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Learning Together: Investigating Possibilities for Mathematics Teachers'
Equity-Focused Learning Through Coaching

By

Evra Baldinger

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

In

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in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Alan Schoenfeld, Chair
Professor Judith Warren Little
Professor Deborah Nolan

Summer 2018

Learning Together: Investigating Possibilities for Mathematics Teachers'
Equity-Focused Learning Through Coaching

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by

Evra Baldinger

Abstract

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Evra Baldinger

Doctor of Philosophy in Education

University of California, Berkeley

Professor Alan Schoenfeld, Chair

Developing ambitious and equitable mathematics teaching involves recognizing and working against fundamentally inequitable hierarchies that pervade the dominant culture of US schools. To engage in this sizeable undertaking, teachers need ongoing, work-embedded opportunities for learning and thought partners with whom to do it. Instructional coaching is increasingly employed as a strategy to support improvement in mathematics teaching, but little is known about how coaching can function to support this the kind of teacher learning required for the development of more ambitious and equitable math classrooms. Moreover, in much research on teacher learning, and almost all research on coaching, learning itself is either underspecified or narrowly articulated, and goals for teacher learning leave out equity.

This dissertation introduces and operationalizes a multi-strand framework for *transformative teacher learning toward ambitious and equitable teaching* (in short, TTL), and employs it to investigate possibilities for coaching to support this learning. Interactions between two middle school math teachers and their coach were observed and recorded and surveys and interviews were conducted. Close examination of the work of these two teacher-coach pairs yield findings with implications for the research and practice of equity-focused coaching.

All strands of learning were found to support the others, and when barriers existed in individual strands, their consequences were broadly evident. One teacher engaged in learning along all strands, coming, in her own words, to be “wowed” by her students’ mathematical thinking. This story of learning involved making new meaning of students, mathematics, and teaching; coming to engage deeply in coaching; co-participating with the coach in risky, new classroom practice; developing an articulated vision of powerful teaching; coming to identify as competent with respect to that vision; and developing joint engagement with the coach. One teacher experienced challenging power and positioning with respect to her coach, and this arrangement inhibited all strands of her TTL. When power was renegotiated and new positions established, opportunities for each aspect of TTL were newly available. In both cases, learning was found to be afforded and constrained by *frames* for coaching, and the joint accomplishment of productive reframing was found to involve opportunities for participation that is inconsistent with extant, less productive frames.

Findings support articulation of some aspects of powerful coaching, as well as challenges that coaches must navigate. Three broad and interrelated coaching practices were found to support TTL: (1) working from the premise, made explicit in talk, that each student is mathematically smart; (2) naming and building from teachers' strengths related to ambitious and equitable teaching; and (3) interrogating mathematical content. However, as TTL was found to be mediated by power and cultural frames for coaching, these practices alone were insufficient. Coaching toward TTL was found to necessitate attention to issues of culture, power, and framing that mediate teachers' experiences in coaching interactions. These findings have implications for the preparation and support of coaches and the design of coaching programs intended to support teacher learning toward ambitious and equitable teaching.

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Chapter 1

Introduction

1.1 Introducing the Dissertation

Imagine a classroom in which students of various skin tones, hair textures, and access to wealth and privilege engage together each day with rich, challenging mathematics. They explore, question, hypothesize, conclude, justify, and represent ideas in multiple ways. They make connections across representations and content areas, discovering and building deep and connected understandings of mathematics. They see themselves and are seen by others as “smart” mathematical thinkers and learners.

Some teachers, schools, and districts are working toward this vision of excellent and equitable instruction, hoping to make classrooms like this one typical, rather than the rare exceptions documented in the literature (e.g. "Raiside High School" in Boaler, 2008; Nasir, Cabana, Shreve, Woodbury, & Louie, 2014). In these districts, schools, and classrooms, communities are being crafted to support powerful experiences for all students. Teachers are being supported to examine and dismantle patterns of social inequality that serve as barriers to learning for many students.

Such teaching is complex and contingent¹. There is no list of “best practices” that, once mastered, will reliably result in equitable and excellent classrooms. Teachers’ learning toward such a vision involves more than coming to know more content or getting better at a particular skill. It involves working against cultural “common sense” notions of mathematics and intelligence as exclusive and hierarchical to construct math communities in which each student’s “smartness” is assumed, recognized, and expanded. It involves learning to engage with complexity and contingency and to continually adapt and revise classroom practice. It involves the formation and maintenance of relationships and communities of educators that foster creativity and collaboration, taking on the challenges of such teaching together.

The cultural surrounds of US education do not support development of the kinds of work or the kinds of teaching outlined above. American schools are organized to classify, categorize, and sort students, not to invite them, as their whole, authentic selves, to engage together to investigate mathematics (McDermott, Goldman, & Varenne, 2006). Broadly accepted notions of mathematics and intelligence which are narrow, hierarchical, and fundamentally racist and classist support our American obsession with standardized measures of student achievement and other simplistic one-size-fits-all measures of teacher and student success. These measures, in turn, feed into hierarchical narratives, supporting teachers to understand some students as “gifted” and others as “slow,” breathing life into systems that increasingly frame students as labels (EL, IEP, gifted, struggling, at-risk, high, low, etc.) more than humans. The egg crate organization (Lortie, 1975) of schools and the ubiquitous notion of “hero” teachers (Ayers, 2000) cast teachers as masters of their private domains, discouraging the kinds of collegiality and collaboration that matter for teachers to take up and sustain challenging teaching (Grossman, Wineburg, & Woolworth, 2001; Little, 1982; McLaughlin & Talbert, 2001). Teachers are asked to wear many hats—acting as therapists, social workers, administrators, ambassadors of ever-evolving district initiatives, etc.—consuming time and energy that becomes unavailable for ambitious, reflective, or collaborative work.

¹ One could certainly argue that all teaching is complex and contingent, to varying degrees and in various ways.

Many investigations of teacher learning lack articulated goals for learning or conceptions of learning. Those goals that are articulated for teacher learning tend to focus on a single kind of outcome (Borko, 2004), for example teachers' gaining mathematical knowledge for teaching (e.g. Hill & Ball, 2004) or getting better at noticing students' mathematical thinking (e.g. van Es & Sherin, 2008). Studies of teacher learning tend to ask whether experiences or interventions of focus supported teachers to know more or to get better at a defined set of things. Although these outcomes are often aspects of ambitious teaching that matter, narrow foci do not illuminate connections among various processes and outcomes of teacher learning, leaving us with partial—and often disconnected—pieces of the puzzle. Moreover, research focused on interventions and outcomes often does little to support our understanding of *how* interventions support learning, leaving teachers' actual interactions within them hidden. This dissertation tries to unpack some of the complexity of ambitious teacher learning and of interactions that can support that learning.

Coaching, which has been increasingly employed by districts working to reform classrooms, holds promise for supporting ambitious learning for teachers, as it offers learning experiences that are integrated with teachers' own classrooms, students, and schools (Desimone & Pak, 2017; Woulfin, 2014). When combined with other efforts to support teacher learning it can, at least in theory, support teachers to connect ideas they may encounter in spaces outside of their classrooms (such as professional development workshops) to the particularities and challenges of their day-to-day teaching practice (Woulfin, 2014).

However, coaching offers no simple solution. A widely-documented challenge in coaching relates to the need for coaches and teachers to develop productive working relationships (Anderson-Levitt, Feldman, & Minstrell, 2014; Feger, Woleck, & Hickman, 2004; Neufeld & Roper, 2003; Poglinco et al., 2003). The ways this challenge has generally been written about suggest that some teachers or coaches have the wrong dispositions, skills, or other attributes (Anderson-Levitt et al., 2014); teachers are framed as resistant or defensive and coaches as lacking "people skills." These explanations yield limited solutions, implying potential courses of action such as asking teachers to change, ignoring resistant teachers, screening coaches for "people skills," or developing strategies for teaching them these skills.

In this dissertation, I suggest that considering coaching and teacher learning as situated in *figured worlds* (Holland, Lachicotte, Skinner, & Cain, 2001) supports the examination of these phenomena in ways that illuminate conditions that govern the interactions that we hope support teacher learning, yielding more generative understandings. A *figured world* is a "socially and culturally constructed realm of interpretation in which particular characters and actors are recognized, significance is assigned to certain acts, and particular outcomes are valued over others. (p. 52)" In figured worlds, people inhabit roles (e.g. student, teacher, coach), and participate in ways that are made sensible by cultural meanings that surround those roles. Particular *kinds of people* have access to particular ways of participating in their worlds. For example, in the world of *US schooling*, teachers can explain, nurture, argue, plan lessons, listen, gossip, punish, etc.

Within figured worlds, *frames* (Goffman, 1974; Hand, Penuel, & Gutiérrez, 2012) narrow possibilities for kinds of people in kinds of interactions. Frames delineate kinds of interactions, answering the question, "What is going on here?" and providing actors with cues about *particular* ways of participating that belong in *particular* interactions. For instance, in a *tutoring session* at lunchtime, it is acceptable for a teacher to explain, listen, and nurture, but not gossip, while it is sensible for a student to listen, ask questions, and try out ideas, but not tell raunchy jokes. In a *break-room chat*, it may be acceptable for a teacher to gossip, listen, and complain,

but not plan a lesson and in a *schoolyard game*, it may be acceptable for a student to tell jokes, throw balls, and taunt, but not ask questions about fractions. By shaping *who gets to do what* in interactions, frames are a mechanism by which power and participation are organized.

This dissertation employs the concept of *figured worlds* to investigate teacher-coach interactions and the conditions that govern them through the in-depth examination of two teacher-coach pairs. What results is a robust picture of (1) conditions that can support coaches and teachers to construct new, more ambitious and equitable worlds for themselves and for students and (2) how frames and power can support or inhibit learning and ways that coaches might attend to these issues productively.

After a brief review of relevant literature, this dissertation begins by proposing a framework to support the examination of teacher learning toward the kinds of classrooms described at the start of this chapter. The framework draws from *figured worlds* and from social theories of learning to name multiple, intertwined processes of teacher learning and to articulate trajectories for each process—the “from what” and “to what” aspects of teacher learning—that are taken to matter for teachers’ learning toward the vision for classrooms outlined here. I refer to the learning outlined in this framework as *transformative teacher learning toward ambitious and equitable teaching* (for brevity, “transformative teacher learning” or TTL). The dissertation offers methods for the study of five *strands* of TTL, methods which are then employed in the analyses that support the arguments outlined in the three data chapters named below:

- Chapter 4: Learning to be “Wowed by Kids:” A Case of Transformative Teacher Learning and the Coaching that Supported It
- Chapter 5: “It Feels Like I’m Throwing a Bomb Out There.” Negotiating Power and Agency to Support Transformative Teacher Learning
- Chapter 6: Learning to Learn Together: (Re)framing Coaching to Support Transformative Teacher Learning

Chapter 4 reveals some of the complexities of TTL through in-depth analyses of one teacher’s learning and of the coaching that supported that learning. In doing so it reveals ways in which processes of TTL are interconnected and it begins to unpack coaching work that can support multiple processes of TTL in coherent and connected ways. It highlights ways in which progress along each strand of TTL requires teachers’ agency and the co-constructed nature of learning activities.

Chapters 5 and 6 examine some of the complexities of TTL in coach-teacher interactions that relate to frames, the arrangements of power and agency that are afforded by them, and implications of these arrangements for learning. Chapter 5 examines one case in which power relations first constrained and then afforded opportunities for TTL. It examines two distinct phases that unfolded in this coach-teacher relationship, and a pivotal conversation that transformed it. In the first phase, power was inequitably distributed, the teacher experienced limited agency, and opportunities for her learning were severely constrained. In a pivotal conversation, power and agency were negotiated explicitly and the relationship was reframed, setting up a brief phase in which the teacher had increased access to power and agency, which afforded new opportunities for learning.

Chapter 6 zooms out to consider frames and learning across these two cases, identifying three frames that shaped these teachers' understanding of—and participation in—coaching. It demonstrates that these three frames—coaching as *evaluating and fixing teaching*, *helping*, and *learning together about teaching*—developed with similar trajectories in the two cases and that these trajectories supported greater opportunities for TTL over time. It examines the accomplishment of productive reframing, finding that opportunities for participation were consequential for each such accomplishment.

For the remainder of this chapter, I situate this dissertation by providing a brief review of relevant literature.

1.2 Research Related to Teacher Learning in Work-Embedded Interactions

Instructional coaching has received relatively little research attention to date—although with a recent surge—but some of the issues of concern in this study relate to other bodies of literature. I report below on three lines of research that shed light on issues related to how teachers' learning toward equitable math classrooms might be supported through work-embedded interactions: (a) research on teacher collaboration and school reform; (b) research on teachers' learning in workgroup conversations; and (c) research on instructional coaching. I do not review these bodies of literature comprehensively, but instead situate this dissertation by focusing on the perspectives, methods, and findings from this literature that bear on the issues outlined above.

1.1.1 Teacher Collaboration

Since the 1980s, there has been increasing research attention paid to the role of teachers' collaboration and the organization of professional communities in the accomplishment of various aspects of advancement from traditional and inequitable conditions in schools and classrooms toward increased equity and justice. Little (1984) found that efforts to desegregate schools were more successful in districts where participants (teachers and schools) were positioned as collaborators with reformers, rather than as recipients of outside reforms. Little's findings brought attention to the importance of teacher collaboration for school reform. More researchers came to investigate collaboration among teachers, its dynamics, its effect on various outcomes, and structural supports that facilitated its development (e.g. Hargreaves, 1994; Nias, Southworth, & Yeomans, 1989; Rosenholtz, 1989). This literature came to employ "teacher community" and "community of practice" (influenced by Lave and Wenger (1991) and Wenger (1998)) to refer to the entities formed from the web of relationships among teachers who collaborate.

The empirical work that developed out of this refocusing clarified that not all groups of teachers who talk together work productively toward more equitable or ambitious practice, and articulated some of the features of teacher communities that do (Louis, Marks, & Kruse, 1996; McLaughlin & Talbert, 2001). Multiple aspects of school culture were identified as important for the development of the kinds of teacher communities that support instructional innovation. These aspects are (1) the deprivatization of practice, including frequent collaboration among teachers and sharing of teaching materials and ideas and (2) shared norms and values, including collective focus on student learning, shared commitment to all students' success and to the continual adaptation of classroom practice, and thoughtful decision making, rather than prescriptions of "best practices." While this literature does not focus explicitly on teacher learning, but rather on instructional innovation or school change, it illuminates conditions of teachers' work with other

teachers that support the kinds of interactions that are likely to support teacher learning. It calls out the importance of teachers having opportunities to share and examine their practices with other educators.

Another influential finding from this work is that teachers' ways of understanding their students are cultural in that they inform and are informed by the discourse within their professional communities (McLaughlin & Talbert, 2001). This finding offers an expansion to psychological perspectives that study teachers' beliefs, suggesting that those concerned with influencing teachers' ideas about students (and by extension about mathematics, teaching, and learning) should consider the cultural practices of the communities within which teachers work.

Research on teacher collaboration and school change focused the field's attention on the cultural conditions in which efforts at school and classroom change are situated. It established that efforts to understand or support equity- or justice-focused change (and by extension, teachers' learning toward such change) must attend to both the local cultures of teacher communities that impact teachers' understandings and practices, and the school and district level cultures that afford and constrain the development of teacher communities that are productive for such efforts. It established that teachers should be positioned as collaborators with those seeking to support reform and that teacher communities should be supported in developing collective norms and practices that support innovation.

The research described above did not yet help us to understand *how* the collective norms and practices that support innovation play out in interaction or how communities develop them. Nor did it focus on connections between these norms and practices and teachers' learning. Out of this work, several studies were conducted—which I describe below—to investigate mechanisms by which collective norms and practices are negotiated in teachers' conversations and how these negotiations can provide opportunities for teachers to learn.

1.1.2 Teachers' Learning in Professional Interactions

Grossman, Wineburg, and Woolworth were among the first researchers to offer substantive answers to the question of what teachers can do as they interact together with the purpose of improving instruction. In the 1990's, they facilitated the development of a "community of teacher learners" among English and Social Studies teachers in one high school and investigated its discursive practices over time (Grossman, Wineburg, & Woolworth, 2000; Grossman et al., 2001; Thomas, Wineburg, Grossman, Myhre, & Woolworth, 1998; Wineburg & Grossman, 1998). Their findings offer the field deeper understanding of the interactional work required for the formation and maintenance of productive teacher community. For example, their analysis reveals that when the teachers in their study first gathered, they behaved as a *pseudocommunity*. Their talk remained general and abstract enough to allow them to behave *as if* they agreed. They avoided pressing each other for specification, allowing for agreement about generalities, such as the importance of "critical thinking" or "interdisciplinary curriculum," and were thus able to maintain an "illusion of consensus" (Grossman et al., 2001, p. 955). Over time, however, disagreement surfaced and this group of teachers struggled to develop the capacity to handle ensuing conflict. Grossman and colleagues argue that the presence of disagreement, and group norms to navigate this disagreement, are essential for productive teacher community.

Grossman and colleagues (2001) offer a framework for the development of productive teacher community. It includes dimensions related to formation of "group identity" and norms for interaction; teacher's navigation of various disagreements and tensions related to negotiations of disciplinary questions and competing goals for the group; and development of shared

commitment to the learning of each member. This research was unique in the extent to which its findings were grounded in the interactions that took place in a developing community; it offers examples of the interactional work of this community unfolding and includes transcript that allows readers to “hear” the development of group identity and norms, the management of conflict and negotiations of tensions, and the development of the group’s shared commitment to learning.

Little (2002) is another early piece to provide a rich picture of teachers’ learning interactions. Little, drawing on data from a 2-year comparative case study of teacher interactions in subject matter departments in two high schools (Horn, 2005, 2007; Horn & Little, 2010; Little, 2002; Little, Horn, & Bartlett, 2000), takes on the question of how learning might be found within records of teachers’ everyday work and offers a framework for analyses that seek to do that. She asks, “How can we find teachers’ learning inside of their interactions with other teachers?” and chronicles analytic dilemmas and opportunities for analysts. She culls one conversation among teachers in a High School English department for teachers’ *opportunities to learn*, identifying conversational junctures at which opportunities for teachers to learn are either opened (when challenging questions are posed, reframed, or pursued) or closed (when decisions are stated and conversational moves are made to “move on”).

Little (2002) suggests that analyst looking for learning in teachers’ interactions treat all of what is said and done as evidence of what is known and as potential resources for learning, look for the options for talk or action that are opened or closed in conversation, and suspend our own prior notions about what is or what might be learned. She offers a three-part conceptual framework to help “unpack the relations among teacher community, teacher development, and the improvement of practice,” pointing analysts to (1) representations of practice within teachers’ conversations, (2) ways in which teachers’ interactions create a stance toward practice and its “improvement,” and (3) development of norms for interaction among teachers (concurring with Grossman and colleagues) and the extent to which these norms open or close opportunities for learning. Finally, Little suggests that, while opportunities to learn may be identifiable in single episodes of interaction, identifying learning itself will require attention to changes over time, leaving the development of methods to do so to future research.

Taken together, these two foundational pieces (Grossman et al., 2001 and Little, 2002) help to establish the importance of looking at teachers’ interactions as they work and learn together. They begin to flesh out the notion that some types of interactions among teachers support learning better than others, and set the stage for a group of studies that compared interactions in more and less successful groups of teachers, which I consider in the following section. Grossman and Little also provide methodological precedents for the study of learning in interaction, demonstrating ways in which interactional data can be culled for evidence of teachers learning together.

Teachers’ opportunities to learn through collaboration.

Continuing the work begun by Little (2002), and coming mostly out of the same study, the pieces in this section help us to focus on teachers’ learning by consider their *opportunities* to learn or the *resources* available for their learning in interactions with other teachers. They take a comparative approach to the study of teachers’ learning in work groups, comparing interactions in groups of teachers in two high schools which they determined to have “taken reform seriously.” (Horn, 2005, p. 212) Recordings and field notes from 18 months of observations of

conversations among teacher work groups were collected and analyzed to investigate the ways in which teachers' interactions support them to learn about their practice.

Horn (2005) focuses on *resources* for learning as she compares conversations in two mathematics teacher work groups, one of which had shown greater success in developing ambitious teaching practices and in supporting large numbers of students to enroll in Calculus, despite serving more students from groups with historically low rates of participation in Calculus. She found that the pedagogical reasoning of the more successful group of teachers was characterized by (1) deep interrogation and collective sense making around artifacts of reform; (2) interrogation and ultimate rejection of hierarchical classification systems; and (3) frequent replays and rehearsals of classroom practice that included teachers' and students' voices.

Horn (2007) expands on the second numbered finding above, providing a picture of what the conversational classification systems sounded like in conversations and the ways in which those classification systems that reinforce hierarchies of ability can be either reified or challenged in teachers' conversations. In one group of teachers, talk about "fast," "slow," or "lazy" students was taken as normal, whereas in the other group, such talk was problematized and alternative classification systems (that consider status differences among students, rather than ability levels, for example) were proposed. While this piece offers transcript that shows how teachers challenged hierarchical classification systems, it does not shed light on how this group developed in ways that supported this to happen productively (and not, as we could imagine, "shut down" some teachers by positioning them as wrong), nor does it offer opportunities to see how individual teachers' sense-making about students may have shifted over time.

Horn and Little (2010) investigate the "practices by which groups structure work-related talk" for two groups of teachers at one school, and how those practices "forge, sustain, and support learning and improvement." They analyze the extent to which conversational routines supported "the linking of frameworks for teaching to specific instances of practice," a linking that they consider essential for teacher learning. They found that the conversational routines in one group more consistently opened opportunities for learning, while those in the other group more consistently constrained opportunities for learning, with the similarities and differences elaborated as follows. Both groups frequently "normalized problems of practice," responding to teachers' articulation of problems by communicating that these problems were normal and not indicative of failure on the teachers' part. However, in the first group, this normalization served as a starting point for deeper discussions of the problem, whereas in the second group, problems were superficially "solved" or dismissed (e.g. "Don't let it get you down" or "maybe you just need to..."). In the first group, there were also opportunities for "rough draft" talk (e.g. "I don't know. Maybe it was..." or "No, maybe it was like..."), teachers were given agency over their own problems, teaching problems were framed as actionable, and teacher talk frequently bridged specific accounts of practice with general principles of teaching. This study concurs with Little's earlier findings to suggest that extended discussion of problems of practice is important for teacher learning and suggests additionally the importance of both teachers' agency over their own problems and their public acknowledgement of what they do not yet know. This study also raises questions about how groups of teachers might come to interact in these ways. How do norms develop that support deep inquiry into problems of practice, that create safety for "rough draft" talk, and that position teachers as agents?

Horn and Kane (2015) investigated the interactional processes of learning in teacher work groups as they relate to varying levels of teacher expertise, addressing the question, "How do conversational opportunities to learn compare in mathematics teacher work groups at different

levels of instructional accomplishment?” (p. 14) They compared the interactional practices of three work groups, which they determined were made up of teachers with primarily beginning levels, emergent levels, and sophisticated levels of pedagogical expertise in ambitious mathematics teaching. They found that teacher groups made up of more accomplished teachers had conversations richer in opportunities to learn than did groups made up of less accomplished teachers. They argue that teachers’ well-developed, ambitious teaching practice provides epistemic resources that support them to employ conversational frames that are more likely to support learning. They suggest that strong facilitators might play important roles in supporting teachers’ learning in interactions with their colleagues.

Louie (2016) followed the interactions of groups of mathematics teachers who were explicitly focused on developing their own equity-oriented teaching practices. She found that their talk exhibited tensions between restrictive discourses consistent with dominant math education culture and expansive discourses consistent with the non-dominant vision for classrooms that the teachers were aiming to take up. While these tensions might have served as resources for these teachers’ equity-focused learning, the frames that organized their understandings of their interactions together inhibited opportunities for this to happen. Louie showed that teachers understood the purpose of their interactions to be *sharing ideas and strategies*, and that they routinely avoided disagreement to support this purpose, effectively closing opportunities for learning. Louie argues that framing collegial conversations instead as *opportunities to co-investigate problems of practice* makes available norms of interaction that support teachers to navigate the tensions inherent in equity-focused teaching, and to learn.

Taken together, this body of literature provides a window into interactional practices that provide opportunities for learning toward various aspects of ambitious and equitable teaching. They show us teachers airing and resolving disagreements (Grossman et al., 2001), negotiating use of conversational category systems (Horn, 2005, 2007), taking up and investigating problems of practice (Horn & Little, 2010), connecting teaching principles with instances of classroom practice (Horn & Kane, 2015; Horn & Little, 2010), engaging in “rough draft” talk and public revision of ideas (Horn & Little, 2010), framing problems as actionable, positioning themselves and each other as agentive (Horn & Little, 2010), and framing collegial conversations as opportunities to dig deeply into problems of practice (Louie, 2016).

These papers also speak to the creation and maintenance of professional relationships that are rich in opportunities for learning. Grossman et al. (2001) and Horn and Little (2010) point to the importance of establishing (Grossman et al., 2001) and maintaining (Horn & Little, 2010) norms for interaction that support deep and collective inquiry. Grossman et al. (2001) show us how these norms at first failed to develop with one group of teachers and were later developed. Horn and Little (2010) show us how constructive norms operate in one well-established group of teachers. From these examples, we can see discursive practices that may support the development of learning relationships: participants allow speakers to retain the “conversational floor” (Horn & Little, 2010); attend to creating “safety” and inviting all group members to participate (Grossman et al., 2001); share personal challenges (Horn & Little, 2010) and make their personal histories and identities public (Grossman et al., 2001); distribute the task of leading or facilitating discussions across participants (Grossman et al., 2001); and treat ideas as public property and refrain from personalizing differences of opinion (Grossman et al., 2001).

These pieces do not yet provide examples of *the development of* the interactional practices that support opportunities to learn. And, by focusing on *opportunities* to learn or *resources* for learning in single interactions, they do not yet provide us with analytic or

conceptual tools for the study of learning over time as it unfolds through multiple, work-embedded interactions.

1.1.3 Teachers' Learning Through Interaction with Instructional Coaches

The practice of instructional coaching dates to the early 1980s (Joyce & Showers, 1981), but research about it has been scarce until a recent surge in the past decade. The corpus of research literature available includes a few conceptual pieces that help us to understand possibilities for coaching (Brown, Stein, & Forman, 1996; Desimone & Pak, 2017; Gibbons & Cobb, 2012; Joyce & Showers, 1981, 1982), large-scale efficacy studies of coaching programs (Bean, Draper, Hall, Vandermolten, & Zigmond, 2010; Campbell & Malkus, 2011; Cantrell & Hughes, 2008; Ross, 1992), reports about specific programs involving coaching prepared by professional program evaluators (Neufeld & Roper, 2003; Poglinco et al., 2003), quantitative analyses which identify factors that support successful implementation of coaching programs (Gibbons, Garrison, & Cobb, 2012; Matsumura, Garnier, & Resnick, 2010; Matsumura, Sartoris, Bickel, & Garnier, 2009), studies that examine knowledge and skills that support productive coaching in particular cases (Barlow, Burroughs, Harmon, Sutton, & Yopp, 2013; Gibbons, 2012), studies that use self-reports to investigate how people in the role of “coach” spend their time (Campbell & Griffin, 2017; Ellington, Whitenack, & Edwards, 2017; Luebeck & Burroughs, 2017), and a few studies that have used observational data of the work of coaches and teachers to investigate the potential of various kinds of coaching interactions to support teacher learning (Anderson-Levitt et al., 2014; Coburn & Russell, 2008; Ellington et al., 2017; Munson, 2018; Saclarides & Lubienski, 2018).

In this section, I summarize this literature, outlining the few convergent findings that are available, which come from a small number of studies and thus must be taken as tenuous. I follow this overview by situating my dissertation with respect to the knowledge base about coaching, proposing ways to fill some gaps by drawing from the previously summarized bodies of literature about teacher collaboration.

Instructional “coaching.”

The use of the word “coaching” to support teachers is credited to Joyce and Showers (1982), who compared teachers learning to teach with athletes learning to play competitive sports. Joyce and Showers conceptualized learning as a two-step process. First, teachers and athletes must learn skills, which they can do in settings somewhat removed from their classrooms or competitive events. They must then learn to “transfer” their new skills into practice, a process for which, Joyce and Showers propose, they need coaching.

By teacher “coaching,” Joyce and Showers referred to a support model generally referred to now as *peer coaching* in which teachers who are working together to take up new practices observe each other, provide feedback, and work together on the problems that arise. Other models of coaching in education are *technical coaching*, in which “more accomplished others” support teachers to transfer new teaching practices into their own repertoires; *collegial coaching*, in which coaches work to enhance teacher collaboration and encourage teachers to reflect together on their work; and *mentoring*, which is used primarily to support new or novice teachers to develop proficient practice (Poglinco et al., 2003). Some programs have named two kinds of coaches: *change coaches*, focusing on whole school change by supporting collaboration and developing leadership, and *content coaches*, focusing on helping individual teachers improve their teaching (Neufeld & Roper, 2003).

Coaching, in its many forms, is employed increasingly often in education (Coburn & Russell, 2008; Woulfin, 2014). In practice, people employed as “coaches” tend to fill a number of roles and multiple coaching models are employed simultaneously (Cantrell & Hughes, 2008; Coburn & Russell, 2008; Matsumura et al., 2010; Neufeld & Roper, 2003; Poglinco et al., 2003). One coach may work with individual teachers in their classrooms, work with groups of teachers to build routines for constructive collaboration, support principals in efforts to distribute leadership, and work with teachers to build peer support structures, such as peer observations and peer coaching (Gibbons & Cobb, 2012; Neufeld & Roper, 2003; Poglinco et al., 2003).

What coaching IS, or what coaches either do or might do, is the subject of a number of recent studies, with the convergent finding that people in a role called “coach” engage in many different activities (Campbell & Griffin, 2017; Gibbons & Cobb, 2017). Studies concerned with the practices of coaches have generally relied on coach self-reports, using activity logs and surveys to investigate how coaches spend their time and, in some cases, to make connections between their activities and desired outcomes for teachers and students. Findings from these studies suggest that the more time coaches spend working with teachers (rather than, for example, making photocopies, filling in for absent teachers, or gathering teaching materials), the more likely it is that their work will support changes in teaching. What it means to “work with teachers” is generally articulated only in terms of activity descriptors, such as “co-planning,” “modeling,” or “giving feedback.”

Desimone and Pak (2017) provide a resource for thinking about how activities like “co-planning” might most productively support teacher learning. They argue that coaching can provide each of the five features of quality professional development that had been identified in previous work (Desimone, 2009; Desimone & Garet, 2015). They suggest that each of the five features—content focus, active learning, duration, collective participation, and coherence—can serve as a guideline for decision-making about coaching, as the degree to which each feature is available will depend on the particularities of coaching interactions. They give the example that the degree to which “active learning” is available to teachers in a coaching relationship depends largely on whether the coach—or the initiative in which the coach is situated—takes a “directive stance,” in which the coach guides interactions and tells teachers how things should be done, a “responsive stance,” which allows teachers to lead the work they engage in with coaches.

Challenges in instructional coaching.

Some research has articulated the challenges of instructional coaching and some of the skills coaches may need to navigate those challenges. It is clear that coaches need certain kinds of knowledge and expertise with respect to the innovations they are coaching toward (Feger et al., 2004; Gibbons & Cobb, 2016; Mudzimiri, Burroughs, Luebeck, Sutton, & Yopp, 2014) and that they should develop expert “eyes” for issues in and out of classrooms that matter for teaching and learning (Feger et al., 2004; Gibbons & Cobb, 2016). Gibbons and Cobb (2016) set out to investigate the knowledge base that supports exemplary coaching by examining the practices of one middle school mathematics coach who was experienced and who was found to engage consistently in activities that Gibbons and Cobb (2017) identified as potentially productive for supporting teacher learning. Through analysis of interviews with the coach and with teachers across the four years of the study, Gibbons found that this coach had (1) deep understanding of mathematics teaching and learning, (2) professional vision, (3) understanding of teacher development, and (4) an extensive repertoire of activities in which to engage teachers

to support their learning². Other publications (Aguilar, 2013; Feger et al., 2004; West & Staub, 2003) have concurred that coaches need deep content knowledge, pedagogical knowledge, as well as knowledge and skills related to supporting teacher learning.

Numerous studies have suggested that coaches need “human relations” or “interpersonal” skills necessary to develop and manage relationships—between themselves and teachers as well as between teachers, administrators, and others—that foster teacher learning, and contend with the tensions inherent in these relationships (Anderson-Levitt et al., 2014; Feger et al., 2004; Poglinco et al., 2003). For instance, coaches must manage tensions inherent in the navigation of roles and positioning, as they struggle to define themselves as teachers’ peers, as evaluator/advisors, and/or as quasi-administrators (Poglinco et al., 2003). They also must understand principles of distributed leadership and find ways to support teachers’ authority and autonomy while encouraging multiple stakeholders to remain flexible and find compromises in instances of disagreement (Neufeld & Roper, 2003). Multiple studies have found that coaches manage tensions between ensuring that teachers feel heard and respected—a necessary aspect of building productive working relationships—and supporting (or “pushing”) them to improve their practice (Neufeld & Roper, 2003; Poglinco et al., 2003). The subject of coaches’ need to build productive relationships with teachers comes up across enough studies that I elaborate on this research below

Managing relationships and tensions in coaching.

Coaching literature is clear that relationships between coaches and teachers are central for the success of coaching (Feger et al., 2004; Neufeld & Roper, 2003; Poglinco et al., 2003). Coaches report spending more time with teachers with whom they have comfortable relationships (Poglinco et al., 2003) and the time that coaches and teachers spend together, particularly co-engaged in substantive conversations about teaching, correlates with the extent to which teachers shift their classroom practice in alignment with the goals of coaching (Campbell & Griffin, 2017).

Coaches report relationship-building to be not only central to their work, but also deeply challenging. Extant research has articulated this challenge in terms of the need to manage (1) roles and positions between coaches and teachers, which is related to managing feedback and the need to create safety for teachers to take risks and open their practice to outsiders, and (2) interactions with “resistant” teachers. I elaborate briefly on each of these ideas below.

Managing coaching roles and creating safety for teacher learning.

Managing roles and creating safety for teachers is an oft-cited and well-known challenge in coaching (Neufeld & Roper, 2003; Poglinco et al., 2003; West & Cameron, 2013). In a study of coaches working in 27 America’s Choice schools (Neufeld & Roper, 2003; Poglinco et al., 2003; West & Cameron, 2013), coaches reported challenges related to managing tensions in their work, in particular the tension between “being a teacher and a colleague of teachers, and being a quasi-administrator or manager.” (Poglinco et al., 2003, p. 11) As coaches manage their roles and positions with respect to teachers, they often struggle to find productive ways to talk with teachers about teaching, with *providing feedback* being an oft-cited challenge. Coaches in the Poglinco et al. study reported being challenged by the task of giving critical feedback, stating that doing so undermined their ability to construct productive relationships.

² It is interesting, if not surprising, to note that this is similar to knowledge identified as important to support effective teaching in *How People Learn* (Bransford, Brown, & Cocking, 2000).

Coaches emphasized the importance of staying positive, being tactful, and thinking about each particular teacher's personality, strengths, and weaknesses. Several coaches said they initially erred on the side of being too "honest" with or critical of teachers, and that teachers felt threatened. (Poglinco et al., 2003, p. 24)

One coach in their study said, "Providing feedback is the toughest part. I want to be considered non-threatening...I would say, 'maybe next time, we'll do this' ...I wanted to provide them with opportunities to reflect. I wish I was more adept at conveying information positively." (Poglinco et al., 2003, p. 24) While this coach interprets the solution to her challenge as "conveying information positively," research has not yet investigated ways in which coaches' interactions with teachers can most productively support their learning.

Neufeld and Roper (2003) drew from longitudinal, qualitative studies of coaching in Boston, Corpus Christi, Louisville and San Diego over six years to put together a paper providing guidance to district leaders who hope to support successful implementation of district-wide coaching efforts. They describe as an essential part of a coach's job the task to, "Help establish a safe environment in which teachers can strive to improve their practice without fear of negative criticism or evaluation" (p. 9) and describe that coaches, "must figure out when and how hard to push principals and teachers to address the reform agenda... [and to] gauge how directive to be when they see little movement..." (p. 6-7)

Some recent studies suggest that coaches co-participating in the work of teaching alongside teachers may support more productive learning relationships than providing evaluative feedback or otherwise assuming the role of outside expert (Ellington et al., 2017; Munson, 2018; Saclarides & Lubienski, 2018), a finding that logically connects with Neufeld and Roper's call to establish safe interactional environments for teacher learning.

A number of studies name "resistant teachers" as a ubiquitous challenge for coaches (Ellington et al., 2017; Luebeck & Burroughs, 2017; Poglinco et al., 2003). Poglinco et al (2003) found that coaches spent more time in classrooms where they felt welcome, rather than in those in which they perceived the greatest need for support. Luebeck and Burroughs (2017) found that there was wide disagreement among coaches about how best to respond to "resistant" teachers.

Anderson-Levitt and colleagues designed a mixed-methods study (Anderson-Levitt et al., 2014) to identify science coaching that "works" and coaching that "breaks down." They were surprised to find that not only did teacher-coach relationships matter for the success of coaching (which was not a surprise) but that cultivating these relationships was ongoing over multiple years. That is, it was *not* the case that coaches built relationships with teachers and then got on with the work of supporting their learning, but that coaches needed to attend to relationship building and maintenance throughout their years-long work with teachers. Additionally, they found that this relationship-building work was situated. In their words,

We could see that successful coaching was not well characterized as a linear process of establishing relationships and then "getting to work." The ups and downs did not seem to be a reflection of the personal disposition or skills of the coach or the teacher, but rather seemed to result from *the situated interaction between coach and teacher*. (p. 7, emphasis in original)

How coaches manage relationship-building.

A number of studies suggest that coaches might productively manage relationship-building challenges by working to establish relationships with teachers in which their roles are closer to two peers working together to try out innovations and learn from the process than that of an expert and a novice. Coaches in a few studies (Munson, 2018; Poglinco et al., 2003; Saclarides & Lubienski, 2018) established relationships that supported learning in part by engaging *with* teachers in their work (e.g. planning and teaching lessons), rather than observing this work and offering advice or feedback. Some coaches reported focusing on the positive aspects of teachers' practice as one way to build strong working relationships.

Anderson et al. (2014) found that the establishment and maintenance of productive coach-teacher relationships required both *relational trust* and the management of what they call *role synchrony*. Coaches needed to assume roles and participate in ways that matched teachers' expectations of coaches' roles. Many of the "breakdowns" that they observed in coaching were attributable to interactions in which coaches' ways of participating did not match teachers' expectations for them. For example, a coach reported deciding to collect data about teachers' questioning practices during lessons. Her intention was to use the data only with teachers to examine their questioning practices, but teachers interpreted this collection of data to be evidence of the coach assuming an evaluative role, and relationship challenges ensued.

Given the finding that what coaches do with teachers varies greatly, it is logical to assume that the challenges they encounter in building productive relationships with teachers would vary as well, as would the ways in which coaches improvise approaches to these challenges. No studies have yet raised questions directly about how the relationship-building work of coaches and teachers might relate to the context within which they work, although the group of studies in the following section provides insights that may bear on this question.

Coaching situated in school contexts.

A number of studies have considered the affordances of supportive school context for instructional coaching, focusing in particular on the degree to which school principals have supported and been engaged with the work of coaches.

Matsumura and colleagues (Matsumura et al., 2010, 2009) investigated the relationship between principal leadership and teachers' participation in a literacy coaching program by interviewing and surveying principals, coaches and teachers. They found that principals' leadership and beliefs were positively associated with and/or predicted teachers' (1) engagement with the target pedagogy, (2) participation in coaching activities and (3) perceptions of the usefulness of these activities. Gibbons, Garrison, and Cobb (2012) investigated the factors that influence middle school mathematics coaches' centrality in the social networks of teachers in schools, considering that centrality to be an important dimension of coach effectiveness. They found that in schools in which coaches were most central, principals regularly (1) attended meetings in which teachers collaborated, (2) observed classroom instruction, and (3) met with coaches to discuss teachers' practices. These studies suggest that the ways in which teachers and coaches perceive their work, and thus their orientation to coaching relationships, should be taken to be situated within school culture, a suggestion that echoes findings that suggest that the ways that teachers make sense of students is connected with school and district-level discourse (Horn, 2007; McLaughlin & Talbert, 2001).

Coburn and Russell (2008) drew on data from a comparative case study of two large, urban school districts engaged in a district-wide adoptions of innovative mathematics curricula.

Both districts employed coaches as part of their support for teachers, but the extent to which coaches' interactions with teachers were both supportive of the curriculum adoption and were of significant depth to support learning varied across the districts. Among the factors contributing to these differences, Coburn and Russell found the participation of school and district leaders to be significant. In particular, school leaders mediated district policy by allocating coaching resources and these allocations influenced the extent to which coaches and teachers interacted with depth. (The more coaching time was available to teachers, the deeper the conversations were.) They found also that the extent to which principals' talk was congruent with the intentions of the curriculum adoption was related to the extent to which coaches' and teachers' talk was also congruent and that "district-developed routines of interaction diffused through social networks, shaping what and how teachers talked with one another about mathematics and influencing depth of interaction." (p. 213) These studies point to the need to consider coaching as situated within broader contexts, raising questions about what other aspects of school or district culture might bear on the work of coaches and teachers.

What do we know about the nature of interactions between coaches and teachers?

To date, coaching literature has given surprisingly little attention to the nature of interactions between coaches and teachers. Coburn and Russell (2008), briefly discussed above, was the first study to analyze these interactions themselves (rather than what teachers or coaches report about these interactions). As part of their effort to understand how various policy-level factors influenced the work of coaches, they developed a rubric to characterize degrees of *depth* of coach-teacher interactions. They considered interactions to be of low depth when they focus on "surface structures and procedures, such as sharing materials, classroom organization, pacing, and how to use the curriculum" (p. 212). High depth interactions "addressed underlying pedagogical principles of the approach, the nature of the mathematics, and how students learn" (p. 212). Sadly, and perhaps due to space constraints inherent in journal publication, Coburn and Russell do not share transcript of coach-teacher interactions at varying degrees of depth. They do, however, share the coding scheme that they developed to code analyze depth of interactions. A few studies (Gibbons & Cobb, 2017; Saclarides & Lubienski, 2018) have used these rubrics and the ideas behind them—assuming, as Coburn and Russell did, that greater depth is desirable for teacher learning—to investigate the affordance of various coaching activities, although none of these studies share transcript of coach-teacher interactions.

Mudzimiri and colleagues (Mudzimiri et al., 2014), observed 7 math coaches' work with teachers during one day and analyzed field notes taken from these observations. They attended to the content of teacher-coach conversation, strategies coaches used in these conversations, and the dynamics of teacher-coach interactions. They found that coaches and teachers talked about various aspects of teaching (e.g. math content and pedagogy, students, classroom management, etc.), that teachers used various strategies. They characterized coach-teacher dynamics by examining forms of coach-teacher communication (face-to-face, email, telephone), substance of this communication (about content, pedagogy, teachers' concerns about life or work), stances that coaches adopted (collaborative or directive) in these communications, and what they call the relational balance of coach-teacher communication (hierarchical or collegial). Interestingly, they found that all 7 coaches were both collaborative and directive in their interactions with teachers, and that these two stances were often evident in the same interactions. They found that all teachers deferred to coaches as experts, and characterized the relational balance in all cases as hierarchical. Unfortunately, the lack of records of teacher-coach interactions and the momentary

nature of their data (collected during one day) prevents further investigation of how these dynamics unfolded over teacher-coach relationships or within conversations, were situated within particular contexts, and may have connected with teachers' learning.

1.3 Situating the Dissertation

This dissertation aims to contribute to the relatively young research corpus on instructional coaching, in particular focusing on the possibilities for coaching to support the vision of mathematics classrooms with which this chapter opened. The aims of most of the coaching literature to date are distinct enough from the aims of this study that I find it useful to draw from literature that has examined teachers' learning in interactions not with coaches, but with fellow teachers. In this section, I outline the ways in which this study hopes to contribute to our understanding of the possibilities and complexities of coaching toward ambitious and equitable mathematics classrooms.

1.2.1 About Teacher Learning

Despite a recent uptick in research on coaching, teacher learning remains underspecified or undertheorized. Some studies focus on the potential of coaching to support the uptake of various reforms, and are not centrally concerned with teachers' learning (c.f. Hopkins, Ozimek, & Sweet, 2017; Neufeld & Roper, 2003; Poglinco et al., 2003). Other studies attend to teacher learning by looking at shifts in teachers' skills or practices immediately following work with a coach, adopting view of learning that is measurable, but narrow and outcome-oriented (c.f. Cantrell & Hughes, 2008; Teemant, Wink, & Tyra, 2011). Also, this literature generally fails to attend to the insights provided by the previously-reviewed literature on teacher collaboration that highlight the culturally situated nature of teachers' perspectives (and by extension, their practices). Coaching literature thus tends to miss important questions about how the skills or practices that teachers do or do not "learn" through their work with coaches relate to broader discourses in schools and districts.

None of the coaching studies located for this review articulated goals for mathematics teacher learning that explicitly take up issues of equity and justice. The goals for math teacher learning that were articulated in coaching studies named a vision for teaching that is sometimes called "ambitious" or "standards-based," that is described in terms of supporting students' mathematical sense-making. There were no studies that addressed the need to support teachers to learn to recognize and address patterns of oppression or inequity in classrooms. Without studies of coaching that attend explicitly to goals for equitable classrooms, we are left without resources for understanding essential aspects of teachers' learning. How can coaches work to support the aspects of teachers' learning that matter for the creation and maintenance of more equitable math classrooms, such as the negotiation of conversational classification systems (Horn, 2005, 2007) in which the same students might be cast as either "slow" or as having sensible mathematical insights to identify and build on?

Coaching studies that consider teacher learning also tend to treat this learning as an outcome, using pre- and post- measures to draw conclusions about whether and under what circumstances coaching is effective. While these studies reveal insights about the potential power of coaching, they leave us without access to processes of teacher learning that might be available in coaching. Research on coaching has yet to develop methods for identifying teacher learning as it unfolds in interactions with coaches.

This dissertation builds on advances made available by Grossman, Horn, and Little to theorize and propose methods for the study of teacher learning toward equitable classrooms as it unfolds (or does not unfold) in interactions with coaches. Chapter 2 proposes a framework for conceptualizing teacher learning toward ambitious and equitable classrooms, as it is situated in broader cultural contexts of US education. Chapter 3 outlines methods for capturing central aspects of this learning as it happens in and through teachers' interactions with coaches.

1.2.2 About Coaching Practices

This dissertation also aims to contribute to the research that illuminates what coaches might productively do with teachers to support their learning. Extant research has begun this work by naming activities that coaches engage in (Campbell & Griffin, 2017; Mudzimiri et al., 2014) or that researchers find are—or might be—productive for teachers (Gibbons & Cobb, 2017; Munson, 2018), such as co-planning, modeling, or observing lessons. Without observational data of coaching interactions, however, we cannot know how these named activities play out, which limits our ability to understand their potential for supporting learning. For instance, one could imagine different kinds of coach-teacher interactions with different affordances for teacher learning, each of which could be called “co-planning.” Coaches might, for instance, listen to teachers describe their plans and then offer suggestions, they might tell teachers how they should plan a lesson, or they might work together with teachers to generate plans that neither of them has thought of before. Without further investigation, we have no reason to believe that these different kinds of conversations will have similar affordances for teacher learning, so naming each of them the same way may turn out to be problematic. This dissertation looks inside of coach-teacher interactions to investigate what one coach does with two teachers and how various interactional choices afforded and constrained teachers' learning.

1.2.3 About Fostering Teacher-Coach Relationships that Support Learning

While the extant coaching literature is strongly convergent on the idea that coach-teacher relationships matter, it has done little to support our understanding of how these relationships might be developed in productive ways. The issue is generally framed in terms of attributes of individual coaches and teachers (Anderson-Levitt et al., 2014), with coaches either having or not having “masterful relational skills” (Luebeck & Burroughs, 2017) and with teachers being “willing” or “resistant.” Just as attributing powerful teaching to idiosyncratic “hero” teachers is unproductive for understanding teaching and learning in classrooms, I join Anderson and colleagues (2014) to suggest that attributing successful (or unsuccessful) coaching to the idiosyncrasies of coaches' “people skills” or teachers' receptiveness is minimally productive for understanding the work of coaching. Research is needed that supports our understanding of how relationships among coaches and teachers develop over time in their interactions. When these relationships go well, what are coaches and teachers doing? When these relationships are more challenging, how can we understand the challenges in ways that might support us to consider responses?

This dissertation suggests that it is instructive to consider ways in which teachers' resistance to coaching, like their understandings of students, can be understood as culturally situated. The coaching literature is clear that some contextual factors outside of the immediate work of coaching (e.g. administrative support) have an impact on the quality of the interactions between coaches and teachers, a finding which aligns with the above suggestion.

It is also instructive to consider the ways that similar concerns were framed and investigated in earlier literature investigating teachers' learning in interactions with other teachers. Rather than asking whether teachers in these interactions were "resistant," Horn, Little, Grossman, and colleagues investigate ways in which interactions were fostered that supported learning, uncovering findings about the development of interactional norms and practices that supported teachers to participate productively together and that therefore provided opportunities for learning. This dissertation follows their lead by investigating the nature of interactions between a coach and two teachers with whom the trajectory of relationship-building was differently challenging. It considers factors that support and constrain "relationship-building" and "teacher resistance" that are not about the idiosyncrasies of the individuals involved, but that shed light on the cultural forces that bear on interactions.

In summary, this dissertation aims to contribute to our understanding of both mathematics teacher learning toward ambitious and equitable classrooms, and the possibilities and complexities of coaching to support this learning. It does this by proposing theoretical and methodological tools for the study of this kind of teacher learning and using these tools to investigate teacher learning and coaching through the close analysis of two cases. My hope is that this research will contribute both to the design of coaching that supports teachers to disrupt inequity in their math classrooms, and to theoretical conversations about teachers' learning in work-embedded interactions.

Chapter 2

Theoretical Framework

The purpose of this chapter is to (1) acknowledge and describe some of the perspectives that underlie this study and (2) lay out a framework for *transformative teacher learning toward ambitious and equitable teaching* that draws from these perspectives and guides this study. I begin by describing some aspects of my position in the world and reflecting on ways that these positions are intertwined with the research presented in this dissertation.

2.1 Researcher Positionality

Education research is not neutral (Gutiérrez, 2008, 2013; Martin, 2008; Patel, 2016). The generation of knowledge is, and always has been, a power-laden set of processes; functionally only some people are granted the right to define problems, shape the questions that research works to answer, choose what counts as data or as progress, interpret and apply trends in data. The power wielded by those who are granted these rights generally remains unacknowledged. This power has historically been granted to—and wielded by—White, middle-class men. This arrangement has come with costs, not only to communities of color, women, and communities in poverty, but also to the breadth and quality of the knowledge generated through education research (Martin, 2008, 2010). While it is outside the scope of this dissertation to take on or dismantle these arrangements, it is important that they be acknowledged. Here I do my best to name my positions in the world, and consider some of the limitations and perspectives that accompany these positions.

The theoretical framework that is at the center of this chapter, and that guides the analyses throughout this dissertation, is built from a set of perspectives about how mathematics classrooms should be and about what ways of thinking, being, and teaching are conducive to the development of these kinds of mathematics classrooms. These perspectives are central to the way I conduct research. While there are obvious challenges to the underlying endeavor (e.g. what gives me the right to decide these things?), I hope that in the end, there is value to offer; that the questions, ideas, analyses, and findings herein will contribute constructively to ongoing conversations, and that these conversations will include voices from a broader set of cultural positions than is currently typical. There are two aspects of my position that I comment on below: my relationship to Whiteness and to communities organized around Complex Instruction.

I identify as White. (More broadly, I identify as a middle-class, straight, White woman of Jewish heritage, but my identities as middle class, straight, female, and Jewish bear less directly on the issues herein, so for now I comment on my identity as White.) Whiteness, though a scientifically-baseless and oppressive social construct (Leonardo & Broderick, 2011; Roediger, 1999), has been with me from birth, shaping the ways in which I understand and am understood by the world. While I have much to learn about the implications of Whiteness in my work, a few things are clear to me that bear on this dissertation. First, it is not possible for me to know in any rich or complete way the limitations of my perspectives without engaging with others who are differently positioned. The work of a dissertation is conceived of, and designed to be, the work

of an individual, with structural constraints placed on the extent to which differently-positioned collaborators can be sought out and different perspectives can be included³.

Second, it is clear to me that it is and will be my responsibility, as I continue learn with and from research, that I seek out opportunities to engage with differently positioned teachers, researchers, and other colleagues. For now, inside of this individual endeavor of a dissertation, it must suffice to recognize the limitation of Whiteness on my perspective, and to resist the pull to claim universality of the knowledge generated herein.

As a mathematics educator, my perspectives have been shaped by ideas and communities surrounding Complex Instruction (Cohen & Lotan, 1997; Cohen, Lotan, Scarloss, & Arellano, 1999)⁴. I first encountered CI when I joined a collaborative team of curriculum developers, which included members of the math department at “Railside” or “East HS” (Boaler, 2008; Horn, 2008; Nasir, Cabana, Shreve, Woodbury, & Louie, 2014), who had been for years using and developing CI pedagogy. I was a 6th year teacher, and the ideas I encountered through this engagement helped me to understand newly what might be happening for my students—and what might be happening differently for my black and brown students than for my students who identified variously as Asian or for the few students who identified as White—and how I might work to shape a classroom community that upended some of the injustices that dominated students’ mathematical experiences.

Since that time, my continued learning about mathematics education, as a teacher, curriculum developer, professional developer, coach, and researcher, has taken place alongside my engagement with communities of CI educators. I designed a dissertation study that allowed me to dig into these ideas, practices, and communities, and to investigate issues of teacher learning toward a vision of teaching that is rooted in these communities and their work.

The framework that I have developed to guide this study is closely tied with my position with respect to Whiteness and to communities organized around Complex Instruction. My hope is that this framework, and the discoveries that have resulted from its application to data, will be useful for other researchers and educators with varied positions and perspectives. One way to work against the limitations of perspective and the perpetuation of Whiteness through education research is to seek out new ideas and voices and to resist the call claim the universality of our learning⁵. It is thus my hope that I will have opportunities to bring these ideas and perspectives into future collaborative work that will challenge and expand them.

For the remainder of this chapter, I outline the central perspectives that this study takes and present the framework I developed for investigating teacher learning toward the vision of ambitious and equitable teaching that opened this dissertation.

³ In a sense, by promoting and broadcasting the individual voices of those in the position to dissertate, and by rewarding “objectivity” and “neutrality,” the dissertation itself acts to reproduce Whiteness in the “White Institutional Space” of mathematics education research.

⁴ Complex Instruction emerged from a White Institutional Space, coming from the work of Cohen and Lotan at Stanford University. Since its inception, CI has been taken up, developed, and engaged with by various communities of educators, some of which have included differently positioned participants.

⁵ This resistance is made more challenging by the values and norms of the world of Education Research, wherein individual scholarship is valued and individuals achieve status and recognition when they claim to be the source of universally applicable knowledge.

2.2 Equity

The ideas in this dissertation build from the work of scholars who point out that math education in the US is situated within, and contributes to, a culture dominated by inequity (Cohen, 1997; Gutiérrez, 2002; Martin, 2003; Nasir & Shah, 2011). To work toward equity in math education, these scholars tell us, it is important to recognize that math teaching and learning unfold in spaces that are not neutral, but instead governed by unequal distributions of power and access. And these unequal distributions of power and access organize opportunity in mathematics classrooms in such a way that the social order is maintained and some students are granted access to status and opportunity as “smart at math” and others are not. Given the position of mathematics as a gatekeeper to broader social and economic opportunity, these arrangements have far-reaching consequences for the lives of poor communities and communities of color (Martin, Gholson, & Leonard, 2010; Moses & Cobb, 2002).

This backdrop of injustice implies that working toward equity in mathematics education requires recognizing and undoing structures of inequity. Systemically, this calls for us to create structures that grant access to rich mathematics to all students, dismantling systems that have historically granted access to rigorous, college preparatory curriculum only to some students, and tracked others into remedial or vocational educational pathways. Within math classrooms, working toward equity entails dismantling for students the narrow and limiting views of mathematics and of themselves that they have been supported to develop through their histories of schooling. It entails building classroom cultures in which all students come to see themselves and each of their classmates as valuable contributors to the intellectual work of the class. This requires curriculum that supports broad access to rich math, as well as teaching strategies and classrooms systems that support teachers to redefine what it means to do math, to be smart in math, and which students can be and do these things.

This perspective is different from common-sense notions of equity that are evoked in many conversations in US schools, where mathematics has been viewed as both the domain of the intelligent elite, and as a body of facts and procedures that students should take up and master. (While this latter view no longer dominates education research, there is evidence to suggest that it still characterizes much of students’ experiences in classrooms, carried there by teaching, curriculum materials, school arrangements, and grading policies that are vestiges of a long history of inequitable mathematics teaching and learning.) Consistent with this common-sense conception of mathematics is a view of equity as equal access to membership in the elite for different demographic groups. This view connects with widespread conversations about “achievement gaps,” that presume that the goal of equitable math education in the United States should not be to include *everyone*, but to ensure that equal portions of students counted within each demographic group are included, and by deduction, equal portions are excluded.

In contrast, the vision of equity that guides this research, and the professional development project in which it is situated, rests upon understandings of all students as ‘smart,’ or capable, math learners and of math as rich, complex, and full of connections. This does not suppose that all students are the same, but that ‘smartness’ in mathematics is multidimensional and that all students excel at some of its dimensions and have room to grow in others. In this view, equitable mathematics education has room to include all students, as all students can, and should, engage in meaningful mathematical inquiry, discovery, and learning in mathematics classrooms.

2.3 Learning

Learning is complex. Despite multiple and varied attempts to define it, it resists capture; attempts to operationalize it for research and practice (including in the study presented here) miss some of its complexity. Educational research (and many aspects of educational practice) have tended to take a relatively narrow view of learning, especially of teacher learning. While educators and researchers over the past decades have added richness to our understanding of student learning, much of that richness is absent from studies that focus on teacher learning. These narrow views of teacher learning have left us with narrow conceptions of supporting teacher learning.

This dissertation argues that broader views of teacher learning support richer ways to understand—and work to support—that learning. I draw primarily from the work of Wenger (1998) and Holland, Lachicotte, Skinner, and Cain (2001) to propose a view of teacher learning that aims to capture the complexity that I suggest matters for understanding the kinds of learning likely to support the development and maintenance of equitable mathematics classrooms. I refer to the teacher learning outlined below as *transformative teacher learning toward ambitious and equitable teaching*, or for brevity, *transformative teacher learning*, or TTL.

I use the word “transformative” here to denote degree, and not rate, of change. Like all meaningful learning, teacher learning is slow and ongoing, and does not take place in momentary revelations. Rather, it takes place over long stretches of time, influenced by teachers’ ongoing experiences and opportunities for learning. As is outlined in the sections below, the teacher learning of focus here involves ambitious, counter-cultural work and is thus different from other foci for learning, like learning to write a particular kind of lesson plan, or learning the mechanics of a new classroom routine. I use the word “transformative” to signal the focus on this broad and ambitious teacher learning.

2.3.1 Social Processes of Learning in Communities of Practice

Wenger’s (1998) theory outlines learning as consisting of ongoing negotiations (processes of *participation* and *reification*) related to four interrelated social processes: (1) meaning, (2) practice, (3) identity, and (4) community. The TTL framework considers learning to consist both of *shifts* in each process (e.g. development of new meanings), and ongoing, in-the-moment negotiations that take place related to each of these processes (e.g. in-the-moment negotiations of meaning). I return to these four processes after the discussions below of figured worlds and frames.

2.3.2 Figured Worlds

Holland et al.’s (2001) theory supports an understanding of learning as afforded and constrained by *figured worlds*. Holland et al. define a *figured world* as “a socially and culturally constructed **realm of interpretation** or **web of meaning** in which particular characters and actors are recognized, significance is assigned to certain acts, and particular outcomes are valued over others. (p. 52)” Figured worlds are historically rooted and situated⁶. They are constructed

⁶ While many of the ideas related to Holland et al.’s *Figured Worlds* resemble those related to Wenger’s *Communities of Practice*, these entities are distinct in at least two significant ways: (1) Figured Worlds exist at a larger scale than Communities of Practice. Holland and colleagues discuss the figured worlds of *Nepali Women*, *Romance on College Campuses*, and *Alcoholics Anonymous* that span geographic regions and consist of actors who will never meet, nor even know of each other’s existence, while Wenger’s discussions of Communities of Practice

over historical time, as cultural and political forces work together to construct, reconstruct, and negotiate realms of interpretation that pervade the spaces in which individuals conduct their lives.

In figured worlds, certain *kinds of people* exist, who are afforded certain ways of participating mediated by their positions with respect to the world. Thus, figured worlds mediate agency. They contain norms of interpretation and interaction, mediating how participants make meaning of how it is sensible to interact and interpret interactions. They are a backdrop against which individuals negotiate meaning about what they *can* do, coming to see some forms of participation as sensible, others as oppositional or radical, and still others as impossible.

Figured worlds make available particular tools and artifacts that people take up as they navigate their lives in these worlds. Tools that might appear to be the “same” to outside observers may be differently salient in different worlds. For example, “student work” might be a tool for identifying student deficits in one world and for making sense of students’ sensible thinking in another.

Dynamics of power and influence in any *figured world* constrain the meanings, practices, identities, and communities that are salient to inhabitants of that world. This is true for the *figured worlds* of math classrooms, which afford and constrain these processes for students, as well as for the *figured worlds* salient to mathematics education, which afford and constrain them for teachers. I describe two of these worlds in this chapter.

For this study, I connect Holland’s et al.’s articulations of figured worlds with the notion of *frames* that comes from scholars of discourse. Along with *kinds of people* and *ways of participating*, I suggest that figured worlds contain *kinds of interactions*, or *frames* (Goffman, 1974; Hand, Penuel, & Gutiérrez, 2012), and that frames further narrow individuals’ possibilities for participation. In the following section, I briefly discuss the notion of frames as they connect with learning.

2.3.3 Frames and Learning

In addressing the question, “what is it that is going on here?” a frame supports participants in situations to make meaning of those situations, organizing constellations of tools and actors, with particular roles, participating in particular ways, toward particular goals. Frames are continually negotiated in interaction as participants both provide and read contextual cues to make sense of and organize activity. For example, children hitting each other with pillows read and provide signals to their playmates about whether the activity they are engaged in is a game or a fight. (One can see in this example that when cues are mismatched or understood differently by different children, their experiences in the activity are likely to be confusing or hurtful or otherwise challenging.) A frame is said to be “at play” when individuals *act as if* that frame is functioning (Goffman, 1981; Hand et al., 2012).

Learning scientists have helped us to understand ways in which the frames that organize learners’ activity are consequential for learning (R. A Engle, 2006; Greeno, 2009; Hand et al., 2012). They have examined *positional frames*, which organize learners’ understandings of their

focus on communities that evolve within a workplace environment, for example. (2) The ways in which Holland et al. conceive of Figured Worlds involve considerable attention to their historically and culturally situated nature as well as the ways in which they organize power among actors in worlds. Wenger focuses on ways in which Communities of Practice and individuals in those communities mutually constitute each other (he uses the image of climbing a tree that climbs you back). This mutual constitution applies also to Figured Worlds, but the larger scale of worlds leaves the individuals within with less power to influence the world.

relationships with others involved in any activity, and *epistemological frames*, which organize their sense of the discipline. Both frames guide learners' understanding of how they are expected to participate or what forms of participation are acceptable or desirable. Hand et al. (2012) describe forms of participation that are supported by two contrasting frames in classrooms: "doing school" and "productive disciplinary engagement" (PDE; drawn from Engle & Conant, 2002). They demonstrate that the "doing school" frame involves particular positions (instructors as experts who decide what knowledge students need and delivering it and students as passive receivers of knowledge) and supports particular forms of participation, here individual practice. The contrasting PDE frame invites students into positions as active sense-makers and bestows upon them the intellectual authority to ask questions and investigate ideas. As these positions are offered to students, new forms of participation are rendered sensible, namely questioning, justifying, disputing or revising ideas together. When students participate in these ways, they have rich opportunities to learn.

Along with demonstrating the affordances of the PDE frame for learning, Hand et al. (2012) demonstrate ways in which the less productive "doing school" frame is entrenched in classrooms. Teacher-centered activities, roles that students experience throughout their schooling, and tools (such as exams and worksheets) cue "doing school" as the dominant frame. Hand et al. (2012) show that to support the PDE frame, explicit cultural work is required to signal to students that "doing school" is no longer "what is going on here" and to support them to accept invitations into new roles and positions.

Bringing together ideas from Wenger (1998), Holland et al. (2001), and Goffman (1981), I view learning as shifts in the intertwined, social processes of negotiating meaning, practice, identity, and community, which take place within—and are mediated by—figured worlds and the frames available in these worlds. In the following sections, I consider the worlds and frames that are salient to this dissertation, namely the dominant world of *US Schooling* and the emerging world of *Ambitious and Equitable Teaching and Learning*.

2.3.4 The Dominant World of *US Schooling*

This dissertation considers the world of *US Schooling*,⁷ which has evolved over historical time. Its evolution has been informed by purposes it was designed or modified to serve, and by the interests of the actors who were powerful in its formation. It is made up of meanings (about students, teachers, mathematics, lessons, etc.) that mediate particular actors' (e.g. students, teachers, coaches, administrators) ways of engaging in the world, as well as their understandings of the possible, the valued, and the impossible.

In this world, intelligence—especially intelligence with respect to mathematics—is valorized and understood to be the innately held property of only certain students. School mathematics is a body of information and procedures to be taken up and applied correctly; students either master it or fail to do so, becoming labeled as either "math people" or people who are "bad at math." Learning is understood to be the acquisition of knowledge or skills, which involves adding information which is missing, and correcting erroneous thinking. Learning can

⁷ To consider a world called "US Schooling" does not imply any particular uniformity across schools in the US, but rather draws attention to the historically and culturally situated webs of meaning, or realms of interpretation, that mediate teaching and learning in the US. This is similar to Holland et al.'s world of *Romance on College Campuses*, which is useful for supporting investigations of identity, despite the fact that romance does not function identically on all college campuses, or among all those who populate college campuses.

be accomplished by certain kinds of people (e.g. “high” or “bright” students) in certain kinds of environments (e.g. advanced classes with “good” teachers).

Teaching, which in this world is the work of individuals, is a collection of actions, moves, or “best practices” that can be expected to result in students’ acquisition of new knowledge and skills, at least for those students for whom learning is presumed to be possible. Teaching is also the management of the different kinds of students so that students who are capable of learning do so without disruption from others. Parallel to conceptions of student learning, teacher learning is the acquisition of knowledge and skills and the development of mastery of the “best practices” of teaching. It is sensible here for more novice teachers to acquire this mastery through the tutelage of experts.

Recall that in figured worlds, frames guide individuals’ understanding of and participation in moment-to-moment interactions, outlining which *kinds of people* get to participate in *which kinds of actions*. Germane to this study, the dominant world of *US Schooling* provides frames for understanding and participating in activity intended to support teacher learning. “Coaching” is easily understood as an activity in which more expert coaches give information or impart skills to more novice teachers, in part by identifying their deficits and working to mitigate them.

In this study, I refer to the world of *US Schooling* as dominant because this world dominates the meanings, participation, identities and communities available to teachers in schools. It is the collective common sense, what people have always known, and unless they are given explicit cause to notice it, it remains all-encompassing and unnoticed. It surrounds and touches on all activity that takes place in schools. It does not determine activity in schools, as actors can and do find opportunities to innovate or resist; but all school-related activity takes place against the backdrop of this world.

2.3.5 Possibilities for the Creation of Alternative Worlds

Holland et al. demonstrate that alternative worlds can be imagined and brought into being. They show, through their analysis of a group of women in Nepal who used an annual women’s religious festival to bring an alternative, more empowering world into being, that the creation of alternative worlds involves collective engagement in new forms of activity and the “carving out,” or the creation and protection of space in which it is possible for communities of world-builders to achieve relative freedom from the trappings of dominant worlds. Once emerging worlds are imagined and have gained some degree of strength, participants can carry these worlds from “safe” spaces into those where pre-existing worlds dominate.

2.3.6 The Emerging World of *Ambitious and Equitable Teaching and Learning*

I consider the PD program in which the coaching in this study takes place to be part of one such emerging world, which I call the world of *Ambitious and Equitable Teaching and Learning*. This world has a shorter history than that of *US Schooling*, but has its own history none-the-less. It too, is made up of meanings, actors, and frames that mediate moment-to-moment interaction.

In this world, intelligence is understood to be multi-faceted, acquired through human activity, and distributed among all people. Mathematics is a body of rich and connected ideas to be made sense of and created anew. All students—and teachers, coaches, and others—are sense-makers with various perspectives and strengths with respect to mathematics. Learning in this

world is ongoing and socially negotiated and takes place through human interaction⁸. Teaching is complex and contingent and requires ongoing innovation, and is thus worthy of collective investigation and development. Teacher learning involves ongoing experimentation, sense-making, and co-investigation.

In the emerging world of *Ambitious and Equitable Teaching and Learning*, coaching can be sensibly understood through the frame *learning together about teaching*. This frame organizes people called “coaches” and people called “teachers” to understand themselves as engaged in the collective activity of learning about teaching and to participate accordingly.

As represented in Figure 1, This emerging, alternative world exists (or in some cases struggles to not-quite exist—see Chapter 5) in spaces where *US Schooling* is dominant. It must contend continually with the press (represented with gradient shading) of the meanings, identities, positions, forms of participation, and frames of the dominant world. In this sense, working toward the emerging world of ambitious and equitable teaching and learning is counter-cultural. Work must continually be done to recreate and sustain this emerging world and to work against the influences of the dominant one.

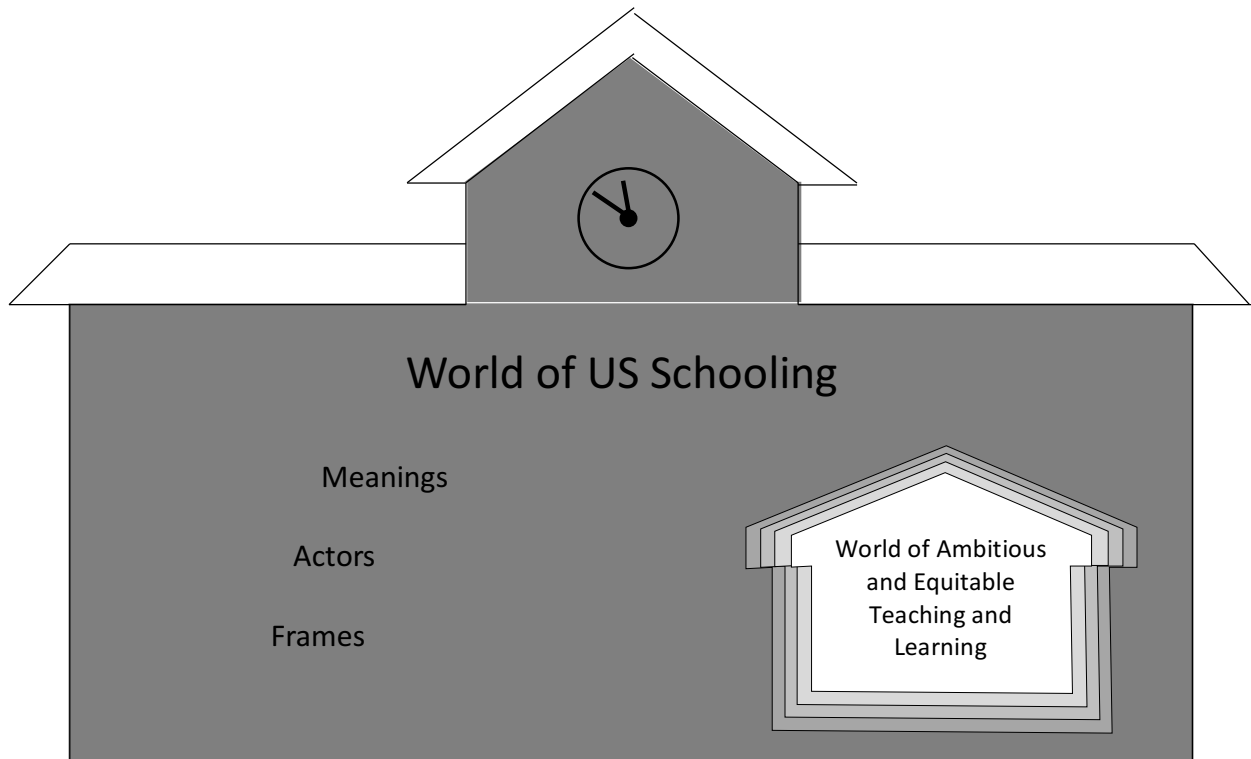


Figure 1. The emerging world of *Ambitious and Equitable Teaching and Learning* within the dominant world of *US Schooling*

⁸ As was discussed at the start of this chapter, this study was born from this world, so similarities between the meanings in this world and the meanings throughout this chapter are not accidental.

2.4 Transformative Teacher Learning toward Ambitious and Equitable Teaching

I use the phrase *transformative teacher learning* to signal learning of an ambitious scope in the following respects. It involves shifts in the four processes of meaning, practice, identity and community in ways that move between worlds. This dissertation is concerned with transformative teacher learning *toward ambitious and equitable teaching*, that is learning that is characterized by shifts in meaning, practice, identity and community from the dominant world of *US Schooling* toward the emerging world of *Ambitious and Equitable Teaching and Learning*. The framework in Figure 2 articulates transformative teacher learning toward ambitious and equitable teaching by enumerating aspects of four processes of learning—meaning, practice, identity, and community—as they relate to these two worlds. As indicated with arrows in Figure 2, this learning is taken to be progress along any number of learning strands from those consistent with *US Schooling* (articulated in the shaded region in Figure 2) to those consistent with *Ambitious and Equitable Teaching and Learning* (articulated in the unshaded region). Shading and placement in Figure 2 are intended to connect with the ideas in Figure 1, although the relative sizes of the representation of each world are shifted to accommodate text. (“Transformative teacher learning toward ambitious and equitable teaching” is cumbersome. I use the phrase “transformative teacher learning” and the shorthand “TTL” throughout this dissertation to indicate this kind of learning.)

While the four learning processes of meaning, practice, identity, and community are conceptually useful, they are too broad to support articulation of goals for teacher learning. For this reason, the TTL framework articulates sub-processes (which I call *strands*) that connect more directly to the work of teaching and to teacher learning toward ambitious and equitable teaching. Below, I briefly explain these strands. While described individually, they are taken to be intertwined, with complex relationships. Throughout the dissertation, I examine learning along the strands, foregrounding different strands at different times. I attempt as I do so to stay attentive to their interconnected nature.

2.4.1 Meaning

Meaning-making is active, ongoing, socially negotiated, and embedded in worlds. As teachers go about their professional lives, they continually take up, create, contest, and absorb meanings in negotiation with the people and artifacts of their worlds. The TTL framework articulates aspects of this meaning making—about smartness, math, students (who they are and what they should do), goals for teaching, and equity—that are central for teachers’ capacity to develop ambitious and equitable classrooms. Figure 2 articulates meanings along each of these strands that are given by and consistent with *US Schooling* and those that are supportive of, and connected with *Ambitious and Equitable Teaching and Learning*. Meaning-making is closely related to each of the learning processes named in the following sections; comments about these connections follow the articulation of each strand.

2.4.2 Practice

Wenger articulates participation in practice as a central process of learning. He explains, “The concept of practice connotes doing, but not just doing in and of itself. It is doing in a historical and social context that gives structure and meaning to what we do. (p. 47)” Cook and Brown (1999) use the term similarly to mean “the coordinated activities of individuals and groups in doing their ‘real work’ as it is informed by a particular organizational or group

context.” (pp. 386-387) They consider practice to contrast with behavior (doing of any sort) or action (behavior with meaning) in that practice is imbued with meaning drawn from a “particular group context.” Consistent with these articulations of practice, this strand of learning is concerned with what teachers do in the context of their “real work” that is imbued with meaning drawn from the worlds in which they teach.

The TTL framework articulates two strands of practice that capture central areas of teachers’ *doing* of teaching: teachers’ *doing* of teaching in their classrooms with students and teachers’ *doing* of the away-from-students aspects of teaching, including planning, reflecting, grading, etc. I call these two strands *participation in classroom practice* and *participation in thinking and talking about teaching*, respectively.

2.4.3 Identity and Community

Identity has been thoroughly and variously theorized over the past few decades and researchers take it up in a variety of ways. Here, I draw primarily from Wenger and Holland et al. to consider identity processes to be negotiations related to individuals becoming *kinds of people*. Teachers become kinds of teachers as they draw from the range of available constructions of “teacher” in their worlds.

The worlds of *US Schooling* and of *Ambitious and Equitable Teaching and Learning* contain meanings about teaching and teachers that mediate teachers’ notions of ideal teaching, and of who or what they might strive to become professionally. Their senses of their own competence with respect to these visions are mediated by worlds, as they have ongoing experiences of feeling more or less competent, or being positioned by others as more or less competent. The TTL framework articulates three strands to capture various aspects of these processes of teachers’ *becoming* in figured worlds, borrowing language from Holland et al. and Wenger: (1) figurative identity of teaching, (2) identity of competence, and (3) positioning (here with respect to the coach). I describe each briefly below.

Figurative identity refers to processes of becoming that relate to ongoing negotiations of meaning about the *kind of teacher* that is possible or desirable to become⁹. In the TTL framework, *figurative identity* is focused on teachers’ evolving, situated meanings of what a teacher *is* or *should be*. The TTL framework uses *identity of competence* to point to teachers’ processes of negotiation related to their senses of their own competence with respect to ideal teaching. How do they experience themselves, or how do they experience being treated, as competent with respect to what they understand “good teaching” to be?

Recently a number of researchers have drawn from positioning theory (Davies & Harré, 1990) to understand aspects of students’ identities that are consequential for learning processes (Bishop, 2012; Engle, Langer-Osuna, & McKinney de Royston, 2014; Esmonde & Langer-Osuna, 2013). They use the spatial metaphor of position to signal the aspects of *becoming* that relate to how people experience themselves as situated with respect to other actors in their worlds. As the example drawn from Wood (2013) below demonstrates, individuals experience their placement in social space, taking up and offering positions through interaction:

A student (I will call her Rebecca) might frame school as a realm of sorting students into ability. If Rebecca sees herself as mathematically smarter than her peers, she might communicate her position (and her perceptions of her peers’

⁹ This relates closely to Wenger’s notion of *practice-based identity*. However, I found the phrase “practice-based identity” to be used in differently ways in various studies, so to avoid confusion I use language from Holland et al.

positions) by placing her mathematical work in front of other students and ordering them to copy answers. (pp. 778-779)

While teachers experience positioning in all their interactions, and with respect to various actors in their worlds (e.g. administrators, students, other teachers), the TTL framework focuses on the positioning that is most relevant to teachers' learning through interactions with coaches: *positioning with respect to the coach*. This aspect of teachers' *becoming* is intimately connected to their experiences of togetherness, or community with coaches. Thus, it is located to span the headings "identity" and "community" in Figure 2.

The final strand of the TTL framework is that of *community* or *belonging* with respect to the communities that matter in teachers' worlds. A great deal of research attention has been paid to the essential role of community in teachers' learning (see Chapter 1). Holland et al. show ways in which the creation of alternative worlds requires collective practice among people who experience themselves as strongly connected and collectively committed to a shared vision. Thus, to understand TTL, it is important to consider ways in which teachers come to *belong* with communities of educators committed themselves to TTL.

The articulation of figured worlds as *webs of meaning* or *realms of interpretation* highlights the special place of meaning-making processes in learning. Meanings—about students, teaching, and learning—that exist in teachers' worlds both inform their other learning processes and are informed by them. For example, the meanings that teachers hold about teaching and students guide their actions and interactions in the classroom. At the same time, teachers' in-classroom participation supports their ongoing meaning-making processes, offering possibilities to reify dominant meanings or to construct emerging ones. Similarly, the *web of meaning* available to teachers mediates the *kinds of teachers* they can see themselves to be, or how competent, as well as how they are positioned in relation to others. At the same time, teachers' development of identity supports meaning making. A teacher might, for example, come to see that she is good at supporting students' mathematical sense making in groups. This developing identity could, in turn, support her to gain new understanding of the importance of this sense making for students' math learning.

Figure 2 summarizes the TTL framework.

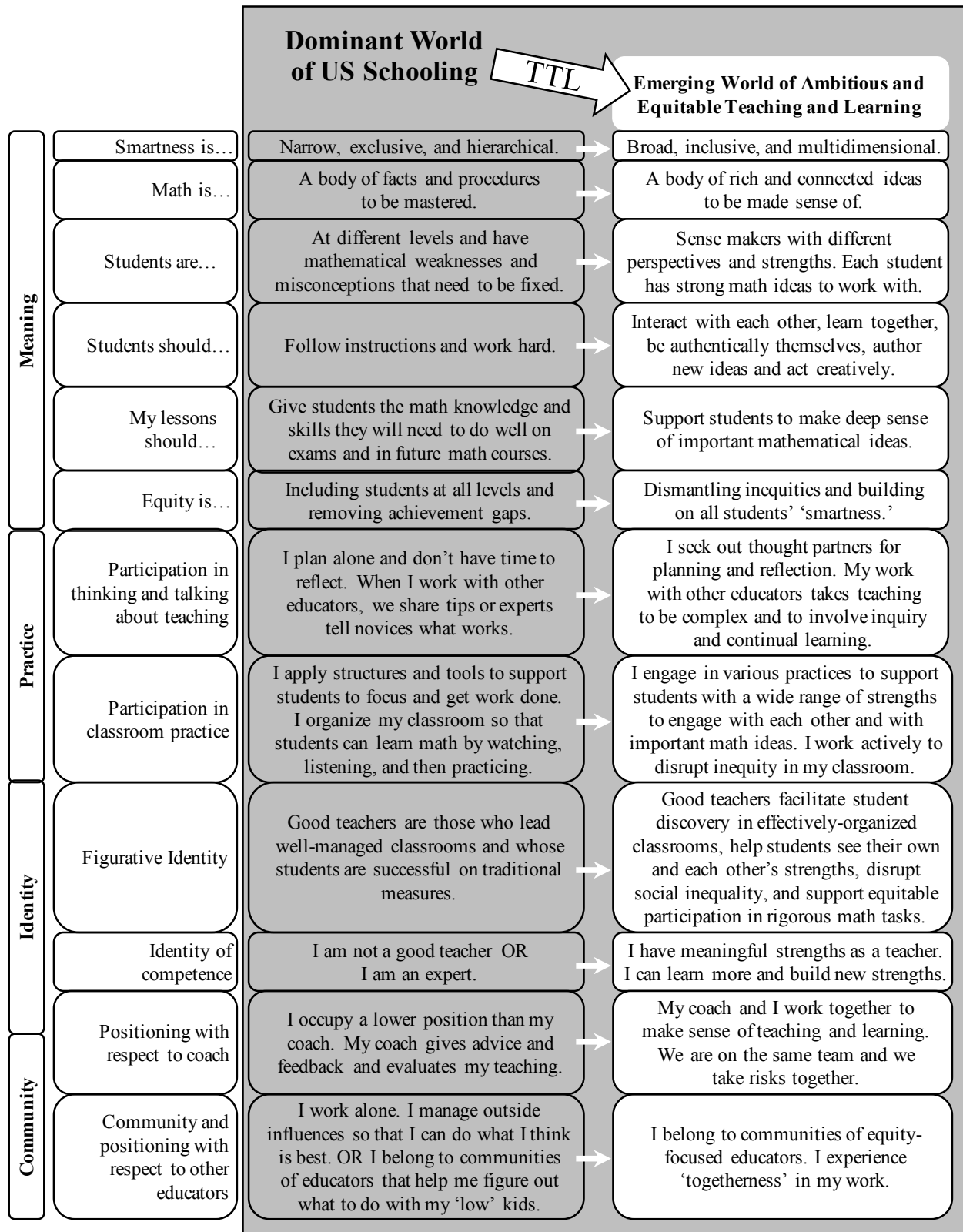


Figure 2. Framework for transformative teacher learning toward ambitious and equitable teaching (TTL)

Figure 2 describes possible states of being for teachers along each strand consistent with the dominant world of *US Schooling* or the emerging world of *Ambitious and Equitable Teaching and Learning*, with TTL represented by arrows signifying progress from the former to the latter. Because the world of *Ambitious and Equitable Teaching and Learning* is emerging and is situated within the dominant world of *US Schooling* (a relationship signified in Figure 2 by shading surrounding the unshaded region), TTL is not expected to result in an unproblematic finished state of arrival into the emerging world, or to be complete. The dominant world exists and will continue to exist and to press on the emerging world. Thus, it is expected that tensions between the worlds will continue to arise for teachers and coaches for as long as they work toward the emerging one. As prior research has demonstrated (Gutierrez & Vossoughi, 2010; Louie, 2016), these tensions can provide opportunities for learning, as teachers, coaches, and others can work together on navigating them.

It is possible, and likely, for teachers at any moment to be best described by some descriptors in the *US Schooling* and some in *Ambitious and Equitable Teaching and Learning* portions of Figure 2. For instance, a teacher might make meanings about students and classrooms in ways consistent with *Ambitious and Equitable Teaching and Learning* and see herself as not good at the things that matter in teaching. A teacher might also see herself as good at the things that matter in teaching and be making meanings of students in ways consistent with *US Schooling*. TTL is not the summative travel from *US Schooling* to *Ambitious and Equitable Teaching and Learning*, but rather progress along any number of strands of learning in that direction.

The meanings, practices, identities and communities articulated in the world of *US Schooling* (shaded in Figure 2) are readily available in this world. This does not indicate that these descriptions exist *only* in this world. For example, “I am not a good teacher” does not reside solely in the world of *US Schooling*; it’s possible (and perhaps common) to experience oneself as a “bad” teacher in relation to meanings and practices of *Ambitious and Equitable Teaching and Learning*. However, the world of *US Schooling* supports a focus on deficits, and is replete with meanings, practices, and artifacts (the image of the “hero teacher” in popular culture, against which teachers can easily fall short; teacher evaluation procedures and checklists; etc.), all of which work against teachers’ processes of *becoming* competent.

While Figure 2 represents each strand of TTL in binary terms (by articulating a “from” and a “to” state), TTL is considered progress along the arrows, and not arrival. Progress, even along a single strand (participation in classroom practice, for example) might unfold in various ways. One teacher might, for example, begin to experiment with explaining math to her students less often and asking students to generate mathematical explanations more often, while another might work on trying out new ways to intervene strategically with student groups to support more equitable participation. Both teachers would be engaging in TTL along the strand of participation in classroom practice.

The presence in Figure 2 of descriptions located at the end of arrows is not meant to suggest ideal or final states. The world of *Ambitious and Equitable Teaching and Learning* requires continual TTL; those working to embody and sustain this emerging world must continue to contend with their ongoing embeddedness in *US Schooling*. It is in part because of these presses that the work of TTL should be understood as ambitious and requiring substantial, ongoing support.

Chapter 3 explains strategies used to operationalize the TTL framework with data drawn from teachers’ work with coaches.

Chapter 3

Methods

As the central purpose of this study is to investigate possibilities for coaching to support TTL (outlined in Chapter 2), a substantial amount of theoretical and methodological attention was paid to articulating this learning. Chapter 2 laid out the theoretical tools. This chapter presents the methodological tools I employed, and in some cases developed, to operationalize TTL and to investigate its connections to coaching. I begin by describing the research setting and introducing the participants. I elaborate on my own role in this study as both a participant/subject and a researcher. I describe the methods for collecting data and then turn my attention to analytic methods. There, I map the multiple-strand TTL framework from Chapter 2 onto 5 analytic strands of TTL. I describe methods developed to investigate each of these strands and then describe my approach to examining coaching and the issues of power and frames that mediate teachers' experiences in coach-teacher relationships.

3.1 Research Setting and Participants

3.1.1 Research Setting

Research was conducted during the 2014-2015 school year in three “East Side” middle schools in Coastal Unified School District (CUSD)¹⁰, a large, urban school district on the West Coast of the United States. CUSD is racially and socioeconomically segregated, with “East Side” schools serving larger portions of Black and Latinx students and students living in poverty, and “West Side” schools serving more students with racial and economic privilege.

At the time of the study, CUSD was in its 6th year of engagement in an ongoing professional development (PD) program in Complex Instruction (CI) for secondary mathematics teachers. In brief,

Complex Instruction is a combination of pedagogical strategies used to create a classroom “social system” that directly attends to problems of social inequality, which undermine academic access and achievement if left unexamined. The complex instruction model aims to “disrupt typical hierarchies of who is ‘smart’ and who is not” (Sapon-Shevin, 2004) and promotes equal-status interactions amongst students as they engage with tasks that have high cognitive demand within a cooperative learning environment. (Jilk, 2009)

The PD program was designed to support district-wide cultural change in mathematics classrooms through multiple components, or “learning spaces.” Each learning space was designed to support the learning of various groups of learners (e.g. teachers, coaches, teacher leaders), but with particular focus on a primary group. Table 1 details the learning spaces that were part of the professional development design, which groups of learners the space was designed to support (denoted with an “x”), and which group of learners was primary in each space (denoted with a “P”). Those spaces that were primarily intended to support the learning of teachers and coaches are shaded for emphasis.

¹⁰ Pseudonyms are used for names of the district, schools, teachers, students, coaches, and other participants.

Table 1. Design of CUSD professional development program in Complex Instruction

Learning Spaces:	Students	Teachers	Teacher Leaders	Administrators	Coaches	Program Designers
Formal Workshops: teachers learn tools for teaching equitably in heterogeneous classrooms. Exclusive understandings of students, math, and ‘smartness’ are taken up and challenged.		P		x	x	x
In-Class Coaching: teachers’ sense-making about students, math, and ‘smartness’ are supported in the context of teachers’ own classroom practice.	x	P			x	x
Peer Observation: teachers work together to build common vision and norms of mutual support for teacher learning within their school sites.	x	P	x		x	x
Supporting Teacher Collaboration: norms of equity-oriented collaboration are built and reinforced through support at the department level.		P	x		x	x
Video Club: Educators come together across the district to build a vision for equitable classrooms and develop tools for strengths-based teaching practice.		P	x	x	x	x
Cross-Site Collaboration: Teachers plan units and lessons together to build common vision and norms of mutual support across school sites.		P	x		x	x
Teacher Leader Support: Teacher leaders develop their capacity to build and reinforce self-sustaining, equity-oriented departments.			P		x	x
PD for Administrators: School and district administrators come together to experience Complex Instruction and build understanding of the work taking place in math departments.				P	x	x
PD for Coaches: New and experienced coaches develop their practices together through apprenticing in “the field” and in formal workshop sessions, and through monthly “coaches’ meetings.”					P	x
Ongoing Program Development: Program designers come together regularly to share data gathered in all learning spaces and adapt the program in response to district-wide strengths and needs.						P

As is evident in Table 1, teacher learning was the primary focus of multiple components of the PD program, namely workshops, peer observation, support for teacher collaboration, video club, cross-site collaboration, and in-class coaching, which is the focus of this dissertation. The hope was that teachers would have multiple complementary opportunities to learn with and from other educators about CI as they took on the challenging work of integrating it into their teaching practice.

It is luxurious to have a context within which to investigate these issues that is so richly supported. Rarely do PD programs offer so many complementary opportunities to teachers over extended periods of time (Desimone & Garet, 2015). The learning teachers experienced in this program was likely supported by their engagement in multiple learning spaces. It is thus important to take care when connecting particular aspects of any one teachers’ learning to coaching, and to recognize that numerous experiences may have supported the learning that is observed.

The methods developed in this study to examine teacher learning (detailed throughout this chapter) tend to focus on observing learning as it happens, rather than as a measured outcome that might be attributed to various experiences. The methods used here instead seek to observe teachers' learning as they are interacting with coaches, to understand the affordances and challenges of coaching for TTL.

3.1.2 Participants

I collected data pertaining to the work of three coaches and seven teachers, shown in Table 2. Coaches were selected for their experience teaching and coaching with CI. Schools were selected that served mostly students from low-income families (receiving free or reduced price lunch) and students of color. Within schools, teachers were selected to maximize data collection opportunities given the schedules that coaches had established for their work. Most coach-teacher pairs engaged in four coaching visits across the course of data collection.

Table 2. Coaches and teachers with schools and school demographics (to nearest 5%)

Coach	Coaching (yrs)	Teacher	Teaching (yrs)	School	Low SES	Non-White
Jess	10	Tina	3	Malcolm X MS	90%	100%
		Jasmine	2			
Olive	7	Selina	7	Dinai MS	70%	85%
		Chantel	2			
Mia	6	Aya	5	John Adams MS	85%	95%
		Heather	5			
		Kamilah	3			

3.1.3 Participant Observation

I was engaged in this study as both a participant and researcher. In this section, I outline my role as a participant and discuss how this role intersected with my role as a researcher.

I had been involved in the PD program since its inception, 5 years prior to data collection. Throughout those years, I had been employed by CUSD as a program designer and coach, and I was part of the collaborative team of designers that designed (and continued to re-design) all aspects of the program. I was also a member of the 3-person team of senior coaches who were engaged during the year of data collection in apprenticing newer coaches into the project. As a member of this group of more senior coaches, I was a subject of my own data collection. To support my analysis and writing, I gave myself a pseudonym (Mia) and wrote about myself as a research subject in the third person.

While it could reasonably be argued that my involvement in the project introduces biases that influence my analyses and interpretations (which must be true to some degree), it is also clear that my involvement gives me access to understanding the data in ways that an outside observer could not. For instance, I met regularly with other members of the coaching team and was privy to multiple years' worth of conversations about the work of coaching in this project, its intentions, its design and its outcomes. I attribute my own learning about being a coach largely to my ongoing work with this team.

It is also true that my position as a researcher influenced the coaching work. My presence (with computer and video recorders in tow) must certainly have introduced some degree of self-consciousness for coaches, teachers, and students. My position as an observer of the work of multiple coaches also yielded insights and questions about our collective work of coaching. I shared these insights freely with coaches, both formally (in monthly coaches' meetings) and

informally (in casual conversations) over the course of the year. This degree of observation, reflection, and feedback must have had some impact on coaching approaches and practices.

I suggest that, for several reasons, this does not introduce insurmountable validity problems. First, across the course of a school year, it is reasonable to assume (and indeed, to hope) that any thoughtful, collaborative team of practitioners, including coaches, would engage in ongoing learning and practice shifts. As with any other set of practices, including teaching practices, there is no point at which practitioners are finished developing and changing. The practice of coaching is a moving target; it shifts and adapts constantly, in response to environmental influences, including the perceived needs of teachers, the developing ideas and capacities of coaches, and constraints of school and district contexts.

Second, the intention of this study is not to evaluate the expertise of coaches or to establish degrees of effectiveness. It is, however, to examine closely the work of coaches and teachers to investigate ways in which their co-constructed interactions can support powerful teacher learning. The depth of knowledge afforded me as a participant in this work supports this goal of the study.

Nevertheless, to mitigate risks to validity associated with my multiple roles (and with my necessarily limited perspective as one person), I engaged with multiple research assistants, colleagues, and professors frequently through all phases of analysis and writing. These collaborators provided feedback, offered alternative interpretations, and pushed me to return to my data with new considerations.

3.1.4 Case Selection

While the primary aims of this study remained stable, its design developed over time. After data collection with the multiple participants (see Table 2), the design shifted into a comparative study of two teacher-coach pairs. In this section, I discuss the reasons for this development as well as the logic of the selection of the two cases. The discussion unfolds chronologically.

One aim of this study was to address a need (detailed in Chapter 1) to develop tools to study teacher learning with a degree of nuance that would support understanding of the ambitious learning (TTL) that was the aim of the PD program. To support this goal, I chose to begin detailed analysis by examining one case closely. In one case, I reasoned, I could develop and begin to refine tools for identifying multiple learning processes and that I could later apply those tools (while continuing to refine them) to other cases.

I selected the case of Kamilah (teacher) working with Mia (coach) for the following reasons. I wanted to begin with a teacher who I coached, as my closeness to the data could, guide my investigations productively and such a choice offered me opportunities to learn newly about my own coaching practice. Among the teachers I coached (Aya, Heather, and Kamilah), I was most curious initially about Kamilah. I experienced my coaching work with Aya as relatively easy. While this case, which I interpreted to involve successful coaching, could be interesting, I was not as curious about it as about other cases. In the other extreme, I experienced my coaching work with Heather as challenging and I did not have a sense that I would find clear evidence of learning. As my initial purpose was to flesh out tools to study learning, this was not an optimal case for beginning analysis. I experienced my work with Kamilah as productive, although not as easy as my work with Aya. I suspected that investigation would uncover evidence of Kamilah's learning, but I did not yet have a strong sense about what that learning would be or where the evidence would be found. Together, these factors pointed to the Kamilah case as the most

interesting for me as a starting point and the most supportive of my aim to develop tools for studying teacher learning.

As my investigation in the Kamilah-Mia case progressed, several things became clear that influenced study design and further case selection. First, as I developed strategies for studying multiple strands of Kamilah’s learning, it became clear that the depth of analysis that was emerging, and that was appearing to be generative, would not be possible across the data corpus in a reasonable timeframe and that the study design would shift to a comparative case study (Yin, 2006).

As I uncovered aspects of Kamilah’s learning and Mia’s coaching, I became increasingly curious about Heather. As will become clear in Chapter 4, Kamilah engaged in multiple processes of TTL, and clear evidence emerged that Mia’s coaching was supportive of this learning. There were numerous similarities between Kamilah’s and Heather’s work, and Mia’s participation in that work, which might lead one to expect similar results. They taught the same classes (7th and 8th grade math) in the same school (John Adams MS), and used the same district-generated curriculum. They, along with Aya, planned together regularly, and often taught the same lessons on the same days. Both teachers had first met Mia when she visited Adams MS the previous spring to talk with the department about CI and invite them to join the PD program. They had both participated in the 5-day summer course in CI that Mia taught. Mia coached both teachers during the same four visits to Adams MS (see Figure 3), and their conversations were often related to the same, or closely related, lessons.

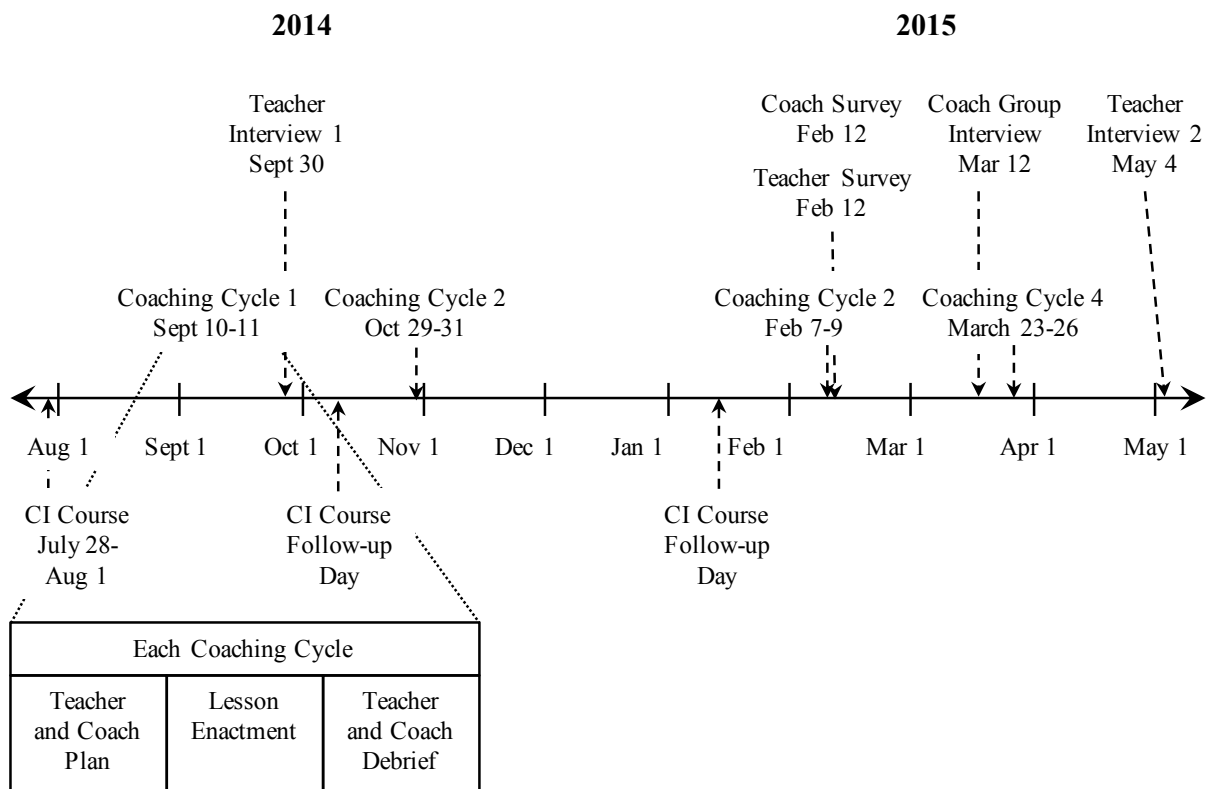


Figure 3. Timeline of data collection through 2014-2015 school year.

Despite the contextual similarities (see Table 3), my experience with Heather and my preliminary analyses of data suggested that her experiences with coaching—and her learning—were markedly different from Kamilah’s. It was clear that Heather’s learning had been less dramatic and that her relationship with Mia had been more challenging. This contrast suggested Heather as a rich case for analysis and comparison. Also, I had a hunch that studying my own work with Heather could support me, and others, to learn about difficult coaching. It had been easy for me to interpret my challenges with Heather as resulting from her “resistance,” an interpretation that is common in the coaching literature (Matsumura, Garnier, & Resnick, 2010; Neufeld & Roper, 2003; Poglinco et al., 2003). Indeed, as Heather’s coach, I did sometimes interpret her in this way. I suspected that there were more generative ways to understand the challenges in our work together and was interested to discover those.

Table 3. Comparison of contextual factors between Kamilah and Heather

Similarities	Differences	
Kamilah and Heather	Kamilah	Heather
<ul style="list-style-type: none"> • Same school (Adams MS) • Same courses (7th and 8th grade math) • Both in 1st year with new, district-developed curriculum. • Planned lessons together. • Worked with Mia on same days with similar lessons. 	<ul style="list-style-type: none"> • 2 years of prior teaching experience; 1 year at another school using Direct Instruction and 1 year at Adams trying group work. • Relative newcomer to Adams. • Positioned as novice in co-planning, often taking up Heather’s previously-developed ideas. • Identifies as a teacher of color. 	<ul style="list-style-type: none"> • 4 years of prior teaching experience, all at Adams, organizing her classes into groups and using reform curriculum (CPM). • Department chair. • Positioned as expert in co-planning, often sharing previously-developed ideas. • Identifies as a White teacher.

3.2 Data Collection

In the following sections, I describe the methods employed for data collection.

3.2.1 Teacher Interviews

Semi-structured interviews with teachers were conducted (and video and audio recorded) after the first coaching cycle and again after the last, investigating teachers’ goals for their own teaching, their perceptions of CI and of the PD program, their experiences with their CI coach and experiences they had had with previous coaches, and their perception of their own learning—and goals for learning—through coaching. End-of-year interview protocols were modified slightly for each teacher, with a few questions designed to follow up on comments each had made in the first interview about their goals or wishes for their work with their coach.

I conducted the interviews with the teachers who worked with other coaches (Olive and Jess). A research assistant conducted interviews (using a slightly modified protocol) with the teachers with whom I was coaching. To reduce the extent to which these teachers might be concerned with how I (their coach) would react to their talk, they were informed that I would not view recordings of the interviews or have access to their content until after my coaching work with them was completed at the end of the school year.

Basic interview protocols for both interviews are included below. Modified interview protocols are included in Appendix A.

Beginning Teacher Interview Protocol

Introductions and reminder what the study is about: Just to remind you, I'm conducting a study to try to learn about how coaches and teachers work together and what kinds of things they can do together that feel supportive for teachers. There's not much research yet that helps us understand that. There's a little bit of research that helps us to see whether coaching is or can be effective, but none that helps us understand what coaches and teachers can actually do together and which things might be most supportive for teachers. So that's what my study is working toward. Do you have any questions?

Also, I want to remind you that this interview is for research purposes only. No one in the City complex instruction community or in your school will have access to it. Do you have any questions about that?

Goals for their own practice

OK, I want to start by learning a little bit about you as a teacher.

1. Why did you go into teaching?
2. Describe yourself as a teacher. What is your teaching practice like? What do you feel good at? What is hard for you?
3. Now think about the teacher you'd like to be in 5 years. Paint a picture for me of the educator you'd like to become. Help me understand your vision of perfect practice? What would it look like? Sound like? Feel like?
4. What challenges do you deal with as you far as making your goals for yourself a reality?

Perspectives on CI

Great, now I'd love to learn some more about how the complex instruction project you are involved with relates to what you already told me.

5. Can you talk about complex instruction for a bit? How does it relate to the kind of teacher you are hoping to become?
6. What are you hoping to learn from or get out of your engagement in the complex instruction project in San Francisco?

Perspectives on Coaching

Thank you. Now I'd like to learn about your experiences with coaching in the CI project so far.

7. What are your first impressions of your coach? What do you know about her/them?
8. Have you worked with coaches before? What have those experiences been like?
9. How did your first coaching experience with (your coach) go for you? Did it feel useful? How? Did you learn? What and how? Did it feel hard or frustrating? (ask probing questions here, pushing for specifics as much as possible that might help us connect their comments to our video data of the interaction)
10. Were there particular parts of your conversations with (your coach) that felt particularly helpful or challenging? How so?
11. Given everything you just told me, what do you hope to be able to learn or accomplish with (your coach) this year? Do you have worries?
12. Is there anything else that you want to tell me that you think might help me understand your experiences with coaching or the complex instruction project in general?

End-of-year Teacher Interview Protocol

Hello and preamble: Thanks for taking the time to meet with me again. I know you're busy and I appreciate this a lot. Some of what I'll ask you about today will overlap with stuff we've talked about before. Don't worry about trying to remember anything you said before. I'm interested in your thinking now. Also, you and I are part of the same CI community and so we might share some ideas about teaching and complex instruction. For the sake of research though, I'm going to do my best to talk as if that were not the case. So, I may ask you to explain or describe things that I otherwise would not. I just want to be really clear that I'm not making assumptions about what you mean.

Development of teachers' ideas about math teaching and learning

OK, I want to start by learning a little bit more about your ideas of great math teaching.

1. Describe to me your vision of great math instruction. (If necessary, probe for detail with: What are students doing? What is the teacher doing? What makes the instruction great?)
2. What people or experiences in your life, past or present, have been influential in building this vision of good instruction?
3. Has your work with complex instruction, this year or in the past, influenced your vision of good instruction at all? If so, how?

Experiences with CI in their own practice

4. What are your experiences so far using CI in your own classroom? (If necessary probe for detail with: How is it hard? Useful? Powerful? Rewarding? What are you appreciating about it? How has applying it to your practice shifted how you think about it?)

Development of teaching practice

5. Has your teaching practice shifted since last year? How?
6. I want to get a sense for what you were like as a teacher before I met you. Would you walk me through a typical day in your classroom before this year? (If necessary, probe with: what happens right after the bell rings? Can you continue from there?)
7. Thanks. Now would you walk me through a typical day in your classroom now. How is it different? How is it the same?

Perspectives on Coaching and on their own learning

8. Now that you've worked with your coach a few times across this year, do you feel like you know her better than you did at the beginning? How so? How comfortable do you feel with her?
9. How did your work with your coach go for you throughout this year? Did it feel useful? How? Did you learn? What and how? Did it feel hard or frustrating? In what ways? (ask probing questions here, pushing for specifics as much as possible that might help us connect their comments to our video data of the interaction)
10. *Questions were crafted for each teacher here that followed up on their earlier talk about their goals for coaching. One example: You talked at the beginning of the year about goals you had for your own practice this year. In particular, you talked about wanting to increase academic rigor and using CI every day. I think you said something about*

becoming a master of CI. How are you feeling about these things now? (If she talks about learning or improving, ask:) To what do you attribute your growth/learning?

11. As you worked with (your coach) this year, did new goals develop for you in relation to your practice? Tell me about that.
12. Can you remember any specific parts of your conversations with (your coach) that felt particularly helpful or challenging this year? Please explain.
13. Is there anything else that you want to tell me that you think might help me understand your experiences with coaching or the complex instruction project in general?

Demographic stuff:

14. How old are you?
15. How many years have you been teaching?
16. How do you identify racially/ethnically?
17. Are there other aspects of your identity that are central for you?
18. Where and when did you do your pre-service training / get your credential?

3.2.2 Coach Interviews, Surveys, and Reflections

Informal interviews of coaches.

When possible, I interviewed coaches (Olive and Jess) informally before and after each coaching visit, investigating their thinking about teachers' strengths and needs, their coaching approach and plans, and their perceptions of the success of particular interactions with teachers. These conversations were audio recorded.

Coach surveys.

In February, I conducted a brief survey of coaches, asking for their open-ended responses to prompts investigating their perceptions of their work with each teacher to date. The survey questions are below:

1. How would you characterize your relationship with TEACHER at this point?
2. Do you perceive success in any aspects of your work with TEACHER so far? Please explain?
3. Do you perceive challenges in any aspects of your work with TEACHER at this point? If so, please describe them.
4. Do you perceive any change happening for TEACHER so far? Explain.
5. On a scale of 0 to 10, how clear do you feel about what TEACHER wants your help with? Please give a number and also explain your choice.
6. What are your goals in relation to TEACHER (for this coaching relationship, for your work with her/him, or for her/his growth)?
7. Please reflect on how working with a coaching team (COACH A and COACH B) has affected your work coaching TEACHER so far this year.

Coach focus group interview.

I conducted one focus-group interview with coaches in March both to investigate their coaching goals and approaches and the learning they perceived for the teachers with whom they worked and to gather their feedback on my current thinking about how to articulate the teacher

learning that we collectively hoped to support and I planned to study. (This thinking was encapsulated in a document called “Draft Framework” below).

Coach Focus Group Interview Protocol:

1. Give coaches the Draft Framework and explain: *“I developed this framework to try to encapsulate what I think the goals are for our work as coaches with teachers. In other words, this captures my thoughts (with some feedback from Jess) about what we hope teachers will come to know and do. I’d like to start this conversation by giving you each an opportunity to read it and to react. I’m interested both in your feedback (what might be missing, what makes a lot of sense to you) and your questions. Once we reach what feels like a common understanding of this document, we’ll talk about some of the teachers you each work with and how these ideas might relate to them. Any questions about that?”*
2. Answer any clarifying questions and then ask them to read the document quietly and jot down thoughts or questions or reactions.
3. When everyone is done reading, say, *“OK, I’d love to hear the reactions or questions that came up as you read this document.”*
4. When this discussion is concluded and it seems that we have some common understanding of each of the items in the Framework, ask: *“I’d like to ask you about each teacher you work with that is included in my study in relation to this framework. First of all, please reflect on ways in which you think you are seeing progress from these teachers on any of the categories listed here. To remind you, the teachers I am focusing on for now are Jason, Tina, Brittany, Michelle, Jessica, and Dante.”* As coaches talk about teachers and their learning (or lack of learning), ask clarifying questions or push for more detail.
5. It may be that through this conversation coaches naturally talk about their goals or hopes for teachers. If not, ask about their hopes or goals or what they perceive as next steps for teachers along the categories in the framework.
6. Follow up on any other lines of conversation that came up as relevant and interesting.

I engaged in ongoing reflections and journaling about my own coaching work with teachers.

3.2.3 Audio and Video records of Coaching Cycles

Each coaching visit consisted of a three-part cycle: a teacher-coach conversation prior to a lesson enactment, the lesson enactment itself, and a teacher-coach debrief conversation. Data collection for each part of this cycle is described below.

Planning and debrief conversations.

For teachers with whom I was not coaching, I observed and took field notes during planning and debrief conversations. I occasionally participated orally, as participants knew me and sometimes asked me questions. I made efforts to minimize this participation and remain a silent observer. I recorded teacher-coach conversations, usually with video and audio. In a few cases, I only audio recorded. I also collected copies of coaches’ notes for each of these conversations. When observing my own coaching work, data collection methods were the same, with the omission of field notes.

Lesson enactments.

I video recorded lessons using a stationary camera. I also used a lapel microphone to audio record each coach during the observed lessons in order to capture conversations between coaches and teachers during class. For lessons in which I was not coaching, I observed and took field notes, paying particular attention to interactions between coaches and teachers during class. I collected lesson materials, such as photographs of board inscriptions and copies of task cards and worksheets. I collected copies of notes coaches took during lessons.

3.3 Analytic Methods

The remainder of this chapter focuses on the analytic methods used for the study of teacher learning, coaching, and issues of frames and power in teacher-coach relationships. I begin by mapping the theoretical framework for TTL onto five strands for analysis.

3.3.1 From Theory to Analysis: Operationalizing Transformative Teacher Learning

The process of transforming theoretical constructs to observable measures is, by definition, a process of narrowing (Maxwell, 2013). In this section, I describe ways in which I approached this process of narrowing to operationalize the framework for TTL that was described in Chapter 2.

I began by asking the question, “What, from the theoretical territory of each strand of TTL, could be reasonably observed in data?” To clarify, I do not mean, what *happened* in the data and was thus observable, which is a question to answer through analysis, but what aspects of the theoretical constructs could be captured by records of teacher-coach talk, interview or survey responses, classroom artifacts, etc. For instance, from the conceptual territory of *participation in classroom practice*, what could be investigated through the examination of video records from a stationary camera, audio records of coaches’ talk during class, coaches’ notes, and video and audio records of teacher-coach conversations?

Answering questions of this sort involved the following iterative process. From the theoretical ideas and from initial encounters with data, I articulated analytic strands, and methods for operationalizing them, that I predicted would be observable in data and bear in some relevant way on the theoretical ideas. I then applied these first-draft methods to data, which revealed imperfections in the methods (e.g. something I thought would be clear in transcript was not present or ambiguous, or there were phenomena in the data that I did not anticipate). I generated ideas for adjusting the analytic strategy in response to these first attempts. Proposed adjustments were checked against theory: does the adjusted method still capture a reasonable slice of what matters from the theoretical terrain? If so, I applied this adjusted strategy to data, and repeated the process.

These iterative processes—which are similar to the *progressive refinement of hypotheses* described by Engle, Conant, and Greeno (2007)—took place over extended time. For the sake of space, I focus here on describing the current forms of the methodological tools that came out of them. My hope is that the tools described here will continue to be refined in future research. Table 4 shows the four large-scale processes of TTL (in the first column) mapped to the five analytic strands for which I developed methods. The following sections describe the methods developed for each.

Table 4. From a theoretical framework to an analytic framework

Process	Operationalized strand of TTL	Overview of data and methods
Meaning	Meaning-making in coaching conversations.	Coded transcripts of planning and debrief conversations for strands of meaning-making consistent with <i>US schooling</i> or <i>ambitious and equitable teaching and learning</i> . Used colors to represent codes and created visual representations of meaning-making across conversations over time called "code profiles." Used code profiles to identify patterns in data, which were then investigated in video and transcript.
Practice	Participation in thinking and talking about teaching with coach.	Coded teachers' contributions to coaching conversations using a rubric considering depth of these contributions and the degree to which they open or leave open lines of inquiry in conversation. Contributions that were deeper and opened lines of inquiry were considered consistent with the world of ambitious and equitable teaching and learning. Examined shifts in frequency and type of contributions over time.
	Negotiations of classroom practice with coach.	Coded transcript of coach-teacher conversations and classroom interactions for actions related to classroom practice grouped into 12 <i>threads</i> . Created visual representations tracing actions along these threads in and out of conversations and lessons over time.
Identity	Becoming a kind of teacher.	Examined interview data for evidence of teachers' ideas of ideal teaching and of their own competence in relation to those ideas. Compared talk early and late in the year to identify shifts.
	Positioning with respect to coach.	Examined talk and non-verbal behavior for evidence of teachers being offered, accepting, rejecting, or claiming positions with respect to coach. Zoomed out to identify patterns of this positioning over the course of the teacher-coach relationship.
Community	Analysis of teachers' community with other educators is outside of the scope of this study.	

Meaning-making.

The methods outlined below were developed to capture (1) essential aspects of teachers' and coaches' ongoing negotiation of meaning about students, mathematics, teaching, and "smartness" and (2) relationships between this meaning-making and both the dominant world of *US schooling* and the emerging world of *ambitious and equitable teaching and learning* that the professional development program was working toward. As the analytic focus was on *ongoing* negotiation of meaning—and not, for example, a set of meanings or "beliefs" that one might consider a result—coaching conversations were treated as the central data source. The following sections outline the methods used to cull these conversations for information about teachers' and coaches' negotiation of meaning.

Transcription.

Coaching conversations were transcribed and organized in a two-column format to make visible the flow of conversation between the participants (Ochs, 1979). Care was taken to capture any verbal responses that could be detected (such as "mhm" or "yeah") and to note when talk was simultaneous. Non-verbal behaviors, such as laughter, that were interpreted as relevant for readers and analysts to understand the tone and meanings of the conversation were included in the transcription. Further transcription conventions utilized are provided in Appendix B. To facilitate coding, two column transcripts were copied into Microsoft Excel.

Segmentation.

Traditionally, researchers who have looked for a low-inference method for segmenting talk have used turns or grammatical structures such as sentences or phrases. However, Chafe (1994) found that *breath groups*, or segments of talk that take place between breaths, carry more meaning for the participants in conversation. As speakers' meaning is central to this analysis, transcripts were segmented by breath group. I began a new unit of talk when (1) a new speaker began to speak or (2) a speaker took a breath. In most cases, breaths were audible. In some instances, the taking of a breath was inferred from a combination of the length of a pause in speech and the amount of speech that preceded the pause. Clear shifts to new topics of conversation were marked in each transcript. These were often signaled by talk such as, "Another thing I thought of was..." or "Also..."

Coding.

Breath groups were color-coded using the codes outlined in the following section. When it was found that a single breath group could reasonably be coded in different ways and that there were insufficient context clues available to support confidence in one choice over another, the breath group was not coded.

Development of meaning-making codes.

Codes were developed using an open coding procedure. As I read transcript, I created codes to capture categories of talk related to teachers' and coaches' ongoing meaning-making about students, teaching, and mathematics that were consistent with either the world of *US schooling* or the world of *ambitious and equitable teaching and learning* (see Chapter 2). As I continued through transcript, I revised the collection of codes by, for example, dropping codes for categories that did not arise frequently enough to be relevant, collapsing codes that did not appear meaningfully distinct in the data, and creating new codes in response to unexpected discoveries.

Once I achieved a reasonably robust and meaningful group of codes, I trained a team of undergraduate research assistants in my current understanding of the codes. We coded together, refining our definitions of codes interactively. Points of disagreement among coders served as resources for more clearly drawing boundaries around categories. We captured these disagreements and their resolutions in a code book that evolved throughout this process and is included in Appendix C. The Code Book includes descriptions of each code as well as examples and, where they were useful, non-examples.

Out of this process, nine categories of talk emerged as salient, four categories that we consider to be consistent with the world of *US schooling*, and five that we consider to be consistent with the world of *ambitious and equitable teaching and learning*. These codes are described below.

Consistent with the dominant world of *US schooling*:

Compliance: This is talk about student compliance, and whether and how students are doing what they are supposed to do.
Limiting Math Goals: This is talk about goals that are consistent with particularly limiting aspects of traditional education. This includes goals driven by procedural math (that is not examined as such) and goals driven by issues of content, pacing, and standardized testing.
Smartness as Exclusive: Talk about ability or smartness as global, binary, and/or hierarchical. For example, statements that some students are smart, implying that others are not.
Students' Math Deficits: Talk about what mathematics students do not or cannot do, do not or cannot understand, or what they are doing, have done, or might do incorrectly.

Consistent with the emerging world of *Ambitious and Equitable Teaching and Learning*:

Social Organization of the Class for Learning: This is talk about the social organization of the classroom environment, which includes talk about group work, norms, safety and risk taking, students' feeling about learning and working in the class, etc.
Rich Math Goals: Consideration of goals for strong student thinking and considering what content matters for student learning. This includes talk about rich goals for learning as well as talk about whether the goals at hand are rich.
Smartness as Inclusive: This is talk about smartness that is inclusive. It includes talk that explicitly states that all students are smart or that is dismantling limiting views of smartness.
Students' Smart Math Thinking: Students' mathematical thinking (or doing) is being talked about as a resource or strength or as sensible.
Rich Mathematics: This is talk about mathematics of the following three kinds: (1) talk about math that is rich, connected, detailed, conceptual; (2) talk that is about whether the mathematics at hand is rich, connected, detailed, or conceptual with the idea that pushing for this type of mathematics is desirable; or (3) talk that is about what richness or complexity may be present in content that had not previously been related to as challenging or conceptual.

Application of codes to transcript and creation of code profiles.

Using Microsoft Excel, color codes were applied to cells containing breath-group segments of transcript. In the unusual cases in which two codes applied to a single breath group segment, one color was applied to the cell containing the transcript of talk to be coded and the second color was applied to the preceding or following cell, as appropriate. Shifts between topics were noted with horizontal lines.

After color codes were applied and topic shifts indicated, text was removed and row heights for breath-groups were standardized. To generate representation of manageable size (it was important for analysis that an entire conversation could be represented on one page), rows containing no color codes were removed.

This process, exemplified in Figure 4 below, yields representations of conversations called *code profiles*. Note that, because of the standardization of heights of each breath group in the code profile, the thickness of each color is proportional to the number of breath groups receiving that code. (This is therefore independent of the width of the columns and the number of words within a breath group. For readability, this standardization is not possible in the transcript itself.)

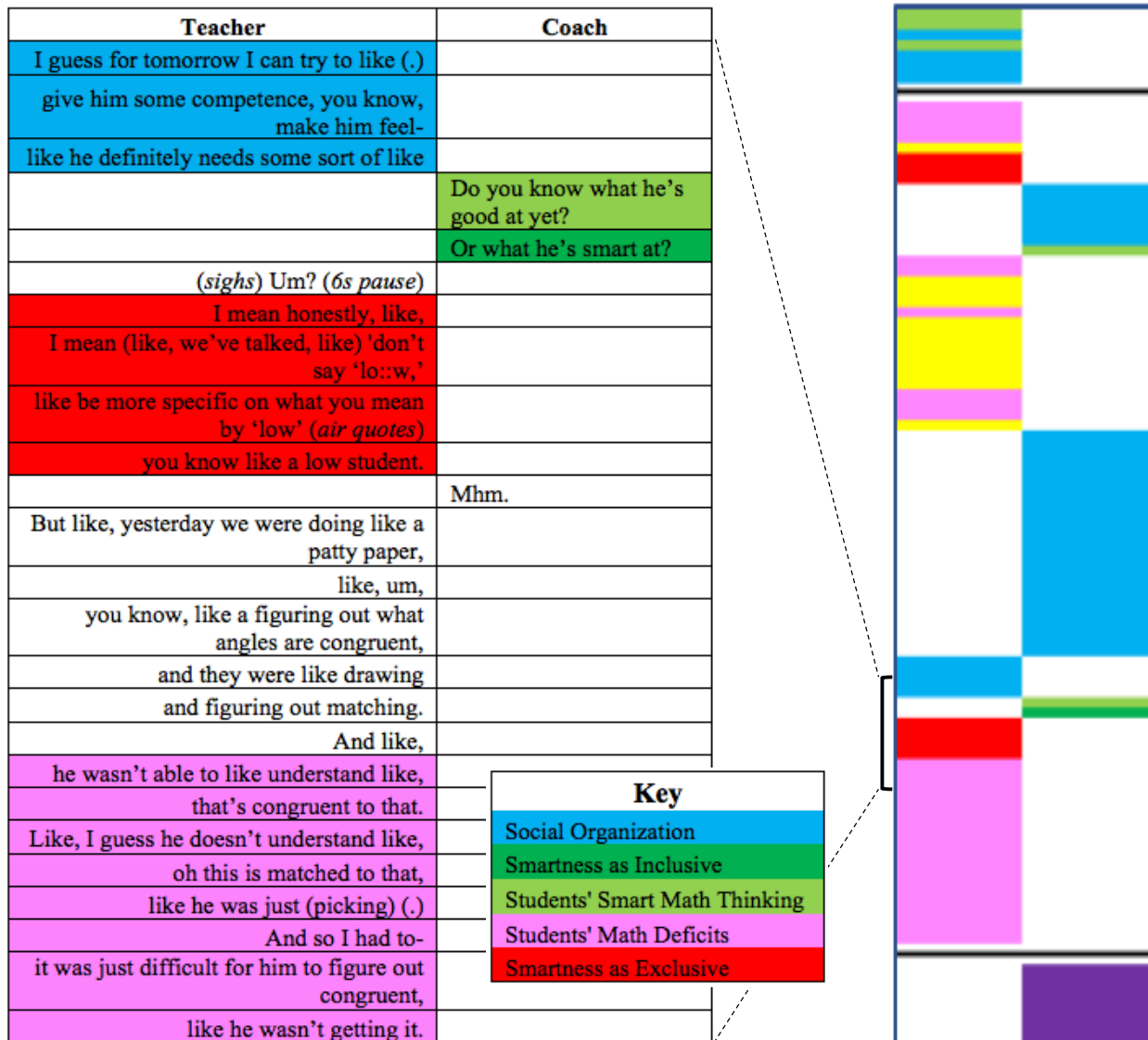


Figure 4. Application of codes to transcript and formation of code profiles

Code profiles were generative for analysis, as they suggested answers to analytic questions that were otherwise challenging to observe in the data. Some of the types of observations and questions available for investigation using Code Profiles are listed in Table 5.

Table 5. Types of analytic questions and observations available for investigation using code profiles

In-speaker	Between-speaker	Relationships among types of talk
<ul style="list-style-type: none"> • Which code categories dominate teachers' talk? Does this shift? When and to what? • Do teachers' code categories shift over time across the four coaching cycles? Between planning and debrief conversations? Within conversations? 	<ul style="list-style-type: none"> • How similarly or differently are teachers and coaches making meaning? Does this relationship shift over time? • How are coaches responding to various categories of teachers' meaning making? How are teachers responding to the meaning making of coaches? 	<ul style="list-style-type: none"> • Thickness and color relationships: Thin, stripes of varied cool colors could signify that teachers' or coaches' meaning-making is nuanced, and well-aligned with ambitious and equitable teaching and learning. • Co-occurrence of codes: patterns of meaning-making can be revealed by stability or shifts in codes occurring together.

Formation and investigation of hypotheses, supported by code profiles.

The power and danger of representations is that they make visible some aspects of underlying phenomena and obscure others. Code profiles make visible patterns in coded categories of talk, as discussed above, but they obscure non-verbal activity and distort time. Codes were applied in most cases in response to transcript, which captured only small portions of non-verbal activity. Video recordings were used when the relevant meanings appeared ambiguous, and in some cases non-verbal activity, such as body language or intonation, was used to draw conclusions about meaning. Never-the-less, verbal activity was privileged strongly over non-verbal, with the consequence that coding may have missed important aspects of interaction.

Due to design choices made to accommodate space constraints (e.g. the removal of white space between codes), they also distort the flow of time across interactions. A consequence of this is that codes sometimes appear related by proximity in the representation when in fact the talk they represent was separated by time and by other talk. Because of these limitations and others (e.g. all categorization systems collapse non-identical talk into identical categories, obscuring nuance), it is necessary to take any conclusions drawn from the examination of code profiles as hypotheses and that care be taken to seek out confirming or conflicting evidence in other representations of data.

Hypotheses about TTL that resulted from identification of patterns in code profiles were investigated in transcript and/or recordings of interaction. These investigations either provided corroborating evidence or prompted alternative hypotheses, which in turn were investigated. Relevant examples are elaborated in Chapters 4, 5, and 6.

Participation in thinking and talking about teaching.

To examine TTL along this strand, I posed the following analytic question: to what extent do teachers' contributions align with the world of ambitious and equitable teaching and learning? That is, to what extent do teacher contributions support co-inquiry into and ongoing learning about teaching? To investigate these questions, I drew from Coburn and Russel's (2008) notion of *depth* and Little's (2002) ideas about talk moves that *open* or *close* lines of inquiry, asking: to what extent are teachers (1) Inquiring deeply into practice vs. asking surface questions that invite 'tips' or easy answers; (2) Sharing struggles and challenges in ways that invite collaboration and progress vs. complaining or deflecting; and (3) Sharing original ideas about practice that leave open opportunities to learn together vs. waiting to be told by experts or deciding what to do independent of the coach.

These analytic questions rest on the idea that the following teacher practices are consistent with, and supportive of, the world of ambitious and equitable teaching and learning: (1) teachers inquiring deeply into practice, (2) teachers sharing struggles and challenges in ways that invite collaboration, and (3) teachers sharing their own ideas about teaching in ways that leave open opportunities to learn. The first and third of these ideas are well supported in literature that I have previously reviewed, most directly by Coburn & Russell (2008) and by Little (2002). The second, however, surfaced from my data and deserves a little attention here.

As I examined teachers' talk, I noticed some markedly different ways that teachers talked about what was hard for them, with clear implications for coach-teacher interactions. Teachers sometimes talked about their struggles or challenges in ways that positioned themselves as learners and invited the coach to participate *with* them in making sense of the struggle. For example, when a teacher said, "I didn't have closure on [the lesson], I didn't feel like there was like a good set goal for me, like in my mind," she expressed vulnerability and implied that she was willing to reflect on what she might learn with her coach. At other times, teachers talked about what was hard for them in ways that did not invite the coach to participate in any way and did not imply that they had learning to do. For example, a teacher said in a planning conversation, "My classes are all off [sequence], so I don't know what to teach." She went on to say more things about what might happen in the lesson, but did not invite her coach to work with her on this challenge. The difference between these ways of talking about what is hard in teaching is consequential in ways that are related to the other ideas in this rubric. When teachers position themselves as learners and invite coaches in to considerations of their struggles, lines of inquiry are opened, and depth is available. When teachers do not do this, lines of inquiry are not opened, and opportunities for depth do not exist.

These ideas were combined into a simple rubric, summarized in Table 6. I isolated teachers' minimally responsive contributions to conversations, where they, for instance, asked their own questions or offered their own ideas.

Table 6. Teacher participation in conversations aligned with US schooling or ambitious and equitable teaching and learning

	Depth	Openness
The world of <i>Ambitious and Equitable Teaching and Learning.</i>	Higher depth questions or statements of struggle: <ul style="list-style-type: none"> • About pedagogical principles underlying instructional choices. • About mathematics. • About student learning. • About emotional or psychological challenges of teaching. 	<ul style="list-style-type: none"> • New ideas that open or leave open lines of inquiry. • Questions or statements of struggle that display vulnerability or concerns about one's own competence.
The world of <i>US schooling.</i>	Lower depth questions or statements of struggle: <ul style="list-style-type: none"> • About general group work or student support. • About lesson design or flow. • About how to use strategies or activities. • Without specification. 	<ul style="list-style-type: none"> • New ideas that close (or do not open) lines of inquiry. • Questions or statements of struggle do not display vulnerability.

Each teacher contribution was coded using the appropriate column above. In other words, questions and statements of struggle were examined for depth and for the degree to which they displayed vulnerability. New ideas were examined for the degree to which they opened (or left open) lines of inquiry in conversations.

Note that teachers' ideas were not evaluated for pedagogical quality. In other words, I did

not distinguish between ideas that were more or less consistent with ambitious and equitable teaching and learning. This strand of TTL is about *participation in thinking and talking about teaching*, and not about classroom teaching. It seeks to capture ways in which teachers' participation in coaching conversations support their own *progress* along TTL.

Participation in classroom practice.

The goal of this line of analysis is to address the question: How do teachers work (with coaches) toward ambitious and equitable classroom practice? What patterns exist in teachers' ongoing negotiations of classroom practice with coaches? (This analysis does *not* seek to evaluate the nature of teachers' classroom practice. Such an analysis is not supported by the data and is not in line with an investigation of TTL. TTL does not require expert teaching practice, but continual work toward more ambitious and equitable teaching.) Together with a research assistant, I developed a strategy for following teacher-coach "work" on various *threads of practice* from coaching conversations into lesson enactments and back into coaching conversations. These representations support findings addressing the following questions:

1. What classroom practices do the coach and teacher work on together? How does their focus shift over time?
2. To what extent do conversations about classroom practice "live" beyond one coaching cycle, contributing to coherence over time in teacher-coach work on classroom practice?
3. To what extent (and by whom) does talk about classroom practice make it into lesson enactments? To what extent do teachers try out new classroom "moves" in line with their work with their coach on classroom practice?
4. Who initiates work on which practices?

This strategy for analyzing *threads of practice* is described below.

Data reduction and organization.

First, we examined transcripts of coach-teacher conversations and of lesson enactments, pulling out moments of interaction that were directly related to the negotiation of ambitious and equitable classroom practice¹¹. That included moments in which teachers or the coach, for example, proposed actions that could be taken in class, named actions that were taken, took actions, or wondered aloud about the potential benefits or drawbacks of taking actions. We summarized these moments and arranged them in Microsoft Excel such that the flow of such moments through one coaching cycle were arranged sequentially into a single column, with empty cells separating the three parts of each coaching cycle (planning conversations, lessons, and from debrief conversations).

Bottom-up development of categories of classroom practice.

Each action was characterized by a descriptive phrase assigning it to an area of teaching practice. Rather than listing or trying to define what counts as a teaching practice, which would be both challenging and unnecessary for our purposes, we focused on areas of teaching practice, which we called *threads of practice*, such as "intervening in student groups" or "leading rich and equitable whole class discussions."

¹¹ One limitation of this analysis comes from the nature of my recordings of classroom practice. My recordings, as with any set of recordings, miss much of what happens classrooms, in particular student-centered classrooms like Kamilah's, where the important action is distributed around the room.

As we progressed through data, we combined, divided, and renamed these threads until we had arrived upon a list containing threads (1) of a manageable number, (2) of similar “grain size,” and (3) that appeared a significant number of times or were otherwise relevant to the data corpus. When the final list of threads was developed (listed in Table 7), they were applied to the data corpus by entering the appropriate letter in the cell to the right of each action in Excel.

Table 7. Threads of practice relevant to the Kamilah-Mia and Heather-Mia cases

Letter Code	Thread of Practice
A	Organizing students into groups or pairs.
B	Interventions into student groups.
C	Making expectations for group or pair work explicit.
D	Using strategies (e.g. Participation Quiz, huddle, sentence frames) to support productive participation in groups.
E	Making important math ideas central to the lesson.
F	Using manipulatives and other tools to support student learning.
G	Building norms to support equitable participation and learning.
H	Leading equitable and rich whole class discussions.
I	Naming and building from students' math strengths in lessons.
J	Watching and listening, allowing time for student sense making.
K	Task design or redesign.
L	Supporting student-led whole class discussions.

Visually representing threads of practice.

We then created time-sequenced representations that trace teacher-coach work along these threads of practice through coach-teacher interactions. To illustrate my description of these representations, I have included the diagrams from the Kamilah-Mia case in Figure 5.

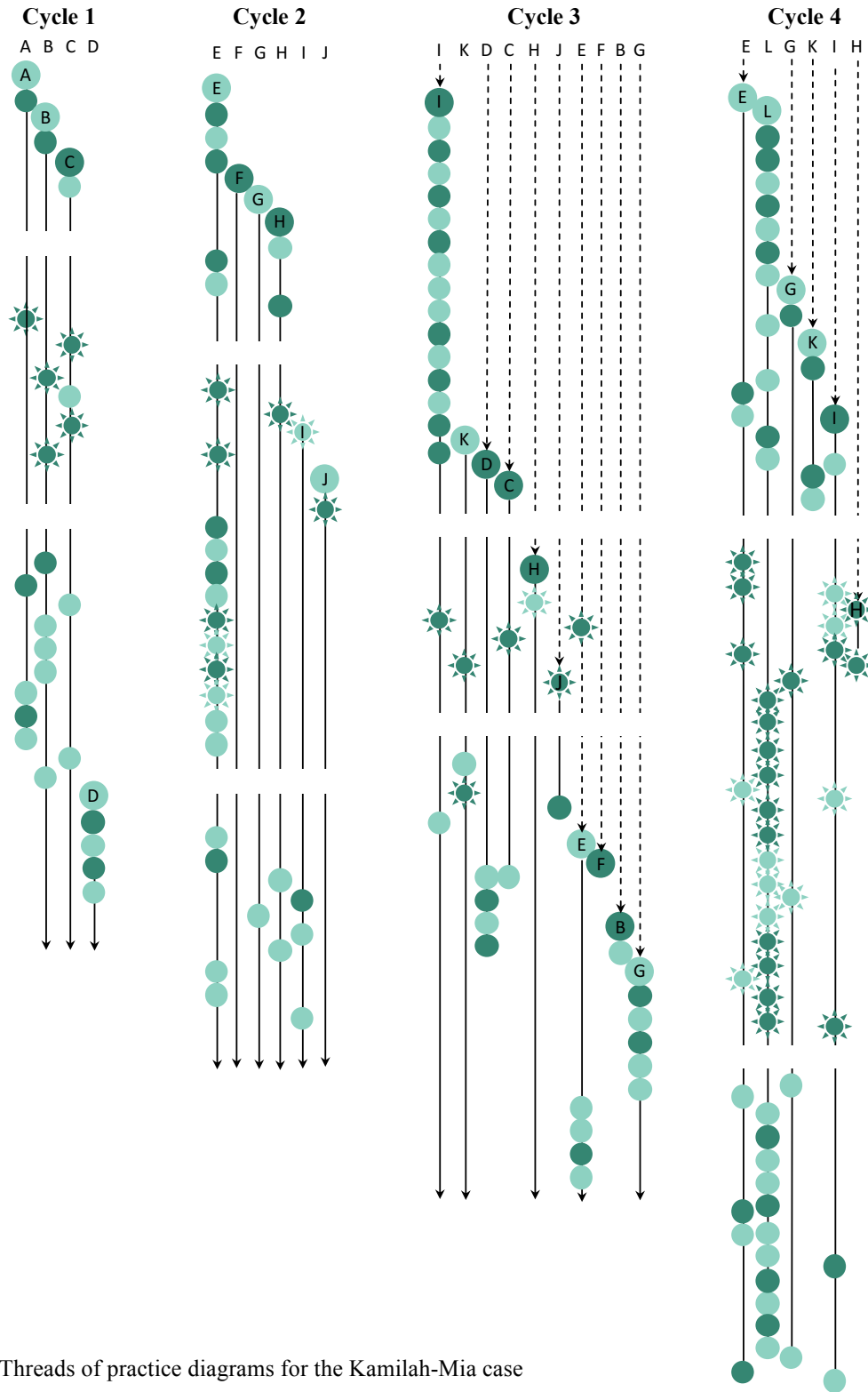


Figure 5. Threads of practice diagrams for the Kamilah-Mia case

Each moment of “work” is represented by a dot, with darker dots representing teacher work and lighter dots representing coach work. (“Work” here consists of talk and/or other action that signifies ongoing negotiation of ambitious and equitable classroom practice, which includes envisioning, describing, proposing, trying out, and/or interpreting elements or moments of such classroom practice.) Stars are used to represent those actions that involve the uptake *with or for students* of practices that have been (or will be) under discussion. In all but one case these actions took place in lesson enactments. (The single exception took place in Kamilah’s Cycle 3 and involved a moment in a debrief conversation in which she modified lesson materials as she talked with Mia.) Stars are used to signify the engagement in *new* practice, or practice directly related to the work the teacher and coach do together. So, for example, if a teacher had already planned to use particular tools to support student learning and the conversations did not push or change these plans, her use of these tools in class would not be represented by a star. Thus, the absence of a star does not mean the absence of classroom practice in a strand, but the absence of *new* classroom practice in that strand.

Dots and stars are sorted into columns according to threads, with the thread of practice for each column indicated with a letter above that column. The first action along each thread is denoted with a larger dot, which, for ease of reading, also contains the thread letter. Each vertically-oriented diagram represents one coaching cycle, with the planning conversation first, followed by the lesson, and the debrief conversation at the bottom, each of these parts separated by a strip of white space. Sequence is preserved such that earlier moments appear higher in the representation, with time progressing downward.

Lines and arrows connect moments of action within each thread of practice; solid lines connect actions along threads *within* one coaching cycle, and dashed lines connect threads *between* coaching cycles. Dots at the start or end of lines represent the first or last action taken in that thread. Arrows signify that the thread is continued from or continues to another coaching cycle. For instance, in the diagram in Figure 5, Thread H began in Cycle 2 and continued in Cycle 3. An arrow downward from the last dot in the “H” column indicates this continuation, as does the dashed arrow starting at the top of the Cycle 3 diagram under the letter “H.”

Formation and investigation of hypotheses, supported by threads of practice diagrams.

Like the process used to investigate patterns of meaning-making from code profiles (see “Meaning-making” section of this chapter), threads of practice diagrams were used to generate hypotheses about teacher-coach negotiation of classroom practice. Further evidence (usually in transcript and sometimes video) was then identified to corroborate or refute these hypotheses.

Threads of practice diagrams supported the development of hypotheses related to connections among or between threads (e.g. by frequency of dots alternating between two threads over time); who tended to initiate work along which threads; which threads included (or did not include) new practices being tried out with and for students, and by whom; and coherence, as indicated by threads appearing through multiple coaching cycles. Findings resulting from the formation and investigation of such hypotheses are shared in Chapters 4, 5, and 6.

Supplemental investigations of teachers’ classroom practice.

While the data in this study do not support a broad examination of teachers’ classroom practices over time (separate from the negotiations of classroom practice that are the foci of the analysis outlined above), there are data to support some relevant observations. For instance,

recordings of lessons allow for the examination of teachers' lesson and task launches in the lesson enactments that were part of the coaching work. Also, photographic or material artifacts related to mathematical tasks (worksheets designed for students, prompts written on boards) served to support observations about classroom practice. These data were examined when other findings suggested that this examination would be useful. (For instance, examination of threads of practice in the Heather-Mia case revealed ongoing negotiations about which mathematics was important and the articulation of mathematical learning objectives for students. In this case, it was instructive to examine Heather's lesson launches over time to investigate if or how her talk with students about what mathematics was important in the lesson shifted. Findings related to this investigation are in Chapter 5.)

Becoming a kind of teacher.

As discussed in Chapter 2 and earlier in this chapter, becoming a kind of a teacher involves (at least) two related processes: developing a vision for the kind of teacher it is possible or desirable to become (in language borrowed from Holland et al., *figurative identity*), and developing an identity of competence (Wenger, 1998) with respect to that vision. These processes are cultural (Goodwin, 1994; Holland, Lachicotte, Skinner, & Cain, 2001; Lave & Wenger, 1991; Wenger, 1998). What teachers should *be* and what they should *do* are continually negotiated in and with figured worlds that shape the meanings available to them. One's own sense of competence exists always with respect to continually negotiated shared meanings of competence, as well as ways in which any individual interprets his or her own actions and capacities in relationship to these meanings.

I culled evidence of these two aspects of teachers' *becoming* processes from interviews conducted after teachers' first and last meetings with their coach as follows. After transcribing interviews, I reduced the data by isolating teachers' talk which bore directly on issues of *becoming a kind of teacher*. I focused on portions of transcript that contained teachers' talk about ideal teaching, and about themselves with respect to that teaching. As the interviews were semi-structured (see interview protocols beginning on page 37), this talk was found in teachers' responses to various questions across the interviews.

Memos were then generated to capture patterns in this talk in each interview. Connections were made between relevant instances of teacher in various responses throughout each interview. Summative descriptions were generated of teachers' talk in each interview related to these two aspects of identity. Summative descriptions for the two interviews (in September and in May) were compared and hypotheses were generated from the similarities and differences observed in teachers' talk at these two points in time. These hypotheses were then checked against transcripts and video records of interviews and adjusted as needed. Findings resulting from this process are shared in Chapters 4 (for Kamilah) and 5 (for Heather).

Positioning with respect to the coach.

As discussed in Chapter 2, a teachers' *positioning* with respect to the coach relates to both *becoming* (identity) and *belonging* (community). To operationalize this strand, I borrowed from Wood's (2013) notion of *micro-identity*, which she defines as the moment-to-moment experiences of positioning that take place for learners. While teachers experience positioning in all their interactions, and with respect to various actors in their worlds (e.g. administrators, students, other teachers), the positioning that is most relevant to this study—and available in the data—is that of teachers and coaches.

I examined teachers' talk and nonverbal behavior for evidence of roles and positions that they were offered, accepted, rejected, or claimed. This evidence was gleaned from teachers acting *as if* they occupied certain positions with respect to their coach¹². For instance, teachers sometimes asked questions that served to position themselves as less expert than the coach, for example by asking what they "should" do (e.g. "Should I have 2 groups of 3 [students] or should I have 1 group of 5?"). Other times teachers asked questions of the coach in ways that served to position them as *together* in thinking about teaching, for example by offering an idea and inviting the coach to reflect on that idea. These invitations were often communicated through intonation and body language, rather than through words, for example by ending an idea with the rising intonation of a question and then suggesting with eye contact, body language, and wait time that a response was desired (e.g. "So maybe we can have a Do Now where kids can see the table and the equation, kind of like what we did today, right? Where we had those table points and we plugged it into the equation to see if it would make it true?" *Teacher looks at coach expectantly.*)

Unlike Wood, who examined *micro-identity* as it shifted across individual interactions, the analysis developed for this dissertation is concerned with *patterns* of positioning that teachers experience with respect to coaches, or how this positioning shifts for teachers (or remains stable) over the course of the teacher-coach relationship. For this reason, I noted evidence of positioning that existed in short segments of talk, and then zoomed out to examine patterns across interactions. As did Wood (2013), I relied finally on peer debriefing (Lincoln & Guba, 1985) to interrogate the credibility of my findings. As I uncovered patterns, I shared these findings in writing and in conversation with colleagues, who questioned my interpretations, offered alternative hypotheses, and pushed me to return to data to investigate further. I continued this process until my colleagues and I were convinced that my claims were solid.

The preceding sections have outlined the five strands of analysis developed and employed in this study for the investigation of TTL. The following sections describe more bottom-up strategies used to investigate issues related to supports and challenges for TTL. Because this dissertation aims to connect each of its investigations to a rich picture of teacher learning, a primary goal was to develop a detailed framework for this learning and to use it for close analyses of various learning processes. Analyses of coaching and of frames and power, which I describe below, were developed with a more emic approach. That is, they were developed *in response* to findings that surfaced from analyses of TTL. Details follow.

3.3.2 Examining Coaching Practice

Analyses of coaching in this study were closely intertwined with, and came out of, the analyses of learning described above. The coaching literature does not yet offer frameworks for coaching that can reveal ways in which coaching connects with TTL. As the coach under investigation in the focal teacher-coach relationships, I had access to ideas about what the coaching practice in the data was intended to accomplish. It was important for this study however to let the data drive conclusions about how coaching was functioning. It is unavoidable that my practitioner lens influence my analytic lens, but the emic approach supported me to do my best to be open to being surprised by the data, which indeed I was.

¹² Deeper analysis of micro-identity is certainly available in the data I have, and is an intended focus of further study. I treat the subject briefly here to allow for reflections on this strand as it relates to the multiple processes of Transformative Teacher Learning.

For the reasons outlined above, my findings about coaching came out of observations that surfaced through my analyses of TTL. For instance, the analyses of TTL suggested the special importance of particular segments of teacher-coach interactions in that these segments contained evidence of TTL along multiple strands. I started my analytic focus on coaching by looking at these consequential segments of interaction and asking, “What is the coach doing that seems to connect to the teacher’s TTL?” From this question, I articulated various kinds of coaching “moves,” and zoomed out to examine how these moves were employed across the teacher-coach relationship. I grouped (and regrouped and renamed) these observed coaching moves until I had achieved a manageable number of coaching practices that were relevant across the data corpus.

To illustrate this process, I use the example of a conversation that unfolded early in the second Kamilah-Mia coaching cycle about a student. This conversation turned out to be consequential for the analyses of all five strands of TTL. In this conversation (the “Manuel” conversation, which is treated in detail in Chapter 4), Kamilah and Mia negotiated meanings about math, students, and smartness; ways of talking together about teaching; ideas for classroom practice; a vision for ambitious teaching; and their positions with respect to each other. As there was so much happening with respect to TTL, I took this interaction as a useful place to begin to examine coaching. I articulated various things that Mia did in this interaction (e.g. offer ideas for classroom practice, direct conversational attention to the underlying mathematics, and reframe the problem from being with Manuel to being with some yet-to-be discovered features of his school experiences that were presenting barriers). I then examined these coaching moves with respect to the larger data corpus and identified ways in which they related to coaching moves that took place in other interactions and appeared to connect with the TTL that I had previously identified. This turned into an iterative process that continued until I had arrived on coaching *practices* (larger grain size than individual “moves”) that (1) took place across the data and (2) consistently related to TTL. Findings from this process are discussed in Chapter 4.

3.3.3 Frames, Power, and Agency

Like analyses of coaching, the analyses of frames and power were emic in nature. In contrast to observations about coaching, which surfaced from interactions that were particularly generative for TTL, observations about frames and power surfaced from interactions that were revealed to be particularly challenging or problematic in nature. I did not set out to study frames; in my investigation of TTL, I was struck by ways in which issues of framing (and positioning and power) surfaced as consequential. Discoveries about frames are detailed (both the content of the discovery and how it surfaced from data) in the findings sections to which they relate. Here I comment briefly on the analytic precedents for my identification of frames.

Like positions, frames are said to be “at play” when individuals in an interaction act as if they are (Hand, Penuel, & Gutiérrez, 2012). As teacher (rather than coach) learning was most central to this study, I focused on ways in which teachers’ talk and action in interactions with the coach suggested particular frames to be at play. For instance, when teachers asked coaches questions that suggested that they expected to be offered evaluative feedback, or when teachers talk and action suggested that they interpreted ambiguous coach comments as evaluative, a *coaching as evaluating* frame was said to be at play for teachers. Consistent with prior research (Hand et al., 2012; Louie, 2016; Wood, 2013), teachers acted as if different frames were at play in different moments. To allow for the analysis of framing patterns unfolding over the span of

teacher-coach relationships, the frame that was evident for teachers throughout the majority of each interaction was named as the *primary frame* for that interaction.

To investigate ways in which Mia worked to influence the primary frames for coaching that mediated teachers' experiences with coaching, her talk was examined for evidence of interactional work that took up components of frames. This work included ways she offered roles and positions, talked about teaching, talked about coaching, and the activities that she proposed for the coaching work. Open coding was used to label relevant talk and types of talk were grouped and regrouped into a manageable number of categories. These categories of talk are shared in relevant findings section of Chapter 6.

Chapter 4

Learning to be “Wowed by Kids:” A Case of Transformative Teacher Learning and the Coaching that Supported It

There are days when I'm so excited. Like I remember a week or two ago, I wasn't feeling well, I was getting sick and I gave a task for my kids to do and the way they were talking with each other and talking about the math and making sense of it was just so amazing and just hearing it was making me feel so good that my kids are justifying and reasoning and sharing their ideas and feeling comfortable about it. It was really cool. I mean, it's not like every day is like that, definitely not. But there are days where I'm just really wowed by my kids.

Kamilah, final interview, May 2015

In the words above, Kamilah identifies a key aspect of her learning. Her journey toward being “wowed” by her students was part of a transformation that enabled her to shape her classroom so that her students, across traditional hierarchies of which students *can* learn rich math, could work productively together as they “struggled” to make sense of complex mathematical ideas. This chapter documents’ multiple processes of Kamilah’s nuanced and multi-faceted learning. Understanding these processes is central for developing a theory of ambitious and equitable teacher learning and for supporting teachers’ engagement in such learning.

This chapter examines the story of Kamilah’s learning in two sections. I begin with a focus on the learning itself, first by sharing a summative description and then with findings resulting from analyses of multiple strands of her *transformative teacher learning* (TTL, see Chapters 2 and 3 for articulation of this framework and my strategies for operationalizing it). I then turn to the coaching that was instrumental in supporting this learning¹³ for Kamilah, investigating how it unfolded in interaction to support multiple strands of Kamilah’s TTL. In brief, I find that the learning that led Kamilah to be “wowed” by her students’ mathematical thinking was supported by three intertwined coaching practices: (1) the interrogation of mathematical content; (2) the premise, made explicit in talk, that each student is smart; and (3) naming and building from the teacher’s own strengths. Each of these practices supported opportunities for TTL along multiple strands, with the three together supporting Kamilah’s learning in layered and nuanced ways.

I begin by describing the learning that took place for Kamilah across the year of working with Mia, illustrating it with the lesson that Mia and Kamilah planned and taught during their fourth and final coaching cycle. I argue that this learning is significant—it supports the ongoing creation and maintenance of ambitious and equitable teaching and learning—and worth examining in more detail. I use the TTL framework to analyze this learning, presenting findings along multiple strands of that framework. I argue that a multi-layered analysis (such as the one I present) supports the understanding and fair representation of learning like Kamilah’s.

¹³ For ease of reading, I refer after this to the collection of processes of TTL as “learning.”

4.1 Overview of Kamilah’s Learning: from “Student Struggle” to Student-led Teaching

Kamilah came into her work with Mia clear that she wanted help supporting her students to talk together about mathematics. She expressed, both in her initial interview, and in her first coaching conversation with Mia, a newfound commitment (but one that predated her work with Mia) to allowing students to “struggle” and to develop their own deep understandings of mathematics. At that time, she expressed this concern in terms of wanting her students to “feel safe” so that they would engage with struggle.

Below, I describe the work Kamilah did with Mia in March during their 4th coaching cycle. I use this description to demonstrate ways in which Kamilah’s initial commitment to supporting students to feel safe to struggle developed into ambitious and generative engagement with teaching, the kinds of engagement that we might hope to support for teachers broadly. She took on new and challenging teaching and she did so in ways that supported her continuing development as a teacher. Thus, the story that I share below is of both product and process; it demonstrates that Kamilah had achieved significant learning (without which the work in this story could not have happened) and it demonstrates her ongoing engagement in learning about teaching. In this story, Kamilah asks important questions about her practice, takes risks in trying out new and challenging teaching, and engages with Mia in deep sense-making about that teaching.

In Cycle 4, which took place in March of 2015 (just before Spring Break), something new happened for Kamilah in her journey of becoming “wowed by kids.” With support from Mia, she tried out a challenging new lesson structure, one in which students were responsible for leading the mathematical work of the class. (Part of what makes this ambitious is that the mathematical work of the class was not about content that had previously been covered. Students were not being asked to lead “reviews,” but rather to lead the class in making sense of new content.) In her work with Mia to try out this new lesson structure, Kamilah engaged with teaching as a complex system, attending to issues of students’ embeddedness in the social system of the classroom, replete with status challenges and social risk; she related to all of her students as sense-makers, working to plan and implement a lesson that relied on their sense making to succeed; and she worked hard to ask and support students to “struggle” publicly, in part by providing them with meaningful mathematics about which they could collectively grapple.

What happened in this 4th and final coaching cycle came out of a question that Kamilah posed to Mia at the beginning of their planning conversation:

I’m using this right now (*showing Mia a worksheet about solving equations using a manipulative called “Algebra Tiles”*) and we are working on this as a whole group... And [I want to know] how to kinda make it more- less me up there (*pointing to the front of the room*) and talking on how to do it and more them trying to figure out how to do it.

The two decided that they would try out an ambitious lesson structure that Kamilah had not previously attempted in which students would be the ones at the front of the room leading the class in mathematical discussion, rather than Kamilah. In this structure, the teacher selects students randomly—using some sort of public randomization strategy—to lead the class in figuring out a ‘legal move,’ or a manipulation to an equation that would not disrupt the equivalence of the expressions on either side of the equals sign. Students would come to the front

of the room and either propose and justify a manipulation to an equation or ask the class for help in doing so. The students' work at the front would be considered complete when the whole class agreed about how the equation might be manipulated and why that manipulation preserved the integrity of the equation.

This kind of lesson is challenging to teach, especially when it's the first time a classroom community has been structured in this way, as was the case in Kamilah's class. It requires allowing students to be in control of the mathematics of the lesson, which in turn requires trusting that students are collectively capable of making sense of the mathematics on their own and that each of the individual students is capable of leading such a mathematical sense-making process. It requires supporting students to take on roles and responsibilities that are new and scary as they are called on to share their partial or unsure thinking publicly and to trust the class to be both able and willing to support the development of their thinking in ways that will help them learn and that will strengthen or preserve their sense of belonging and acceptance in their community. And it requires the teacher to be clear about the important mathematics that students are being held responsible for making collective sense of.

In some senses, this lesson required Kamilah to *be* a different kind of a teacher than the one who had come into the year committed to helping students feel safe to struggle. She needed to be a teacher who relinquishes control of mathematics to students. She needed to see (and act on seeing) her students (all of them) as mathematically smart, and as capable of taking on challenging mathematics together. During the lesson, she needed to be ready to support her students as they took on new roles and challenges and to do so in ways that did not undermine them as individuals or undermine the classroom community. She needed to trust in Mia, as her partner in teaching and learning, to do these things with her. In short, to engage in this lesson, Kamilah needed to operate within a world of ambitious and equitable math teaching and learning. To do so, she needed to resist the gravity of the dominant world, which provides numerous reasons that teaching such a lesson is either impossible (e.g. "Maybe other, *high* kids could do that, but not *these* kids.") or undesirable (e.g. "Students don't know the math, so teachers have to lead the learning to make sure the math students learn is 'right'").

To be clear, I do not share this story to demonstrate Kamilah's mastery of any of these things, but to demonstrate her in-the-moment engagement with both ambitious teaching and with learning about ambitious teaching. In other words, she worked to make sense of mathematics and of new ways to structure a classroom, she asked for help as she did this, she tried out new and scary practices, and she considered together with Mia the implications of various teaching choices.

As might be expected, Kamilah was nervous about this lesson. She anticipated that students might "draw a blank" when they were on the spot. She understood that it would be her job to support them but also that in trying to do this, she might unintentionally undermine them. (For example, if she were to support a student by either doing the thinking for her or by asking guiding questions, she would be sending a message to the class that she didn't think the student was able to do the mathematics without that support.) After some discussion of the lesson, Mia asked what Kamilah would like her to do during the lesson.

Kamilah	Mia
	Um, cool. so, what- what would you like my participation or support or anything with? Should I just watch so we can debrief?
Um, just the "why" part because that's new for me.	

Kamilah	Mia
So, if I'm just- if they're not like, making sure that they're justifying clearly.	Yeah.
Like if they need support in that, or like how can I support a kid- cuz I know like some kids I feel like are gonna have a blank stare and not know how to say it, so like helping me help them to come up with an idea.	Okay.

Mia agreed to “play it by ear” and “join in” if it seemed useful.

The lesson unfolded successfully. Students came to the front of the room and shared ideas, asked questions, got stuck, and fielded input and support from their classmates. Kamilah and Mia worked together to support them to do this, for example by working to establish the norm that students at the front of the room can and should ask the class for help when they need it. Kamilah and Mia provided only support for participation, but offered no mathematical ideas or feedback. Instead, they insisted that it was up to students to determine, as a class, when they were satisfied with a mathematical idea that had been proposed.

As an example of students’ participation in leading the mathematical work of this lesson, I describe the work of Emelyn, one of the students Kamilah called—using “equity sticks,” a strategy for public, random selection of students—to the front of the room. When she arrived at the front, she told Mia and Kamilah that she didn’t know what to do. Mia thanked her for that and asked the class to support her: “She doesn’t know what to do. Awesome, let’s help her. Thank you for saying that. She wants help from her team.” Multiple students in the class raised their hands and, when Emelyn called on them, offered and justified ideas. Emelyn took up one of these new ideas and removed three unit tiles from each side of the “equation mat,” carrying out what students had proposed was a “legal move.” Multiple students then participated in justifying this move, explaining that whatever you do to an equation must “keep it equal.” After a number of students spoke, Emelyn agreed that she was convinced that the move was justified, and she returned to her seat accompanied by claps and cheers from the class.

When Kamilah and Mia sat down to debrief after this lesson, they reflected together on the mathematical work students had done and the new possibilities that were created for the classroom community out of this lesson. Kamilah said that she planned to teach the same kind of lesson with her other classes (when Mia would not be with her) and that “I feel like we just need to- like when we come back from [Spring] Break, like doing it all over again.” The power of this experience stayed with Kamilah well beyond her work with Mia; in a follow-up interview 1.5 years later, Kamilah brought up this lesson and its structure as a new piece of her practice that she found powerful and that she gained from her work with Mia.

Kamilah came to engage in complex and nuanced thinking and action with regards to teaching. She came to integrate ideas and practices that supported her to reshape her classroom in significant ways (in this lesson, supporting her students to take on new roles and responsibilities with respect to each other and to mathematics). Before the lesson described here, Kamilah looked for and achieved clarity about the central mathematical work of the lesson, and she treated students as capable of doing this work without mathematical intervention from any adult. She attended to the complexities of supporting students to take the substantial social risk involved and asked for support in those aspects of this work that she felt most challenged by. My contention is that this work, and the journey that she took to interrogate and integrate new (or

revised) ideas and practices, and to become a different sort of a teacher from the one she had been, *is* transformative learning. I contend that to understand learning of this sort (and thus to develop our understanding of how to support it), it is productive to examine this learning in layers, uncovering both the multiple processes involved and connections among them.

To investigate what happened for Kamilah (and thus to develop our understanding of what kinds of processes might be available for teachers more broadly), this chapter proceeds in two main sections. First, I examine Kamilah’s learning in more articulated ways as it developed over time. To do that, I use the *transformative teacher learning toward ambitious and equitable teaching* (TTL) framework to foreground each of five separate learning processes—meaning-making, participation in thinking and talking about teaching, participation in classroom practice, becoming a kind of teacher, and positioning with respect to Mia—and trace her development along these processes across the year. Such an examination opens the otherwise ‘black box’ of Kamilah’s learning, revealing multiple, interconnected strands of development, each of which shows up as necessary to support the others, and each of which is part of the summative story we have glimpsed here. Then, after Kamilah’s transformative learning has been articulated analytically, I turn my attention to the coaching that supported it, using this case of TTL as a starting point to examine ways in which such learning might be supported.

4.2 Kamilah’s Transformative Teacher Learning

The TTL framework draws on social theories of learning to name multiple, intertwined learning processes and to identify ways in which these processes can support teachers to move away from the dominant world of *US Schooling* and toward the emerging world of *Ambitious and Equitable Teaching and Learning*. This framework is operationalized with five strands of analysis (see Chapter 3) that aim to capture both teachers’ shifts over time in relation to these processes and the negotiations that are part of these processes *as they happen*. Table 8 lists these five strands of analysis, along with summaries of findings they yield regarding Kamilah’s learning. In the sections that follow, I share each line of analysis and flesh out these findings.

Table 8. Lines of analysis and central findings for Kamilah’s TTL

Strand of Analysis	Central Findings
Making meaning about students, classrooms, mathematics, and goals for teaching.	Kamilah’s talk shifted away from foci on student compliance and students’ math deficits consistent with <i>US Schooling</i> to focus more on strong student thinking and to contextualize students’ “misconceptions” in talk about possibilities for supporting their learning.
Participation in thinking and talking about teaching.	Kamilah’s contributions to coaching conversations deepened over time and increasingly contributed to substantive lines of inquiry remaining open in these conversations.
Participation in classroom practice.	Kamilah’s work with Mia on classroom practice was coherent, connected, and supported her to try out and take up new and ambitious teaching practices.
Becoming and belonging: vision for teaching and identity of competence with respect to that vision.	Kamilah’s talk suggested a vision of powerful teaching that developed to become increasingly integrated, specified, and connected to mathematics. Kamilah’s sense of her own competence became connected to this newly powerful vision.
Becoming and belonging: patterns of positioning between teacher and coach.	Kamilah experienced increasing “togetherness” with Mia, with less hierarchical positioning and an increased sense of shared purpose.

As I foreground each strand in turn, I examine ways in which results illuminate various aspects of Kamilah’s learning, shedding particular light on the big picture and leaving some aspects of that big picture in the dark. I also consider how the various aspects are interrelated. What emerges is an analytically articulated picture of rich and interconnected learning processes that come together to support the work we saw her do with Mia in the opening section and to support her to be “wowed” by her students’ mathematical thinking and learning, both by developing the eyes and ears for that thinking and by developing ways to provide opportunities for that thinking and learning to thrive.

4.2.1 Meaning-making: Shifting Talk about Students

Ongoing negotiation of meaning is central to learning. While some aspects of meaning making about students, teaching, and learning are captured in the analysis I present in this section, meaning making is central to other learning processes as well. For example, part of the ongoing negotiation of *classroom practice* for teachers is the meaning they make about those practices. (We will see this in the analysis of classroom practice in a later section.) An aspect of *becoming* a kind of teacher is ongoing meaning-making about the kind of teacher it is possible, or desirable, to become. (We will see this in the analysis of figurative identity in the *becoming* section.) In this section, I present findings from analyses of Kamilah’s meaning making in talk with Mia about math, students, classrooms, and goals for teaching. I present findings from analyses along other strands in the sections that follow.

My analysis of this meaning-making in teacher-coach conversations captures categories of talk that align with the dominant world of *US Schooling* or the emerging world of *Ambitious and Equitable Teaching and Learning*. Table 9 contains names and color codes for these categories of meaning making, which are detailed in Chapter 3. Figure 6 contains code profiles for Kamilah’s talk in the four coaching cycles,¹⁴ with color-coded representations of her talk in each planning conversation followed by those for her talk in each debrief conversation, with white space indicating the separation between the two.

Table 9. Meaning-making codes for talk consistent with the worlds of *US Schooling* and *Ambitious and Equitable Teaching and Learning*

Dominant world of <i>US Schooling</i>	Emerging world of <i>Ambitious and Equitable Teaching and Learning</i>
Compliance	Social Organization of the Class for Learning
Limiting Math Goals	Rich Math Goals
Smartness as Exclusive	Smartness as Inclusive
Students’ Math Deficits	Students’ Smart Math Thinking
	Rich Mathematics

¹⁴ Code profiles that include both Kamilah and Mia are included in Appendix F.

Cycle 1
9/10/14
Scientific Notation



Cycle 2
10/29/14
Angles in Triangles



Cycle 3
2/8/15
Solutions to Systems



Cycle 4
3/26/15
Solving Equations



Figure 6. Code profiles for Kamilah's meaning-making

Table 10 contains the portion of all of Kamilah’s coded talk that was captured by each code across the four coaching cycles, total portions across the broad categories of *talk consistent with the dominant world of US Schooling* (warm colors) and *talk consistent with the emerging world of Ambitious and Equitable Teaching and Learning* (cool colors), and ratios comparing these two broad categories. In the sections that follow this table, I interpret and investigate some of the patterns revealed here.

Table 10. Portion of each code for Kamilah’s talk over time (entries are percentages of total coded talk)

	Cycle 1	Cycle 2	Cycle 3	Cycle 4
Compliance	30	7	2	0
Limiting Math Goals	1	7	0	0
Smartness as Exclusive	0	4	0	0
Students’ Math Deficits	1	31	9	10
Total talk consistent with <i>US Schooling</i>	32	49	12	10
Social Organization of the Class for Learning	48	17	10	26
Rich Math Goals	0	9	30	3
Smartness as Inclusive	0	2	0	0
Students’ Smart Math Thinking	10	19	44	26
Rich Mathematics	9	5	4	35
Total talk consistent with <i>Ambitious and Equitable Teaching</i>	68	51	88	90
Ratio of <i>Ambitious and Equitable</i> to <i>US Schooling</i> talk	2.1	1.0	7.3	9

Less dominant and more emerging talk about teaching over time.

Examination of code profiles (Figure 6) and code frequencies (Table 10) reveals a broad trend away from warm colors (representing talk consistent with *US Schooling*) and toward cool colors (representing talk consistent with *Ambitious and Equitable Teaching*). Also, a closer look reveals that a good portion of Kamilah’s ambitious and equitable talk in the first coaching cycle was talk related to the social organization of the classroom and not directly to students’ math thinking and learning. While considerations of the social organization of the classroom are certainly a central part of ambitious and equitable teaching (and of the particular teaching that we saw Kamilah take up in Cycle 4), omitting that category reveals interesting patterns in Kamilah’s development of ambitious and equitable talk about math content and students’ connections with that content. This subset of talk is compared in Table 11 below.

Table 11. Comparison of Kamilah’s *Ambitious and Equitable Math* talk to her talk consistent with *US Schooling* over time (numbers in table are percentages of total coded talk)

	Cycle 1	Cycle 2	Cycle 3	Cycle 4
Talk consistent with <i>US Schooling</i> (warm colors)	32	49	12	10
Talk about math and students’ connections with math that is consistent with <i>Ambitious and Equitable Teaching and Learning</i> (cool colors except light blue)	20	34	78	64
Ratio of <i>Ambitious and Equitable Math</i> to <i>US Schooling</i> talk	0.6	0.7	6.5	6.4

As indicated in Table 11, Kamilah’s talk about students, math, and math learning shifted in ways that indicate development of meaning-making about these aspects of teaching that increasingly aligns with the world of ambitious and equitable teaching and learning.

Talk about student deficits decreases and connects with ambitious and equitable teaching.

Another interesting pattern relates to Kamilah’s talk about students’ mathematical deficits, or what they do not know or cannot do, which is coded with pink. At the most basic level, we see that she talked less about what her students did not know or could not do (1%, 31%, 9%, and 10%) after the second coaching cycle and that she talked increasingly about their smart math thinking over time (coded with light green: 10%, 19%, 44% and 26%).

Closer look at the relative location of these codes in the code profiles reveals that when Kamilah did talk about what students did not know or could not do (pink), she came to do that in ways that were coupled with talk consistent with ambitious and equitable teaching (cool colors). (This pattern is apparent from the second coaching cycle on. In the first coaching cycle, there is only one instance of pink in Kamilah’s code profile and this one instance took place during a portion of the conversation in which she had been prompted to talk about the strengths of her lesson;¹⁵ here she said that some students did not understand a particular math idea in the context of saying that most students *did* understand that idea.) In cycle 2, talk about what students do not know or cannot do (pink) appears adjacent to other dominant talk (warm colors). However, in Cycle 3, Kamilah’s talk about what students do not know (pink) was coupled with talk consistent with ambitious and equitable teaching (cool colors), often talk about students’ strong math thinking (light green). The portion of her talk about students’ math deficits that is accompanied by codes for ambitious and equitable teaching across these last three coaching cycles is captured in Table 12 below.

Table 12. Portion of Kamilah’s deficit talk that is accompanied ambitious and equitable teaching talk

	Cycle 2	Cycle 3	Cycle 4
Instances of deficit talk accompanied by talk consistent with ambitious and equitable teaching (pink adjacent to cool colors)	2	7	4
Instances of deficit talk (pink)	11	7	5
% of deficit talk accompanied by ambitious and equitable codes	18%	100%	80%

To understand the significance of this shift, we must consider the role of talk about students’ mathematical deficits in ambitious and equitable teaching. First, as discussed in Chapter 2, this teaching is not deficit-focused, but rather strives to recognize and build on the smart math thinking that students engage in when given appropriate opportunities to do so. Thus, a shift toward ambitious and equitable teaching logically involves a decreased emphasis on students’ math deficits. However, to provide meaningful math learning opportunities to all students, teachers must be attuned to those ideas that students do and do not yet understand (as well as being ready to be surprised, or “wowed,” by students’ smart math thinking that they did not anticipate). Examination of Kamilah’s talk that was coded pink revealed that often when it was coded alone or alongside other warm colors, it was clear that the deficits being discussed occurred for Kamilah as barriers or limitations to student learning. In contrast, when this “pink” talk was coded alongside talk consistent with ambitious and equitable teaching, it was often connected with making sense of possibilities for supporting students’ future learning. The two examples I share below illustrate this difference.

¹⁵ This conversation, and the coaching it contained, is discussed in detail in Section 4.3.1.

The first example took place in the planning conversation for Cycle 2. Kamilah had asked Mia for help thinking about how to support a struggling student and Mia asked her about that student's strengths:

Kamilah	Mia
	Do you know what he's good at yet? Or what he's smart at?
Um, (6s <i>pause</i>) I mean honestly, like, I mean we've talked like, 'don't say 'loow,' like be more specific on what you mean by 'low' (<i>air quotes</i>), you know like a low student.	
	Mhm.
But yesterday we were doing like a patty paper, um, you know, like figuring out what angles are congruent, and they were drawing and figuring out matching. And he wasn't able to understand like, that's congruent to that. I guess he doesn't understand, oh this is matched to that, like he was just picking. And so I had to- it was just difficult for him to figure out congruent, like he wasn't getting it.	

Here we see Kamilah's perception of this student's math challenge as a barrier. In other words, it seems to limit what she could see as possible for his learning. In contrast, in the following example, she instead related the mathematics that students were not yet seeing with what might be possible for them if they were given the right opportunities. This example took place in the debrief conversation for Cycle 3, when Mia asked Kamilah for her thoughts about the lesson.

Kamilah	Mia
	Yeah, so, what are you thinking? What did you learn from them first period?
Like, the misconceptions, but I feel like we kind of predicted that too	
	Mhm.
... I was like 'yeah, I feel like they're not gonna see, they're gonna think that those tables are the only solutions that could work'	
	Mhm.
(pause) And then, I don't know. I just feel like there needed to be more time for them to, like- ...	
	Mhm.
I feel like they needed, like they saw the point of intersection, and then there was like- need to have conversations about like, OK, could there be other possibilities for x values?	
	Than what's in the table you mean?
Yeah.	
	Mhm.
Um, and I don't feel like those conversations were yet happening- but it's not like it wasn't going to happen but I feel like if there was time, it could happen.	

Here we see acknowledgement of what Kamilah called misconceptions. She observed that students were not yet attending to values between the integer values that they saw in x - y

tables as potential solutions to systems of equations. At the same time, her talk presumed that students would be able to find their way through that “misconception” given more time and she envisioned what kinds of conversations students would need to have in order to make sense of this mathematics. She ended this comment with the statement that “it could happen” if students were given enough time. Her awareness of what students were not yet making sense of did not serve as a barrier for her teaching, but instead supported her to consider possibilities for supporting students’ future learning (in this case giving them more time to talk about the mathematical issues).

Analyses indicate that over time, Kamilah came to focus more on students’ strong math thinking and to contextualize considerations of students’ math deficits in talk consistent with ambitious and equitable teaching and learning.

4.2.2 Participation in Thinking and Talking about Teaching: Deepening Engagement

In this section, I examine Kamilah’s participation with Mia in thinking and talking about teaching. Analyses of this aspect of Kamilah’s participation reveals that it deepened over time, becoming increasingly conducive to the ongoing work required for ambitious and equitable teaching and learning. She came over time to ask more unsolicited questions, seeking Mia’s input, and to ask questions of a deeper nature, which created opportunities for co-investigation with Mia about ambitious and equitable teaching. She also came to propose more of her own ideas for teaching, and to do so in ways that opened or left open possibilities for inquiry. Details related to these shifts follow.

Kamilah’s contributions in each coaching cycle were coded for depth (coding detailed in Chapter 3). Results of this coding are presented in Table 13 below.

Table 13. Kamilah’s low and high depth contributions to coaching conversations over time.

	Cycle 1	Cycle 2	Cycle 3	Cycle 4
1. Low-depth questions	13	5	2	1
2. Ideas that close	2	1	0	0
Total Low Depth	15	6	2	1
3. High-depth questions	0	1	3	7
4. Ideas that open (or leave open)	0	11	11	5
Total High Depth	0	12	14	12
Total coded contributions	15	18	16	13

These results demonstrate that Kamilah’s contributions to her conversations with Mia about teaching increased in depth over time. To give the reader a sense for this development, I provide examples of some of the questions and ideas that Kamilah asked or shared in Cycle 1, followed by some that came later.

Example 1: low-depth question in Cycle 1.

During the planning conversation in their first coaching cycle, Kamilah described for Mia the lesson that she had planned. Throughout this description, she asked Mia a few questions about what she “should” do or how to best structure aspects of the lesson. For example, she wondered about how to organize student groups when groups of 4 were not possible: “Should I have 2 groups of 3 [students] or should I have 1 group of 5, because I feel like 5 is better than 3?” Later, as she described the flow of the lesson, which was to be about scientific notation, she

asked, “Would you recommend me- before [students] start getting into group work, getting how to do this scientific notation, or having them discover it first?”

Example 2: high-depth question in Cycle 4.

By the end of their work together, Kamilah asked questions and described her struggles in ways that were of greater depth and supported deeper conversation about issues of teaching and learning. For example, as shared in the opening pages of this chapter, Kamilah asked Mia in the 4th and final coaching cycle to help her think about ways to redistribute responsibility for mathematics in her lesson, making it, “less me up there and talking on how to do it and more [students] trying to figure out how to do it.” Later in the same Cycle 4 conversation, as Mia described something that students might do with manipulatives as they were making sense of solving equations. Kamilah made her own prediction about what students might do and then shifted the conversations to inquire into the mathematics behind the action itself, looking for a “better understanding.”

Kamilah	Mia
	And so somebody might add six [tiles], they might add four, right? They might
They’re gonna do this (<i>moves tiles from one side of the equation to the other</i>).	
	They’re gonna move those over there?
Mhm.	
	Cool. So every time anyone does anything we’re gonna say, “Why? How does that keep [the expressions on either side of the equals sign] the same?”
So, I don’t know, I think that for me, I need a better understanding of that too (<i>moving tiles</i>)	
	yeah
So the reason why we flip it is because... (<i>flips some red unit tiles from the right side of the mat to their yellow side on the left side of the mat</i>)	

Here her engagement in conversation with Mia was working toward deeper understanding of the mathematics in the lesson, an understanding that she needed in order to effectively support student learning.

Also evident in Table 13, Kamilah came to offer more of her own ideas after the first coaching cycle, and she did so in ways that opened (or kept open) lines of inquiry. Below are two examples of ideas that Kamilah offered that were coded as high depth, as they were interpreted to open or leaving open potential lines of inquiry.

Example 3: high-depth contribution, proposing ideas and inviting input in Cycle 3.

In the debrief conversation in the 3rd coaching cycle, Kamilah and Mia were discussing student thinking that they observed during a group task that asked students to identify points of intersection in multiple representations of linear systems. Kamilah reflected on what students were struggling with, proposing the idea that one particular source of confusion was not actually part of the “main goal” of the lesson.

Kamilah	Mia
I feel like [students]- once they see it in table, and the graph. And then the equation part, I feel like they're really struggling with, on how to substitute.	
	Uh huh.
Um, I don't know if I should worry too much about that right now, if we're just trying to- I think our main goal is for them to understand that there's many solutions and it could be anywhere on that line, right?	

In this talk, Kamilah was considering aloud her priorities for student learning, inviting Mia to join in this consideration by ending with “right?” Mia took up her invitation, making a case for continuing to include the equation as one of the representations students are asked to attend to in the lesson. Mia then returned to Kamilah’s earlier proposal that the lesson be revisited the next day, asking Kamilah to elaborate. Kamilah proposed an idea for a “Do Now” activity that might support students with substitution. Here she used questioning intonation to invite Mia into conversation about the idea.

Kamilah	Mia
	So I'm wondering about- yeah, so what are your thoughts about then how we would take it up, like what would it look like to take it up tomorrow?
((sighs)) So I think like a Do Now, I mean, (4s pause) well, one, my concern is substitution still.	
	Mhm.
So maybe we can have a Do Now that (4s pause) like, where kids can see the table and the equation, kind of like what we did today, right? where we had those table points and we plugged it into the equation to see if it would make it true?	

In this sequence, Kamilah offered her own ideas, and did so in a way that invited input from Mia, supporting their ongoing co-investigation of teaching.

Example 4: high-depth idea, leaving open a line of inquiry in Cycle 4.

The next example comes from the debrief conversation that took place after the lesson I described to open this chapter. In this conversation, Mia described a moment that took place in the lesson and connected it to a challenge she saw related to supporting equitable participation among students in student-led whole class discussions.

Kamilah	Mia
	One question came up for me about, I think it was when... Emelyn was up there and she said, ‘I need help’ she called on the very first person whose hand went up really really fast, and then when I kind of asked her to wait a minute, I was like, ‘Let’s see, let’s just give some more people time’ you remember that? And three or four hands went up and she called on David?
Mhm.	
	Do you remember that?
Mhm.	
	...I had one little worry, which was just like when kids are up there

Kamilah	Mia
Picking kids that, yeah.	
	picking other kids, is there- are we reinforcing status stuff because they're gonna pick the kids they think are the smart ones?
Right, right.	
	Right?

Together, the two considered the challenge of leaving students in charge of leading these discussions, but attending to equitable participation at the same time. After some discussion, Kamilah offered an idea for a teaching move that could help:

Kamilah	Mia
Or also like, maybe if we want to try to get voice from other students, we could have them call on someone but then also ask other people like, "Oh what were you gonna say or what were you gonna say" you know?	
	(writing) Mhm, mhm.

I share these examples not to offer Kamilah's ideas for evaluation, but to give the reader a sense for ways that Kamilah came to participate in coaching conversations. She came to ask questions and offer ideas that supported ongoing co-inquiry into substantive issues of ambitious and equitable teaching and learning.

In my examination of Kamilah's participation in these conversations, connections between this aspect of *participation in practice* and *meaning-making* became evident. The ways in which Kamilah participated in these conversations has obvious implication for the kinds of meaning making that were available to her in them. Deepening engagement in these conversations created opportunities for rich and substantive meaning-making. Also, as Kamilah's meanings about teaching, learning, and students shifted, these meanings supported her deepening engagement in coaching conversations; her increasing focus on strong student thinking, rich goals for student learning, and mathematics itself supported her to ask more substantive questions and offer new ideas. For example, as Kamilah's meaning-making about teaching shifted in ways that facilitated her to see teaching less as presenting math to students and more as supporting students to make sense together of mathematics, the range of mathematical ideas she needed to consider shifted. This shifting relationship to the math content of lessons, in turn, supported her to engage differently with Mia in talking about math. In the following section, I turn to Kamilah's ongoing negotiation of *participation in classroom practice*.

4.2.3 Participation in Classroom Practice: Taking on New Teaching Together

In this section, I move on to analyze Kamilah's *participation in classroom practice* throughout her work with Mia. A *threads of classroom practice* analysis was used to investigate how Kamilah and Mia engaged in the ongoing negotiation of classroom practice, how their work together on classroom practice traveled in and out of the classroom, and how the classroom practice that they talked about did (or didn't) get taken up or tried out with students, and by whom. (See Chapter 3 for a detailed description of this analytic strategy.) 12 salient *threads of practice* emerged:

- A. Organizing students into groups or pairs.
- B. Interventions into student groups.
- C. Making expectations for group or pair work explicit.
- D. Using strategies (Participation Quiz, huddle, sentence frames) to support productive participation in groups.
- E. Making important math ideas central to the lesson.
- F. Using manipulatives and other tools to support student learning.
- G. Building norms to support equitable participation and learning.
- H. Leading equitable and rich whole class discussions.
- I. Naming and building from students' math strengths in lessons.
- J. Watching and listening, allowing time for student sense making.
- K. Task design or redesign.
- L. Supporting student-led whole class discussions.

Representations of Kamilah’s and Mia’s ongoing work along these threads of practice are included in Figure 7 below. Darker dots represent moments of work done by Kamilah and lighter dots work done by Mia. (To remind the reader, I consider this “work” to consist of talk and/or other action that signifies ongoing negotiation of classroom practice, which includes envisioning, describing, proposing, trying out, and/or interpreting elements or moments of classroom practice.) Each vertically-oriented diagram represents one coaching cycle, with the planning conversation first, followed by the lesson, and the debrief conversation at the bottom, each of these parts separated by a strip of white space. Stars are used to represent those actions that involve the uptake with students of practices that have been (or will be) under discussion. To be clear, stars are used to signify the engagement in *new* practice, or practice directly related to the work Kamilah and Mia do together. So, for example, if Kamilah had already planned to use particular tools to support student learning and the conversations did not push or change these plans, Kamilah’s use of these tools in class would not be represented by a star. Thus, the absence of a star does not mean the absence of classroom practice in a strand, but the absence of *new* classroom practice in that strand. Lines and arrows connect moments of action within each thread of practice. Dots at the start or end of lines represent the first or last action taken in that thread. Arrows signify that the thread is continued from or continues to another coaching cycle.

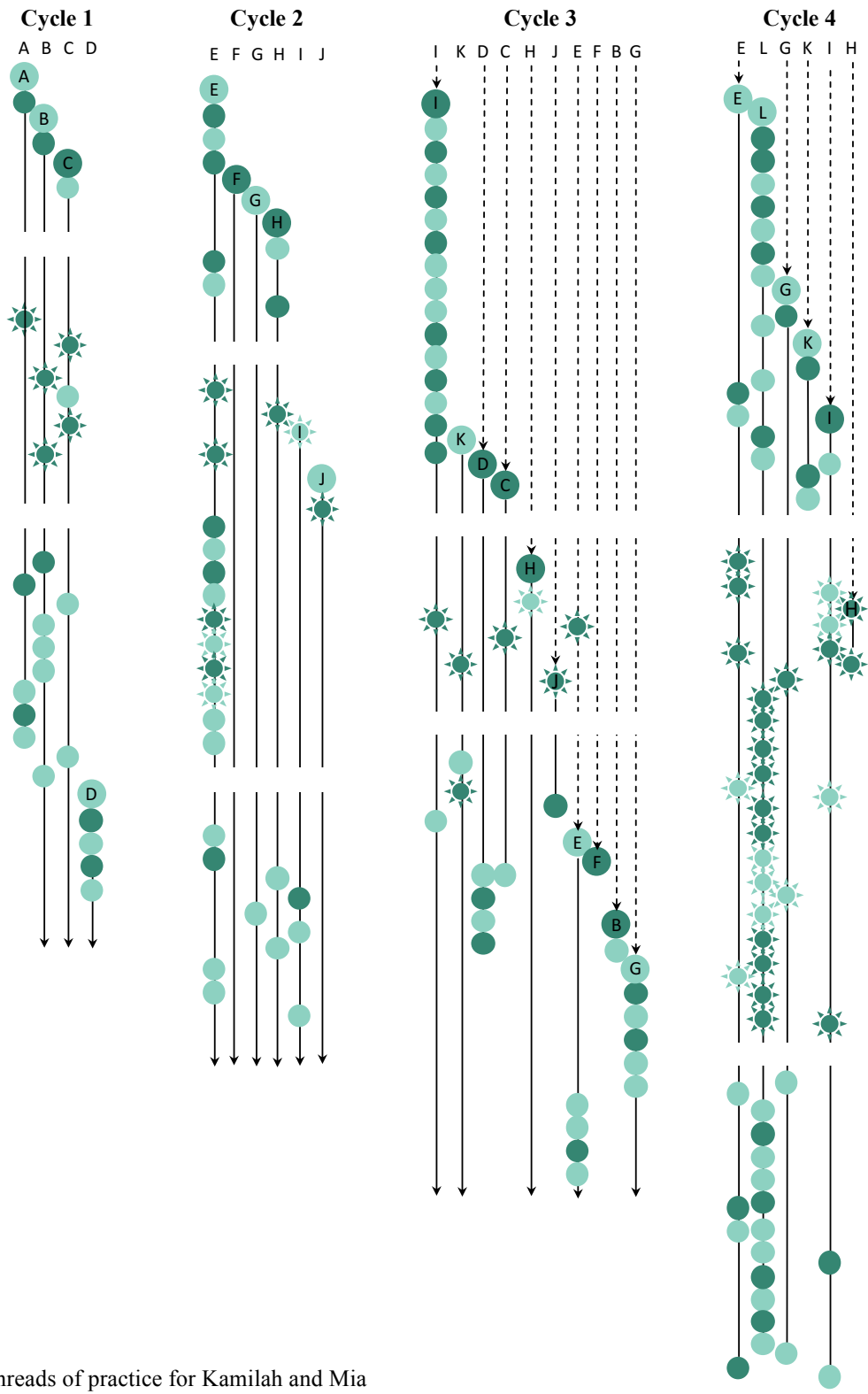


Figure 7. Threads of practice for Kamilah and Mia

A number of conclusions about Kamilah’s work with Mia on classroom practice are available from this analysis. First, Kamilah and Mia were co-involved in the examination and uptake of ambitious and equity-focused classroom practice throughout their work together. This work together was continuous and coherent, evidenced by the fact that 11 of the 12 identified threads of practice continue throughout multiple coaching cycles. Also, their work on classroom practice included a fair amount of trying practices out with students, which can be seen by the 10 of 12 threads of practice that include stars. (This is a low estimate, as there is a significant amount of Kamilah’s classroom practice that isn’t available in my recordings.) 9 of the 10 threads of practice that include stars also took place across more than one coaching cycle. Table 14 summarizes the path of each thread of practice across the coaching cycles, showing where each thread started, continued, and was taken up with students.

Table 14. Threads of practice start, are taken up, and continue across Kamilah-Mia coaching cycles

	Cycle 1	Cycle 2	Cycle 3	Cycle 4
A. Organizing students into pairs or groups.	Start, take up			
B. Interventions into student groups.	Start, take up		Continue	
C. Making expectations for group or pair work explicit.	Start, take up		Continue, take up	
D. Using strategies to support productive participation in groups.	Start		Continue	
E. Making important math ideas central to the lesson.		Start, take up	Continue, take up	Continue, take up
F. Using manipulatives and other tools to support student learning.		Start	Continue	
G. Building norms to support equitable participation and learning.		Start	Continue	Continue, take up
H. Leading equitable and rich whole class discussions.		Start, take up	Continue, take up	
I. Naming and building from students’ math strengths.		Start, take up	Continue, take up	Continue, take up
J. Watching and listening, allowing time for student sense-making.		Start, take up	Continue, take up	
K. Task design and redesign.			Start, take up	Continue
L. Supporting student-led whole class discussions.				Start, take up

Below I share in more detail some of the development of Kamilah’s and Mia’s work on two threads of practice, to exemplify how these threads travel between coach-teacher conversations and the classroom over time, and to demonstrate some of their interconnectedness. Two threads—*making important math ideas central to the lesson* (Thread E) and *naming and building from students’ math strengths* (Thread I)—were chosen for exemplification because of their centrality for Kamilah’s journey of coming to be impressed by her students’ thinking and because of their interconnected nature.

What I capture in this analysis is *work along* these threads. In other words, the moments captured with dots or stars are those that relate to work the two have done together on a given

thread of practice. For example, Kamilah had been leading whole class discussions before she met Mia. However, the two worked together on some practices related to supporting equitable and rich whole class discussions. Dots and stars along this thread, then, relate to discussion or use of classroom practices that are being newly negotiated here related to leading equitable and rich whole class discussions (e.g. supporting students to volunteer ideas aloud by asking them to share the thinking of a partner, rather than of their own).

Below I describe how talk and classroom action along the two strands (E and I) developed over time. (See Appendix D for more detailed articulation of each dot and star in Figure 7.) Also, as part of the purpose for looking more closely at these threads is to understand their interconnected nature, I share their sequential development, interweaving discussion of the two. Kamilah's and Mia's work on these threads began in Cycle 2, with thread E in the planning conversation, and thread I beginning during the lesson. Work on both continued into Cycle 4.

The planning conversation for Cycle 2 began with an exchange about a student who Kamilah described as "struggling." Out of this exchange, Mia and Kamilah came to the idea that the concept of *angle* is important (Thread E) and that students often struggle to make sense of angles. They together planned a Do Now activity that centered this content by surfacing, connecting, and building from students' current thinking about angles. (In Figure 7, this portion of their conversation is represented by a sequence of alternating dark and light dots along the line for Thread E.) Their conversation then turned to the rest of the lesson, which was to be about the Triangle Sum Theorem. Mia suggested that she and Kamilah together figure out a "big question" for students to think about in the lesson, which she connected with Kamilah's goal of supporting math talk in groups by giving students meaningful mathematics to discuss. Kamilah agreed and their conversation about the rest of the lesson included multiple considerations of what a "big question" could be, ending with various articulations of this question, including: "The sum of the angles in the triangles we made was the same in every case. Do you think this will be true for every triangle? Why or why not?"

The dark stars on line E in the Cycle 2 lesson indicate that Kamilah used several of the ideas that she and Mia had generated together. Dots along Line E indicate that the two also talked during class about ways that the important math of the lesson could be more effectively centered for students, and the latest star indicates that out of this talk Kamilah took a new action. The Thread I line, which begins here, shows that their work on naming and building from students' math strengths began with Mia taking an action in class with students. As described in more detail below, the start of Thread I was closely related to work Kamilah and Mia had done and were doing along Thread E.

Kamilah started this lesson by posing the Do Now activity about angles that the two had created in the planning conversation (the first dark star on Line E). Posing Do Now activities was not new for Kamilah. However, this Do Now was crafted together in the planning conversation and worked to make the important mathematics of the lesson central and explicit for students. After students had time to work on the Do Now in pairs, Kamilah led a whole class discussion asking student to share their ideas. Early in this discussion, Kamilah had called on a student (in this case, David) to share his ideas, a practice she had employed in class many times before. She was ready to move on to a new idea when Mia asked for her permission to join in. Kamilah agreed and Mia asked the student to repeat his idea, highlighted the importance of it, named it "David's idea," and ensured that other students had opportunities to make sense of it. Mia did this a few times with other students' ideas during this discussion. This thread of practice began with Mia, and not Kamilah, taking an action with students (represented by a light star). Mia's

actions initiated co-investigations of this aspect of classroom practice, which was then connected to actions Kamilah took in future lessons (see dark stars on Line I in Cycles 3 and 4).

This segment of classroom instruction demonstrates the interconnectedness of the two threads of practice of *making important mathematics central* and *naming and building on students' math strengths in lesson*. When Kamilah and Mia centered the concept of angle, they were able to create opportunities for students to generate mathematical talk, which they could then highlight and build upon in the lesson.

After this Do Now activity concluded, Kamilah launched the activity related to the Triangle Sum Theorem referencing the “big question” she and Mia had generated together. As class was close to ending, she asked students to write down as an “exit ticket” their ideas about a version of this big question:

Kamilah	Mia
(to the class) OK, so I want you to get out your exit tickets and just to think about this question here, um, “Do you think that the sums of angles, so (<i>inaudible</i>) in each triangle, are always 180 degrees?”	
	And why or why not?
And why or why not?... So, I just want you to think about and reflect, do you think the angles of a triangle, always add up to 180 degrees? Do you think you can make a triangle that is more than 180?	

During Kamilah and Mia’s debrief conversation the next day, their work on both threads of practice continued. At the beginning of the conversation, Mia recalled that Kamilah had said she wanted help with students making sense of angles and suggested that they could look together at students’ exit tickets to work on that. Kamilah agreed and together they read students’ work and drew conclusions about how students were so far making sense of angles and triangles. Following this, Mia explained to Kamilah why she had asked permission to join in and help lead during the whole class discussion about angles out of the Do Now activity in class. She explained that she had wanted the strong student thinking that Kamilah was surfacing to be written down so that it could be a resource for assigning competence and that part of that practice involved using students’ names with their strong math ideas.

Kamilah	Mia
	So- and then you were surfacing, their thinking, beautifully, but it wasn’t getting written down?
Mhm.	
	So I wanted it on the board
Mm right	
	because I wanted it to be a resource for- for many things. One, for assigning competence because when it’s up there (<i>points to board</i>) we’re able to go back to it,
Yeah, yeah.	
	and say “Oh yeah, this round idea (<i>hand motions</i>) is super important and look Guadalupe had that too.” You know what I mean- and like pull (<i>pulling gesture</i>) with their names.
I love that!	

Kamilah explained that in a class she taught after the one Mia had been in, she also wrote down students’ math ideas and used students’ names to label them. She said that doing this had

both helped her students to “feel smart” and served as a resource for herself to remember what had been said in the discussion.

Kamilah	Mia
It was good.	
	Cool
Yeah they- I couldn't tell that they felt like “Oh she's putting what I said up there,” you know like feeling competent or whatever.	
	Yeah
And um (.) even for ME because there were things being said and I forget	
	Yeah
you know like I needed like a refresher on what was said before and like going back to what they were saying	
	You can't keep all that in your head.
Yeah, no way!	

Mia added that this practice also helps to encourage math conversations, as it demonstrates that no students yet have all the math ideas, but that lots of students have useful ones. Later, Mia proposed that they talk together about planning “next steps” for Kamilah’s class, given what they had seen about students’ thinking. She proposed a way to use some of the ideas students had generated on their exit tickets as a starting point for the next lesson that Kamilah agreed to try. Mia also pointed out that Kamilah’s clarity about the mathematics she wanted students to learn in this lesson was a strength that allowed them together to watch carefully for and make use of students’ math thinking. She suggested that in their next meeting the two could think about how to build on students’ strong thinking to create more out-loud math talk. In this debrief conversation, we again see the interconnectedness of these threads of practice. We see that Mia’s support for Kamilah to develop clear articulation of the central math supported the two of them to notice, name, and work to build on the smart math ideas students that students generated.

These two threads of practice continued throughout their work in Cycles 3 and 4. Due to space constraints, I share just an overview of the development along these strands here. (Again, see Appendix D for more detailed articulation of each of the elements in Figure 7.) In cycle 3, these two threads of practice are again intertwined, as Kamilah asked for Mia’s help in constructing a “Multiple Abilities Orientation” (CITE) to launch a lesson in which students are asked to identify points of intersection for systems of linear functions using multiple representations of those functions (tables, graphs, equations, and descriptions). Kamilah had learned about this strategy in the CI training, but had not yet tried it in her own teaching. In a Multiple Abilities Orientation, teachers launch a lesson by naming for students the various math strengths that will be central in the day’s lesson, making the case that students need each other because each of them have some of these strengths and none of them have all of these strengths yet. The (20-minute) planning conversation for this cycle was taken up almost entirely by Mia and Kamilah considering the important math for the lesson, how students might make sense of various aspects, and what smart math talk was supported by the lesson and would support students’ learning together in groups, all of which they used to generate language for the Multiple Abilities Orientation.

Kamilah started her lesson with another Do Now that students worked on in pairs and then discussed as a class. In that discussion, Mia again participated by assigning competence to students' math ideas. Kamilah then launched the groupwork portion of the lesson with a Multiple Abilities Orientation, using the language she and Mia had generated together. Students engaged in groupwork for the entire lesson and struggled with important mathematical ideas, such as how to make sense of a situation in which a "point" where two lines can be seen to cross on a graph does not appear in an x-y table. Multiple groups struggled in particular with whether this point of intersection that they saw in a graph actually counted as a point, if they did not see it in their table. As the class period ended, a number of groups had just figured out that they could add points to their table with non-integer input values, and had started to do so.

In the debrief conversation for this lesson, Mia and Kamilah talked about the struggles they heard in groups and what conclusions they could draw about what students were and were not yet making sense of, and what Kamilah wanted to be sure students had opportunities to learn before she moved on to new material. They reflected together on the ways that the presence of a "big question" for the lesson allowed them to consider productively whether to revisit the content the next day or move on, and they considered ways in which Kamilah could capitalize on the smart and sensible thinking she observed in groups to launch the next day's continued exploration of the central math ideas.

In Cycle 4 Mia and Kamilah together tried out a new and challenging kind of lesson in which students were asked to lead the class in making sense of new mathematics. (This lesson was described in the opening section of this chapter.) In this cycle, both threads of centering important mathematics and naming students' strengths mattered for the success of the lesson. In the planning conversation, Mia and Kamilah discussed the central mathematics that students were being asked to make sense of together, recognizing that this lesson structure would work only if the math were meaty. (If students were asked to lead the class in doing mathematics that was rote, skill-based, or not new to the class, this lesson structure would be likely to highlight differences between students who were more and less comfortable with the material, framing them as existing in a dichotomy of those who "get it" and those who don't.) In this lesson, students were tasked with figuring out how to solve equations with Algebra Tiles by proposing "moves" that could be done with the tiles (roughly, a geometric model for ways to rewrite the equations). The underlying mathematics students were responsible for involved them justifying why their proposed "moves" were allowable and did not violate the equations. Then, during the lesson, Mia and Kamilah both worked to publicly name the mathematical strengths displayed by students who were selected randomly to lead the class from the front of the room. They planned explicitly to do this and they debriefed afterward about how it went.

Analysis of Kamilah's participation in classroom practice reveals that Kamilah and Mia took on coherent, connected, and ambitious work on classroom practice together, including numerous aspects of practice that are central to the transformation that supported Kamilah to become impressed by her students' mathematical talk. Their work to name students' smart thinking and build on it in lessons connects with Kamilah's journey of becoming "wowed" by that smart thinking. Also, her work to make clear for herself and for her students the "big" math ideas that are central in lessons supported her to both provide opportunities for students engage in smart math thinking out loud and for herself to notice, name, and build from that thinking.

4.2.4 Becoming a Kind of Teacher: Professional Vision and Identity of Competence

This section investigates Kamilah's process of *becoming a kind of teacher* by analyzing together her *figurative identity* (ongoing negotiation of meaning about ideal teaching) and *identity of competence* (sense of her own competence in relation to that shifting vision). These identity issues connect also to the TTL strands of *meaning-making* and *practice*. Developing ideas about powerful teaching involves meaning-making and is interconnected with practice in a myriad of ways. This section foregrounds processes of *becoming* a kind of teacher, looking at how this *becoming* draws on notions constructed in figured worlds of the kinds of teachers it is possible to become—Holland et al.'s notion of *figurative identity*, which relates also to Wenger's ideas about community-wide negotiations around the meaning of competence—and Kamilah's evolving notions of her own competence, which are built in relation to her evolving notions of ideal teaching.

Analysis focused on Kamilah's talk in two interviews—in September 2014 and May 2015. In both interviews, Kamilah was asked about how she saw good teaching and her perception of her own teaching strengths and challenges.

In this section, I examine this talk and consider how it suggests a particular kind of identity shift; one in which her ideas about what it means to become a powerful teacher, as well as her sense of herself in relationship to these ideas, became increasingly specified and connected to the mathematics that she gives students opportunities to learn. At the beginning of the year, Kamilah focused primarily on her wishes for students, and talked some about particular teaching tools or strategies. At the end of the year, she talked in more connected ways about how she could work to support students to have the experiences she hoped for, including by articulating more clearly ways in which her vision for students depended on building lessons around rich and multi-dimensional mathematics.

September Interview.

When asked to describe her own teaching in terms of what she's good at and what's challenging for her, Kamilah responded,

I hear lots of math talk. Students are reasoning and justifying, they are used to working in teams and as groups and struggling. I really care about my students. They are always on my mind. I think a lot about what I can do to make myself better as a teacher. I work hard to learn a lot and put what I learn into my practice. I'm willing to try things. Caring for my students is my strength.

Her talk about her own competence here sheds light on some of her current notions about good teaching: in a good teacher's classroom, students reason and justify, work in teams, and struggle. Good teachers care about their students and work hard to learn and improve their practice, being willing to take risks. In relation to each of these things, she claimed a sense of her own competence. She went on to talk about what she found challenging.

I need to work on dealing with time. This style of teaching is very different this year. The activities take a lot of time and so I need to be patient with how the learning is happening in my classroom because I'm not used to that. Letting [students] have those conversations and letting it go on another day if it needs to,

and feeling like I don't need to keep going on a pace. It gets stressful because of time and pacing.

Here we see that to her, good teachers manage time and pacing well and know when it's okay to slow down to let students have math conversations, and that she did not yet feel good at this. Later in the interview, Kamilah described how Complex Instruction related to her current practice, revealing some of what she was working to support in her classroom.

The way that I incorporate [Complex Instruction] in my teaching is all students are included, not feeling like, it's like a heterogeneous where students are not grouped into ability levels; the type of instruction I'm doing gives access to all students...

Here we see that Kamilah cares about all students being included and that she is relating inclusion to heterogeneous grouping. She goes on to describe the "type of instruction" that gives access to all students:

...and that is having group roles and enforcing that consistently, having kids have conversations about math and having to prove and justify, a lot of higher level thinking. There's checkpoints where students are responsible for being on top of- as a group they come to a checkpoint and they have to check in with me and make sure they're okay. And there's a participation quiz where they are working and I'm jotting down like how they are working as a group and we give kids feedback like, I like how you were having this conversation or that was really powerful.

Here Kamilah talked about how she saw things happening that she valued for students. At this point, this talk reads something like a list of tools or strategies (checkpoints, participation quizzes) that she did not connect with the math tasks students should be engaged in doing. She went on to describe the math culture she wanted to support for students, focusing on how she wanted students to feel and not yet on the mathematics that might support the development of this culture.

And also, giving kids, making them feel welcomed and competent about their abilities in math. And giving them, like, "Your way." Having them feel like they aren't wrong in their way of thinking. There are multiple ways you can do [math] or think about and having kids feel like, "You do have a good idea, let's build off of that or let's dig deeper." So, making students feel like it's not just one answer.

In the same interview, Kamilah was asked about her goals for her own learning with Mia. She articulated two goals, both of which she described in terms of what she was hoping for her students to experience. She did not yet articulate what *she* might learn or do that would support these goals for students.

Goal statement 1: I hope my students have a better conceptual understanding of math and that they are able to make more sense of it.

Goal statement 2: [I hope] also for kids to feel more comfortable struggling and challenging themselves and how those feelings are ok, and that's when you need to push yourself further... I want to make sure my kids are feeling safe to have those feelings. So, when they get older they will feel like they will come across a challenging situation and they will overcome it.

Again, we see evidence that Kamilah had well-articulated wishes for students, here that they learn math in a particular kind of way and that they “feel more comfortable struggling.” We see evidence that she saw “struggling” here in relation to students’ sense of safety and their feelings, but she did not yet articulate either of these goals in relation to the mathematics students are supported to learn, or what she might do as a teacher to support these things.

Across Kamilah’s talk in this first interview, we see that her description of strong teaching included some skills (e.g. managing time) and a lot of description of the kind of classroom culture that she wanted to build. She articulated this culture in terms of the kinds of math learning it supports (supporting students to discover math ideas on their own, rather than tell them things and supporting students to have conversations about math, including having to prove and justify ideas and lots of higher level thinking), some of the norms of the culture (“making students feel like it’s not just one answer”), goals of the culture (provide access to all students), teachers’ participation in the culture (provide feedback to students about group work), students’ participation in this culture (struggling productively). We don’t yet see, however, how these various pieces fit together for her or how she saw her own role in building this culture. As I demonstrate below, her talk about the same issues in the end-of-year interview was more specified and connected to particular mathematics.

May Interview.

In the end of the year interview, Kamilah’s talk conveyed a vision that had become more connected and more specified, particularly in terms of the nature of the mathematics. Talk about “access for all students” and supporting students to “feel included and competent,” to “struggle” and to have “conversations about math” gave way to connected and articulated talk:

Complex Instruction brings out all these smartnesses in our kids and like, depending on the task, and hopefully it’s a challenging task where multiple ways of looking at the problem can be highlighted, so we could assign competence to all our students. It’s like a way to differentiate my instruction too, and it gives access to the curriculum for all the students.

Here she connects the concept of “access to the curriculum for all the students,” which was something she had also mentioned in the earlier interview, to the nature of the mathematics that supports this access and connected that, in turn, to supporting students’ sense of their own math competence. Here, rather than talk about how kids might “feel,” she talks about highlighting multiple ways of looking at math and bringing out students’ “smartnesses.” Her comment about differentiating instruction here is significant in that it presents a view of “access for all students” that is markedly different from the pervasive talk in Kamilah’s school and district about “differentiating” instruction by giving different math to different students, according to teachers’ perceptions of differing ability. This is an example of ways in which

teachers' sense-making about powerful teaching can be part of the creation and maintenance of more ambitious and equitable worlds for students.

When asked here about goals for her ongoing learning, Kamilah articulated four goals, each of which was framed in terms of aspects of powerful teaching that she wanted to get better at (rather than in terms of her hopes for students). Put together with her ongoing talk about her hopes for students, including her frequent talk about wanting to support students to “struggle,” we see a development of her more specified, and more mathematics-connected ideas about the kind of teacher she could work to become.

Goal statement 1: There are things that I'm still learning about that I need more coaching or more suggestions on like, “Hey what do I do if this is-” or maybe the task wasn't rich enough or challenging enough or like could have been improved in a way that kids who were not engaged could get into the conversation.

This statement implies that the nature of the math task (whether it is “rich enough”) is closely related to supporting all her students to be engaged in mathematical conversations. She went on to list three more goals, each of which related directly to her own teaching practice.

Goal statement 2: I want to do a better job assigning competence to my students, I don't think I've done the greatest job on that.

Goal statement 3: Another thing I want to push for more next year is presenting student work and showcasing that. I don't think I've done a lot of that and I want to do more of that. Displaying [student work] a lot more in my classroom.

Goal statement 4: Um, having kids come up [to the front of the classroom] and present, I want to do that more next year.

Kamilah was asked also about what she learned in her work with Mia. Her responses shed light again on her developing sense of her own competence, which is tied up in her developing sense of competent teaching itself. Here are Kamilah's articulations of her learning:

Assigning competence to my students, like recognizing my students' smartness when they're doing math. Kind of like boost their confidence and create an environment where it's not one person contributing to the group or like doing all the learning but like everyone has something to share.

Here Kamilah not only articulated “recognizing my students' smartness when they're doing math” as part of her learning, but she connected it clearly with creating “an environment” in which there is more equitable participation in groups. It is interesting to notice also that she named “assigning competence” as both something she has learned and a goal for her ongoing learning. (For me, this is evidence of her shifting conception of teaching from a collection of practices one might master to practices to keep learning over time.)

Kamilah named other aspects of her own learning that relate to what students are doing in her class in relation to the mathematics tasks she is learning to engage them with.

[Supporting students in] focusing really deep on one problem, and really making sense of it and understanding it and how to, like delve into a like a really complex and difficult and challenging problem with a group and applying group roles with that.

I remember at the beginning of the year, I really, really had to remind my students that it's OK to struggle, or to feel that way, or to feel lost or confused, and so CI really supports that because of- the tasks that we do are challenging and [students] have to push themselves in order to understand what they are doing. So, they kind of have to go through the struggle.

Between these two interviews, a clear picture emerges relating to processes of Kamilah *becoming* a kind of teacher. Her notions of what kind of teacher it is possible to become (which Holland et al. and Wenger remind us are constantly undergoing social negotiation embedded in figured worlds) shift in ways that are more integrated, specified and connected to mathematics. Her talk of her own competence in relation to this shifting vision of powerful teaching demonstrates a sense of deepening competence, connected to ongoing goals for her own learning. This shift tells a story of Kamilah *becoming* a kind of teacher who works continually toward a well-elaborated vision of ambitious and equitable teaching.

In the next, and final, analytic section, I examine another aspect of Kamilah's processes of *becoming* and *belonging*: her shifting positioning with respect to Mia.

4.2.5 Positioning with Respect to the Coach

This section presents findings from analyses of a strand of TTL that bridges processes of *becoming* and *belonging*. As discussed in Chapters 2 and 3, this is an aspect of identity (*becoming*) that what Wood (2013) calls *micro-identity*, or the moment-to-moment experiences of positioning that take place for learners. Because the moments of micro-identity most available in my data are those that relate to the relative positions of Kamilah and Mia, this analytic strand collapses with an aspect of *belonging*: Kamilah's sense of belonging to the mini-community of herself with Mia, or her sense of *togetherness* with Mia. I examine this strand briefly here, connecting it with analyses presented in Chapter 6.¹⁶

The roles and positions that Kamilah experiences and takes up in her work with Mia are central foci in the analyses in Chapter 6, where I consider how Kamilah and Heather each experience different and shifting *frames* for their work with Mia, understanding differently at different times what their work together is all about. In that chapter, I consider how Kamilah makes sense of her work with Mia, what it's about, sensible forms of participation in this work, and how she and Mia are each positioned. There I discuss findings that suggest that Kamilah's sense of her own and Mia's roles and positions in relationship to each other shifted over time through three rough phases, summarized in Table 15 below.

¹⁶ Deeper analysis of micro-identity is certainly available in the data I have, and is an intended focus of further study. I treat the subject briefly here to allow for reflections on this strand as it relates to the multiple processes of TTL.

Table 15. Shifting positions and roles for Kamilah and Mia throughout their work together

	Phase 1	Phase 2	Phase 3
Kamilah is	<ul style="list-style-type: none"> • A novice with deficits, which Mia will work to fix. • The sole leader of her classroom, who performs for Mia's evaluations. 	<ul style="list-style-type: none"> • A novice teacher in need of help. • A teacher who is working to get better at teaching. • The central leader of her classroom, with some softening of this position, as she invites Mia to co-lead some with her. 	<ul style="list-style-type: none"> • Teacher with meaningful expertise, who is also learning. • Leader of the classroom <i>and</i> co-teacher with Mia. • Ongoing learner, sense-maker, innovator.
Mia is	<ul style="list-style-type: none"> • A teaching expert, with teaching strengths Kamilah aspires to. • An evaluator who will fix Kamilah's deficits. • An outsider to the classroom community. 	<ul style="list-style-type: none"> • An expert with more and better ideas about good teaching. • A resource for Kamilah's improvement. • A helper. • An outsider to the classroom community, who is sometimes invited in. 	<ul style="list-style-type: none"> • Expert <i>and</i> learner • Resource for Kamilah's ongoing learning. • Member of the classroom community. • Ongoing learner, sense-maker, innovator.

These shifting positions are evidenced in part by Kamilah's shifting participation. As Wood argues, positions can be inferred from participants in interactions *acting as if* they are positioned in particular ways with respect to other interlocutors. Kamilah's participation, examined in a previous section in this chapter, as well as in Chapter 6, shifts in ways that are consistent with the shifting positions outlined above. For example, as she comes to ask deeper questions that do not suggest the presence of simple answers, she *acts as if* she is a co-investigator with Mia into substantive issues of teaching.

Over time, Kamilah and Mia's positions became less distinct. Their increasing togetherness is related, as I discuss in Chapter 6, to the ways in which teaching itself—and by extension, learning about teaching—are being understood. As discussed in greater depth there, Stages 1 and 2 are connected to a conception of teaching, and of learning teaching, that renders hierarchical positioning logical. Teaching is understood as a collection of best practices and learning teaching is understood as increasing expertise with the practices of teaching. Within this understanding of teaching, it makes sense to construct hierarchical models for teaching expertise, and for Mia and Kamilah to occupy different locations on these models. Between these first two stages, Mia and Kamilah got somewhat closer in that Kamilah was repeatedly positioned (by Mia and sometimes by herself) as a competent teacher with meaningful teaching strengths, which invited her to occupy a more expert position along this hierarchy. Simultaneously, Mia did considerable work to complicate a simplistic positioning of herself as the expert who had all the answers (e.g. by wondering aloud, naming her mistakes and what she doesn't know, trying things that she then discusses as not having worked how she thought they would, etc.). Resulting from this work, Kamilah may have seen her as a less distant expert.

However, by the third stage, the two had worked together to explore a different conception of teaching that does not lend itself to linear hierarchies and positions along them. Their conversations were oriented instead to an understanding of teaching as complex, contingent, and requiring ongoing innovation and collaboration. In such a conception, each could claim different kinds of expertise and be positioned as having room to investigate and continue learning about teaching. To be clear, this does not imply that Mia ceased to be seen as having expertise, nor that Mia and Kamilah were then presumed to be the same in relation to teaching,

but that they both occupied space of expertise *and* exploration within the broad and complex field of what can be investigated in teaching. These ideas are represented in Figure 8 below.

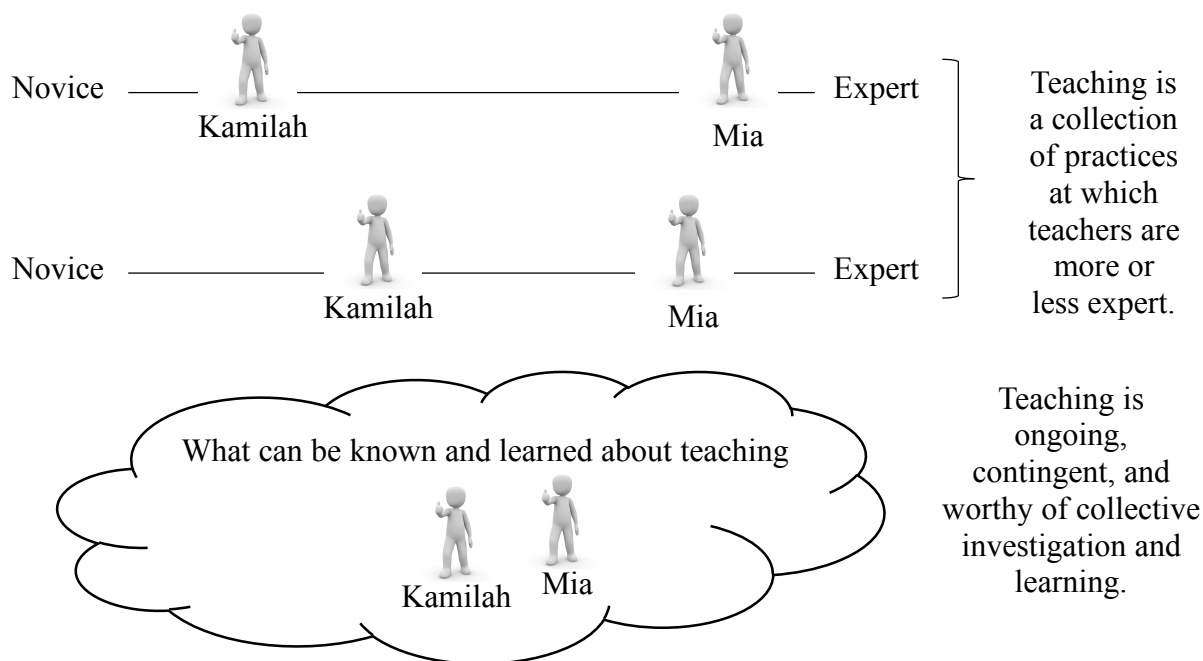


Figure 8. Kamilah’s shifting positions in relationship to Mia.

As well as coming closer in these spatial analogies of positioning, Mia and Kamilah achieved a sense of togetherness in a set of shared work and shared goals. In her interview in May, Kamilah articulated some of this sense of shared work. She was asked whether her work with Mia had supported her previously-articulated goal of “getting my kids to talk more about math.” Kamilah responded with a strong affirmative, including with the quote that began this chapter, in which she described that, “there are days where I’m just really wowed by my kids.” The interviewer (a research assistant) then asked about particular things Mia may have done that supported this. Kamilah responded:

I think Mia has, you know, helped me create this classroom environment where kids could feel like [students] can do that [take risks in front of the class]. So, then it’s caused for that to happen. Does that make sense? I don’t think it’s specific like she said to say *this* and *this* is what happened, you know? It’s like [we’ve] kinda built off each other and created that environment.

Here she describes the sense that she and Mia worked *together* in ways that involved mutual, complementary contribution (“built off each other”) to develop a particular kind of classroom environment.

Again, both types of increasing “togetherness” (in position, and in shared goals and practice) are evidenced by Kamilah’s shifting participation (see Section 4.2.2) as well as by the shifting nature of their talk and their teaching. In other words, over time, Kamilah and Mia came to take risks together (e.g. in Cycle 4 supporting students to lead the new mathematics in a lesson), wonder aloud about student thinking together (e.g. in debriefing Cycle 3, when they

wonder together about students' sense-making about points of intersection), and they proposed and revised ideas together.

Kamilah's sense of this increased togetherness, and of its connection to participation and shared goals, can be seen in her talk in her end-of-year interview as well.

I really appreciated like, it wasn't just her just observing me and then like writing down notes and then like, "Oh this is how your lesson went," but like she actually participated in the lesson and like would jump in with conversations or like, she wasn't there just to observe, she was there to support my kids and my students and to, if she could help them, she would do it, you know? Instead of just being an observer and not saying a word.

Here we see that Mia's participation in Kamilah's class supported Kamilah to see a new potential role for Mia (participator, rather than observer) and shared goals (supporting students). This new role for Mia and the shared goals, invited Kamilah into a position of alignment with Mia (both people who participate in the classroom toward a shared goal). She spoke to the importance of shared goals in her sense of alignment with Mia again:

I think the more that I got to see her and work with her, the more comfortable I felt. Um, and then knowing that she's coming in to support my kids and not to just observe me made me feel a lot more comfortable too.

Kamilah's participation with Mia and her talk about working with Mia provide evidence that she experienced a sense of more egalitarian positioning with Mia over time, as well as an increasing sense of 'togetherness' in shared goals of supporting students and learning about teaching.

4.2.6 Summary of Kamilah's Transformative Teacher Learning

Through examination of each strand of TTL for Kamilah, different aspects of her overall transformation have come into focus. The meanings she made in talk with Mia shifted to become more consistent with the ambitious and equitable world that she was working to build. Her participation in thinking and talking about teaching deepened and supported conversations in which meaningful co-investigation of teaching was increasingly available. She engaged with Mia in planning for, trying out, and reflecting on new classroom practices that are part of this ambitious and equitable world. Kamilah identified with an increasingly articulated and mathematics-connected vision for powerful teaching and learning. Increasing 'togetherness' in Kamilah's work with Mia supported the two to work together toward shared goals for students. These distinct (but not at all separate) stories of learning processes weave together to build a more articulated understanding of what happened for Kamilah that led to the transformation described to open the chapter and to her increased sense of being "wowed" by her students.

At the end of her time with Mia, Kamilah had not reached the end of any of these learning processes. Indeed, they do not end, as each continues to be negotiated throughout a teacher's work life. Kamilah will, as long as she is engaged in teaching, continue to make meanings of it, participate in various practices around and in it, develop vision and identity with respect to teaching, and become connected with various people and communities relevant to her work. We cannot predict the directions those negotiations will take, nor can we be sure that

Kamilah will continue to have the support necessary to continue to work toward the creation and maintenance of ambitious and equitable teaching. However, it is reasonable to interpret the transformation that took place for Kamilah across this one school year as meaningful and to expect that it will be part of her ongoing development as a teacher.

It stands to reason that if coaches aim to support learning for teachers of the types we have seen Kamilah engage in, they must develop rich practices that provide multi-faceted supports. For the remainder of this chapter, I turn my attention to Mia's coaching work with Kamilah, looking for coaching practices that can be seen to support multiple strands of Kamilah's learning.

4.3 Coaching that Supported Kamilah's Transformative Learning

As I transition into a focus on coaching in this relationship, I must flag a change in analytic approach and rhetorical structure. My analyses of Kamilah's learning were aimed at uncovering sub-processes that made up the whole, and thus a strand-by-strand presentation of those findings is sensible. However, considering a strand-by-strand approach to coaching (in which we might look for practices that aim at supporting teachers' meaning-making, and different practices that aim at supporting teachers' classroom practice, and still others that aim at supporting teachers' identity processes alone) is nonsensical. As we have seen, the various strands of learning are deeply interrelated, and thus support for those strands we might hope would be coherent and connected.

To examine the coaching practices that supported Kamilah's transformative learning, I started by looking closely at Mia's coaching during two parts of their work together that surfaced as particularly powerful. Here I focused in on a stretch of interaction early in the planning conversation for Cycle 2 (in which Kamilah was looking for help supporting Manuel, who she talked about as "failing") and on the planning and teaching of the lesson in Cycle 4, which I described to open this chapter. (These two segments, which I identified as particularly powerful, were the same two segments that Kamilah talked about in her follow up interview 1.5 years after her coaching work with Mia had ended, in response to an open question about what she remembered getting from their work together.) In each of these segments, I looked closely at Mia's work, asking "What is Mia doing and how are her actions related to Kamilah's learning?" Then, as observations about coaching surfaced from these segments, I considered them in relation to the rest of the data corpus, looking for those practices that showed up across the data. I grouped and regrouped the actions I saw, making choices about breadth of groupings that would best allow for the examination of continuous work over time to support TTL. This process is discussed in more detail in Chapter 3.

In this section, I share findings from this examination of Mia's coaching work with Kamilah, highlighting three interconnected coaching practices that I found to have supported Kamilah's learning: (1) naming and building from an expansive view of Kamilah's teaching strengths; (2) interrogating mathematical content (to develop empathy for students' thinking and learning as well as to understand what students need opportunities to make sense of); and (3) working from the explicit assumption that all students are mathematically smart. In the sections that follow, I provide an overview of the coaching interactions between Mia and Kamilah and demonstrate how each of these broad practices played out in different coaching cycles. Throughout the discussion of coaching practice, I consider connections between these practices

and various strands of Kamilah’s learning. I close with summative consideration of the support that these practices provided for various aspects of Kamilah’s learning across the year.

In her coaching work, Mia relied on the three practices named above, leaning on them with different emphases across the coaching cycles. Table 16 represents the extent to which Mia relied on each practice in each coaching cycle, with darker shading representing greater emphasis.

Table 16. Relative emphases of each of three coaching practice in each Kamilah-Mia coaching cycle

	Interrogating content	Students smart	Teacher strengths
Cycle 1	Medium	Low	High
Cycle 2	High	High	Low
Cycle 3	High	High	Medium
Cycle 4	High	High	High

The sections that follow progress cycle-by-cycle, providing both an overview of the coaching that took place and more focused look at data from those places in the interactions in which these three practices came most strongly and explicitly into play. For example, in Cycle 1, Mia structured a debrief conversation that allowed her to name and build from some of Kamilah’s teaching strengths. In the planning conversation for Cycle 2, Kamilah posed a question that Mia took as an opportunity to both interrogate content and make explicit the assumption that all students are smart. In the sections that follow, I emphasize these conversations, providing other information about the coaching cycles to give readers an understanding of the ongoing work these conversations were situated within.

4.3.1 Coaching from an Expansive View of Teacher Strengths in Cycle 1

In the first coaching cycle, Mia created structures in which Kamilah’s strengths were named and built upon explicitly (practice 1), setting the stage for their ongoing work together. She also supported Kamilah to think more about the nature of the mathematical content of the lesson (practice 2), here connecting that to Kamilah’s desire to support students to talk together about mathematics. However, since practice 2 is central to Mia’s coaching in Cycle 2, I will focus my discussion here around practice 1 (naming and building from teachers’ strengths in relation to an ambitious vision of teaching), which Mia employed primarily in the debrief conversation. Below, I describe briefly Mia’s and Kamilah’s work together in the planning conversation and the lesson, then examine more closely talk in the debrief conversation that supported a more expansive view of Kamilah’s teaching strengths. As I share that talk, I consider ways in which it provided various kinds of opportunities for Kamilah’s transformative teacher learning.

In this first coaching cycle, Kamilah asked Mia to help her support better group work. She was concerned about a few students who spent time with off-task conversations and students who she described as not yet willing to talk about math in their groups. After laying out these concerns, Kamilah began to describe the lesson she had planned, which was about expressing large and small numbers using scientific notation. Mia interjected a few questions and comments, asking Kamilah to consider the nature of the math content and what, exactly, she might hope that students would be talking about in their groups. Out of these considerations, the two concluded that there was insufficient richness in the mathematics to support constructive group conversations and decided to organize students into pairs for this lesson.

Kamilah taught the lesson as the two had discussed, spending most of her time circulating, responding to students' questions, and checking with student pairs, sometimes supporting pairs who were off task to get back on task and sometimes asking students questions about the math they had done. Mia mostly watched and took notes, listening to students and observing Kamilah's interactions with pairs. A few times during the lesson, she spoke briefly with Kamilah.

Mia began the debrief conversation the next day by thanking Kamilah and setting up a conversation protocol focused on Kamilah's teaching strengths and questions:

Kamilah	Mia
	Thank you for letting me come into your classroom.
Of course.	
	I really enjoyed it. Um okay. (<i>Opens her notebook.</i>) So if we take a few minutes to um think both-like start with some writing. I am going to do it too and then we will talk about it.
Okay.	
	I like to do it in this T-chart kind of way (<i>drawing a large "T"</i>) so the strengths of your own or of your class or of your kids (<i>writing "strengths" at the top of the left column of the t-chart</i>), but I would like you to try to own them. So, what you feel like you are really good at and strong with that happened today in class or that you feel you know connected to for today? And um questions (<i>writing "questions" at the top of the right column</i>). What are you feeling curious about, wanting to work on, yeah?
Mhm, okay.	

After writing quietly for about 6 minutes, Mia asked Kamilah to share what she had written. The strengths that Kamilah articulated about her own teaching point to ways in which she was making sense of both herself as a teacher and of strong teaching. Kamilah named 3 strengths, taking 1 minute 47 seconds to do so. I have condensed her talk about these strengths below.

Strength 1: I really liked the video. I think it was really cool for students to see what the power of 10 was and I think it was interesting for them to see. There was the comments they were making like, "Oh, that's nasty." But... they were still thinking about what that means. You know?

Strength 2: I noticed proximity works well with my kids, and if they're talking and I come over, they'll stop... In Table 1, who wasn't getting anything started, but when I came over, there was that motivation to, "Okay let me actually read or try and do something. Let me work with a calculator, or let me write something down." So, I feel like my kids do feel like they do need to do something in my class. I feel like it's positive that they are feeling like I am coming over and that they do have expectations and they are trying to, you know, fulfill it.

Strength 3: The Do Now problem I think helped [students] see patterns, early on and then it kind of overflowed and they were able to see- I mean, not all students, but I think most students were able to see, "okay the decimal is moving" or "when we add a zero, this is happening." I think the Do Now problem kind of helped them with that.

Kamilah's talk about her own strengths here points us to some of how she was seeing herself and seeing good teaching in this conversation, and connects with the findings along that strand of her learning in Section 4.2.4. (It is often challenging for teachers to name what they are good at and naming only three strengths is not at all unusual for similar conversations across my data set.) Here we see that students' math learning was central for Kamilah, as two of the three strengths she listed related to aspects of the lesson that she perceived as supportive of students' "seeing" math ideas that mattered to her in the lesson. However, her articulation here of her strengths, especially in contrast to Mia's articulation, which I share below, does not point to a particularly expansive or connected vision of teaching and learning, nor does it attribute to herself particularly 'meaty' strengths toward that vision. (To be clear, this is not evidence that Kamilah does not have aspects of an expansive vision for teaching, just that this talk doesn't point to such here. In fact, as discussed in Section 4.2.4, her talk in interviews suggested that she did have *aspects* of such a vision, just that these aspects may not yet have been connected or relate clearly yet to the particularities of the math she provided students opportunities to learn.)

After Kamilah had listed these three strengths, she posed five questions, which I have enumerated below, again condensing her words. These questions point us to how Kamilah was thinking about teaching, and which areas of inquiry were salient for her.

Question 1: So the flow of class... I wonder what you were thinking about the flow. Was it too slow? Like how much should I have been pushing forward?

Question 2: Pair work versus group work, like how to use that... deciding when to use pairs or groups.

Question 3: What should I be doing at [pair] check-ins? Like if I'm doing pair work, what kind of questions should I be asking? Is it kind of like a checkpoint?

Question 4: Changing seats. Like I feel like Tony and Manuel are not working very well together, so like if- you know they have seats already, because I try to be random. But I have seats and they are not working out, how long do I keep them together until I move them?

Question 5: Just kind of like- because Table 1 is the one that is struggling with getting stuff done. They tend to be unfocused. So how can I help them?

In Kamilah's questions, we get a sense for what she was attending to in this conversation, namely "flow," how to group students, how to interact with student pairs, and how to support students to stay "on task." These concerns are on the level of "how to" do things in class and do not suggest that Kamilah was yet inquiring into the underlying causes of the challenges she was experiencing. Mia's talk, which we will see below, worked to dig under some of Kamilah's questions, connecting the particularities of classroom happenings, including teaching practice, to underlying ideas about teaching and learning.

Mia listened to Kamilah's questions, inserting only minimal verbal reactions, (such as "uh huh" or "yeah"). When Kamilah finished, she said, "Okay cool" and then transitioned into talk about the strengths that she observed in the class and in Kamilah's teaching. She talked for 7 minutes, 20 seconds about 9 distinct but connected strengths that she observed, often connecting

these strengths to Kamilah’s priority of supporting students to talk with each other about math or to the questions Kamilah had articulated. As she enumerated strengths, Mia drew connections between moments of practice (what happened in class) and an ambitious and equitable vision for teaching (why this strength matters for teaching and learning). In doing so, this talk offered opportunities for new meaning-making about what is possible and desirable in classrooms, new ideas about powerful teaching practice, and invited Kamilah to identify as a teacher with meaningful competence in the realm of ambitious and equitable teaching. Mia’s talk about Kamilah’s strengths was too extensive to include in full here (lines 249-522 in the transcript, see Appendix E), so I share a few examples below.

Some strengths that Mia described were rooted in what students were doing, rather than in Kamilah’s actions. For example, in the relatively short segment below, Mia told Kamilah that she had “heard student voices,” which was directly connected to a priority that Kamilah had shared related to her goals for their work together (277-307).

Kamilah	Mia
	I heard student voices. You know I know you have articulated- in my experience with tiny classes and first period is it’s really hard to get any momentum happening, and maybe this is related to your question about flow.
Mhm, right.	
	I feel like it's a first-period-small-class-always problem (<i>laughs</i>).
Yeah.	
	I was hearing voices and they were reading [the task] aloud to each other and I couldn’t remember if you told them to or if they had just taken that up as a norm.
Yeah, that is the norm, yeah.	
	That’s awesome. That’s what I thought because I didn’t hear you- I don’t think I remember hearing you.
No, I didn’t say it. And yeah when they broke into groups I thought about that and I looked around and I noticed that they were already reading to each other.	
	Yeah. Almost all the pairs just naturally started by reading aloud, which does multiple things. It gives more access to kids. It also breaks that silence barrier, so it makes talking easier because something has already been spoken, right?
Mhm, yeah.	

In this example, Mia commented on a strength of the class, drawing the conclusion that students’ talk with each other was evidence that they were taking up a norm that Kamilah had worked to support. In her talk about why this matters, she named aspects of powerful teaching—“hearing student voices,” providing “access to kids,” and “making talking easier.” She also stated that achieving these things is hard, thus inviting Kamilah to interpret them as impressive and meaningful toward ambitious teaching.

In listing other strengths, Mia talked about what she had seen Kamilah do in class, connecting Kamilah’s actions to aspects of her (Mia’s) vision of powerful teaching and learning. In the following example (411-435), Mia talked about an interaction she overheard between Kamilah and one pair of students, and why she saw the choices Kamilah made in that interaction as powerful for supporting her students’ learning.

Kamilah	Mia
	Oh! You were making a decision about a calculator. The kid said, “But we are not supposed to use a calculator.” And you said, “I’m okay with you using a calculator. The biggest thing that I want you to notice is-” And you pointed them to the content.
Mhm.	
	So, for me that was powerful. You were telling them, “What matters here is the learning and here is the exact learning that I want to see happening.”
Right. Mmmhmmm.	
	So the tools or like the rules are less important than the learning.
Right, right. Right, the answer (<i>inaudible</i>).	
	Or like the rules about what it says on the paper. Like as long as you have access to this learning, that’s what I care about. So, I was really appreciating that.

Here, Mia pointed out something that Kamilah had not noticed as mattering. In doing so, she expanded Kamilah’s understanding of her own strengths and named some aspects of powerful teaching: here a focus on student learning, rather than on particular “tools or rules.” In the following example (lines 436 to 492), Mia described a strength she had observed of Kamilah’s in relation to attending to and making sense of students’ mathematical thinking. This example is particularly significant in that Mia used it to set the stage for future work. As their coaching work continued beyond Cycle 1, Mia continued to return to this strength and use it to support collective development of teaching practice that was new for Kamilah.

Kamilah	Mia
	You said something to a kid- as I was writing this- I can’t remember. Maybe you can, because I wish I could remember the details. What I wrote down was- and I remember this. You said to a kid- I don’t even remember who, “You made an awesome connection here.” And you helped the kid connect something they had done to the problem. To the task the way it was printed in a way- and I don’t remember. I wish I could (<i>inaudible</i>).
Oh, I think it was right here (<i>points</i>).	
	Okay. And what was the connection?
I think it was like um moving the decimal and looking at the exponent.	
	So, it was something- what I remember about it, at least my impression of it, was that it wasn’t a connection that you were expecting. Like you were listening to the kid,
Oh right.	
	and you heard the kid say this thing. And you recognized the math in what they said and you recognized how that math was connected to the task,
Right.	
	even though it wasn’t exactly what the task was asking for.
Yeah.	
	So, you were helping them to see how what they were doing was connected like to the formal task.
Oh yeah.	
	Does that feel right?
I am just trying to remember what it was.	

Kamilah	Mia
	I wish I wrote- took better notes. Err. Grr (<i>snaps</i>).
(<i>laughs</i>)	
	Anyway, it was a moment like that I think. So, what it told me was that you were listening for what the kids were actually saying, not for like, “Are they right?”
Yeah.	
	Or, “Are they doing the thing I’m expecting?”
Yeah.	
	But you are listening to what they are actually doing, you were making sense of it, and then helping the kids to see how it made sense. Which is a super powerful pedagogical skill.
Mhm, okay (<i>smiles</i>).	

Here Mia named some aspects of powerful teaching, namely, listening closely to students’ math talk and making sense of how students are thinking. She contrasted this with a practice of listening only for whether students are “right” and invited Kamilah to identify as a teacher with a “super powerful pedagogical skill.”

It is interesting to notice that in some sense, Kamilah’s strengths that Mia points out are at the same time large and small. Her talk points to small moments in class, which Kamilah might not have noticed, and highlights them as significant by connecting them with big ideas about ambitious teaching and learning. This feature of these strengths served multiple learning purposes. It invited Kamilah to be impressed by herself, to take small moments and notice what was impressive about them. It allowed for consideration of the ways in which the big ideas of teaching, our large and lofty goals, are instantiated (or not) in small moments of classroom instruction. It supported Kamilah’s development of a powerful vision of teaching in that as this vision was described, she was invited to connect with it; that is, it was described in a way that was not separate from her, not about some future set of goals to aspire toward, but rather was connected with what was already happening in her practice.

After Mia listed those strengths of Kamilah’s that she had observed in the lesson, she directed the conversation back to Kamilah’s questions. First, she turned Kamilah’s question about when to use pairs or groups back to her, asking for her thoughts before sharing some of her own thinking (transcript lines 527-599). Then, she suggested that Kamilah’s two other questions, about “flow” and about what to ask students during “check-ins,” were connected to each other and she connected these questions with one of Kamilah’s named strengths and used that to propose an area of inquiry for the two to take up together. (631-658)

Kamilah	Mia
	Um I feel like those are a little bit connected.
Okay.	
	... I think you want more opportunities- you know what you did with that group where you were like, “you made an awesome connection.”
Mmmhmm.	
	Listening to the kid make sense of something?
Mhm	
	That allowed you to connect with their math thinking. Helped to connect their math thinking to the task, which helps them learn.
Mmmhmm.	
	But you can’t do that if you are not hearing that from kids.

Kamilah	Mia
Right.	
	Right? And you could there because you were.
Right.	
	So, I wonder about how we could think about how to get them producing [more] math, in writing or in talk that then is available for you to do more of that with.
Okay.	
	Do you know what I mean?

Here Mia basically restated a question Kamilah had already posed, but did so in way that connected to a previously-identified strength of Kamilah’s. In her restatement, she framed it not as a simple question with a simple solution, but as an area of inquiry to investigate together.

The conversation went on from there, with considerations of ways to support students to develop ideas about what it sounds and looks like for groups of students to do powerful math together. They considered ways that sentence frames might be used to support this in her class, and how that connects or might connect to their use of group roles. They considered strategies for providing public feedback to the class about powerful group work when it’s happening, with Mia commenting that Kamilah could work on some of those strategies with her teaching team.

In this first coaching cycle, Mia relied heavily on the coaching practice of naming and building from teachers’ strengths, organizing the debrief conversation to make explicit space for doing this together with Kamilah. In this strengths-based talk, opportunities were created for multiple aspects of Kamilah’s learning.

Also in this coaching cycle, particularly in the planning conversation, Mia engaged in some interrogation of the mathematical content of the lesson. Here that took the form of asking Kamilah to consider what sense-making was available for students in the lesson and the implications of what was (and wasn’t) available for what teaching decisions might be needed to support productive group interactions. Thus, this interrogation of content supported opportunities for new meaning-making and for making new sense of classroom practice. This practice of interrogating mathematical content is discussed in more detail in the following section.

Note: Kamilah’s learning exists both in in-the-moment negotiations related to teaching and in evolutions that took place over time. Learning is supported in individual interactions, but spans beyond them. This first coaching cycle was the start of this work. While it contained opportunities for learning, it can also be understood as the foundation for the rest of the coaching work. Mia was not working here to support a self-contained experience of learning that would end when she left, but to begin work that would continue throughout the year.

4.3.2 Students’ Smartness and Interrogating Mathematics in Cycle 2

In the planning conversation for the second cycle, Kamilah opened a topic of conversation that Mia took as an opportunity to employ two coaching practices: the interrogation of mathematical content and working from the assumption that all students are smart. In this cycle, she continued to name and build from Kamilah strengths, but this practice was less emphasized in this coaching cycle. She used the other two practices to support Kamilah to make new, more empathetic sense of a struggling student and to build, with Kamilah, pieces of classroom practice that provided opportunities for him and for other students to make sense of important math (recall the work discussed in Section 4.2.3 on the concept of angle). Below I share the unfolding of this planning conversation, demonstrating how these coaching practices

together functioned to support Kamilah in the development of new understandings of a student and of ways that classroom instruction might respond to students' mathematical struggles.

Kamilah began the planning conversation in this second coaching cycle by asking Mia for help figuring out how to support Manuel, whom she described as "failing" most of his classes and being "really lost." She explained that he said he has math anxiety, but, "I don't know if I a hundred percent believe it. I think he's scared of math and once he sees it he gets afraid, but then I don't see that motivation in him." Mia responded by talking about ways that student behaviors that might be perceived as evidence of lack of motivation could also result from a student's history of being convinced that he is not smart. Mia then asked Kamilah, "Do you know what he's good at yet? Or what he's smart at?" Kamilah struggled with this question and described a recent lesson about congruence in which, "I explained to him what congruent is and... he was doing it but it wasn't right." She went on to explain that "the activity that we were doing was very hands on... and so it's worrying me that he still..." (You may recall that this moment was examined in Section 4.2.1, as an example of ways in which students' math challenges occurred to Kamilah as barriers.)

Another coach who was present (and mostly observing) suggested that Manuel might not understand what an angle is. From there, Mia opened a discussion about the nature of the concept of angle, pointing out that it is often a difficult concept for students, more abstract than teachers generally assume. Below is an excerpt of Mia's talk about this.

But like, where is the angle? It's nowhere. There is no- there's not a thing I can point to and say that's the angle. We try, we represent it in diagrams, but then, it's like that non-concreteness, I think, is weird. Which is very different than a point or a line, right? Um, because you could say, well like okay a point is right THERE. Where's the angle? Is it here (*pointing to the space between the rays in a diagram of an angle*)? So, it's- is it something like area? How much space is it taking up? Right, so this idea of an angle as a measure of how open something is? Like how open is the door? That in itself I think is sort of abstract, or less totally obvious and concrete I think.

She went on to explain that this challenge

...could underlie some things that otherwise you're like, how are you not seeing this? Because if [Manuel] is saying- if he understands that congruence means sameness, and he does understand that, but he doesn't understand what an angle is, then what is the same? He might be looking at something that IS the same and saying congruent.

Through this sequence of interactions, Mia made explicit the assumption that Manuel *is* smart at something, even if we do not yet know what that is and she problematized the concept of 'angle,' which Kamilah had not yet considered as challenging for students. Through those two moves, she helped Kamilah to see a way that Manuel's struggles might be sensible. She also set the stage for Kamilah to be impressed when students *did* demonstrate understanding of angles, which was relevant to the lesson they were planning in this conversation. Later in the planning conversation, Mia returned to question of Manuel's smartness, framing it as both an important and a challenging question.

Kamilah	Mia
	So, do you have any experience- do you have any- can you call to your memory right now experience with things yet that he IS smart at, or that you see in him? (.) And it's okay to say no, cuz that happens. That doesn't make you a bad teacher, I promise. (<i>laughs</i>)
Yeah, Um, I'm trying to think (<i>6s pause</i>). I mean in terms of like his math skills, right? Or anything...	
	Or understanding a way of making sense of thing, or does he know the right question to ask that proves something, or does he, you know, that sort of "math" but like the broad definition of math that involved finding ways to do it, participating in practices.
I guess it's still, I'm learning more, I mean it's still early.	
	Yeah okay. That's totally a good answer. I mean it's an honest answer, and it's one that I think is constructive for making progress. So, if we want to figure out how to support him, then sometime- so what that might mean is giving ourselves opportunities to listen and watch closely and try to learn that.

In this sequence, Mia implied that there must be an answer to the question, "How is Manuel smart?" and suggested that it's okay to not yet have an answer, but framed it as their (hers and Kamilah's) collective responsibility to look for it.

Out of this conversation, Mia and Kamilah went on to plan an introductory activity for the next day's lesson that surfaced students' thinking about the meaning of angles. In this activity, which was discussed in a previous section, students were asked for their ideas about what an angle is and Kamilah and Mia together collected these ideas on the board and then led a brief discussion highlighting the strong sense-making of students and putting students' various ideas together to form a more complete description of angles. The rest of the lesson involved an activity in which students drew triangles, tore off their "corners," and lined them up to see (Kamilah hoped) that in every case, the angles in a triangle come together to form a straight line, or a 180° angle.

In the debrief conversation, Mia and Kamilah looked together at student work and considered evidence they had seen and heard in class about how students were making sense of both angles and the Triangle Sum Theorem. They concluded that students made reasonably strong sense of angles in the opening discussion and that many of them were still struggling with whether the angles of triangles would *always* add to the same amount and why that might be the case. Mia pointed out that she and Kamilah together had been clear on the particularities of the math learning they wanted to support in the opening discussion about angles and less so in the portion of the lesson dealing with triangles. They considered how they might create a next lesson that would build on students' sensible (and partial) thinking about triangles to better support their understanding of the triangle sum theorem. They considered the strategies they had used and might use in the future to support students to share their smart math ideas and to build on those ideas constructively.

In this coaching cycle, Mia used the opening conversation about supporting Manuel to lean heavily on the practices of interrogating mathematical content and working from the explicit assumption that all students are mathematically smart. In doing so, she supported multiple

aspects of Kamilah’s learning. These two practices together supported a richer view of the mathematical content and in turn a more empathetic view of what students must grapple with as they learn this content. That, combined with the statement that Manuel *must* be smart at math in some ways, supported a shift of focus from all the ways in which Manuel is not meeting expectations to what it might look like to support Manuel, and other students, to have access to engaging meaningfully with mathematics. Out of this shift of focus, Mia and Kamilah engaged together in the development of classroom practice to do this and, in the debrief, in making sense of students’ mathematical thinking. Also, Mia’s questions about how Manuel is smart, and her talk about the challenges inherent in answering that question, implied the claim that it is the job of an equity-focused teacher to know, or work to know, how each of her students is smart.

4.3.3 Interrogating Content to Support and Name Students’ Smart Thinking in Cycle 3

In the third coaching cycle, Mia and Kamilah continued to interrogate mathematical content, using that content to make space for, and then to notice and name, students’ smart math thinking. Their work together in the debrief conversation, which was largely about making sense of students’ thinking, relied on Kamilah’s strength of listening well to students and making sense of what they are doing without intervening (which she had done again during the lesson). In the planning conversation, Kamilah was largely focused on considering her goals for strong student thinking as she asked Mia for support in developing a Multiple Abilities Launch (This conversation was featured section 4.2.3 in the discussion of *threads of classroom practice*), foregrounding for students the multiple and various ways of being mathematically smart would be necessary for each group to succeed with that day’s math task. During the lesson—in which groups of students were asked to determine whether two linear functions had a point of intersection and to support their conclusion with x - y tables, graphs, and equations—students struggled. By the end of class, no groups had yet finished their conversations or come to firm conclusions that they were ready to defend.

At the beginning of the debrief conversation, when Mia asked Kamilah how she felt about the lesson, Kamilah responded, “...there was a lot of confusion, but I feel like I have to tell myself that the confusion was good.” They spent a large portion of this conversation sharing with each other how they heard various groups of students making sense of the mathematics. They laughed and expressed both surprise and joy in the ways in which students struggled to make sense of the mathematics. They talked about students in one group who had graphed the two linear functions correctly, circled and labeled the point of intersection and then made the claim that there was no point of intersection. Mia and Kamilah eventually figured out that this confusion stemmed from students’ lack of experience working with points with non-integer coordinates.

Kamilah	Mia
	I said, ‘Is there a point of intersection?’ They said, ‘No.’
I didn’t hear this, no.	
	They said, ‘No.’ And I said, ‘OK, what’s a point of intersection?’
But they circled it, right?	
	I know. And they labeled it ‘point of intersection.’ <i>(They both laugh heartily.)</i> And then, this is awesome, right? So then, I said, ‘what is a point of intersection?’ [They responded] ‘It’s where the two graphs cross.’ [I said] ‘OK, do these graphs cross?’ [They responded] ‘Yeah.’ I wish I could remember exactly what they said.

A little while later...

Kamilah	Mia
	Oh yeah, that's the other thing they said. Oh yeah (<i>claps</i>). That's where it went. I love this conversation! 'There's no point of intersection.' 'OK, what's a point of intersection?' ... 'It's the point where they cross.' 'Do these lines cross?' 'Yes, but not at a point.'
Mmmm!	
	So this was the logic, why it was totally working for them that there is no point of intersection because sure they cross, but it's not at a point, so there's no point of intersection.
Right!	
	There's an intersection, but it's not a point. Which is awesome, right?
Yeah!	
	So that feels actually pretty easy to take up, right?
...	
Yeah, but I think that's normal in the way that this unit has played out, like we've never had, I mean we've only been like doing points, like we haven't-	
	Like whole number points?
Like we haven't talked about decimals or whatever. So, I mean, I think I told you that I had a feeling that's what they were gonna think.	
	Yeah, you did.

Here we see Mia and Kamilah find the sense in student thinking. Mia made clear also that this thinking had surprised her, and that she was learning newly about student thinking from her observations. (One could imagine a different conversation between teachers who observed this lesson. Some teachers might, rather than being impressed by the sensible nature of students' confusions, focus on "misconceptions," or on students' incorrect responses to the question of whether the system has a point of intersection. They might, out of that focus, decide to "fix" students' misconceptions by explaining that points can have non-integer coordinates. This conversation, in contrast, supported Kamilah to continue to trust in the intelligence of her students, concluding that they could make sense of this themselves if they were given more time and the right kind of support.)

Throughout this coaching cycle, we can see two coaching practices coming together. First, the planning conversation, in which Kamilah and Mia interrogated the mathematical content of the lesson, supported Kamilah to create rich opportunities for students to make sense together of mathematics that was challenging for them. That conversation also primed Mia and Kamilah to see and hear students' smart math thinking as they watched and listened to groups during the lesson. Then, in the debrief conversation, they shared their observations, with Mia starting by sharing a sense of wonder, getting joy from the ways in which student thinking, even that thinking that surprised them and was not yet "correct," was smart and sensible. (This sense of wonder and joy is hard to convey in transcript, but clear in the audio recordings of the lesson, both in laughter, and intonation.) This focus on students' sensible thinking also supported Mia and Kamilah in learning new ways to think about this content, through the eyes of Kamilah's students. Their continued focus together on student thinking through the lens of students'

smartness supported Kamilah to develop ideas for future practice in which students would continue to have opportunities to make sense of the math themselves. This exchange, in which Kamilah and Mia made sense together of student thinking and were collectively impressed (or “wowed”) by that thinking, even when students were not yet “correct,” was enabled by (1) the opportunities provided in this lesson for students to make sense of rich mathematics out loud and (2) Kamilah’s and Mia’s implicit agreement (which had evolved from Mia’s initial claims) to work from the assumption of the smartness of students.

4.3.4 Three Coaching Practices come together in Cycle 4

As discussed at the opening of this chapter, something new and special happened for Kamilah in Cycle 4. With support from Mia, she tried out a new lesson structure in which students were responsible for leading the mathematical work of the class. All three coaching practices discussed here came together in this cycle to make this risky work possible. First, Mia leaned on Kamilah’s strengths (some of which had, by that time, been named and exemplified multiple times) to support her to see it as possible to take on this ambitious new way of teaching. Second, the assumption (that had been made explicit in talk numerous times) that all students are mathematically smart supported the agreement (if still scary for Kamilah) that it is possible for randomly-selected students to lead lessons. Third, for this lesson to work, students needed meaningful math content to lead and make sense of together. (Recall the earlier point that if students were asked to lead the class in doing mathematics that was rote, skill-based, or not new, this lesson structure likely serve to highlight differences between students who were more and less comfortable with the material, framing them in a dichotomy of those who “get it” and those who don’t.) Kamilah and Mia interrogated the content of the lesson to make sense of what this “meaty” math was, in this case landing on reasoning *why* particular “moves” can be made when solving equations, focusing on how we can be sure that any change made to an equation has not violated the statement of equality.

These three coaching practices by this time had been in place for multiple coaching cycles and the ways in which they functioned to support this risky work must have included some cumulative impact. In other words, what took place in Cycle 4 took place, in part *because* it was cycle 4 (and far from the first time Kamilah and Mia came together to work on teaching). After having spent this much time together doing the sorts of work they were doing, we can assume that Kamilah and Mia had some established relationship, including some negotiated norms and agreements (and, in fact, we see this in Section 4.2.5 of this chapter and in Chapter 6), that underlie their interactions and that because of this, some portion of the work that Mia does to support Kamilah has been distributed over time and is not visible here.

The place where this is most clear is in the assumption that all students are smart, which had been made explicit and connected clearly to teaching prior to this. But here, the assumption (which Mia took at this point as an agreement) was present in the suggestion, taken up by Kamilah, to select students randomly to lead the mathematical work class. While there was discussion about how this challenging work for students might be supported, there was no discussion of what might happen if the “wrong” students were selected, implying that this lesson would work with any students being selected, as each student in the class was able to do this work.

Also, as shown in the segment of talk below, when Mia suggested random selection of students, and thus implied that all students are capable of challenging work, she immediately segued to talk about supporting students in a way that was explicitly connected with a strength of

Kamilah's that they had talked about previously, "helping them feel really smart for what they do that's smart." Here she used a strength of Kamilah's to support her to see herself as able to support the challenging work she would ask of students.

Kamilah	Mia
	And so you can just say at the beginning, "I'm gonna randomly call on kids. What your job is when you come up here is to help us make progress, and progress can look like telling us something you think and explaining why or progress can look like asking a really good question that the rest of us can respond to."
So then, so I don't choose a student to come up here. Randomly?	
	Yeah, you do.
Okay.	
	Yeah, you choose a student to come up and build. You choose another student to write the algebra, you choose- when everyone agrees and that student is done, we're like "yay" (<i>clapping</i>), and then you choose another one to come up and do the next tiles manipulation up there (<i>pointing to front</i>), yeah.
Okay.	
	Um and I think the- that one- yeah, that's how I see it. And we just say "why" every time and we give them, like- like you're so good at that right? Giving, like, helping them feel really smart for what they do that's smart, Like we don't just let it go by,
mhm	
	we don't let them sit down without making it clear how useful what they just did was, whatever it was, right?
mhm	
	and then the more we do that, the more kids are gonna want to come up
ok	
	and it won't be like, (<i>in student voice</i>) "ahhhh, that's scary."
uh huh	

Later in the conversation, Kamilah made it clear that she was nervous about supporting students as they were leading the class. Mia responded by both offering her support and by reminding her that she had meaningful teaching strengths that would matter for taking up this challenge:

Kamilah	Mia
	Um, cool. so, what- what would you like my participation or support or anything with? Should I just watch so we can debrief?
Um, just the "why" part, because that's new for me.	
	Yeah.
So if I'm just- if [students are] not like-making sure that they're justifying clearly.	
	Okay.
Like if they need support in that, or like how can I support a kid- Because I know some kids I feel like are gonna have a blank stare and not know how to say it, so like helping me help them to come up with an idea.	

Kamilah	Mia
	<i>(nods)</i> Yeah. Well, I think if a kid is struggling with an idea, what we do is turn it to the class. Because we want to set up this dynamic where, “When you [student] go up there, the rest of our job is to support you in what you’re doing and not to like judge you for what you’re doing.”
Uh huh, mhm.	
	“So, when you’re struggling, what I want you to do is ask for help from the class and then volunteers from the class can offer support, like ways to say stuff.”
Okay.	
	And one thing I feel like you’re <i>(she has switched to talking about Kamilah here)</i> - yeah, you’re super good at, is when kids- and I just want you to keep it for today because it’ll be helpful, is when kids, when kids say partial things or things that are not yet totally right, you’re really good at listening for the thing that’s useful in there and pulling it out.
Uh huh.	
	And I think that will help support this today. And yeah, I’ll join in with you to help you do that too.
Okay, cool.	

The interrogation of mathematical content was a large part of the planning conversation for this cycle. Here that took the form of Kamilah working to get clear herself on the reasoning that they were hoping students would engage in. As she explained, “I think that for me, I need a better understanding of that too.” A significant amount of time in this planning conversation was spent talking about the mathematics itself, with Mia supporting Kamilah to make sense of solving equations with Algebra Tiles. The presence of this kind of talk is visible in the code profiles (See Appendix F) with the purple color, used to code talk about mathematics. There was also some talk aimed at getting clear on exactly what sense-making students were to be accountable for, or the mathematical goals for students. At one point, Mia summarized her understanding of what they had decided together was the important mathematical reasoning for students in the lesson:

So, I’m also hearing that, um uh, maybe something we could think about is how to integrate into [students’] sense-making a focus on “why.” ... there’s two different kinds of “whys.” There’s a “why do we want to do this thing next, like why would I subtract or add six to both sides?” And then there’s the “why *can* I, like why is it legal, why does it not violate this expression, why is it mathematically permissible?” That’s the one I think we’re focusing on for today.

This talk from Mia, as well as the work they did helping Kamilah to make sense of solving equations with Algebra Tiles, worked to support Kamilah to feel (and be) more prepared to lead the lesson. It is interesting to point out an apparent paradox here. Kamilah needed to be clear about the mathematical goals of the lesson, even though the plan was that she would *not* talk about any of this mathematics in the lesson, but instead support students to talk about it. It was important for the success of this lesson, and for the mathematical development that it was a part of, that Kamilah make deep sense both of its mathematical goals, and of the mathematics that students generated in class. She needed to know whether justifications that students created

were sound, or in what ways, as well as what other justifications might be available to them so that she could make choices about when to allow students to move on and what kinds of support students might need (from herself or from each other) in this and upcoming lessons.

4.3.5 Summary of Coaching Practices’ Support for Transformative Teacher Learning

Here I consider each of the three coaching practices, summarizing ways in which the data shows it connected with various strands of transformative teacher learning. The connections described are included in Figure 9 below as arrows.

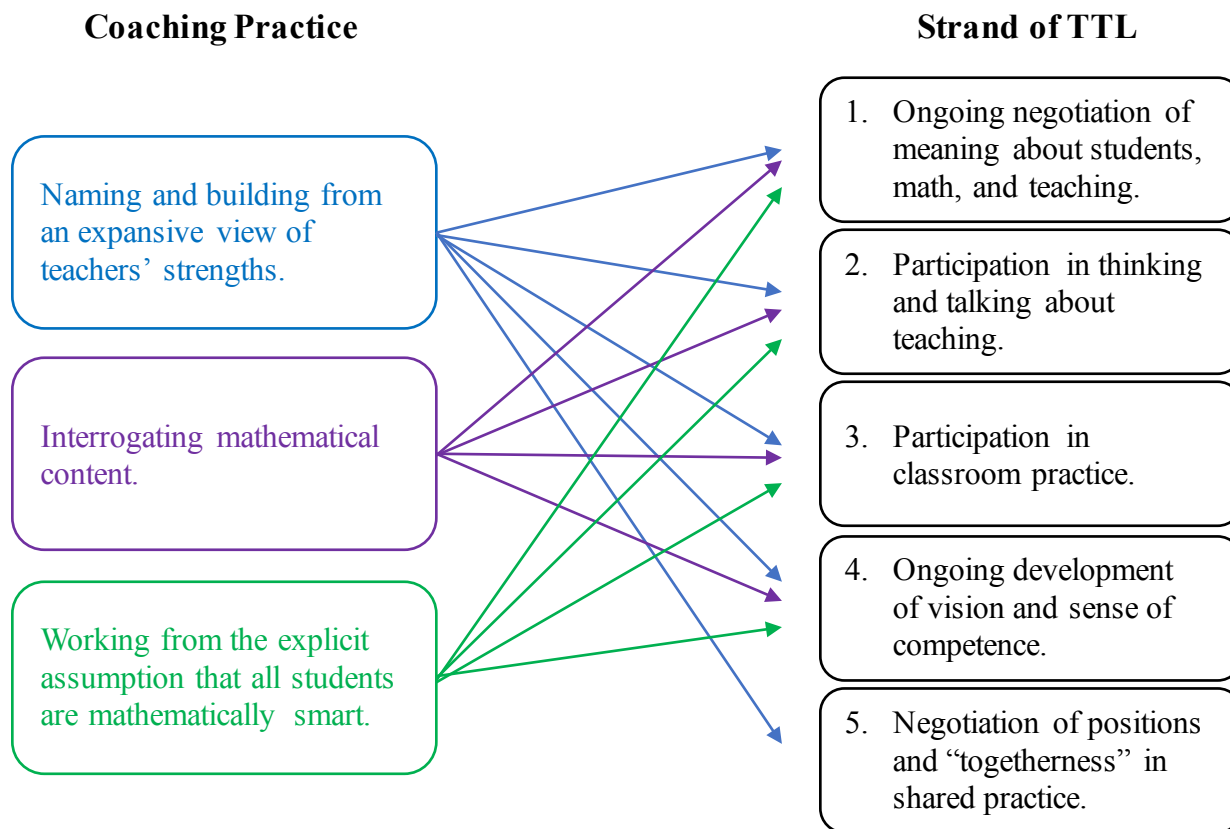


Figure 9. Connections between coaching practices and strands of Kamilah’s TTL.

Practice 1: working from an expansive view of teachers’ strengths.

Mia’s work to name and build from Kamilah’s strengths provided opportunities for Kamilah’s learning along all strands of the TTL framework that I examined. Her talk about Kamilah’s strengths involved naming classroom moments and connecting them with claims about what matters in math classrooms, thereby providing opportunities for new meanings about math, students and classrooms (strand 1) and providing opportunities for Kamilah to develop her vision of powerful teaching and to identify as competent in aspects of that vision (strand 4). Naming Kamilah’s strengths also worked to offer her new positions (away from a “novice” end of a novice to expert hierarchy) and roles (a teacher with strengths and ideas that matter) (strand 5). This repositioning, in turn, offered Kamilah new ways to participate in their conversations (strand 2), both by creating safety to take conversational risks, and by rendering it sensible for Kamilah to contribute her own ideas and areas for inquiry. Also, this work supported Kamilah to

try out new and ambitious classroom practices (strand 3) by helping her to see that she had strengths to lean on as she did so. It is notable that Mia's work to name and build from Kamilah's strengths was not "soft" practice that functioned simply to support Kamilah to be comfortable or to feel good. Rather, it was used to accomplish substantive support for Kamilah's ongoing learning along all strands of TTL.

Practice 2: interrogating mathematical content.

Mia's practice of interrogating mathematical content similarly supported Kamilah's learning along multiple strands. First and perhaps most obviously, talking about mathematics itself supported Kamilah's meaning-making about the content and about her goals for students' learning of the content (strand 1). Similarly, this talk supported Kamilah's developing understanding of the relationships between the mathematics she wanted students to learn and her vision for powerful teaching and learning of that mathematics (strands 1 and 4) and her own sense of competence in relationship to the mathematics (strand 4). The conversations in which Mia and Kamilah interrogated content shaped Kamilah's classroom practices as well, helping her to name for students the math they were being asked to think about and to notice and name students' strong thinking as they worked (strand 3). Also, the interrogation of content provided new ways for Kamilah and Mia to participate together (strand 2) and, it stands to reason, provided Kamilah with new ideas about ways that she might participate in talking and thinking about teaching with other educators, namely by doing math together or otherwise looking closely at the mathematical content of their lessons. While one might logically connect this coaching practice with Kamilah's and Mia's developing sense of "togetherness," connections between this coaching practice and that strand of learning (strand 5) were less clear in the data.

Practice 3: Working from the explicit assumption that all students are mathematically smart.

Mia's practice of working from the assumption, made explicit in her talk, that all students are mathematically smart provided opportunities for multiple strands of learning for Kamilah as well. First, this talk (connected with talk that interrogated content) provided new meanings related to what counts as smart math, which students can be expected to engage in smart math (all of them), which in turn provided new ways to make sense of what happens in classrooms and, indeed, of what teachers should know about their students (strands 1 and 4). (Recall the conversation about Manuel in which her perception of his "deficits" was recast as sensible struggle and the job of teachers was recast to include the responsibility for learning about students' strengths.) This practice supported Kamilah and Mia in new ways to interact, shaping planning and debrief conversations that focused on inquiring into, observing, and describing students' strengths. Also, the assumption that all students are mathematically smart supported the development of classroom instruction (strand 3) that both relied on that assumption (e.g. randomly selecting students to lead the class in Cycle 4) and provided opportunities for all students to participate and to display their mathematical strengths.

4.4 Co-constructing the World of *Ambitious and Equitable Teaching and Learning*

The three coaching practices I name in this chapter are interconnected and together are part of a larger "world-building" project, in which Mia worked to create with and for Kamilah a world of ambitious and equitable math teaching and learning. These practices, which often

occurred together and sometimes even in the same segments of talk, can be understood as contributing to the development of a world in which teachers are seen as having meaningful strengths toward ongoing learning and innovation, students are seen as smart and teachers are people who help uncover and build on their strengths, and mathematics is rich and connected and full of opportunities for collective discovery and sense-making.

Mia engaged in practices beyond (but also related to) these three that can be understood as part of this world-building project. Throughout these coaching interactions, she worked to reposition herself and Kamilah in relation to each other in ways that would support more equitable participation and learning. She consistently talked about students, classrooms, lessons, and mathematics in ways that aligned with—and proposed—a new world of ambitious and equitable teaching and learning. (Her talk consistent with this world is represented in code profiles that were part of the analysis of *meaning-making*, in which coding of Kamilah's talk and her talk is included, available in Appendix F.)

The construction and maintenance of figured worlds, or *webs of meaning* (Holland et al., 2001) is a cultural project, involving ongoing processes of participation and reification (Wenger, 1998) in communities. It is not something that is done *to* or *for* individuals, but something that they are actively (if not consciously) involved in. This aspect of world-building highlights ways in which supporting TTL in coaching is a joint venture. It relies on the ongoing negotiation of joint activity between coach and teacher; thus, each teacher-coach pair will create its own story, with its own successes, challenges, breakthroughs, and learning processes.

Consistent with the interpretation of negotiating new worlds as a joint venture is the awareness that learners (including teachers) are agents in their own learning. The processes of transformative teacher learning (meaning-making, participating in practice, becoming a kind of teacher, and belonging to communities of educators) are active and we expect that teachers will exercise agency, making choices that are consequential for the stories that unfold.

Certainly, the story of Kamilah's transformative learning relied on the choices that Kamilah made, as well as on the ways that Mia worked to make productive choices available and sensible for her. For example, Kamilah chose to pose increasingly meaty questions about her practice, and chose thereby to open her practice for examination. (That choice is not one to be taken for granted, and one that we will see in Chapter 5 is sometimes harder to make than it appeared in this case.) She chose to participate with Mia in trying out new classroom practices that were ambitious, equitable, and risky. The increasing 'togetherness' that Kamilah experienced in her work with Mia was supported by the choices she made about allowing Mia into her classroom community and opening her practice, and her teaching self, for mutual examination and investigation.

This story also required Mia to continue to learn. To build ongoing work from Kamilah's strengths, commitments, and questions, Mia needed to watch and listen carefully to Kamilah and work to learn about her through a strengths-based lens. She needed to seek out and take up opportunities to connect what she learned about Kamilah with her own (Mia's) vision for math teaching and learning and with her understanding of how ambitious teacher learning can be supported. (Here we see an interesting parallel between coaching and classroom teaching. The work I name here that was required of Mia can be understood as the same work that is required of classroom teachers—and that we saw Kamilah engage in—namely watching and listening to students to learn about them through a strengths-based lens and finding ways to build instruction that connects to what she learned.)

As these world-building processes depend so clearly on the particular contributions of each teacher and coach, we should expect that other stories of transformative teacher learning will be different from Kamilah's. However, some aspects of Kamilah's story provide insight into processes that we might expect to be consistent across cases. First, the ways in which the strands of Kamilah's transformative learning supported progress along the others is something we might expect to see in other investigations into this kind of learning. Second, and related to the first, we might expect to see that effective support for learning (here coaching) should attend in coherent ways to multiple strands of teachers' learning, and that when one or more strands are not effectively supported, we will see inhibited progress along other strands.

In Chapter 5, I investigate the story of Heather (a colleague of Kamilah's who also worked with Mia), whose story is consistent with these expectations. Analyses of her transformative teacher learning reveal significant stagnation along some strands. Most notably, her development of 'togetherness' with Mia was inhibited by tensions and contradictions, which remained unaddressed for some time. The continued distance that Heather experienced from Mia inhibited her opportunities to develop meanings or participate with Mia in ways that were consistent with the world of ambitious and equitable teaching and learning. When some of the tensions were addressed and resolved, 'togetherness' began to develop, as did other strands of learning.

4.5 Conclusion

While educators and education researchers have made progress in understanding some of the rich complexity of student learning, research that focuses on teacher learning has not yet drawn richly on social learning theory to examine teachers' learning as socially negotiated and complex. Most research on teacher learning focuses on individual pieces of learning stories (such as teachers learning a new classroom practice, or learning to "notice" student thinking in new ways). While these pieces may matter, we are left without a holistic view of the kinds of ambitious teacher learning that I posit will lead to ambitious and equitable learning experiences for students in math classrooms.

The Mia-Kamilah story offers some insights related to such a holistic view. It reveals ways in which individual processes of learning (such as learning a new classroom practice or new ways of noticing student thinking) are intimately connected with other learning processes (such as developing new ways to participate in thinking and talking about teaching with other educators or processes of becoming a kind of a teacher). These understandings matter, not only for the pure search for more robust understandings, but also because our efforts as a field to support impactful teacher learning are more likely to be fruitful when they rest on more complete conceptions of that learning. This chapter also offers insights from a first step at unpacking coaching work that might support such learning. It demonstrates the potential power of coaching work that is strengths-based (built from teachers' and students' strengths) and adaptive to teachers' needs and that inquires into important mathematics.

Chapter 5

“It feels like I’m Throwing a Bomb Out There.”

Negotiating Power and Agency to Support Transformative Teacher Learning

While researchers are clear that learners’ agency matters for their learning, and that teachers are learners (and therefore agency must matter for them), efforts to support or understand teachers’ learning tend to privilege other concerns. Indeed, it is difficult to imagine how we might do otherwise; the question of what it can mean to take teachers’ agency seriously is a sticky one. How might we design opportunities for teachers to work toward a vision that *we* hold, while at the same time honoring *their* questions, commitments, and sense-making?

This chapter examines issues of power and agency in one coach-teacher relationship, highlighting the importance of teachers’ own experiences of agency and empowerment through a case in which agency and power were significantly constrained. Findings show that (1) there were consequences of this arrangement, both for the teacher’s learning and for the work required for her to stay engaged in coaching, and that (2) when power and agency were re-negotiated in ways that resulted in the teacher making consequential choices, the nature of her work shifted dramatically and learning became newly available.

Chapter 4 used the TTL framework to support investigation of multiple processes of Kamilah’s learning and ways in which Mia’s coaching supported that learning. This chapter employs the same framework to investigate challenges, efforts, and possibilities related to power and learning in Heather’s work with Mia. The chapter contributes to our understanding of the widely-documented challenge of establishing productive coach-teacher relationships (Neufeld & Roper, 2003; Poglinco et al., 2003; West & Cameron, 2013) by documenting the importance of attending to arrangements of power to support teacher agency and learning.

The findings unfold in 3 sections that follow the developments in the Heather-Mia relationship. First, I share findings related to Heather’s learning, and her opportunities for learning, in the first phase of this coaching relationship (see Figure 10), in which Heather experienced an absence of power and agency in her work with Mia. Data reveal that her opportunities for learning were minimal along each strand of *transformative teacher learning* and that some of the efforts she and Mia both made to support productive development were problematic.

Second, I examine a pivotal conversation, which Heather later called the “Come to Jesus” conversation, finding that power was named, examined, and negotiated, and new relations created. Third, I examine the learning, and opportunities for learning, that were evident after this conversation (Phase 2 in Figure 10), finding that learning along each strand of the TTL framework was transformed.

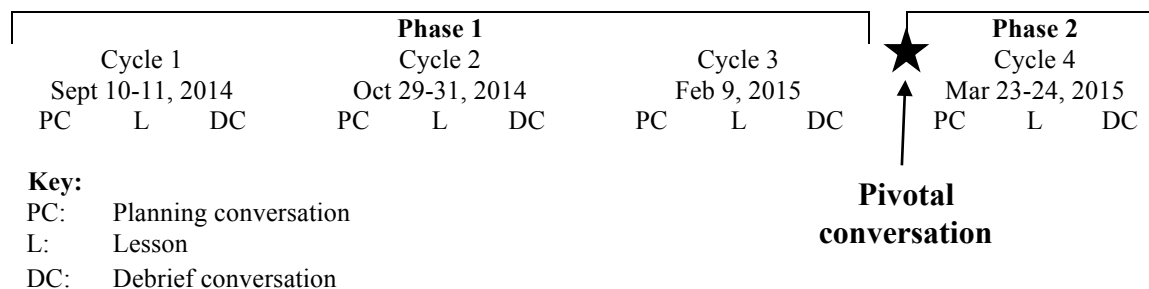


Figure 10. Heather’s and Mia’s Phases 1 and 2 and the pivotal conversation

5.1 Agency and Power in Coaching

I pause briefly to discuss how I use the terms *power* and *agency* in this chapter, and to comment on the ways in which they are closely related, but distinct.

Definitions of agency with respect to learning situations are difficult to come by, despite the prevalence of the word in contemporary educational research. Moreover, those definitions that are clearly stated do not cohere, taking up various issues of learners' capacity to use disciplinary knowledge to solve problems, their dispositions to do so, and their access to making choices with respect to their learning. Here I focus on teachers' experiences of choice-making, defining teachers' agency in coaching as their experiences of control, autonomy, and power to make consequential choices in coaching situations. Teachers' agency can manifest in choice of conversational foci, the logistics of the coaching work (e.g. time, place, duration, etc.), and the choice of modes of participation (e.g. planning, reflecting, co-teaching, etc.).

Stepping outside of teachers' experiences, I use *power* in the sense of *power relations*, considering ways in which the social arrangements in coaching distribute power among participants (Cornelius & Herrenkohl, 2004; Foucault, 1982, 1999). I follow Foucault in considering power to be relational, inseparable from other aspects of relationship, and under continual negotiation, with the *balance* of power in any relationship subject to shift and change. This chapter is concerned both with teachers' experiences of agency and with relations of power, and uses these terms accordingly throughout.

The Heather-Mia case is useful for investigating issues of power and agency in coach-teacher relationships because it contains both a common challenge and an uncommon resolution. Heather and Mia experienced difficulties establishing interactions that were productive for Heather's learning, a common challenge in coaching. In an unusual turn of events, relations of power between Heather and Mia were challenged and renegotiated in a conversation that turned out to be catalytic for Heather's learning. Thus, the case is ideal for investigating common, problematic dynamics *and* possibilities for their resolution, all in the interest of understanding teacher learning.

Teacher's experiences of agency and the power relations that play out in interactions are embedded in the worlds in which those interactions take place, mediated by the frames made available by those worlds. This chapter finds that the dominant world of *US Schooling* provided Heather and Mia with meanings, roles, positions, and ways of participating that resulted in constrained agency and lack of power for Heather and had consequences for her learning. However, Heather and Mia were able to negotiate these arrangements in ways that resulted in new roles, positions, and power relations and facilitated Heather's TTL.

5.1.1 Background

Heather worked down the hall from Kamilah (who was the focus of Chapter 4). She was in her 5th year of teaching, all of which were at Adams MS, where 33% of teachers were in their first or second year (California Department of Education, Data Reporting Office, 2017). During her previous 4 years, Heather had organized her math classes into groups and used curriculum that was designed to support group work. She had built a reputation as a good teacher and was positioned by the school administration and by her colleagues with status and power relative to other math teachers. She was seen as a teacher who could handle "tough kids," an identity that garnered admiration at Adams MS (as it does at many urban schools). She was acting as the chair of the 7-teacher math department and she took on a mentoring and advising role with other math

teachers, sharing resources she had developed in her previous years and teaching advice to go with them.

Heather and 3 of her colleagues (fellow teachers Kamilah and Aya, and Lynn, a former math teacher who was currently in a quasi-administrative position at Adams and who often worked to support this group of math teachers) decided in the Spring of 2014 to join the district’s Complex Instruction (CI) professional development program. Their involvement began by spending 5 days in a summer workshop led by Mia and a colleague, in which they were introduced to CI. During the same year that the Adams teachers were learning about CI, they were also learning a new curriculum that the district had created in its work to organize instruction around the Common Core State Standards.

Mia was one of the designers of the district’s CI program and had been helping to facilitate it since its inception 6 years prior to the study. She worked as a consultant to the district and was positioned by the CI community as an expert in CI professional development and coaching. Lynn, the quasi-administrative member of the Adams CI team, sat in on Mia’s coaching work as a sort of apprentice and occasionally added comments or ideas.

Heather came into her coaching work with Mia, as did each teacher in the study, perceiving a hierarchy of expertise in CI, in which she was presumed to be relatively novice and Mia relatively expert. Given Heather’s positioning as a leader and “good teacher” with respect to her school community, one can imagine that this new positioning as a novice may have been uncomfortable for her and data suggest that this was the case. As we will see in this chapter, some of Mia’s attempts to support Heather’s learning reified this hierarchical positioning and, unbeknownst to Mia, worked to deny Heather a voice in their work and access to making choices. Despite these challenges, Heather continued to show up for their work and to express enthusiasm for CI.

5.2 Phase 1: Limited Opportunities for Teacher Learning

In this section, I share findings related to Heather’s TTL, and her opportunities for such learning in the first phase of her work with Mia, which spanned the first three coaching cycles. Findings indicate that processes along each of the five strands were complicated by challenges related to power. For this reason, the examination of the strands begins with a focus on the one most centrally related to power—becoming and belonging: patterns of positioning between teacher and coach. However, issues of power permeated each strand of learning, a finding that highlights the interconnected nature of these processes and the importance of attending to the ‘big picture.’ Overall, analyses across the 5 strands of Heather’s TTL in Phase 1 reveal multiple ways in which her learning was hindered by inequitably distributed access to choice-making, voice, and power in her work with Mia. Conversations were organized around Mia’s ideas and choices, and Heather’s were effectively bypassed.

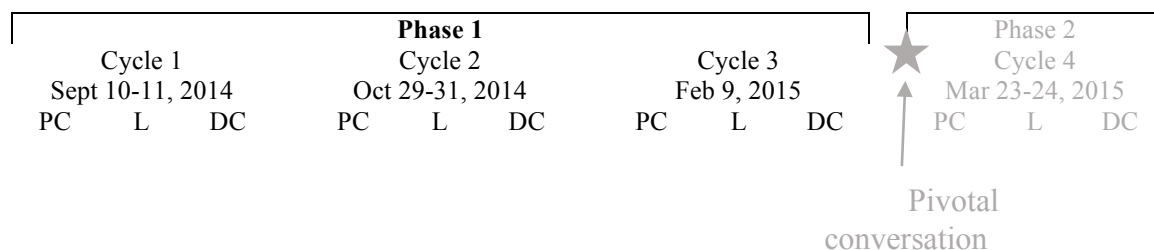


Table 17 lists the five strands of analysis of TTL, along with summaries of the findings of each regarding Heather’s learning in Phase 1. In the sections that follow, I share each line of analysis and flesh out these findings.

Table 17. Central findings along 5 strands of Heather’s TTL in Phase 1

Strand of Analysis	Summary of TTL in Phase 1
Becoming and belonging: patterns of positioning between teacher and coach.	Heather and Mia occupied roles that were hierarchically related to each other, with unequal access to participation, power, and “voice” in the coaching work. This arrangement resulted in a lack of ‘togetherness.’ Heather and Mia both resisted and reified this arrangement, each in ways afforded by her position.
Making meaning about students, classrooms, mathematics, and goals for teaching.	Heather used talk about “high” and “low” students to make predictions and reason about which opportunities to offer which students. Mia’s attempts to support shifts in this reasoning functioned to exacerbate distance between them and denied Heather opportunities to negotiate her own new meanings.
Participation in thinking and talking about teaching.	Heather’s contributions to coaching conversations were not deep and she offered ideas in ways that closed opportunities for herself and Mia to engage in inquiry together. She explained things to Mia and shared her thinking, but did not ask for Mia’s ideas until Cycle 3, when she did so only once.
Participation in classroom practice.	Heather’s and Mia’s work on classroom practice was focused on negotiating the important math in lessons and designing tasks. Only a small amount of their work on classroom practice made it into Heather’s teaching, with many of Mia’s ideas being rejected outright or agreed with, and then not used.
Becoming a kind of a teacher.	Heather’s vision for teaching was marked by a fundamental contradiction (seeing students as “high” or “low” and embracing CI as a powerful equity pedagogy). CI introduced new ideas about powerful teaching to Heather and threatened her previously-established sense of competence. None-the-less, she remained sure that CI is “amazing.”

5.2.1 Belonging and Positioning with the Coach: Unequal Relations of Power in Phase 1

The investigation of Heather’s multiple processes of TTL begins with a focus on *becoming and belonging: patterns of positioning* between her and Mia, as this strand of learning was found to be of particular importance in this case. To remind the reader, there are aspects of positioning and of community that matter for Heather’s ongoing learning, but are outside the scope of this study. For example, Heather’s shifting positionality in relation to other members of her community (students, administrators, fellow teachers) and her shifting belonging in various communities relevant to her teaching work (teachers in her department, the district-wide community of teachers working on CI for equity) are certainly important, but require data and analyses that are not available here. The aspect of positioning that I do take up here relates to what Wood (2013) calls *micro-identity*, or the moment-to-moment experiences of positioning that take place between Heather and Mia. Because I focus on positioning only in this relationship, this analysis collapses with an aspect of *belonging*: Heather’s experience of togetherness with Mia.

Similar to the analyses of Kamilah’s togetherness with Mia in Chapter 4, and connected to the analyses of *frames* in Chapter 6, the analysis in this section considers the roles and positions that govern Heather’s understanding of—and experiences in—her work with Mia. These positions are evidenced in part by Heather’s participation. As Wood argues, positions can be inferred from participants *acting as if* they are positioned in particular ways with respect to other interlocutors. Investigations of Heather’s and Mia’s positioning led to discoveries about power relations that were outlined to introduce this chapter. The following sections detail these discoveries.

Distant roles and imbalance of power.

In *figured worlds*, actors occupy particular roles, each with its own access to sensible forms of participation, power, and resistance to power. During Phase 1 of Heather's and Mia's work together, evidence indicates that the roles they each occupied were hierarchically related to each other and afforded and constrained access to participation and power to each of them in ways that resulted in a power imbalance and a working relationship characterized by "distance."

There is a common-sense notion of coaching that is available to teachers, and was available to Heather, as an activity in which a person called "coach," who is presumed to have more expertise than the person called "teacher," comes into a teacher's classroom to observe, evaluate, and "fix" teaching. (For more discussion of this *frame* for coaching, see Chapter 6.) Consistent with this notion are the understood roles of *teacher as performer / coach as evaluator*, *teacher as sole leader of her classroom / coach as outside observer*, and *teacher as follower / coach as leader in the coaching relationship*.

Below, I provide evidence that these conceptions were salient by showing that during Phase 1, Heather and Mia generally participated in ways that were consistent with these roles. (In Chapter 6, I examine one instance in which Mia's participation was inconsistent with these roles and show that for Heather, Mia's actions were read as a violation of their arrangements.) I also examine the power that was available to each of them in this arrangement, uncovering a power imbalance that turned out to be problematic in their work. I describe how these roles, and differential power afforded by them, were evidenced by Heather's and Mia's participation. Although these dynamics take place in interaction, and are thus deeply intertwined, I begin by describing these dynamics for Heather, looking at her participation and access to power, and then consider the same questions for Mia. I then demonstrate some of these dynamics in action by examining an interaction that took place in their first meeting.

Heather performed for evaluation, led her classroom, and followed Mia in coaching.

Heather participated with Mia in ways that suggest that she occupied the roles of *performer for evaluation*, *leader of her classroom community*, and *follower in the coaching relationship*. Her participation suggests that she experienced access to power in her own classroom, but limited access to power in her interactions with Mia. She performed for evaluation, implying that Mia had the right and the power to evaluate. She did this by teaching alone and then interpreting Mia's talk as evaluative even when it wasn't. For example, in an episode that I share in detail in Chapter 6, Heather misremembered in an interview that in their first debrief conversation, Mia had talked about "some things [for Heather] to work on." When the interviewer probed, Heather said, "I can't think off hand like what were her suggestions, but she definitely gave me some." No such suggestions are evident in records of this conversation.

In her ending interview, Heather spoke about the stress associated with her perceived need to perform when Mia was observing:

I'd love to say that like, "Yeah Mia's coming in. I'm just gonna go ahead and teach..." But when somebody is coming to observe your classroom, there's just like a whole nother layer of added stress that happens. Um, you know, it's just yeah, it's just more stressful. You feel like you have to be more *on*.

During coaching conversations, Heather also asked questions that suggested that Mia was in possession of “right answers” about teaching and that suggested that Mia had the power to decide what good or “better” teaching is (e.g. “How could I make my lesson better?”).

Heather participated as sole leader in her classroom community, teaching alone and giving neither Mia nor her students any indication that Mia was an invited member of their activities. During the lesson in the 1st coaching cycle, Heather taught alone and did not mention Mia to the students. During the lesson in the 2nd cycle, Heather started class and directed students to work on the Do Now while she took roll. Mia interrupted to ask for permission to introduce herself to the students, which Heather granted and Mia did. During the lesson in Cycle 3, Heather introduced Mia to the class when Mia asked her to do so. In the domain of her classroom, Heather had the power to do what she liked, including to decide whether, or when, to invite Mia into the classroom community.

Heather participated as a follower of Mia’s lead in their coaching work. She showed up to talk when Mia asked her to, generally accepted Mia’s suggestions about what they should talk about, and went along with many of Mia’s suggestions. As will be discussed in the following section, she also exhibited some signs of resistance to Mia’s power, but this resistance did not become explicit or direct until the pivotal conversation that catapulted the coaching relationship into Phase 2.

Mia observed Heather teach, offered evaluations, and led their coaching work.

Mia participated with Heather in ways that suggest that she occupied the roles of *evaluator, outsider to the classroom community, and leader in the coaching relationship*. (As we will see as this chapter unfolds, Mia’s participation both reified and resisted these roles. In this section, I focus on her participation that was consistent with them.) Mia offered evaluations of Heather’s teaching, although she did so only by naming “strengths” of Heather’s that she perceived. As we will see below, she did this to contest the hierarchical presumptions of expertise inherent in their roles. However, evaluating is evaluating and, to some extent, by doing this, Mia accepted the role as evaluator and deployed the power to evaluate associated with it.

After one early failed attempt to participate with Heather in teaching (this episode is examined in Chapter 6 with respect to *frames* for coaching), Mia observed Heather’s teaching and interacted with students only when doing so did not appear to get in Heather’s way. She accepted the role of outsider to the classroom community and did not contest Heather’s power to guide activity in this space.

With respect to the coaching work, Mia guided choice-making about when to meet, what to work on, and how conversations would be structured. While she used respectful language, and offered Heather opportunities to make consequential choices, most of these choices were, in the end, made by Mia. The example provided in the following section demonstrates this aspect of Mia’s participation and the power associated with it.

Dynamics of power and voice in these arrangements.

As described throughout the sections above, Heather’s and Mia’s roles afforded them different access to power. Heather had the power to teach how and what she wanted. Indeed, some of her teaching choices that could be read as “resistant” to Mia’s influence (see section 5.2.4 on *Participation in Classroom Practice*) could also be read as claiming the power she was afforded in this coaching relationship. Mia had the power to make the choices that shaped their work together during coaching conversations. The following example demonstrates some of the

ways in which this power dynamic played out. I pause throughout the example to comment on issues of power and positioning.

Early in their first meeting, in a talk about scheduling, Mia had said that she could be available to come either to Heather’s 3rd or 4th period class, ostensibly offering Heather the power to choose. A couple minutes later, Heather returned to the question of which class Mia would observe, and the following interaction unfolded.

	Heather	Mia
1	I’m wondering if we should do 3 rd or 4 th ? I mean they’re both- have their issues (<i>laughs</i>). They are both equally rich in that way (<i>laughs</i>).	
2		Yeah I think, okay, so what I heard was that you have one particularly challenging student in 4 th .
3	Well, I’ve got a few and they are all kinda- I think two of them are into each other and that’s causing a big ten- there is a lot going on in 4 th . 3 rd I have one particular kid that’s a ton of work and that one I’m working with.	
4		Mhm.
5	(<i>to Lynn</i>) You know which one	
6		Lynn: No I don’t.
7		JFG?
8		Lynn: Oh yeah.
9		So my um-
10	But I’m doing a lot of work with him and we’re growing	
11		Cool.
12	Today was kind of crazy but-	

In line 3, Heather articulated a challenge she experienced in her 4th period class in which there was “a lot going on.” This, combined with some earlier talk in this conversation, suggests that a challenge that was salient to Heather in her teaching related to managing students who she experienced as “crazy.” Mia, in the response that follows, deployed the power of her position to determine their work together in a number of ways. She claimed knowledge of (and the right to say) what Heather wanted; defined what their work should—and should not—be about; and made the choice that she had previously offered to Heather.

	Heather	Mia
13		So, my question is- so sometimes when there is like kid drama that is really intense- sometimes it can kinda get in the way of our ability to learn together about what you really want to be learning about,
14	Yeah.	
15		which isn’t about that- you know, cuz you’re- you have more tools than I do to deal with particular kid drama because you know the kids and you know the community and you know the resources.
16	Yeah, yeah.	
17		I don’t know any of that-
18	I know, that’s why I was wondering if that class would be like (<i>shrugs</i>).	

	Heather	Mia
19		If we're going to be distracted from being able to think about like kids' learning
20	Yeah.	
21		and thinking about status around the room and thinking about assigning competence and all of that together, then maybe I should just stick with 3 rd for now.

In line 13, Mia referred to “our ability to learn together about what *you* really want to be learning about,” assuming some knowledge (and right to claim that knowledge) of what Heather wanted to be learning about. Then, in lines 19 and 21, she defined what kinds of thinking would be valued in their work together, namely “thinking about kids’ learning and thinking about status around the room and thinking about assigning competence and all of that...” Finally, in line 21, she made the choice about which period to attend—implying a choice related to what Heather wants to be learning about—softening that move with hedging language: “maybe I should just...” While this was spoken as a suggestion that could ostensibly be rejected, the power dynamics in their relationship didn’t leave Heather much choice. And, as we see in the final few lines of this exchange below, Heather went along with Mia’s choice.

	Heather	Mia
22	Yeah. Let’s do that.	
23		Yeah? Should we do that?
24	I’ll just deal with the circus in 4 th . We have to like go over the rules and stuff.	

Although Heather went along with Mia’s choice here, she also offered a small act of resistance by saying that this choice left her to “deal with the circus in 4th” on her own. The example above illustrates an imbalance of power that existed throughout Phase 1. Mia had—and took—the power to choose when they would work together, what they would work on, and how their conversations would unfold.

It is important to consider Heather’s experience in this power arrangement. While we cannot know many things about Heather’s experience, analyses in the sections that follow suggest that she may have experienced not only diminished access to making choices in her work with Mia, but also diminished access to being heard throughout Phase 1. There were instances in which she was not invited to participate as more than a listener in conversations about teaching. There were other instances, such as the episode above, in which she ventured ideas and questions that mattered to her and those offerings were side-lined in the choices Mia made about how their work together should unfold. In the following section, I examine ways in which both Heather and Mia resisted the imbalance of power and tried to offer Heather different kinds of experiences.

Heather and Mia resist hierarchical positions and power arrangements.

Heather and Mia both did work in Phase 1 to resist the above-described arrangements of power and positioning, although their positions afforded them different access to resistance, as demonstrated below.

Heather’s resistance to the social arrangement.

In *Talk and Social Theory*, Erickson (2004) describes the work of Scott (1985, 1990) related to how people who experience domination express resistance. While his discussion

relates to a society-level analysis of the dominating and dominated classes, it offers insights that support our understanding of Heather’s resistance to the social arrangements I have described here in which she experienced a lack of power in her work with Mia.

The critical insights of the dominated are communicated locally off the record in what Scott (1990) calls “hidden transcripts.” Moreover, the insights do not lead to organization that results in revolution, but to action that is unplanned and sporadic, and that takes place through informal networks... Yet the dominated are not simply fooled by the common-sense understanding of things promoted by the dominating elites. Rather, they express critique through continued resistance of a muffled sort, through the everyday techniques of “foot dragging, dissimulations, desertion, false compliance, pilfering, feigned ignorance, slander, arson, sabotage... typically avoiding any direct symbolic confrontations with authority” (Scott 1985; xvi) (Erickson, 2004, p. 136)

Although Heather did not engage in each of these tactics of resistance (she did not, for example, commit arson), many of her behaviors can be understood as foot-dragging, false compliance, and mild forms of sabotage. For example, she often neglected to answer Mia’s scheduling emails to the Adams team, leaving Mia unsure about whether she would be available to meet. She often expressed that she was busy, suggesting that she did not have time to work with Mia. For example, in the following talk early in the 2nd coaching cycle, Heather said it was a challenge for her that “we’re meeting today” and that “you always come on the most insane weeks.”

Heather	Mia
Oh god, and I can’t even believe we’re meeting today and I’m not even ready for advisory. <i>(puts both hands on her head.)</i>	
	Do you need to- for us to something different?
What?	
	Do you need us to do something different? I’m pretty flexible. Do you want to, um, we can talk after school? If that’s better?
I know, I just forgot that- you know what, there’s just so much going on this week. You always come on like the most insane weeks.	
	<i>(laughs)</i>
I don’t know why but it’s like-	
	Maybe it’s meant to be.
Insane week and you show up. Um. It’s fine, I guess I’ll just wing it.	

While she did not actually refuse to engage with Mia, her various expressions of reluctance can be understood as those forms of resistance that are available to people in disempowered positions.

Mia’s work to offer more productive positions.

Mia’s position of relative power afforded her different opportunities to work against the social arrangement. She appeared to have been aware of, and working to counteract, challenges for Heather’s learning related to hierarchical positioning and imbalanced presumptions of

expertise. She was concerned about issues of teachers' agency in her work, expressing the need to connect her thinking about teaching to teachers' own questions about their practice. In a conversation with Lynn about coaching in September, Mia said about her coaching approach:

There's always for me, um, there's some sorting out to do of what I see and my personal opinions about what I see and what teachers have articulated they want help with, and how what I saw can put me in a position to help them with that, with what they articulated they want. So how could we think together about the questions they articulated?

After some discussion about Heather, Mia summarized her intentions for their first debrief conversation:

My sense is as sweet and welcoming as she's being, I think Heather is scared to have me there. I think there's some anxiety for her, which just tells me that's it's more important that I name [her] strengths... So, I think my role then, given that, and given- I mean that's consistent with what I was sensing, is my role is going to be, speak to a lot of strengths, only speak to her questions, make sure she- do harder work to try to connect strengths to HER questions.

However, Mia did not appear to be fully aware of the power dynamics at play in her work with Heather, or that Heather was experiencing a loss of power and voice. Perhaps because of this incomplete awareness for Mia, some of her efforts to support various aspects of Heather's learning turned out to further complicate these dynamics.

From Mia's place of power (as the dominating elite, as it were), her work against their unproductive positioning was different than Heather's in that it did not take place in "hidden transcripts," but in her talk. She spoke in ways that suggested more productive positions for herself and Heather. Some of her work on this is described in detail in Chapter 6, but I offer a few examples of her efforts below.

Mia worked to mitigate the hierarchical presumptions of status and expertise that were inherent in this relationship by talking about what she perceived to be Heather's strengths as a teacher and by normalizing the challenges that Heather expressed. For example, she began the first debrief conversation by setting up a conversation protocol in which both she and Heather would itemize Heather's teaching strengths that had been evident in the lesson. (For a closer look at this conversation protocol, see Chapter 4.) She normalized some of the challenges that Heather expressed by acknowledging her own experiences with similar challenges, inviting some sense of alignment or togetherness in these challenges. For example, toward the end of the first planning conversation, Heather said, "I am just not super jazzed about this lesson." Mia responded, "Yeah, I totally feel you. I have been there so many times." Here she invited Heather to see her as a fellow teacher who has experienced similar challenges. (For discussion of the ways in which Heather's understanding of this work of Mia's must have been mediated by the frames that dominated her understanding of coaching, see Chapter 6.)

She also worked to mitigate her own high status with various conversational moves, such as attributing her ideas to others or saying what she was unsure about or acknowledging her mistakes or areas for growth. Sometimes her naming of her own challenges co-occurred with her identification with Heather's challenges. For example, as Mia arrived for the debrief

conversation in the first coaching cycle, Heather expressed that she was struggling with some emotional challenges related to the depth of trauma that some of her students experienced. She began to cry and the two talked for a while before recording began. A few minutes later, after Lynn had arrived and they had begun recording and talking about the lesson, Heather returned to considerations of her students' trauma, explaining to Lynn that one of her students had just experienced a tragic loss. Mia responded by supporting Heather to see that the way she had responded to this student was positive, and acknowledged that finding such a response is difficult, recounting ways in which she herself had failed to do this well in the past.

Heather	Mia
<i>(to Lynn)</i> Well her brother just died.	
	Oh, that was the student whose brother just died?
Yeah and I don't, she doesn't really processed anything around that so. I-	
<i>Lynn: (inaudible)</i>	
Yeah, I think that maybe like something like that her brother came up, but I don't know. She couldn't identify	
	What a sweet opportunity. I mean it sounds like you were- you let her- you gave her space to feel her feelings. You didn't call her bad for them.
Yeah.	
	You still invited her back into a learning environment but on her own time.
Yeah.	
	I feel like sometimes as a teacher, I forget that other things matter too. You know <i>(laughs)</i> that they're not just- I'm like <i>(in an exaggerated voice)</i> "GOTTA LEARN MATH NOW. GET OUT YOUR BOOKS"
"GOD DAMN IT GET OUT YOUR BOOKS" <i>(laughs)</i> "You are going to learn!" <i>(laughs)</i>	
	<i>(laughs)</i>
No I totally get that way too, believe me. Today happened to not be one of those days, which was a great perfect timing for all that to happen.	
	<i>(laughs)</i>
Thank God. <i>(laughs)</i>	
	<i>(laughs)</i>
It wasn't one of my like "you are going to learn" days, you know.	

In this interaction, Mia named Heather's handling of a challenging situation as positive, positioned herself as a teacher who doesn't always handle these challenges well, and normalized and identified with the challenge. It is also interesting to notice that Heather normalized Mia's stated challenge in return with "I totally get that way too, believe me."

Mia also tried to create space for Heather to guide some of their work together. She asked Heather for her questions and often checked with Heather about whether the direction of their conversation was acceptable. However, in a mid-year survey, Mia reported "lots of challenges" in her work with Heather including, "Her constant state of being stressed out and unprepared makes it hard to know how to plug in." On the same survey, Mia was asked to assign a number

from 0 to 10 for how clear she felt about what Heather wanted her help with. She responded: “2. I have a vague sense that she wants me to help her ‘with CI’ but I don’t really know what she means by that.”

Her responses in this survey suggests that Mia wanted to know what Heather wanted, and also that she seemed to be understanding the challenges in their work as being a result of what Heather was bringing. She did not mention (and likely did not remember) that Heather *had* made statements about what she wanted help with (recall her talk about the “circus in here”) and she did not appear to be aware of ways in which her own interactions with Heather might stifle Heather’s ability to be more clear about what she wanted.

Heather’s and Mia’s efforts to resist hierarchical positioning (of which Mia appeared to be aware) were complicated by the unequal relations of power that were connected with this positioning (of which Mia appeared to be less aware). As will become apparent in the sections that follow, some of Mia’s attempts to support Heather’s learning along other strands worked to reify their hierarchical positions and deny Heather access to power, inclusion, and agency in her learning.

5.2.2 Meaning-Making: A Fundamental Contradiction

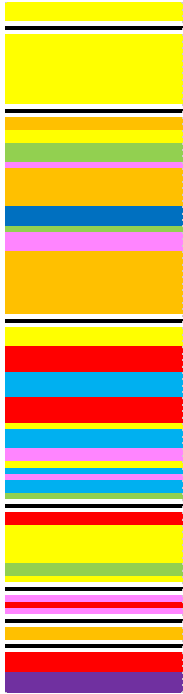
This section presents analyses of aspects of Heather’s meaning making about students, teaching, and learning. (As was true in Chapter 4, analyses of other strands will also include some considerations of meaning-making of various types.) Throughout Phase 1, Heather’s meaning making did not change substantially, although some aspects did begin to shift by the third coaching cycle. Heather’s meaning making was found to be influenced by her talk about students in terms of their belonging to hierarchically arranged categories, such as “high” and “low,” “smart” and “struggling,” and her perceptions of a huge “divide” between these groups. This section also shows that Mia’s attempts to support shifts in Heather’s meaning-making fell flat, and in fact denied Heather opportunities to make new meanings or to engage as an active participant in any negotiation of meaning about students and mathematical ability.

My analysis of this meaning-making in teacher-coach conversations captures categories of talk that align with the dominant world of *US Schooling* or the emerging world of *Ambitious and Equitable Teaching and Learning*. Table 9 contains names and color codes for these categories of meaning making, which are detailed in Chapter 3. Figure 11 contains code profiles for Heather’s talk in the four coaching cycles, with color-coded representations of her talk in each planning conversation followed by those for her talk in each debrief conversation, with white space indicating the separation between the two. Figure 12 contains code profiles for Heather’s and Mia’s talk, each conversation in its own column with Heather’s talk represented on the left and Mia’s on the right.

Table 18. Meaning-making codes *US Schooling* and *Ambitious and Equitable Teaching and Learning* talk

Dominant world of US Schooling	Emerging world of Ambitious and Equitable Teaching and Learning
Compliance	Social Organization of the Class for Learning
Limiting Math Goals	Rich Math Goals
Smartness as Exclusive	Smartness as Inclusive
Students’ Math Deficits	Students’ Smart Math Thinking
	Rich Mathematics

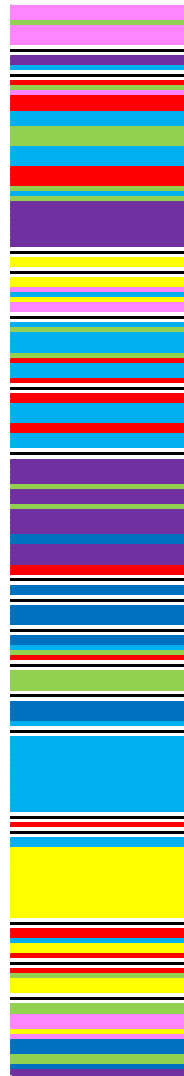
Cycle 1
9/1/14
Scientific Notation



Cycle 2
10/30/14
Angles in a Triangle



Cycle 3
2/9/15
Surface Area



Cycle 4
3/26/15
Shortest Path



Figure 11. Code profiles for Heather’s meaning-making in her work with Mia

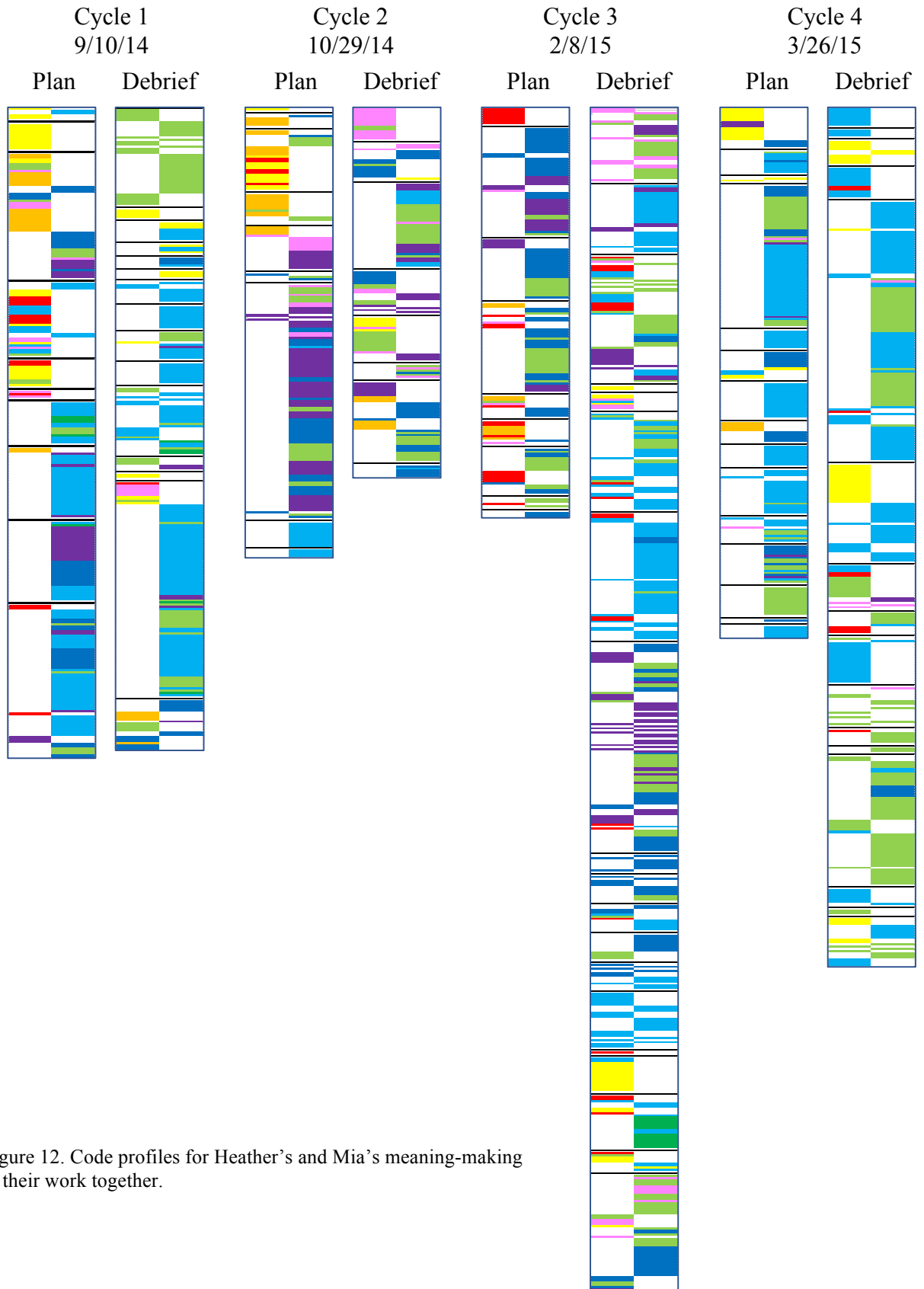


Figure 12. Code profiles for Heather's and Mia's meaning-making in their work together.

Table 10 contains the percentages of all of Heather’s coded talk that was captured by each code across the four coaching cycles, total portions across the broad categories of *talk consistent with the dominant world of US Schooling* (warm colors) and *talk consistent with the emerging world of Ambitious and Equitable Teaching and Learning* (cool colors). In the sections that follow this table, I interpret and investigate some of the patterns revealed here.

Table 19. Portion of each code for Heather’s talk throughout Phase 1 (entries are percentages of total coded talk)

	Cycle 1 9/1/14	Cycle 2 10/30/14	Cycle 3 2/9/15
Compliance	25	14	11
Limiting Math Goals	16	27	4
Smartness as Exclusive	10	4	19
Students’ Math Deficits	9	16	9
Total talk consistent with <i>US Schooling</i>	60	62	43
Social Organization of the Class for Learning	13	0	21
Rich Math Goals	5	14	10
Smartness as Inclusive	0	0	0
Students’ Smart Math Thinking	19	15	11
Rich Mathematics	3	9	15
Total talk consistent with <i>Ambitious and Equitable Teaching</i>	40	38	57

The ratio of Heather’s dominant to emerging talk shifted by the end of Phase 1, with Cycle 3 having a larger portion of talk consistent with the emerging world than either of the first two coaching cycles. Heather’s talk about mathematics, both in terms of rich math goals (dark blue) and mathematics itself (purple) increased somewhat across these three coaching cycles. This pattern is consistent with findings related to Heather’s and Mia’s negotiations around *participation in classroom practice* (see Section 5.2.4), which reveal that their work on practice was largely focused on mathematics throughout Phase 1.

Her talk about compliance (yellow) and limiting math goals (orange) both decreased in this third coaching cycle. However, her talk about smartness as exclusive (red) increased. While in relation to other codes, the portion of Heather’s coded talk that related to “smartness” as exclusive (red) does not appear large, it is a considerably larger portion than occurred in any of the other cases I examined. (In the Kamilah case, this code appeared in only the 2nd coaching cycle, and there was only 4% of her coded talk.) Given its relative frequency in this case, the fact that it does not decrease in frequency, and its connections to some of the most limiting aspects of dominant discourse about students and math, this talk deserves further investigation. The following section contains results of such an investigation.

Heather’s talk about “high” and “low” students in Phase 1.

This section contains results of a closer investigation of Heather’s “smartness” talk. This talk, which I will call “high/low talk,” was examined for when it was used and for what apparent functions.

Heather used high/low talk more frequently in planning conversations than in debrief conversations, with this talk occupying an average 24% of her coded talk in planning conversations and only 5% in debrief conversations across this phase, as can be seen in Table 20.

Table 20. percentage (of coded talk) of Heather’s talk about smartness as exclusive in each conversation in Phase 1

	Cycle 1 9/1/14	Cycle 2 10/30/14	Cycle 3 2/9/15	Phase 1 Average
Smartness as Exclusive in planning conversations	15	11	44	24
Smartness as Exclusive in debrief conversations	2	0	13	5

This trend suggests that high/low talk may have served functions that were relevant for Heather in planning. To investigate this, each of the 41 instances of the appearance of this code in Heather’s talk were examined and categorized in two ways. First, the apparent purpose of this talk was examined, with the following purposes emerging: (1) to explain challenging group work (e.g. “she’s really smart, so she tends to dominate”); (2) to reason about giving opportunities to some students but not all, or to reason about the needs of some students (e.g. “If they get through both of these, then I might push some of the high kids on finding volume or thinking about volume.”); (3) to predict which students will be able to do something (e.g. “It’s pretty tricky. I think my advanced kids could do it.”); (4) to explain a challenge for planning (e.g. “There’s kids that are like, ‘boom, boom, boom, boom, checkpoint!’, you know, and then other ones that are like struggling a lot more.”) and (5) to explain attributes of a student or group, without any of the above purposes clear (e.g. about a class, “They’re high level, but they’re a rowdy bunch.”). Heather’s talk about “high” and “low” kids was then examined for which students were being spoken of, the apparent “high,” the apparent “low,” or comparisons of the two. Table 21 and Table 22 contain the results of these investigations.

Table 21. Purposes of Heather’s high/low talk across Phase 1

	Cycle 1 <i>n</i> = 7	Cycle 2 <i>n</i> = 3	Cycle 3 <i>n</i> = 26	Total <i>n</i> = 36
Purpose:				
1. To explain challenging group work	4		1	5 (14%)
2. To reason around giving opportunities to some students, but not all, or what some students need	1		7	8 (22%)
3. To predict behaviors, usually who will be able to do something.	1		8	9 (25%)
4. To explain a challenge for planning		1	5	6 (17%)
5. To explain attributes or behaviors of a student or group of students (and none of the above).	1	3	8	12 (33%)

Table 22. Which students are named in Heather’s high/low talk across Phase 1

	Cycle 1 <i>n</i> = 7	Cycle 2 <i>n</i> = 3	Cycle 3 <i>n</i> = 26	Total <i>n</i> = 36
Talk contains a clear comparison of smart to not smart, including talk about “divide.”	6	1	14	21 (58%)
Talk focused on the struggling or the not smart.			6	6 (17%)
Talk focused on the smart, without comparison.	1	2	5	8(22%)

This analysis reflects Heather’s focus on a substantial “divide” that she perceived in her classes between students who “get it” and those who are “totally lost.” Also, this analysis reveals that a good portion of this talk related to her reasoning about what opportunities to offer to her students and thus presented significant challenges for working toward the vision of equity that Mia and the CI program in the district were working to support.

For example, in the planning conversation for Cycle 3, Heather and Mia were talking about an activity that Heather was thinking of using that would involve students calculating the surface area of a prism. The question had arisen in their conversation whether students should also be thinking about volume in the lesson. In the talk below, Heather made predictions that her “advanced kids” were ready for this challenge and that she might thus offer them the opportunity to take it on.

Heather	Mia
I think [this task] is okay for surface area, but we felt it seemed really hard for volume.	
	Yeah, yeah, yeah.
It’s pretty tricky.	
	Yeah.
I think my advanced kids could do it.	
	Yeah.
and I’d love to push them to do the volume of it.	
	Uh huh.
Um, so I guess kinda what I thought about doing is, the advanced kids, if they’re pushing through this fast, like they went through this- actually pretty quickly. Like faster than I thought they would.	
	Mhm.
then I thought I could- after they do checkpoint on surface area we could have them do volume.	

Heather’s conception of a group of students that she calls here the “advanced kids” supports her to consider offering different opportunities for mathematical sense-making to different students, functionally denying the students who she does not see as “advanced” opportunities for learning about volume in this lesson.

The high/low conception of students’ mathematical ability that is prevalent in Heather’s sense-making did not come from her. The world of *US Schooling* is replete with evidence that students *are* either “high” or “low,” “advanced” or “struggling” in mathematics. Heather is routinely presented with standardized testing reports and other forms of “student data,” in which students are organized in tables and spreadsheets according to “level” in mathematics, or their Special Education status, or their “level” in English language development. Discourse surrounding education, including at Adams MS, supports the notion that serving students well means meeting each student at his level and providing him with the opportunities that are appropriate, given his limitations and deficits (often called “differentiating” instruction). There is little support available for teachers to make sense of students’ mathematical capacity in terms of their strengths and to relate to students as smart sense-makers. The CI project in the district was attempting to provide such support, as was Mia. As we will see in the following section, some of her attempts to do so turned out to be problematic.

Mia’s work to support Heather’s meaning-making.

Examination of coaching interactions suggests that Mia perceived Heather’s talk about “high” and “low” students as a barrier, and that she may have lacked tools or strategies for addressing this barrier constructively. While she did attempt to offer Heather new ways to make sense of smartness, the ways in which she did so functioned to reify their hierarchical positions, reinforced distance in their relationship, and did not provide Heather with opportunities to engage with agency in negotiations of meaning. These points are demonstrated below.

As the following examples from Heather’s and Mia’s interactions in the first planning conversation demonstrate, some of Mia’s attempts to rebut Heather’s high/low talk functioned to reify the power imbalance between herself and Heather. They also did not offer Heather opportunities to participate as an agent in negotiating meaning *with* Mia, instead offering her opportunities to hear how Mia was making sense of things. What we know about the importance of agency for learning suggests that we should not then read these interactions as providing powerful opportunities for Heather to make new sense of math, students, and teaching.

Early in the planning conversation for Cycle 1, Mia asked Heather how group work was going so far in her class. Heather responded with a comment about the class, and then by describing a number of different groups. Many of her descriptions contained hierarchical characterizations of students or groups of students. A few examples follow to provide a sense for how Heather was making sense of her students.

	Heather	Mia
1	This table, table 9, I’ve struggled with them communicating.	
2		Mhm.
3	They are kind of a quiet table.	
4	Lynn: These two are EL (<i>points at seating chart</i>).	
5	But you know what? I had a big talk with them because Jimmy is really strong and these two are EL and they’re slower. Umm Melanie is medium but like Jimmy was just like all sitting there doing their work, so I had a talk about how she was team captain and they had to pull together and then like they communicated and they all like had this like really great moment where they all got the work.	

In line 4, we seen an example of one of the ways in which Heather’s hierarchical categorization of students was supported by the narratives that existed around her. Lynn was a highly respected colleague of Heather’s who was in a semi-administrative position at the school and who acted sometimes as a math coach. Here we see her presumption that the information that two students “are EL” was relevant to Heather’s characterization of a “quiet table.”

A few minutes later, Heather described a challenge related to Eddy, a student who wanted to work independently and resisted her efforts to engage him in group work.

Heather	Mia
He gets very frustrated when I call on, because I do random card picks-	
	uh huh uh huh
and then, I though-, they are not totally like- you know it takes them a while to explain cuz he’s really smart.	
	Yeah.
He’s like- today he was like “ahhhh” (<i>screams</i>) you know, and he was just like going crazy like trying to, you know, because they were struggling with explaining and he wanted to tell me, “I want to tell, I want to tell.” You know, and then it’s like, he-	
	mhm
I had to like calm him down	
	uh huh, okay
so, yeah	
	okay

Heather	Mia
but he's getting better. He's getting better. I think today was a better day-	

After Heather had described a number of groups, Mia proposed “something we could think about together.” She went on to offer a rebuttal to Heather’s hierarchical talk about students. However, instead of offering her rebuttal directly and acknowledging it as a rebuttal, Mia framed her comments as addressing a problematic perception *of students*. While she may have done this in an attempt to soften her disagreement, she in fact removed any opportunity Heather may have otherwise had to participate in negotiation around competing ideas. In essence, she told Heather she was wrong, made this socially acceptable by pretending that she was naming students as wrong, and then moved on, precluding any opportunities for the two of them to think together.

	Heather	Mia
1		Cool. so here is what I hear as something we could think about together. Um I hear that there are multiple groups that could benefit from assigning competence to particular students
2	Mhm.	
3		in different kinds of ways. So I'm hearing uh, that this group (<i>pointing to table 9</i>) there are students that might be perceived as less competent
4	Mhm.	
5		who we could figure out ways to counter that perception and that might support this group,
6	Mhm.	
7		right? Umm I hear u:h that here (<i>pointing to Eddy's group on the seating chart</i>)- uhh- if we could find ways to make it really clear to all of them that this is not the only smart student in the group
8	Mm, mhm.	
9		right? Um I think that that could support all directions.
10	Mhm.	
11		It could support kids to be more willing to speak up, it could also support him to be more willing to be patient if he like gets opportunities to see other kids doing things he didn't do like or
12	Mhm.	
13		offering things that he didn't think of yet

In line 3, Mia pointed to table 9, the group that Heather had described in which Jimmy was “really strong” and his groupmates were two “ELs” who were “slower” and Melanie, who was “medium” and suggested here and in line 5 that the perception that some students were less competent—a perception that was implied in Heather’s talk but that Mia here attributed to students—was incorrect and should be countered. Then, in line 7, Mia contradicted Heather’s characterization of Eddy’s group (in which she had talked about Eddy as “really smart,” contrasting this with his groupmates where were “struggling with explaining”) by claiming that “this is not the only smart student in the group.” But by framing her contradiction as being a message for students, she did not acknowledge that she was contradicting Heather’s talk, and did not offer Heather the opportunity to respond or to negotiate meaning around this issue *with* her. Rather, she made a claim about student smartness and moved on.

After the talk above, Mia went on to consider what opportunities might exist (or not exist) in the content of the lesson to work on assigning competence to students. She pointed out that the content wasn’t particularly “groupworthy.” Heather responded by expressing some light-

hearted regret that this particular day was the day Mia would be “coming in” to her classroom. In her response, Mia explained how she saw opportunities, but again did not offer Heather opportunities engage in this thinking with her.

	Heather	Mia
1	Oh my god, why are you coming in this day? (<i>laughs</i>)	
2		(<i>smiles and chuckles</i>) Just like randomly choosing groups, I’m randomly choosing days. So, this is what’s happening.
3	I’m just kidding.	
4		No, it’s good to think about together right? So, there are some particular challenges like (<i>pause</i>)
5	Yeah.	
6		In a community where we learn together and where we value everyone being smart, there’s different kinds of math content we need to be able to take up and do together
7	Mhm.	
8		and some of it is like the cool Apprentice Task where there really is a lot of stuff to think about. There are multiple ways to represent things, there are different ways to explain it, different solution strategies and sometimes this is just- I mean and sometimes you have to be clear with kids like it’s just a frickin’ convention
9	Yeah.	

In line 6 above, Mia named the kind of classroom community *she* values and envisions, presuming in her talk that Heather shared this vision. She did not offer Heather opportunities to enter this talk or to engage in negotiation of this vision with her.

Later in the conversation, Heather expressed an idea in a way that exposed her misunderstanding of the concept of “groupworthy” that was part of the CI course that Heather had taken (and Mia had taught) the summer that preceded this school year. In her response, Mia took the role of expert, explaining the concept of “groupworthy” to Heather. In doing so, she reified hierarchical positioning and did not offer Heather opportunities to participate in meaning making about issues of challenging math and “groupworthiness.”

	Heather	Mia
1	I almost kind of want to push to see if we could make this group worthy (<i>laughs</i>).	
2		Well what would there be to talk about?
3	Well I feel like even the high kids that can figure this out, they need to be able to explain to the other kids what the heck is happening.	
4		Yeah.
5	I do think that’s a really tough concept to explain and maybe-	
6		Right, so I think that- groupworthy and hard are not the same thing.
7	Mmm.	
8		Because like, in my way of making sense of this anyway,
9	Mmhmm.	

	Heather	Mia
10		Um, if something is hard, but there is really just one way to do it-
11	Yeah.	
12		So that's why I think because there is something really to explain that's why I would say, maybe, pairs make sense and what the pairs can be held accountable to is, you both should leave this, being able to explain
13	scientific notation	
14		Whatever the end of that sentence is, but I don't know what I need to explain in scientific notation, but maybe you need to be able to explain why- why a number is written in a particular way and what it means or- I don't know. Something like that
15	Okay.	
16		And then they could do that as an end of class, uhh- I don't think this is 'check-pointy' really, right?
17	Ehh.	
18		But they could like write it as an exit ticket or um you could do some spot sort of checking.
19	Mmhmm.	

After “correcting” Heather’s use of “groupworthy” in lines 6, 8, and 10, she went on to claim that “pairs make sense” for the lesson (line 12) and how she saw the lesson being handled best.

In her attempts to address Heather’s high/low talk, Mia reified her own position as an outside expert, and Heather’s position as less expert and wrong. She also did not offer Heather opportunities to negotiate meaning or make sense out loud of these issues. It is perhaps not surprising that Heather’s ways of making sense of student participation and learning remained rooted in talk about “high” and “low” kids and that she continued to use that talk to reason about what opportunities were sensible to offer students.

There is clear evidence that Mia *wanted* Heather to experience choice and agency in their work. She would not have wanted to see herself as a coach who would ever tell teachers they were wrong, or remove from them opportunities to make sense of things themselves. One way, then, of understanding the dynamics that unfold in this talk is that Mia perceived Heather’s high/low talk as a significant challenge for Heather’s own learning. She was unwilling to ignore this barrier, perceiving that it hindered Heather’s ability to make sense of students and teaching in ways that were more consistent with ambitious and equitable teaching. She also knew that there was social risk in taking on this barrier with Heather and she lacked tools or strategies to do so in more productive ways. So, she improvised an approach that was sensible to her, in that it was non-confrontational while still addressing problematic talk. As we see in this analysis, this approach served also to disempower Heather and did little to support her learning.

5.2.3 Participation in Thinking and Talking About Teaching

In this section, I examine Heather’s participation with Mia in thinking and talking about teaching and Mia’s work to support development along this strand. That is, I examine the ongoing negotiation and development of Heather’s planning for teaching, reflecting on teaching, asking about teaching, etc. in her conversations with Mia.

Analyses indicate that Heather’s participation with Mia in thinking and talking about teaching was not deep (as I operationalize depth; see discussion below and in Chapter 3) across

Phase 1, although this pattern did begin to shift somewhat in Cycle 3. Mia attempted to offer Heather new ways to participate, although these attempts did not appear particularly impactful. These findings are sensible, given what we know about figured worlds. Namely, that the roles and positions we see available to us have a large influence on how we choose to participate, or how we see it as possible or sensible to participate. Findings in this section suggest that Heather’s perceptions of the roles, positions, and associated ways of participating available to her guided her participation more strongly than did Mia’s suggestions that she participate in new ways.

Heather’s participation in Phase 1.

As is laid out in more detail in Chapter 3, Heather’s contributions in each coaching cycle were first coded using a rubric that categorized them as being of lower or higher depth. Her questions and statements about her challenges or struggles were coded for low or high depth, using a rubric adapted from Coburn and Russell (2008) and the ideas that she proposed were coded for whether they opened (or left open) lines of inquiry in her conversations or whether they closed these opportunities (see Little, 2002). Results of this coding are presented in Table 23 below.

Table 23. Heather’s low and high depth contributions to coaching conversations in Phase 1

	Cycle 1	Cycle 2	Cycle 3
1. Low-depth questions	13	9	9
2. Ideas that close	3	12	6
Total Low Depth	16	21	15
3. High-depth questions	1	2	2
4. Ideas that open (or leave open)	5	1	6
Total High Depth	6	3	8
Ratio of high:low depth contributions	0.38	0.14	0.53

Throughout Phase 1, the majority of Heather’s contributions to coaching conversation were coded as low depth, with the ratio of high to low depth contributions increasing modestly in Cycle 3. To investigate Heather’s agency in her work with Mia, or to what extent she chose to pursue particular desires with respect to this work, a finer-grained analysis was conducted of Heather’s questions, noting whether they were solicited (e.g. in response to Mia asking Heather for her questions) and whether they were questions that revealed desire for Mia’s ideas or input (as opposed to questions Heather appeared to be asking herself or wondering aloud about and not inviting Mia to answer). Table 24 contains results of this investigation.

Table 24. Heather’s unsolicited questions and requests for Mia’s ideas

	Cycle 1	Cycle 2	Cycle 3
Unsolicited questions	0	3	2
Questions requesting Mia’s ideas	0	0	1

These findings suggest again that there may have been a modest shift in these aspects of Heather’s participation by the end of phase 1. With respect to Heather making active choices in the coaching work, it is notable that for the first time in Cycle 3, she asked Mia for an idea. Below, examples are provided to give the reader a sense for Heather’s participation across Phase 1.

As revealed in Table 24, Heather asked few unsolicited questions during the first three coaching cycles. Those she did ask, as well as her statements that were coded as being about her challenges and struggles, did not in fact seek to solicit input from Mia. Rather, she explained her struggles or concerns, but did not open meaningful opportunities for Mia to contribute to addressing them. For instance, in the first planning conversation, Mia asked Heather to describe how group work was going in her class. Heather responded by describing the particular dynamics she had observed in various teams, including about one team, “This table, Table 9, I’ve struggled with them communicating. They are kind of quiet table.” (See section 5.2.2 for a consideration of Heather’s meaning making related to this example.) She went on to continue her description of dynamics in this team and did not ask Mia in this conversation to think with her about how she might support this team’s communication. Later in the conversation, Mia had suggested that Heather might close her lesson by sharing with the class strong mathematical thinking that she had observed from students during the lesson. Heather responded by sharing a “worry,” without asking for Mia’s ideas about that worry: “My biggest worry about that is that it’s still gonna be the really high kids that are going to be able to explain this, if I do 10 minutes of that. I mean I think this is a really tough concept.”

In all three planning conversations in Phase 1, Heather stated many of her own ideas for teaching, often planning out loud and offering no clear way for Mia to participate. For instance, during the planning conversation in the second coaching cycle, Heather told Mia some of what she was planning for students to do in a lesson about the triangle sum theorem.

Heather	Mia
And then for fourth period, they already know the triangle. Yeah, I’m gonna give ‘em compasses and I’m not gonna say anything.	
	Yeah.
I’m just gonna say, “ok”- cuz they have vocabulary worksheets as well.	
	Okay.

What is notable about talk of this type is not that it is unusual in any way, but that it does not function to invite Mia into conversation about teaching ideas. In fact, there was little indication through most of Phase 1 that Heather was interested in Mia’s ideas about teaching.

This dynamic began to shift in Cycle 3, when Heather asked for Mia’s input for the first time as the two discussed a lesson about surface area. Her question both suggested a direction for their conversation that she *wanted* to pursue and functioned to invite Mia to enter the conversation. Mia took up the invitation, proposing a nascent idea about framing the lesson for students around a math question to think about, rather than around the task of executing calculations.

Heather	Mia
Do you have any suggestions on like, making this-Meatier, in that way? (<i>4s pause</i>) Like I’m not really sure what, I totally,	
	Yeah yeah, I don't either know.
This is not meaty, as far as like vocabulary wise	
	Mhm.
Or getting at like, really giant concepts.	

Heather	Mia
	Mhm mhm. <i>(As pause)</i> Well, is the question like, if we frame the whole lesson around the question- this is experimenting, I don't know if this works at all but
Yeah yeah yeah.	
	about what IS surface area? so you can- Is there a way to frame it like, "today you're gonna be calculating the surface area. It's gonna take a while, but I want you to stay in touch with this question, what IS surface area? What is this thing you're figuring out?"

Following this talk, Mia and Heather continued to discuss what “big question” the lesson could be framed around, and Heather went on to launch the lesson with that question. (This launch will be shared in the following section looking at Heather’s evolving *participation in classroom practice*.)

These various analyses reveal that across Phase 1, Heather’s participation was neither particularly deep or agentive. She participated relatively passively and her talk did not often function to invite Mia into her thinking processes. By Cycle 3, it began to shift in ways that signal somewhat more agency on Heather’s part and that created some opportunities for Heather and Mia to think together that had previously been missing. Given findings with respect to Heather’s and Mia’s differential power and hierarchical positioning, it is perhaps not surprising to discover a sense of distance in their talk and to see Heather rarely active in guiding their work. In the following section, I examine Mia’s talk, finding that she did make attempts to support more agentive participation from Heather and that she expressed the desire to know what Heather wanted.

Mia’s contradictory work to support Heather’s agentive participation in Phase 1.

Evidence suggests that Mia wanted to support Heather to make her own questions and desires clear in their coaching conversations and that her efforts to do this were not occurring for her as particularly fruitful. In this section, I examine how those efforts unfolded and how they may have communicated to Heather that what she (Heather) really wanted was unavailable in this coaching relationship.

Early in their first planning meeting, Mia asked Heather what she was hoping to get from their work together.

Mia: What I would like to know from you is what- what you’re thinking you’d like my help with? How things are going? I think I know a little bit about the lesson- or I know a little about the curriculum, but I don’t know what you are planning to do with it or what your structure- or what your lesson structure is. Or which problems you are doing or anything like that so we can talk about that. But I’d love to hear first sort of- what you’re wanting some help thinking about which can then tell me where to direct my focus when I’m here.

Heather thought for a bit and then responded,

Heather: Well, okay, a couple things that are coming up. One is, well this is moving very slow, which I assumed was going to happen, but we get to a point where I’m like, do we move on with this lesson?

She went on to expand on this challenge, describing issues of providing students with the right level of challenge (e.g. “one student told me he was not being challenged enough”), classroom management (e.g. “there’s so much going on, so many behavioral things” and “one group in particular that was goofing around so much”), and describing that some groups “get through” many problems, while others “barely got through the first one.” She gave an example from the previous lesson, and included considerations (in transcript below) of whether students were learning the math that was central in the lesson.

Heather: Um, I felt like overall though, the idea here was to try to get the fact that when we have like bases, we are adding exponents, is pretty much a lot of what was happening here, which I think most groups pretty much got on that page.

Mia responded by addressing Heather’s thinking about what math mattered in the lesson she had described and relating that to the question of moving on or not.

Mia: Okay, so to go back to your question about moving on or not moving on- I think what I heard you articulate was that the big idea of this lesson, or this part, was that they understand, they could make sense of these um- multiplying these exponential expressions. They know what they mean so that they understand that you are adding exponents and the bases are the same because it just means you are counting how many of them you have and you have that many more, right? And then you pretty much think that happened mostly.

From there, the two went on to talk about how the smaller math concerns that came up might be addressed. As will be apparent in the section about *participation in classroom practice*, Mia and Heather continued to focus together on considerations of what math matters in lessons.

What is notably absent here is any talk together about the aspects of this concern that related for Heather to students “goofing around” or being “off task.” While it is impossible to know how Heather understood this, it is reasonable to conclude that she may have understood that those aspects of her concerns either did not matter to Mia or were not worthy of their time. Given the fact that Heather had expressed similar concerns earlier in the conversation, this move of Mia’s may have contributed to Heather’s interpretation that what was available in the coaching work was not of great importance to her, and may have led to some of the “foot dragging” or other forms of resistance that are evident. (See section 5.2.1 for discussion of this behavior.) The following episode demonstrates ways in which Mia’s efforts to build coaching around Heather’s own questions and needs fell short.

At one point in the second planning conversation, after Heather had expressed that she was busy and it would be helpful to keep the conversation short, Mia presented Heather with some options, and asked what she was hoping to get out of the visit.

Heather	Mia
	So in the- in the pre-observation kind of conversation we could sort of get into planning and thinking together about the lesson or we could totally not
Mhm.	
	and you could just sort of catch me up and help me think about what you are hoping to get out of the visit and what you want to be able to talk about in the debrief
Mmm.	

Heather	Mia
	and then we- and that can help sort of structure what I'm doing during class, what I'm attending to and how I set myself up to be able to be useful to you.

Heather responded with some reiterations of her general overwhelm, and what the math topic of the lesson would be:

Heather	Mia
Mmm, what period are you coming, 3 rd ?	
	I am coming 3 rd period.
I have five different lesson plans today too, by the way.	
	(laughs)
Which, all my kids are off, because of the lock down. 1 st and 2 nd , 3 rd , 4 th , and 6 th , and advisory they're all different. Like oh my god I'm gonna lose my mind. So, I think tomorrow for third	
	Mhm.
We're doing (.) the uh angle conjecture of uh mhm (<i>gets up and walks away from the table, comes back with papers, which she hands to Mia</i>)	
	Ooh, pretty.

Lynn, who had been listening, then asked Mia a question about a video camera and a short conversation unfolded about that. Mia then got the conversation back to teaching by saying, “Okay, triangle angle conjecture... What are you hoping they’re learning?” and the conversation never returned to the question of what Heather wanted to get out of the coaching visit.

While Mia expressed interest in what Heather wanted to work on together, her efforts to solicit this information and use it effectively were mostly unsuccessful. Also, as was apparent in an earlier section, there were times in which Heather made statements about what mattered to her that Mia did not take up. And yet, as we saw earlier, Mia reported in a survey that her level of understanding of what Heather wanted to get out of their work was a 2 of 10. This all suggests that there were some aspects of Heather’s talk that Mia just did not hear, or that talk that fell outside of her ideas about what mattered in their work just did not count for her as meaningful talk. Taken in light of the power issues in this relationship, these blind spots for Mia may have contributed to Heather’s experience of not being heard.

Overall, this analysis shows that Heather’s participation with Mia in thinking and talking about teaching across phase 1 did not delve deeply into issues of mathematics, teaching, or classroom dynamics and did not indicate agency on Heather’s part. It would be possible to interpret these findings in unfortunate and unproductive ways if we did not have the benefit of insights from the other lines of analysis here. We could, for example, interpret this as a story of Heather’s failure to “show up” in the right ways. And it is likely that Mia, without the ability to see all the issues at play, experienced her work with Heather in this way. However, situating this analysis among considerations of other strands of learning, and issues of power and voice in particular, supports a more generative understanding of Heather’s participation. It can be understood as sensible in light of the opportunities she was given to see her concerns as central and to perceive that she had access to shaping her work with Mia in meaningful ways. In other words, if she experienced coaching as being “about” what mattered to Mia and *not* what mattered to her, and she did not think she had any power to change that, then it is sensible that she might simply show up and try to make it through each coaching visit.

The following section takes up analyses of Heather’s participation with Mia in negotiations of classroom practice.

5.2.4 Participation in Classroom Practice

Analyses of Heather’s participation with Mia in negotiations of classroom practice throughout Phase 1 yield some limited evidence of learning. In particular, it is clear that few of the classroom practice negotiations that took place in talk led Heather to take up teaching newly, although these negotiations did seem to support Heather to become increasingly specific with students about what math learning the lessons’ activities were intended to support.

As in the Kamilah case, a *threads of classroom practice* analysis was used to investigate how Heather and Mia engaged in the ongoing negotiation of classroom practice, how their work together on classroom practice traveled in and out of the classroom, and how the classroom practice that they talked about did (or didn’t) get taken up or tried out with students, and by whom. (See Chapter 3 for discussion of this strategy). The 10 threads of practice that were salient in Heather and Mia’s work are listed below. (These 10 threads are a subset of the 12 that were revealed in similar analyses of the Kamilah case.)

- A. Organizing students into groups or pairs.
- B. Interventions into student groups.
- C. Making expectations for group or pair work explicit.
- D. Using strategies (Participation Quiz, huddle, sentence frames) to support productive participation in groups.
- E. Making important math ideas central to the lesson.
- F. Using manipulatives and other tools to support student learning.
- G. Building norms to support equitable participation and learning.
- H. Leading equitable and rich whole class discussions.
- I. Naming and building from students’ math strengths in lessons.
- K. Task design or redesign.

Figure 13 contains diagrams that trace these 10 threads of practice through Heather’s work with Mia (in below). Darker dots represent moments of work done by Heather and lighter dots work done by Mia. (To remind the reader, I consider this “work” to consist of talk and/or other action that signify ongoing negotiation of classroom practice, which includes envisioning, describing, proposing, trying out, and/or interpreting elements or moments of classroom practice.) Each vertically-oriented diagram represents one coaching cycle, with the planning conversation first, followed by the lesson, and the debrief conversation at the bottom, each of these parts separated by a strip of white space. Stars represent those actions that involve the uptake with students of practices that have been (or will be) under discussion. They signify the engagement in *new* practice, or practice directly related to the work Heather and Mia did together. So, for example, if Heather had already planned to use particular tools to support student learning and the conversations did not push or change these plans, Heather’s use of these tools in class would not be represented by a star. Thus, the absence of a star does not mean the absence of classroom practice in a given strand, but the absence of *new* classroom practice in that strand.

Lines and arrows connect moments of action in each thread of practice. The start or end of lines represent the first or last action taken in that thread. Arrows signify that the thread is continued from or continues to another coaching cycle.

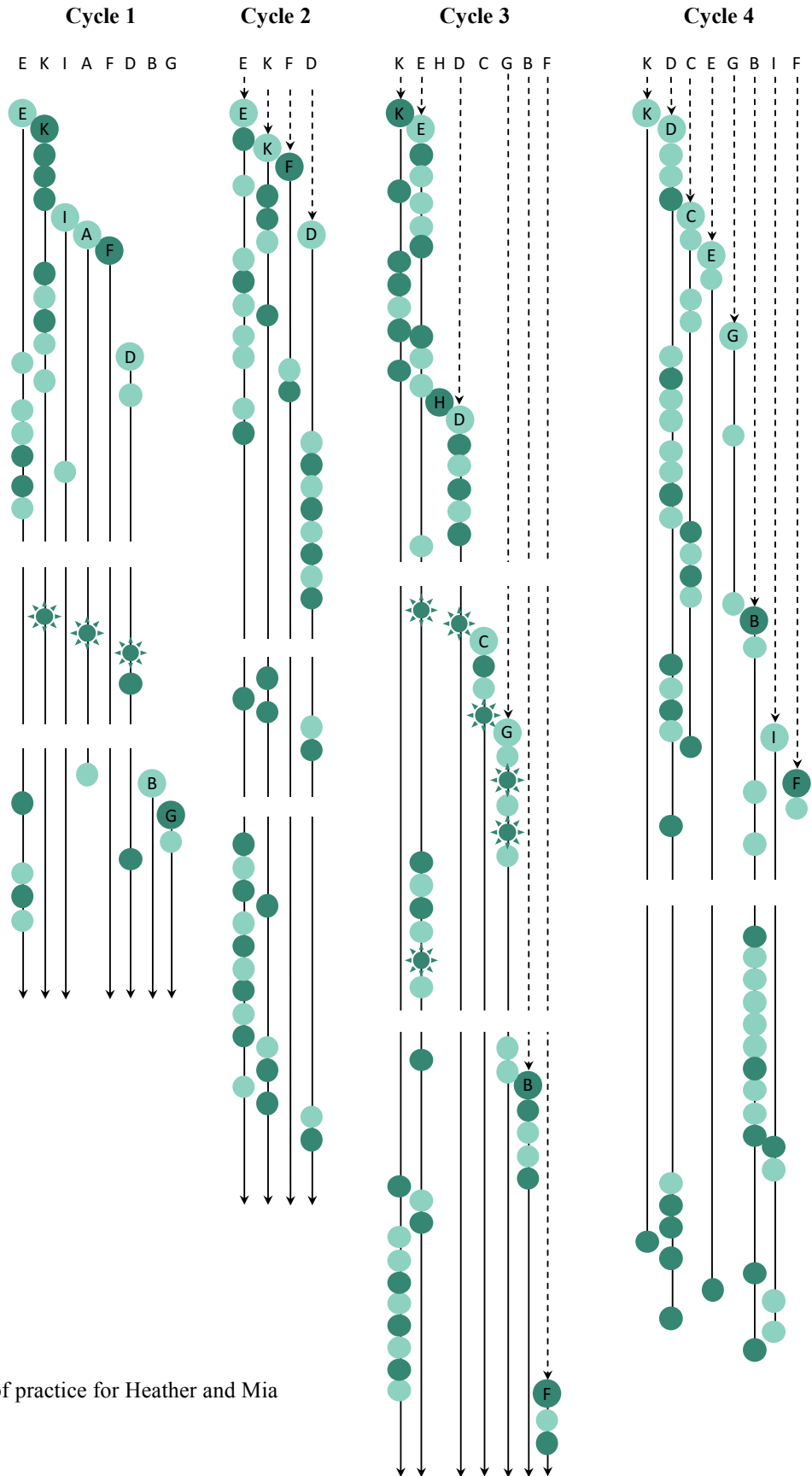


Figure 13. Threads of practice for Heather and Mia

This analysis yields the following information about Heather’s ongoing work with Mia related to classroom practice. First, most of their work throughout the first three coaching cycles was concentrated in two threads of practice: *making important math ideas central in lessons* (Thread E) and *task design and redesign* (Thread K). Second, relatively few of their negotiations around classroom practice in conversation (dots) were connected with new practices being taken up with students (stars). Third, each time a new practice was taken up with students, it was Heather who took it up. In other words, the existence of dark stars and no light stars in Figure 13 indicate that Mia did not engage in the new practices they discussed, which was not true in her work with Kamilah. (This is a necessary byproduct of the arrangement in which Heather taught alone and Mia did not teach.)

For each of the coaching cycles in Phase 1, threads E and K together made up most of these negotiations (together 61% in cycle 1, 68% in cycle 2, and 56% in cycle 3). Much of this work was about negotiating math learning goals for lessons; considering which math goals were “big” and worth collective sense-making in lessons, and which were more trivial and could be handled in other ways, such as with Do Now prompts; and crafting prompts or activities for students that would get at the math under discussion.

6 of the 10 threads of practice contain evidence of “uptake” in the classroom in Phase 1, although none with more than two identified instances of “uptake.” Also, the overall number of moments of classroom practice that were identified as coming out of these negotiations, represented by stars in Figure 13, is relatively low: 3 in cycle 1, none in cycle 2, and 6 in cycle 3. Together, this suggests that while Mia and Heather negotiated classroom practice frequently in terms of important mathematics and task design, most of their work together did not make it into Heather’s practice during the observed lessons.

The absence of lightly shaded stars in Figure X indicates that each time the negotiated practice *did* make it into the classroom, it was Heather who engaged in these new practices. This can be understood as a logical consequence of the roles available to Heather and Mia. With Mia as an outsider in the classroom and Heather the sole classroom teacher, the burden of trying out new practices was entirely on her. This contrasts with the work Kamilah and Mia did together on classroom practice, where they discussed and tried out practices *together*, with both darkly and lightly shaded stars appearing in the *threads of classroom practice* diagrams. This highlights a consequence for learning of the sustained distant roles in this relationship, namely that these roles resulted in Heather having fewer opportunities to engage in risky new classroom practice, as she had no partner with whom to do so.

Lesson launches: increasing talk about math learning across Phase 1.

In line with Heather’s and Mia’s negotiations about what math mattered most for students and how to best make that mathematics central, Mia made a consistent effort to support increasing specificity in Heather’s planning talk about the mathematics that she was hoping students would learn in the lessons she was planning. One example of this effort came in the planning conversation for Cycle 3, in which they were talking about a lesson that was to deal with surface area of prisms.

Heather	Mia
but what I thought I'd want to work on today and I kind of thought this may take a lot of the period	
	Mkay.
is the trapezoidal [prism]. Cuz this is the one that's on the test	

Heather	Mia
	Mkay.
and it's the hardest because they'd have to- oh, no they can measure this. So, they're gonna have to measure all the lengths. And they're gonna have to measure a height on these too, which is gonna be harder, so...	
	Mmmm. So, what are you wanting them to learn?
Uh, surface area of a trapezoidal prism at this point.	
	What about it? What do you want them to learn about it?
(4s pause) I mean honestly the goal is to get them to figure out how to do a trapezoidal prism. That's the goal.	
	How to do what?
Oh, how to find the surface area.	
	How to find it. So, do you want them- So do you want them to find it successfully? Or do you want them to generalize a process? Or do you want them-
Mmmm.	
	like what's the- what's the thing we want them walking out with?
(.) mmm (4s pause) I'd like them to be able to- like completely calculate it. I mean generalizing is great too.	
	Mhm.
So, I definitely want them to be able to generalize too.	
	And what would they be generalizing? So, would they be generalizing ideas about surface area versus- or like what surface area is or something?

Mia went on to talk about what she perceived to be the core math ideas related to this and the two considered this issue together for some time. In many instances of this kind of talk from Mia, there is little evidence that Heather's thinking is changing in response, or that Mia's questioning has supported much development. However, as can be seen in the frequency of dots on the threads E and K lines, talk about important math persisted.

And while Heather's talk about math learning goals did not get markedly more specific in her conversations with Mia, the ways in which she launched lessons for students *did* shift in ways that relate to this work. The transcript below is of Heather's talk in each lesson launching the pair- or group-work portion of each lesson in Phase 1. These launches progress in terms of the extent to which they frame lessons as being *about* mathematical ideas. Table 25 contains transcript of Heather's talk to her students as she launched the group or pair work portions of the three lessons in Phase 1.

Table 25. Heather's task launches across Phase 1

Lesson date and content	Heather's talk launching student work	Mathematics
9/10/14; Scientific Notation	...Okay, so, yesterday we left off our sheets- We are going to start today at 8 dash 3, uh sorry, 8 dash 4 0 (<i>writing on board "8-40"</i>). We're going to be doing A, B, and C. And then we're going to move on to the back side, 8 dash 4 1 to 8 dash 4 4. (<i>writing on board "8-41 to 8-44"</i>) Okay? On the back side of our sheet. Alright. And since we don't have a Resource Manager to get task cards today, let's say the youngest person in your group will come up and get task cards. (<i>Puts papers on the table in the middle of the room.</i>) Youngest person in your group.	Did not mention mathematics at all; only problem numbers.
10/30/14; Triangle Sum Theorem	Okay, so today we're going to be doing a little discovery work. You're going to have some sheets of paper. And you're going to be doing what we call a- (<i>stops to deal with some classroom management challenge</i>) Today, what you're going to be doing- in mathematics we like to show something is true by proving it. This is called a proof. You probably are already doing some of this work in science. In science, you have theories and you have to have a proof to make them true. So, you might make a hypothesis, and then you have to do some experiments to prove that something is actually true. Today you're going to be doing a proof by construction. This is true mathematics. True mathematics, you're always proving everything you do.	Connected the lesson to the mathematical and scientific practice of proving, but did not mention the mathematical content or goals of the lesson.
2/10/15; Surface Area	Okay, today, we are going to continue on our work we did on Friday, talking about surface area. Friday, we looked at a rectangular prism and we also looked at a cube, and we measured all of the lengths and we found the area of each piece and found surface area. Then we put it together into a 3D object. Today we're going to look at a much more difficult prism, it's a trapezoidal prism, okay? (<i>some student noise</i>) I'll wait till we're all focused. Okay, and what I want you to do first, we're gonna do things in a little different order than we did on Friday. Today after you get your paper, the first thing you're gonna do is cut it out and put it together, okay. Then we're gonna find surface area. So, our closing question for today, this will be our task. I want you to think about this throughout the entire period, at the very end we're gonna go around, Mia and I, we're gonna do checkpoints at each table on this question. And do not say it out loud right now, you can talk to your groups about it, but everybody at your group should be prepared to checkpoint on this question. How do we find surface area of ANY prism? ANY prism. Okay, so think about that as you're working today. All right, can I get a volunteer to pass these out?	Described content, posed a math question that framed the particularities of the lesson as connected with a larger mathematical idea.

The progression of mathematical specificity in these lesson launches suggests that Heather's practice was in fact developing in ways that are not evident from her talk with Mia about her practice. In other words, while Mia's efforts to push for more mathematical specificity in their conversations did not appear to get much traction in the conversations themselves, they may have been in fact making a difference for Heather.

5.2.5 Becoming a Kind of Teacher in Phase 1

This section presents analyses of Heather's *figurative identity* (ongoing negotiation of meaning about ideal teaching) and *identity of competence* (sense of her own competence in relation to that shifting vision) throughout Phase 1, and considers ways in which Mia worked to support these processes of *becoming*. The data drawn on include Heather's talk in an interview in September about the kind of teacher she hoped to become and about her own developing sense of competence in relation to that vision as well as her talk throughout her work with Mia. Findings suggest that Heather's vision for powerful teaching was complicated by contradictions between

her understanding of students and their needs in terms of “level” and her commitments to CI as “amazing.” Analyses show that the introduction of CI to Heather’s life as a teacher came with some new threats to her sense of her own competence. During Phase 1, these threats remained hidden and did not enter into Heather’s conversations with Mia. As we saw in Section 5.2.2, Mia’s attempts to address Heather’s high/low talk and the associated contradiction she saw in Heather’s developing vision for teaching were problematic.

A contradictory vision.

Heather’s processes of becoming a kind of teacher (including her shifting notions of the kind of teacher she wanted to be), were marked by a contradiction that is pervasive in dominant narratives about math teaching and equity. On the one hand, Heather cared deeply about her students and wanted each of them to learn math. She saw CI as a set of practices that would support that aspiration. On the other hand, as is clear from the analysis in section 5.2.2, she understood her students and their needs in terms of the categories of “high” and “low”, with the presumption that students’ membership in these categories was related to what they could be expected to do and learn in math class.

The contradiction here did not appear to be apparent to Heather, and may not be immediately apparent to a reader, so I elaborate here. Ambitious and equitable teaching, and the CI program in this district, was built on the premise, made explicit in workshops and other spaces, that all students are mathematically smart and that each student is capable of engaging meaningfully in rich and rigorous mathematics. Teachers in the CI program were supported to develop inclusive conceptions of “smartness” as multidimensional, and of students as each having meaningful mathematical “smartness,” moving away from simplistic and limiting notions of students as “high” or “low” in math. Teachers were encouraged to find ways to remove “scaffolding” that (often in the name of “supporting students”) constrains opportunities—often only for some students—to grapple with mathematical challenges. Teachers are encouraged instead to support students to engage productively with each other, trusting that when they do this, they can and will navigate challenging mathematics together. Teachers are encouraged to understand problematic student participation (e.g. students dominating group discussions, or students appearing to be unengaged) as *status problems* (E. G. Cohen & Lotan, 1997), related to unequal distribution in the group of expectations for competence. (Students who see themselves as the smartest students in the room—and who are seen by others as such— and who do not expect that they have anything to learn from other students are likely to dominate (and be allowed to dominate) group discussions and are unlikely to ask other students for their ideas. Students who are taken by themselves and others to be “low” are unlikely to offer or be asked for their own ideas or questions.) Teachers are encouraged in the CI program to learn to treat unequal expectations of competence, and to thus support more equitable participation and richer math learning for all students.

While Heather’s talk suggests that she saw the tools and strategies of CI as useful, she did not talk in ways that suggest that she was making sense of students’ participation in the ways described above. Rather, she consistently reasoned about student participation in terms of whether students were “high,” “low,” “smart,” “struggling,” “IEP,” and even “super IEP.” Following from these ways of making sense of students, her vision for teaching related to supporting students “at all levels” and she predicted often in her planning conversations that her students would not be able to do rigorous mathematical work. (It is useful to note that these aspects of Heather’s vision are supported by common valorization in the world of *US Schooling*

of “differentiating instruction,” which is taken to mean offering students tasks appropriate to their “level,” with different students presumed to be at different levels being given therefore different opportunities to learn.)

CI is “amazing” but creates new challenges, threatening Heather’s sense of competence.

In the September interview, Heather articulated ways in which she saw CI as powerful and the struggles she was experiencing as she took it on. It is clear from her talk that her exposure to CI had led to some developments in her thinking about powerful teaching, it had not yet seemed to trouble her notions of students being at different “levels” in mathematics.

At one point, Heather said, “Complex instruction has been amazing. And it’s, you know, changing the classroom for sure,” explaining that CI is “a whole different way of teaching.” She went on to explain,

Um, well I think it’s a new way of thinking for me. Like I always did group work and I thought that I understood group work, until I really learned what cooperative learning is about. Um, and what complex instruction entails and it’s way more than just saying, like, “okay go ahead and work in groups.” It’s like- it’s a whole shift. It’s like, I don’t know I think of it as like losing weight. Like you can, you know lose or shed 10 pounds, but if you want to really lose significant weight, you have to change your whole style of eating and your whole lifestyle around it. And I feel like CI is that way. Like, once you go to CI it’s hard to go back, you know, it’s like once you’re in it, it’s kind of hard to want to do anything else because it is really a great way to teach.

When asked to elaborate about this new “great way to teach,” she described,

Group roles, tables in groups of 4, [students] have different responsibilities depending on the lesson. Makes the group accountable to each other cooperatively, but also it makes them accountable individually because I come over and do checkpoints so they have to know what they are talking about when I come over.

This talk makes clear that Heather was experiencing a lot of “newness” along with her involvement in the CI project. Here she talked about this “newness” mostly in terms of structures and strategies. (Recall that Kamilah also described CI mostly in terms of structures and strategies in her September interview.)

Heather’s talk in the September interview also made clear that the newness of CI combined with other aspects of her teaching life to present significant challenges for her. Her description of her challenges also included talk pointing to her previous experiences of feeling (and being seen as) competent.

This year for example has been a tough year for me. It’s my 5th year teaching, and I have some tough classes. And like I think I’ve gotten established here enough to where they throw more tougher students with me, tougher classes, and higher demands. I have a lot more things I’m juggling. You know, I’m head of the math

department and doing so many things that I'm just kind of (*pause*) feeling overwhelmed, I guess, I don't know... Yeah, so I think that's been a struggle for me. I'm not so much worried about like the basics of teaching anymore, but you know, constantly updating my craft and taking in the Common Core and all this new curriculum, and a new way of teaching with CI has been a struggle, it's been tough. Yeah. (*laughs*) Huge learning curve.

Recall that Heather came into this school year having a reputation in her school as a teacher who could be trusted with "tough classes" and with the position of department chair. Her talk makes clear that she was no longer concerned about "the basics of teaching." Her talk about her "huge learning curve" suggests that the challenges she was experiencing during this year may have introduced new struggles and thus threatened her sense of her own competence as a teacher.

A piece of evidence that supports this interpretation is that when Heather was asked to describe her strengths as a teacher in the September interview, none of the strengths she named related to her descriptions of CI, but instead related to aspects of her perceptions of strong teaching that seem to predate her exposure to CI.

My strengths I would say are because I have a lot of life experience and a lot of work experience, um, a lot of customer service experience, um and I know what it's like working my way up, and working really hard to get what I want, that's really helped me in the classroom. It's helped me manage what happens in here, it helps me with working with kids, and understanding what their needs are. So I think those are definite strengths. So I have a bit more wisdom than an early- you know, 22-year-old coming in here with like no job experience and no life experience other than being in school.

None of Heather's talk in this interview about her own competence (and none of her talk about her own competence in the strengths-questions protocol in the debrief conversation in Cycle 1) resembled her talk about CI. This, along with her statements about struggle and the "huge learning curve," suggest that her exposure to CI may have threatened her sense of competence as a teacher. (If her ideas about good teaching shifted such that her own strengths were no longer central to that teaching, her identify of competence would suffer.) It is interesting to note that throughout Phase 1, while Heather did make it clear that she was struggling, she talked about her struggles in terms of the demands on her and how little time she had to do all that she needed to do. She did not talk about being unsure of her own competence.

Along with her expression of struggle, Heather did describe some success in her early work with CI:

We use [CI] almost every single day. Um, every lesson we get, we try to make it into a CI lens type lesson as much as we can. There are some things that are tough to make that happen. And we're going through those kinks with that. But um, overall it's gone pretty well almost daily.

Heather's processes of *becoming a kind of teacher* early in her work with Mia are characterized by a contradiction between her way of making sense of students, and the approach to equity underlying the CI program. Despite this contradiction, Heather was clear that she saw

CI as “amazing” and that for her, “it’s kind of hard to want to do anything else because it’s a great way to teach.” Her commitment to and enthusiasm for CI is perhaps surprising, given the ways in which it seems to have introduced threats to her sense of herself as a good teacher. Also, her clear enthusiasm refutes any potential hypothesis we might harbor that Heather was “resistant” or did not want to learn or change.

Heather’s status as a “good teacher” and therefore her value as a professional was also under threat in her work with Mia, as it appears to be in other aspects of her working life. (She spoke in interviews of administrators who tell her what to fix and of having more demands on her at once than she can manage well.) This point is taken up in more detail later.

Mia’s work to support Heather’s processes of becoming.

Code profiles (Figure 12) make it clear that Mia’s talk about students, teaching, and learning consistently aligned with the world of *ambitious and equitable teaching and learning*, suggesting that she was working to provide resources for Heather to develop her vision of teaching in these ways. However, the broader analyses indicate that she and Heather talked past each other, and Mia’s talk may not have functioned as a resource for Heather throughout Phase 1.

Evidence suggests that Mia was aware of the contradiction present in Heather’s vision and she experienced Heather’s high/low talk as a barrier to Heather developing an ambitious vision for her students. In a mid-year survey, Mia wrote:

When I asked questions to try to get at what she wants kids to learn, she reverted to talk about what her kids don’t know and how hard it is to teach them, rather than thinking deeply about the learning goal. I feel like in her case, her experience (years of teaching) is a barrier, as she’s got some pretty cemented ideas about what is possible and I feel like it’s hard to convince her that more is possible.

As was clear in Section 5.2.2, Mia made attempts to address the contradiction she saw in Heather’s vision by addressing conceptions of students as ‘high’ or ‘low,’ and trying to “convince” her that all of her students were more capable than she thought to engage with challenging mathematics. But, as we also saw in Section 5.2.2, her efforts did not provide opportunities for Heather to engage in conversations in ways that would support her own sense-making and thus were limited in their power.

Mia also worked to support Heather’s sense of her own competence by building talk about Heather’s teaching strengths into the coaching work. As she had with Kamilah, Mia began the first debrief conversation by focusing the conversation around Heather’s strengths. This effort was clearly powerful for Heather. When asked in the September interview about the beginning of her work with Mia, Heather said that in the first coaching cycle, “our follow up meeting was great.” When asked to elaborate, Heather went on:

We talked about like what are my strengths and then like some things that, uh, to work on. Um, and it was really nice to talk about strengths, like as a teacher, getting complimented on anything is very rare. Um, middle schoolers definitely are not very complimentary. and it’s tough with everything, with administration, with, just getting people to appreciate what you do and all the hard work you put

in doesn't happen very often. So it was really nice for her- to hear some compliments about things that I'm doing.

Recall from Section 5.2.1 that her talk reveals a mistaken memory; they did not talk about things for Heather "to work on." However, it is clear that Heather remembered and valued their talk about her strengths.

Overall, Mia's efforts to support Heather's processes of *becoming* were complicated. It is possible that her work to name Heather's strengths supported the development of a positive relationship that led to the slight improvements that were evident in Cycle 3 and that made space for Heather to take the substantial risks necessary to enter into the pivotal conversation, which will be the subject of Section 5.3.

5.2.6 Summarizing Relations of Power and Heather's Learning in Phase 1

Overall, examination of Heather's processes of TTL throughout Phase 1 reveals a picture of learning hindered by issues of inequitably distributed access to choice-making, voice, and power in the coaching work. Mia's ideas, questions, and choices prevailed while Heather's were sidelined. In this section, I summarize the issues this presented for Heather's learning, and I consider the work Heather needed to do to navigate this arrangement.

First, a picture emerges across Phase 1 of power-related challenges for multiple processes of learning. While some of these challenges may have existed without the presence of problematic power relations, these relations clearly hindered Mia's and Heather's ability to make progress. Heather's meaning-making processes did not progress significantly toward the world of *ambitious and equitable teaching and learning* and problematic relations of power resulted in missing agency for Heather, or a dearth of opportunity to make her own new meanings. Mia's attempts to support emerging meaning making exacerbated these challenges. Heather's participation (in conversations and in teaching) was constrained by these problematic power relations; her questions and concerns were sidelined, so it made no sense to continue to offer them. Mia's continued occupation of the role of outside expert left Heather with no teaching partner with whom she might try out new or risky classroom practice. Heather's processes of becoming a teacher in the emerging world were stymied by threats to her identity of competence related to her positioning as a novice in relation to Mia's expertise.

Second, the analyses in this section invite us to consider the work that Heather engaged in as she navigated coaching interactions. It is clear from her talk in interviews, including the comment below from the interview in September, that she experienced her interactions with Mia as *work*, and not the source of support that Mia had hoped she would.

I think coaching is a tricky thing. I think it's really important that coaches come in with a lens of "I'm here to support you and not create more work in your life," and I think it's really important that a coach says that... Like, "Hey, I know your life is ridiculously busy and I really want to make sure that this is a, you know, *helping you* relationship and not I'm trying to make your life miserable or create more work for you." You know? I think that really needs to be said in a good coaching relationship. Because there's nothing like feeling like somebody is, you know not- teachers don't want to feel like there's more work being put on them.

Use of the phrase “put on them,” connects to the power relations that were a central focus of the analyses in Phase 1. This comment also calls for consideration of the work that Heather experienced as necessary to navigate coaching, a consideration I take up briefly here.

The data are clear that Heather *was* doing various kinds of work to navigate her interactions with Mia. It is useful to notice that this work was necessary for her, given the arrangements, and none of it is the kind of work that Mia was *trying* to support for Heather’s learning.

First, Heather did work to resist domination, or to preserve a sense of dignity in the face of missing voice and power. This includes the “foot dragging” discussed earlier and is visible in each of the small ways that Heather resisted the goings on, by not answering emails, by stating her lack of availability, by naming those things she was *not* getting help with from Mia. Also, Heather worked, especially early in the relationship, to assert her voice, attempting to be heard. She asked her own questions, shared her struggles, and continued to do these things despite receiving messages that her questions and concerns were not central to the coaching work. Heather worked also to navigate within the bounds of an interactional space that was being defined by Mia. She figured out what was and what was not acceptable in this space, and tailored her participation accordingly. For instance, she stopped asking about classroom management issues and considered instead the issues of mathematics and tasks that Mia had signaled were welcome topics of conversation.

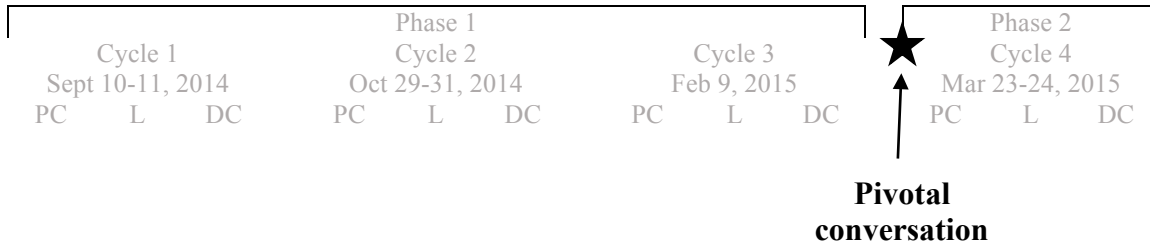
Heather also did protective work in her interactions with Mia, protecting her status as professional with value. This calls to mind Goffman’s (1955) notion of *face work*, or the work interlocutors consistently do to preserve their own and others’ dignity in interactions. The aspect of this work that is relevant here is about the maintenance of professional dignity, or status as a valued professional, and it is clear in Heather’s talk that this status was under threat in various ways, some of which had nothing to do with Mia (e.g. by administrators who evaluated and by the extreme demands placed on her). Inside the coaching work where her questions and concerns were sidelined, Heather seemed to feel threatened by the possibility (or existence) of negative judgments from an outsider who did not seem to “hear” or understand her as a professional, and she protected herself accordingly. She provided reasons things might not go well that did not relate to her professional competence, such as the “insanity” of the times Mia happened to come. She maintained a safe distance from Mia by, for example, providing information but not inviting collaboration and by keeping those questions she was prompted to ask surface-level and free from personal risk. With this distance, she ensured that any judgments that might come would be minimally hurtful.

These considerations of Heather’s work help us to see it as sensible that coaching occurred for her not as desired support, but as work that was “put on” her. It is clear also that Heather engaged in all this work to navigate the learning space, but NOT to learn. Her need to invest considerable energy in being okay in the space of coaching may have left her unavailable to do the kinds of work that Mia was hoping she would do (negotiate new meanings, try out risky new practice, etc.).

The problematic arrangements of power, agency, and voice that prevailed throughout Phase 1 were upended in a catalytic conversation, which is examined in the following section.

5.3 Negotiation of Power in the Pivotal Conversation

In the pivotal conversation, Heather and Mia named, centered, and negotiated power relations in their work together. Out of this negotiation, new roles were created, new relations of power established, with new access available to Heather to feeling heard in her work with Mia.



This conversation took place as Mia and Heather sat down during the time that had been scheduled for their 4th and last planning conversation in March. Just before recording began, Mia had asked Heather, “How’s it going?” Heather’s response, shared in the transcript below, made it clear that she was not happy and that something was upsetting her that she wasn’t sure was appropriate to share. With some encouragement from Mia, she explained that she felt disempowered, overwhelmed, and frustrated by the coaching arrangement.

Heather	Mia
As good as it can be at this point in the year. <i>(laughs)</i> just trying to /barrel through./	
	/Tired, yeah./
the last week before spring break	
	Yeah.
counting /every minute/	/Yeah, it feels like a little bit of a/ marathon, yeah.
Well, it’s more- for me it’s more about survival right now but I, /than a marathon/ but, I wish it was a marathon, I’m just trying to survive right now.	/Yeah./
	Yeah.
Yeah.	
	OK, so then what I want to know is, um, how can I support your survival at the happiest level it could be?
u:::m, I don’t know <i>(laughs)</i> .	
	Yeah.
u::h <i>(8s pause)</i> I mean, I’ll be like super frank with you.	
	Do it.
I’m just checked out as well and trying to get through this so, you know <i>(deep breath)</i> I don’t know <i>(small laugh)</i> . And I feel like um- Yeah, whatever, I don’t know. So:::	
	No I do want to know what you feel like if you want to tell me.
U:::m, <i>(inhale)</i> I guess I just like, I didn’t know that doing CI meant I had to do all this. Like it just feels like a lot all the time, and a lot of times I feel like I’m not really even asked. Like it’s sort of like,	

Heather	Mia
	Uh huh.
just expected that like we have to do all this stuff and perform and like, I don't know, it's frustrating.	

A long conversation unfolded following this. In this section, I summarize this conversation in segments, commenting throughout on the ongoing negotiations of positions, power, and voice. Because the conversation is long (about 20 minutes), I provide a synopsis of each segment (rather than transcript). Segments are separated by who is the primary speaker, denoted in bold in each case. (As in the transcript above, both Heather and Mia speak in each segment. However, each segment unfolds with one interlocutor's ideas privileged. For readability, I leave out the small interjections of the other interlocutor in each segment.) I maintain the first person voice in each summary, except in descriptions or comments, which I distinguish with italics. Line numbers in the Heather-Mia cycle 4 debrief transcript in Appendix E are provided for reference, so the reader can access transcript of line-by-line talk.

Segment 1: Heather Expresses Her Experience of Disempowerment, Lines 9-102

Heather: I didn't know that engaging in the CI project would mean I had to do all this [coaching]. I'm not asked, but expected to perform and it's frustrating. I feel like I'm a new teacher all over again. Sometimes I just want to teach. Is it a requirement? I love CI and don't want to get to the point where I hate it.

Here Heather expressed that she has experienced herself being positioned as powerless, without the freedom to choose her engagement and that she saw herself as "expected to perform" for Mia. She was clear that this arrangement was frustrating for her. Also, with "I feel like I'm a new teacher all over again," she connected this powerlessness to being positioned as a novice, without presumed competence.

Segment 2: Mia Offers New Positions and Power, Lines 105-155

Mia: It's not a requirement. I intend to support you. CI is hard. Coaching is intended to support you in doing this hard work, but if it's not, we don't have to do it.

In this chunk, Mia offered Heather the power to choose her engagement with coaching, positioning her as a teacher doing something hard, for whom support might be useful. She framed coaching as "intended to support you."

Segment 3: Heather States a Need for Power and Recognition, Lines 156-327

Heather: I wasn't ever asked. Sometimes things are put upon us [teachers] without us being asked. I want to be asked. It's been a tough year. I'm feeling stretched and need appreciation. Teachers don't get enough support. We're asked to do many things. I'm feeling resentful lately. I want to appreciate this. I've just been going along, but now I needed to say something about it. It feels like I'm throwing a bomb out there.

In this segment, Heather expressed a general sense of disempowerment as a teacher and stated clearly that she wanted the power to choose her engagement with “things.” She also expressed a need for appreciation, for her efforts to be seen and acknowledged. With “I’ve just been going along,” she suggested that these challenges had been present for her for some time but, until now, they have remained unspoken. With “it feels like I’m throwing a bomb out there,” she acknowledged the social risk and discomfort inherent in this direct challenge she was presenting to the relations of power.

Segment 4: The Tone Softens, Lines 328-374

Both: There is some transitional talk, in which Heather softens the tone and Mia thanks her for being honest, saying that this is necessary to support ‘good things to happen.’ Heather ends this with, ‘I said what I needed to say. I’m fine with you coming in here. I just needed to say that.’

During this brief segment, both Heather and Mia worked to make the conversation safe and free of conflict. With, “I said what I needed to say,” Heather made clear the importance for her of speaking and being heard. She then made a statement of choice (“I’m fine with you coming in here.”), although her choice was still constrained, as she was choosing to go along with something that was already set up, rather than choosing freely for herself.

Segment 5: Mia Offers Her Own Experience and New Power to Heather, Lines 375-619

Mia: I’ll be honest too. My experiences make sense given what you said. I haven’t known what you want from our work. We have fun, but I don’t know our shared purpose. I haven’t known if our work is supporting you. Maybe that’s because you don’t yet want my help. We can decide: do you want my support? We could find a way for me to support you or we could not, and come back to it next year. If this isn’t supportive, let’s hold off or make something new. We could think together now about what DO you care about? How could I be part of that thing you care about? We could do that now or next year.

Here Mia matched Heather’s honesty, offering her own experiences in their coaching work. In doing so, she acknowledged that what Heather said made sense in relation to her own perceptions. With the statement, “I haven’t known what you want from our work,” Mia acknowledged that Heather’s voice had been missing. She again positioned Heather as both powerful and at the center of their coaching work, in the position of choosing whether to engage with coaching and, if so, what coaching would be about.

Segment 6: Heather Uses Her Voice, Expressing Her Struggles, Lines 620-774

Heather: It’s so much work every day for me to keep my cool. Going deep with CI has been tough. I’m just trying to keep students in their seats. I’m struggling. Also, Pythagorean Theorem isn’t group worthy. We’ve been on the same 3 problems for 3 days. I would redo the next section of the curriculum, but I don’t

have the energy. I want you here, but I need more bodies babysitting children. I hate saying that, but I need someone to keep José in his seat. A lot of teachers are behind. It's hard with CI to know when it's OK to move on. Maybe that's where I need support.

Here we can see Heather take up Mia's offer to speak about what matters for her by sharing what she was struggling with. She named a number of tensions in her work (between 'going deep' with CI and classroom management, between CI and math content she does not perceive to be "groupworthy," between the desire to "redo" the curriculum to work with CI and her level of exhaustion). She also said that it's hard with CI to "know when to move on," proposing this as a possible focus for their work together. It is significant that of all the challenges she listed, the one she proposed to work on together was firmly inside the bounds of what Mia had previously established their work could be about. This suggests that Heather's power to make choices about their work was still bounded.

Also, Heather's use of "I hate saying that, but..." in her talk about needing support with classroom management, and her referring to that support as "babysitting children," suggests that she perceived these concerns to be out of bounds or somehow in conflict with what or how she was *supposed* to be talking about her practice or what she was *supposed* to want to work on with Mia. This is sensible considering earlier conversations in which Mia ignored Heather's talk about classroom management or told Heather what she (Heather) should really want to work on. (See section 5.2.1.)

Segment 7: Mia Presents Options that Respond to Heather's Overwhelm, Lines 774-814

Mia: We can do whatever we want. For instance, we could say, "Bye let's talk in a month." I won't take that personally. Or I could just teach your class and you could take a break and watch and see what happens.

In this segment, Mia presented Heather with both the power to choose and options she might choose among. Each of the options Mia offered (not participating in coaching work together at all and Mia teaching while Heather takes a break), connect to Heather's previous expression of overwhelm and exhaustion, inviting Heather to experience herself as heard in this conversation. Also, both options were new in that they were outside of the activities that had previously been part of their coaching work.

Segment 8: Heather Chooses with Pleasure, Lines 911-978

Heather: Do you really want to do that? Yay! Yeah, let's do it. This sounds great! I feel like I've just taken a shower! Thank you!

Heather's expression of surprise ("Do you really want to do that?") suggests that the option of Mia teaching her class was outside of what she had previously understood to be possible in their coaching work. She then made this choice with clear expressions of pleasure. This series of events makes it clear that the two have negotiated new roles (Mia as teacher and Heather as observer in the classroom; Mia as follower and Heather as leader in their coaching

work) and new relations of power (Heather as the one who chooses and whose concerns are centered).

By the end of this conversation, roles, positions, power-relations, and access to voice in this relationship had been renegotiated. As the following sections will reveal, this transformation resulted in vastly different conditions for Heather’s learning along all strands. Her processes of meaning making, participation of various kinds, becoming, and belonging were each transformed.

5.4 Phase 2: New Opportunities for Transformative Teacher Learning

This section demonstrates the transformation for Heather’s learning that took place along each strand of TTL after the pivotal conversation. Table 26 summarizes these findings, which are then fleshed out in the sections that follow.

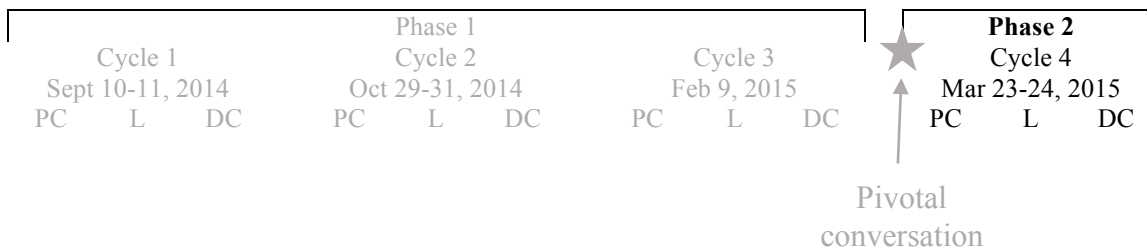


Table 26. Summary of Heather’s TTL along each strand across Phases 1 and 2

Strand of Analysis	TTL in Phase 1	TTL in Phase 2
Becoming and belonging: patterns of positioning between teacher and coach.	Heather and Mia occupied roles that were hierarchically related to each other, with unequal access to participation, power, and “voice” in the coaching work. This arrangement resulted in a lack of ‘togetherness.’ Heather and Mia both resisted and reified this arrangement, each in ways afforded by her position.	Heather’s and Mia’s roles were nearly flipped and Heather gained access to power that had been missing for her in Phase 1. Out of the newly negotiated roles and the new power arrangement, a new sense of ‘togetherness’ was achieved in the coaching work.
Making meaning about students, classrooms, mathematics, and goals for teaching.	Heather used talk about “high” and “low” students to make predictions and reason about which opportunities to offer which students. Mia’s attempts to support shifts in this reasoning functioned to exacerbate distance between them and denied Heather opportunities to negotiate her own new meanings.	Overall, Heather’s meaning making was more in line with the world of <i>ambitious and equitable teaching and learning</i> than <i>US schooling</i> in Phase 2. Her talk about “high” and “low” students was less frequent and was no longer used to reason about which opportunities to provide to which students. This talk also focused only on “smart” students, and there is indication that Heather may have begun to question this system of categorization of students.

Strand of Analysis	TTL in Phase 1	TTL in Phase 2
Participation in thinking and talking about teaching.	Heather’s contributions to coaching conversations were not deep and she offered ideas in ways that closed opportunities for herself and Mia to engage in inquiry together. She explained things to Mia and shared her thinking, but did not ask for Mia’s ideas until Cycle 3, when she did so only once.	Heather’s contributions to coaching conversations were deeper and the ideas she offered opened or left open opportunities for conversation. She asked unsolicited questions, seeking out Mia’s ideas in relation to ambitious teaching. She paused the planning conversation so she could get a notebook to write down new ideas she was getting.
Participation in classroom practice.	Heather’s and Mia’s work on classroom practice was focused on negotiating the important math in lessons and designing tasks. Only a small amount of their work on classroom practice made it into Heather’s teaching, with many of Mia’s ideas being rejected outright or agreed with, and then not used.	The focus of their work on classroom practice shifted to supporting productive and equitable group work. Mia taught an ambitious lesson in Heather’s class and Heather, without prompting from Mia, chose to teach the same lesson herself in other classes, trying out the same lesson elements that Mia used.
Becoming a kind of a teacher.	Heather’s vision for teaching was marked by a fundamental contradiction (seeing students as “high” or “low” and embracing Complex Instruction as a powerful equity pedagogy). CI introduced new ideas about powerful teaching to Heather and threatened her previously-established sense of competence. None-the-less, she remained sure that CI is “amazing.”	Heather continued to see CI as powerful, but came to attend to it as being about centering of students and heterogeneous grouping with the awareness that all students have something to offer. She contrasted this with teaching that separates kids based on their supposed “smartness.” Her vision for teaching as “meeting students at their level” may have been shifting as her notion of “level” was being called into question. Heather’s concerns about her own competence come out of the shadows and into her conversations with Mia, and she reported experiencing success in terms of students’ accomplishments “with CI.”

Each of these findings with respect to Heather’s learning in Phase 2 are fleshed out in the following section.

5.4.1 Transformed Belonging and Positioning, ‘Togetherness’ with Mia in Phase 2

The pivotal conversation resulted in new roles for Heather and Mia, and in Heather gaining access to power that had been missing for her in Phase 1. These newly negotiated roles and positions of power supported a new sense of “togetherness” between Heather and Mia. These points are elaborated below.

New roles support new participation and a corrected balance of power.

As was clear in the first part of this chapter, Heather’s and Mia’s work throughout Phase 1 was characterized by a sense of distance, with the roles and positions available to each of them contributing to an imbalance of power that impeded Heather’s learning. After the pivotal conversation, markedly different roles and positions became available to both Heather and Mia and power was distributed in ways that supported Heather’s learning along all strands. In this section, I examine the roles that were evident after the pivotal conversation for Heather and Mia and the ways in which power functioned newly. I then provide evidence that, along with these shifts, there was a new sense of ‘togetherness’ in their work. Table 15 contains a summary of the roles evident for Heather and Mia in both phases of their work together, showing that the new roles available to each of them in Phase 2 were dramatically different, almost opposite.

Table 27. Role shifts for Heather and Mia from Phase 1 to Phase 2

	Phase 1	Phase 2
Heather is	<ul style="list-style-type: none"> • Teacher as performer for evaluation. • Sole leader of her classroom community. • Follower in coaching work. 	<ul style="list-style-type: none"> • Help-seeker. • Observer in her own classroom. • Driver of the coaching work.
Mia is	<ul style="list-style-type: none"> • Coach as evaluator. • Outsider to the classroom community. • Leader in the coaching work. 	<ul style="list-style-type: none"> • Coach as helper/supporter. • Teacher. • Co-participant in the coaching work.

Heather transformed from a performer for Mia’s evaluations to a help seeker, from a solitary leader to an observer in her classroom, and from follower to leader in the coaching work. Mia transformed from an evaluator of Heather to a support-provider, from an outsider in the classroom community to teacher, from leader to follower in the coaching work. Below I examine each of their participation in Cycle 4, demonstrating ways in which it is consistent with their new roles and is connected with new relations of power.

Participation shifted in accordance with new roles.

As will be examined more closely in the *participation in thinking and talking about teaching* section below, Heather’s and Mia’s participation shifted dramatically in Cycle 4 in ways that are consistent with the roles describe in Table 15. This section focuses on the power dynamics related to these new roles that are evident in their new modes of participation.

Most obviously relevant to issues of power, Heather became a driver in their coaching work. Choices became hers to make, and her questions and other choices determined the direction of her conversations with Mia. In fact, when Heather participated in ways that were inconsistent with this new arrangement (e.g. she asked Mia if she “should” do things), Mia reminded her of the new arrangement, as in the example below where Mia reminded Heather that she had freedom to choose.

Heather	Mia
Yeah, do you think I should do this for all periods tomorrow?	
	Whatever portions of it you want- you feel comfortable doing. Sure, play with it, yeah. Have fun. See what happens.

After some consideration of what aspects of the lesson Heather might like to do in various classes and why, Heather asked again. This time, though, her language suggests that she already knew what she wanted to do. Mia responded by saying “you might as well,” supporting Heather to make a choice based on what would “make your life easier.”

Heather	Mia
So, for 1 st period, do you think I should just boycott this too (<i>indicating a worksheet</i>) and do that (<i>indicating the task that Mia was planning to use</i>)?	

Heather	Mia
	Yeah, you might as well keep- if you feel comfortable doing it, you might as well keep your- make your life easier, keep your kids in pace, right? /

Heather did choose to teach the lesson, and there was some discussion about how the participation quiz strategy, for which Mia planned to use posters and recruit Lynn’s help, might work for Heather when she was teaching alone. Heather asked,

Heather	Mia
For my 1 st and my 4 th period should I not do the poster things?	
	Whatever you wanna do, it’s a lot to do.

A few lines later, Mia encouraged Heather to make her own decisions and to base those decisions on what would feel “fun and easy.”

Heather	Mia
	Make decisions based on what’s gonna feel fun and easy,
Okay.	
	That’s what you need right now, in my humble/ estimation (<i>laughs</i>)
/Yeah, I don’t really know how to run, like (.) seven or eight posters on my own.	
	No no no no, that’s cray cray. Yeah yeah yeah, don’t do it. don’t do it.

Throughout this conversation, Heather related to Mia as a source of desired support. She asked questions about the lesson that they would each teach and was eager to hear Mia’s ideas. (This will be examined in more detail in Section 5.4.3.) Then, during the lesson, Heather watched while Mia taught. In the debrief conversation, the two engaged together on making sense of what had happened during the lesson.

New sense of togetherness.

There was a marked shift in the feel of Heather’s and Mia’s conversation in Phase 2, with a greater sense of ‘togetherness.’ First, coming out of the pivotal portion of their conversation and beginning a planning conversation, Heather expressed a sense of feeling refreshed and being “on the same page” with Mia.

Heather	Mia
This sounds great!	
	Oh.
Like I feel like I’ve just been like, taken a shower right now.	
	Yay!
Like I just, I can’t-	
	Yeah.
do another day of this (<i>gesturing to the worksheets on her table</i>).	

Heather	Mia
	Like this-/awesome/ because I don't know what I would offer you around that. (<i>laughs</i>)
right. thank you! okay so I think we are on the same page /then	
	/yeah/ yeah
about, like, what's happening.	
	Yeah.
Cool. (<i>intake of breath</i>) this sounds great!	
	Yay!
Yay!	

This sense of ‘togetherness’ sustained throughout the 4th coaching cycle with no signs of the “foot dragging” that had marked their earlier work. Also, in contrast to Phase 1, where Heather’s and Mia’s laughter and friendliness had been mostly contained in “off task” talk, in this cycle, the two smiled and laughed together frequently *during* their talk about the lesson. To illustrate these points, I share first an email exchange between Mia and Heather and then some moments from the debrief conversation in this cycle.

In the morning following the pivotal conversation and before Mia was to teach in Heather’s class, Mia sent Heather an email containing the following text:

I just wanted to say, before the hustle and bustle of class, thank you for our conversation yesterday. It takes real courage to be as honest as you were, and the fact that you acted with that courage gave me the opportunity to understand you in new ways, to learn from you in new ways, and to connect with you in a way that I am super excited about. I’m excited for class today and for whatever we decide to do together in the future.

Heather responded:

Thank u for letting me be honest and hearing me out. It’s been a tough year. I am feeling it in many ways. I am sooooo appreciative of you teaching my class today and I couldn't think of a better way than that to support me!! Thanks and I'll see u 3rd.

In this email exchange, Mia and Heather communicated in a way that was newly vulnerable and transparent. Heather’s email suggests that she felt supported in their work, possibly for the first time.

As the two sat down for the debrief conversation after the lesson, Heather again expressed her appreciation, thanking Mia for teaching the lesson and for the email she had sent, and then got the conversation about the lesson started quickly, clearly wanting to hear what Mia thought and share her own thoughts. It is notable that she said nothing here about being busy, instead getting right into the conversation:

Heather	Mia
<i>Mia is moving around, getting a notebook and pencil, Heather is moving toward the table.</i>	
(<i>gesturing to a pile of materials on the desk</i>) Do you need me to move this stuff?	

Heather	Mia
	Eh, I'll just do this (<i>moves a box</i>) and then I'll come sit next to you.
Okay. Um, yeah (<i>small laugh</i>) that was so nice of you to teach.	
	(<i>laughs</i>)
(<i>walking across the room.</i>) Oh my god. Wow! Um, and thank you for that email.	
	Yeah!
Um, do you want a piece of gum?	
	Sure. I'm chewing a really old nasty one so that'll allow me to cycle out (<i>laughing</i>).
I have like teacher breath by the end of the day,	
	I have it too.
So I like to throw in a piece of gum at the end of the day. And my throat's been all messed up lately. Okay. (<i>walks back to table</i>). Okay. So (<i>sitting down</i>) yeah. Tell me what you thought. (<i>laughing</i>) I have some interesting thoughts, too. (<i>laughs</i>)	

With “tell me what you thought,” Heather claimed the power to call the conversation to order and to direct it and she communicated her wish to hear Mia’s thoughts. “Tell me what you thought” is not something that Heather could or would have said before the pivotal conversation transformed the arrangements in this relationship.

Mia followed this by redirecting the conversation back to Heather’s thoughts:

Heather	Mia
	(<i>sits down and opens notebook</i>) Yeah, no I actually would love to hear what you thought first.
Um.	
	I have lots of thoughts but they're very jumbly right now. I don't have anything coherent.

Heather did share her thoughts here, beginning with a reflection that in all three classes (the one Mia taught and the two she taught), students “took on the task without much feeling like they needed me for something... Most of them at least tried to attack the problem or do something.” She then commented (in the segment below) on Mia’s handling of the “high needs” in 3rd period, with her talk and Mia’s listening both punctuated by smiles and laughter.

Heather	Mia
Um, and I will say with the high needs of third period (<i>laughing</i>),	
	Yeah, uh huh (<i>smiling</i>).
which you took on really well (<i>laughs</i>),	
	(<i>laughs</i>)
they were pretty well behaved for the most part,	
	Yeah!
and good.	
	Yeah.
You know, with the exception of a couple toughies.	

In another indicator of ‘togetherness,’ Heather expressed vulnerability in new ways with respect to teaching. As is discussed in Section 5.4.5, she made four statements that contained concerns about her own competence with teaching the lesson the two were planning. While she had frequently expressed a sense of struggle related to being overwhelmed, she had not in Phase 1 ever made statements like this. For example, in a segment of talk that is shared in Section 5.4.3, Heather worried aloud whether “I’m gonna be able to run [the lesson] as well as you.”

Along with these ‘softer’ signifiers of togetherness, segments of their conversations in Cycle 4 sound more like two people exchanging ideas than they previously had. The following example came during an extended discussion about the inequitable participation they had observed in one student group during the lesson, and Mia’s attempts to intervene with that group. They reflected together on what happened and how students responded to Mia’s interventions. At one point, Heather interrupted Mia to propose an idea for a group intervention, called a group huddle, that the two had not previously considered. During the segment that followed Heather’s suggestion, she and Mia were leaning toward each other, listening intently, and built on each other’s ideas:

Heather	Mia
Maybe that would have been a good time to do like a group huddle with like her role.	
	O::h, uh huh.
Or with Thomas’s role or Faith.	
	Yeah.
So that we could have gotten them /a little bit more/ involved. I forget about the group huddle all the time. <i>(Gesture with arm of exaggerated frustration.)</i>	/Interesting./
	<i>(Mirrors Heather’s arm gesture.)</i> Uh, yeah. I didn’t think of it either.
It’s like such a good, yeah that might have been a good one, yeah.	
	Yeah, I feel like we could have huddled around that with Faith or Thomas.
	/Yeah./
	Or we could’ve huddled with Kalea around /like in a way that was really not/ pointing at anyone,
/ backing off <i>(laughing)</i> /	
	but because we had that one- we had a representative from every group.
Right.	
	but just to say to that huddle, um, “I’m seeing something that concerns me a little bit, which is just I really need to hear people asking for other people’s ideas.”
Yeah.	
	“So, I need you guys to go back to your groups and just make sure that happens.”
Yeah.	
	“Can you do that?” /you know like in a really soft way/ that wasn’t pointing her out.
/Maybe that would’ve been good./ Yeah, yeah.	

This section has established that the *micro-identity/relational positioning* strand of Heather’s transformative teacher learning underwent dramatic shifts following the pivotal conversation. In the following sections, findings are shared from analyses along the other four strands of TTL, revealing that these shifts in power and positioning had far-reaching consequences for Heather’s learning.

5.4.2 New Meaning-Making in Phase 2

Analysis of code counts and code profiles revealed some shifts in Heather’s meaning making between Phases 1 and 2. In total, Heather’s talk was coded as significantly more consistent with ambitious and equitable teaching in Phase 2, with the ratio of emerging to dominant talk increasing from 0.9 across Phase 1 to 1.6 in Phase 2. Looking at particular emerging codes, the significant increase lies in the portion of her talk that was focused on the social organization of the class for learning. (This relates to a shifted focus in this coaching cycle to supporting productive and equitable group work. See section 5.4.4.). While this focus matters for ambitious and equitable teaching and certainly might support Heather’s TTL, without more coaching cycles to examine, it is difficult to know whether this shift of focus was anomalous or how it might have been significant in the long term.

Table 28. Portion of each code for Heather’s talk in Phase 1 and Phase 2 (entries are percentages of total coded talk)

	Phase 1	Phase 2
Compliance	16	29
Limiting Math Goals	13	2
Smartness as Exclusive	13	6
Students’ Math Deficits	11	2
Total talk consistent with <i>US Schooling</i>	53	39
Social Organization of the Class for Learning	14	43
Rich Math Goals	9	0
Smartness as Inclusive	0	0
Students’ Smart Math Thinking	14	17
Rich Mathematics	10	2
Total talk consistent with <i>Ambitious and Equitable Teaching</i>	47	61
Ratio of <i>Ambitious and Equitable</i> to <i>US Schooling</i> talk	0.9	1.6

However, as was true with respect to Phase 1, deeper analysis of Heather’s talk about “smartness” as exclusive is instructive. This analysis in Section 5.2.2 that this talk was more common in planning conversations and that it often served a planning function for Heather. She used her hierarchical understanding of students’ smartness to plan lessons, reasoning about what opportunities made sense to provide to which students. As captured in Table 29 and Table 30, this shifted dramatically in Phase 2. First, the planning conversation in Cycle 4 was the first planning conversation in this coaching relationship that contained no instances of talk that were coded this way. (See the absence of red in Heather’s code profile for the planning conversation in Cycle 4, and the presence of red in every other planning conversation in Figure 11.)

Table 29. Instances of Heather’s “smartness” talk in planning and debrief conversations in both phases

	Phase 1 average	Phase 2
Smartness as Exclusive in planning conversations	24	0
Smartness as Exclusive in debrief conversations	5	5

Second, the categorical analysis of Heather’s smartness talk, by purpose and by which groups of students were named, shed light on this shift. As Table 30 reveals, none of Heather’s smartness talk in Cycle 4 was used to reason about which opportunities should be given to which students or to predict what students would do or to explain challenges for her planning. (Together these 3 categories made up 64% of the instances of Heather’s smartness talk in Phase 1.) The 5 instances of this talk in Cycle 4, each of which took place in the debrief, were used for explanatory purposes, to explain a challenge for group work (e.g. “Kalea and Jimmy were kind of owning everything because they’re both really high-level thinkers.”) or to explain individual students (e.g. “She’s actually generally pretty soft-spoken, but she’s super smart”). Another trend revealed in Table 30 is that each of the 5 instances of this talk in Cycle 4 was concerned only with the high end of the high/low hierarchy. Heather did not talk about “low” students, or “the divide” at all in this conversation. Rather, her smartness talk was about explaining group work or students in ways that named them as “smart.” For instance, when Mia asked about one student’s status (E. G. Cohen & Lotan, 1997) in class, Heather responded, “Oh, Jenna’s really smart. Like top of the class.”

The shift described above is particularly notable in light of the fact that the lesson Heather and Mia were discussing in the fourth coaching cycle was a more ambitious lesson than Heather was accustomed to teaching. It was structured around one open-ended problem that they expected would be challenging for students, and that did not resemble problems students had seen before. Given this context, it is remarkable that Heather made no predictions about which kids would or would not be able to take on this challenge or suggest anything to “scaffold” the task for her “struggling” students.

Table 30. Categories of Heather’s “smartness” talk in Phase 1 and Phase 2

Smartness talk by category:	Phase 1 <i>n</i> = 36	Phase 2 <i>n</i> = 5
Purpose:		
1. To explain challenging group work.	5 (14%)	1 (20%)
2. To reason around giving opportunities to some students, but not all, or what some students need.	8 (22%)	0
3. To predict behaviors, usually who will be able to do something.	9 (25%)	0
4. To explain a challenge for planning.	6 (17%)	0
5. To explain attributes or behaviors of a student or group of students (and none of the above).	12 (33%)	4 (80%)
Which students are being named?		
• Talk contains a clear comparison of smart to not smart, including talk about “divide.”	21 (58%)	0
• Talk focused on the struggling or the not smart.	6 (17%)	0
• Talk focused on the smart, without comparison.	8 (22%)	5 (100%)
“Smartness” talk qualified (air quotes)		1

Analysis of Heather’s smartness talk revealed one other interesting development, as is represented in the last row of Table 30. In the debrief conversation in Cycle 4, Heather gave the first indication in all of her work with Mia that she might see something to be questioned about high/low talk. In this instance, she was describing her 4th period class: “They’re one of my (*air quotes*) highest scoring kids, if we’re gonna talk about, like, test scores.” Here the use of air

quotes suggests that she may have been calling into question the validity of the category “highest scoring,” even as she was using it.

This interpretation is supported by a moment that took place during Heather’s final interview in May. She had told the interviewer that when she was a child, she had experienced a “not great model” of instruction. She described a number of aspects of that model, including:

It’s classifying kids based on their, um, you know, skills at math and so what happens is that all these kids that are quote unquote (*makes an air quotes gesture*) smart kids end up in one class and then you get students who have had bad experiences with math, and they all get lumped into another class.

Her use of the words “quote unquote” along with the air quotes gesture suggests that she was calling into question the validity of “smart kids” as a category. This is notable in part because she used this category label so frequently in her earlier talk, with no indication that she saw it as problematic.

5.4.3 Transformed Participation in Thinking and Talking about Teaching in Phase 2

Heather’s participation in thinking and talking about teaching with Mia was markedly different after the pivotal conversation than it had been throughout Phase 1. A previous section detailed some of the ways in which her participation changed, with a focus on her power and agency in the coaching relationship. Here I return to considerations of the depth of her contributions and the extent to which she sought out Mia’s input. As is clear in Table 31, the ratio of her contributions coded as high depth to those coded as low depth almost doubled. This trend is attributable primarily to an increase in her high-depth questions (from an average of 2 per cycle in Phase 1 to 6 in phase 2) and the disappearance of the practice of sharing ideas that closed opportunities for inquiry (from an average of 7 per cycle in Phase 1 to 0 in Phase 2).

Table 31. Heather’s low and high depth contributions to coaching conversations in Phase 1 and Phase 2

	Phase 1 Average	Phase 2
1. Low-depth questions	10	13
2. Ideas that close	7	0
Total Low Depth	17	13
3. High-depth questions	2	6
4. Ideas that open (or leave open)	4	3
Total High Depth	6	9
Ratio of high to low depth contributions	0.35	0.69

Also, as Table 32 shows, Heather asked many more unsolicited questions in Cycle 4 than she had previously. The great majority of these questions (10 of the 12) were clearly intended to solicit Mia’s input.

Table 32. Heather’s unsolicited questions and requests for Mia’s ideas

	Phase 1 average	Phase 2
Unsolicited questions	2	12
Questions requesting Mia’s ideas	0	10

Another shift, which is discussed also in relation to “togetherness” with Mia and *becoming a kind of teacher*, is that Heather expressed doubts about her own capacity to teach CI lessons well—or as well as Mia—4 times in this coaching cycle. Previously, Heather had expressed struggles related to being overwhelmed or not having the bandwidth required for various things, but she had never articulated concern about her teaching competence before this coaching cycle.

The following segment of talk exemplifies a number of the shifts described above. In the pivotal conversation, Heather and Mia had agreed that Mia would teach a lesson in one of Heather’s 8th grade classes the next day. The lesson, which Mia had co-planned and co-taught with a colleague of Heather’s the previous day, was built around one problem that they anticipated students would find challenging. Before the following talk, Heather had decided that she would teach the same lesson in her other 8th grade classes. (This choice was the subject of some examination in Section 5.4.1.)

After a bit of discussion about how the lesson had been structured to support students to use their teammates as resources and persevere through the challenge of getting started, Heather asked Mia about the lesson launch, focusing in particular on the things that would get written (the “opening notes”) as Mia set students up for the group task. In doing so, she expressed her wish for Mia’s input and inquired into a substantive question of teaching (how lesson launches can serve to support students’ participation). She also expressed doubts about her own relative capacity to teach this challenging lesson and she expressed the wish to take notes.

Heather	Mia
Your like opening notes are pretty important for this task, wouldn't you say?	
	Yeah.
I'm just wondering if I'm gonna be able to run it as well as you, like I don't know if I'm gonna have the same- if I do it for all the classes, I- unless I- like I feel like this one (<i>pointing to something in the coach's notes</i>) is like really key to like setting it up how you are explaining it.	
	Well, I think there are a couple key aspects. I think there's a lot of room to play-
Okay.	
	and it'll just unfold differently. I think the key aspects are, whatever you think you need to say to [students] to get them to be willing to try things that they don't already know.
Okay, let me- can I write this down?	
	Yeah, of course.
<i>(Gets a notebook from across the room.)</i> 'Cause I'm gonna forget all this.	
	Yeah.
<i>(Arriving back to the table)</i> Okay, so to open this and launch it, <i>(pauses, then laughs)</i> I was like this notebook's full! OK. <i>(5s pause while she finds an empty page)</i> OK, so launch, alright.	

Also, the ways Heather shared ideas about teaching shifted in this coaching cycle, as is captured in Table 31. Whereas many of the ideas she shared previously had functioned to close

opportunities for collective inquiry, each of the ideas she shared in this conversation opened or left open these sorts of opportunities. For example, in the debrief conversation after Mia had taught, she and Mia were considering ways that the next day's lesson might build from the strong mathematical thinking that students had done in this lesson. Mia suggested wording Heather could use to highlight the smartness in the math thinking from groups who had not yet finished solving the problem. Heather responded with an idea, using rising intonation (indicated in transcript with the use of a question mark) to invite Mia's input: "Maybe I can like, yeah, say like, 'Here's some highlights of a few [student ideas] that I saw were getting closer.' Maybe we could have a group discussion?" The two went on to discuss language Heather could use with her class that would most effectively highlight the "smartness" of students' mathematics.

Overall, Heather's contributions to coaching conversations were deeper after the pivotal conversation and the ideas she offered opened or left open opportunities for further conversation and investigation. She asked numerous unsolicited questions, seeking out Mia's ideas in relation to ambitious teaching.

5.4.4 Transformed Participation in Classroom Practice in Phase 2

Two shifts are evident in Heather's and Mia's negotiations of classroom practice in this last coaching cycle. First, as is evident in Figure 13 (threads of practice diagrams), the focus of their work in this cycle shifted from negotiating important mathematics and task design (Strands E and K)—where it had been throughout Phase 1—to supporting productive and equitable participation in groups, an aspect of ambitious teaching that is both central and unique to CI.

Second, Heather's choice (and action in accordance with the choice) to teach the lesson Mia would teach was a more ambitious step in trying out new teaching than had happened in her coaching work prior to this. Recall that before this cycle, Heather had shifted launched lessons in ways that were increasingly tied to mathematics, and she had tried out some Do Now activities that she and Mia had discussed. Other than these relatively small shifts, her teaching routines appeared to have remained unchanged in Phase 1.

Given this background, and the ambitious nature of this lesson (recall that the lesson was built around a single problem that they expected students would struggle to make progress on), Heather's choice to try out this lesson and try to model the lesson after Mia's was a considerable transformation in her work with Mia on classroom practice. While observational data from the lessons Heather taught is not available, her talk made it clear that she tried out many of the lesson elements that she and Mia had discussed. It is safe to assume that Heather's engagement in trying out new teaching practices must have been productive for her learning.

5.4.5 Becoming a Kind of Teacher in Phase 2

Analyses of Heather's processes of negotiating her figurative identity and identity of competence reveal that the contradictory vision articulated in Section 5.2.5 may have been in revision, as suggested by the analysis of her meaning-making in Section 5.4.2. As demonstrated in the sections below, her talk in the ending interview was different from her earlier talk in that she shifted from a primary focus on CI's tools and strategies to consider student-centered instruction and assumptions of competence and student ability. Her talk about her experiences with CI suggest that she found resources to identify as competent with respect to her notions of CI teaching. These points are elaborated below.

Developing a vision for powerful teaching.

Heather's talk in the end-of-year interview in May suggested that she continued to understand CI as powerful teaching and that her ideas about CI had developed beyond a focus on structures and strategies to focus on (1) the centering of students and decentering of the teacher; (2) heterogeneous grouping, with the assumption that all students "have something to offer;" and (3) students being challenged to teach each other. This, along with the shifting function of high/low talk that was examined in Section 5.4.2, suggests that the contradictory thinking about students by level may have been shifting or loosening. Her talk also suggested that while her experiences with CI over the course of the year were challenging, she also perceived success for her students. In this section, I examine Heather's talk about these aspects of her vision of powerful teaching and evidence related to her sense of competence with respect to this vision.

Heather's talk in the end-of-year interview included greater emphasis on the student-centered nature of powerful teaching. When asked to describe her vision for powerful teaching, she responded,

Uh, to me it would be one where there is structure, um where there is collaborative group work with the students, um, one where the teacher talks very little. Um, and one where the students are pushed and challenged, um, to high standards. And I would add to high standards not only in math but in being able to communicate their ideas as well and explain them.

She elaborated on her vision by drawing contrasts to math teaching that she had experienced as a child, which she dubbed "not a great model." This model, she explained, was "very much about textbooks...worksheets, it was not group work. It was very teacher-centered." She went on to describe that in this model that she experienced,

We were classed by level. Like I distinctly remember taking a test in 8th grade where if you passed it you went onto an algebra class early in 8th grade, which I made it into that class, and I remember feeling so proud that I was in that class, um but I never experienced what the other classes were like for the kids that didn't make it. ...[This model involves] classifying kids based on their, um, you know, skills at math and so what happens is that all these kids that are quote on quote (*air quotes*) smart kids end up in one class and then you get students who have had bad experiences with math, and they all get lumped into another class. and you know it gets really segregated, and it's not a great model. They don't tend to learn as well and a lot of times there's these stigmas of, you know, them not being smart.

She went on to say that CI has "changed my entire instruction," drawing contrasts between CI and this old model in relation to the issue of "segregation."

[CI has] completely changed my entire instruction. It's just changed everything. It's changed the way I thought about group work, it's changed what I thought was a good- what I thought was doing group work was just having kids work in groups, and it's SO much more than that, there's so many components to it, um it really encompasses, you know, learning on every level within groups. Um, it

doesn't segregate, it allows [students] to teach each other instead of me teaching them.

The interviewer asked Heather to explain CI, and Heather responded,

It is a way of learning, a way of teaching, that encompasses all levels of learning. In a way where the students are the focus and not the teacher. And it's in a way that students are challenged but without the intimidation. For example, if I do a checkpoint, if [students are] not ready, I ask them if they need me to come back. Like it's not this on the spot kind of having to know everything. And it also really encompasses the group dynamic, which means that no one person knows everything. And that's really great because I think a lot of students go into life thinking that there's the smart kids and the not smart kids and then there's- that's it. You know, and here it's like everybody has something to offer.

Across these interview responses, Heather's talk about CI and powerful teaching went beyond the structures and strategies that had been her focus in the first interview. She talked about the centering of student and decentering of the teacher, about heterogeneous grouping with the assumption that all students have something to offer, and about students being challenged without intimidation. Also, related to Heather's understanding of students in terms of their membership in categories labeled "high" and "low," it is interesting to notice that her talk in this final interview both included talk about students' levels, as if that were meaningful, and talk that troubled the notion that there are smart kids and not smart kids. This, along with the analysis in Section 5.4.2, suggests that Heather's conceptions of students and smartness and her development of a vision around that conception may have been in revision.

Experiences of competence with respect to powerful teaching.

As was discussed in Section 5.4.3, Heather began to share with Mia concerns about her own competence with respect to CI during their last coaching cycle. The analysis in Section 1.5 (*becoming a kind of teacher in Phase 1*), suggests that these concerns were not new for Heather, but newly expressed, which arguably tells us more about the coaching relationship than about Heather's sense of her own competence over time. But it does tell us that at the end of their coaching work, Heather had concerns in this regard.

Her talk about CI having "changed everything" helps us to see these concerns as sensible. One can imagine that a teacher in her 5th year, who has been positioned prior to this year as highly competent, but who encounters new pedagogy that "changes everything" would experience challenges to her sense of her own competence. Some of Heather's talk in the end-of-year interview suggests that, despite the challenges she experienced with CI, she also experienced success.

Like I said, [CI has] completely changed my classroom this year, so, um, I mean it's been amazing. I think this has been one of the toughest years and one of the best learning years I feel- I mean I've learned so much this year. And I've had some of the strongest work this year come out of students. I also think CI has really created this sense of independence in the students in a weird way, even though they are doing group work, I feel like because they're given so much

space and independence, they do so much more on their own. And they own more as well. like I don't have to really run as much. You know, it's more about they do the work, they know what to do, they know where to grab materials, they know that when I come by there's gonna be a checkpoint and they need to be ready, like there's just been certain things that they know they are gonna get pushed for and they need to come up to those standards. But I feel like they've really met them, in an awesome way.

A remarkable feature of this talk is that the ways in which Heather talked about her successes were each centrally related to her conceptions of powerful teaching, suggesting that she had tools for understanding herself as competent in new ways. (Remember that in the September interview, her talk about her own strengths was entirely separate from her talk about powerful teaching.) In the excerpt above, she talked about students doing more “on their own” and that she did not “have to run as much.” Given that she had named “student-centered” as a central feature of powerful teaching, this observation claims some competence for herself with respect to powerful teaching.

5.4.6 Summarizing Relations of Power and Heather's TTL in Phase 2

Across Section 5.4, analyses indicate that the new relations of power that Heather and Mia negotiated in the pivotal conversation opened opportunities for Heather's TTL along all five strands. It also became clear that much of the interactional work that Heather engaged in during Phase 1 (e.g. preserving “face” and navigating within—or resisting—Mia's conversational boundaries), was absent in Phase 2. New roles, power relations, and ways of participating allowed Heather to relax, leaving her more available to engage in TTL.

5.5 Discussion and Conclusion

Examination of the Heather-Mia case in this chapter yields a number of conclusions that relate to power, learning, and the negotiation of these issues in coaching relationships. First, imbalances of power and missing teacher agency in coaching are problematic for teacher learning. Second, this case demonstrates that it is possible to renegotiate and rearrange problematic relations to create interactions that *do* support learning. Third, these analyses demonstrate that without considering issues of power, we might easily misunderstand the dynamics of coaching in unfortunate ways. Each of these points is elaborated below.

5.5.1 Suppressed Teacher Agency Was a Barrier for Learning

While “agency matters for learning” has become part of current discourse around student learning, consideration of agency and power are missing from most studies of teacher learning. The analyses in this chapter provide opportunities to consider issues of agency in teacher learning, and to look closely at *how* agency matters for teachers' learning in the context of coaching.

Findings suggest that power relations and teacher agency can hinder or support multiple processes of learning. We saw that (1) challenges related to power and agency negatively influenced each identified process of learning and that (2) transformed power relations and restored agency positively influenced each process. When Heather did not have agency broadly in her interactions with Mia, her opportunities to participate *as an agent* in challenging

negotiations of meaning were hindered, limiting opportunities for her to transform her meaning-making. Conversely, when she had agency in these conversations, she was free to participate actively in negotiation of meaning *with* Mia, opening opportunities for learning.

When Heather did not have the power to define acceptable forms of participation in her work with Mia, her participation was limited. But when she had the power to choose how these conversations would be structured, and how she would participate with Mia in conversations and in the classroom, her participation transformed, gaining depth and engagement and she began to experiment with the new and challenging teaching that Mia was working to support.

When Heather's own sense-making about powerful teaching was framed as outside of acceptable ways to talk about teaching, her ability to negotiate her vision with Mia was hindered, and distance between the two was increased. But when she was allowed the space to talk how she liked about what she liked, her vision for powerful teaching and her sense of her competence with respect to that vision entered her conversations with Mia in ways that made them available for negotiation.

This all helps us to see the interconnectedness of learning processes. In particular, we see here that issues of positioning and "togetherness" impact all the other strands of transformative teacher learning. This is different from "it's nice when people feel good in learning situations." It shows us that when learners do not have access to agency, their abilities to engage in learning along *all* strands is hindered. This brings us back to Wenger's notion of ongoing negotiations being part of learning. Learning is not about simply receiving, but negotiating *with* our communities. Here we saw negotiations of power and positioning resulting in limited agency for Heather with respect to negotiations of other learning processes.

Similar to these points, but separate from considerations of particular processes of learning, findings here indicate that teachers who we may perceive to be "disengaged" in challenging coaching relationships may actually be engaged in considerable work to navigate their interactions inside of these relationships. This work, which the Heather-Mia case supports us to see as challenging and exhausting, is not the same work required for learning about teaching. And we see that when power relations are negotiated productively, much of this work is no longer required, and teachers may be free to engage in the kinds of learning coaching intends to support.

5.5.2 Power and Agency Can be Re-negotiated in Ways that Support Learning

The Heather-Mia case provides an existence proof of sorts, demonstrating that it is possible for problematic relations of power and agency in coaching to be reinvented in ways that transform the learning environment. Heather's and Mia's accomplishment of this reinvention required direct and explicit attention to these issues; problematic relations had to be named to be negotiated. It is useful to consider what made this risky work possible.

Courage was required for Heather and Mia to engage in the pivotal conversation. Heather's naming of her challenges breached the bounds of safe conversation and involved considerable personal risk. Mia's willingness to hear Heather's concerns, and her support for Heather's associated risk-taking, required her to put aside any instinct she may have had to defend herself from criticism. The negotiations that unfolded required considerable skill, as Heather and Mia both needed to (1) find a balance between the honest presentation of challenging perspectives and the creation of safety in the conversation so that it could continue and be productive and (2) find ways to offer and accept alternatives.

However, it is likely that more than courage and skill was required to make this conversation possible. From Erickson (2004) and Scott (1985, 1990), we saw that missing power and voice lead to “underground forms of resistance.” The pivotal conversation was not underground. This suggests that Heather must have had access to *some* power and voice by the time she began this conversation. So, despite the challenges that were pervasive across Phase 1, Heather’s and Mia’s joint navigation of these challenges must have laid the groundwork for the pivotal conversation in some way. Indeed, their third coaching cycle was more “together” and productive than the previous two cycles had been. It is promising that even in the face of unresolved power dynamics, incremental progress is possible.

The accomplishment of the challenging negotiations in the pivotal conversation arose spontaneously in this case. Heather experienced a need and brought it to Mia. While Mia met this need with skill, it is clear that she did not see it coming. It is interesting to consider whether she might have been able to support productive negotiations of power and agency before this, had she been aware of the challenges these issues were posing for Heather.

5.5.3 A Power Lens Supports Understanding of Coaching

Another useful consideration is ways in which considerations of power support a better understanding of teachers as they navigate coaching situations, not only by coaches, but by analysts and professional development designers. To this end, I take a moment to consider how we might understand Heather if we were *not* aware of these issues.

Heather could easily be described, as are many teachers in teacher learning literature (e.g. Ms. Oublier in Cohen (1990)), as resistant to change or as a teacher with the wrong beliefs or knowledge about students, math, or teaching. Without looking at her experiences of agency and voice, or the lack thereof, we might read her as unreflective, uncooperative, or otherwise difficult. The analyses in this chapter make it clear that we would be wrong. We see that Heather did a significant amount of work to stay engaged with Mia in coaching. Despite numerous challenges to her professional identity and dignity, she remained committed to making sense of a whole new way of teaching that she perceived to be powerful for her students.

Just as blaming challenging student learning on the attributes of students is minimally productive (and often wrong), so we find that blaming teachers for challenging coaching is minimally productive (and here wrong). By incorrectly attributing the challenges of difficult coaching to the non-optimal attributes of teachers, we miss the opportunity to design more effective learning experiences for them.

Without the lens of power and agency however, it is difficult to understand teachers in more productive ways. Indeed, Mia was at a loss in her work with Heather, as she perceived Heather’s resistance, lack of depth in talk about teaching, and unwillingness to take risks as attributes of Heather, about which she had minimal control. As noted above, had she earlier recognized ways in which power relations were setting up these dynamics for Heather, she may have worked more effectively to create productive learning interactions. For outside observers and interested parties such as analysts and designers of learning spaces for teachers, these misunderstandings have similar consequences. Teacher learning literature abounds with analyses of teachers’ varying types and degrees of *wrongness*, with the wrong beliefs, knowledge, or skills (e.g. D. K. Cohen, 1990; Ernest, 1989; Leikin & Levav-Waynberg, 2007). Rarely do we have opportunities to understand struggling teachers as resourceful, committed humans navigating deeply challenging teaching contexts and learning spaces. Analyses of power and agency provide such an opportunity.

As discussed in Chapter 2, the issues of power and agency that were of central focus in this chapter connect with the notion of frames, or the ways in which participants understand and negotiate the kinds of interactions they are involved in. Frames organize participants' understanding of their own and others' roles, positions, and ways to participate in interactions. For Heather, coaching was framed in a way that supported her to understand a presumed expert-novice dichotomy between herself and Mia, and that constrained her forms of participation in ways that were uncomfortable and minimally constructive. The pivotal conversation supported a reframing of coaching in ways that offered more productive ways for Heather and Mia to participate together in making sense of teaching.

Chapter 6 zooms out to consider issues of framing more broadly, identifying three frames that mediated Kamilah's and Heather's experiences with Mia. It examines ways in which these frames developed over time, and how various frames functioned to support learning, and how productive reframing was accomplished in these relationships.

Chapter 6

Learning to Learn Together: (Re)Framing Coaching to Support Transformative Teacher Learning

It would have been really helpful if we had gone into [coaching] with a bit more of a contract, like this is what I'm here for and this is what our relationship will be about.

-Heather (teacher), about her work with Mia (coach)

Chapters 4 and 5 demonstrated ways in which transformative teacher learning (TTL) unfolded differently for Kamilah and for Heather, despite similarities in their teaching contexts and in their work with Mia. Chapter 5 established that problematic positioning and relations of power inhibited Heather's learning throughout much of her work with Mia, and that when these were negotiated and rearranged, TTL became newly available for her. Chapter 5 also established that the positioning and power relations that mediated Heather's experiences connected with particular ways of understanding what coaching was about, or *frames* for coaching. Heather points to importance of this "about"ness in the statement above.

This chapter investigates frames for coaching that supported Kamilah and Heather to understand differently what the coaching work with Mia was "about." It investigates how these frames developed over time and the relationships between these developing frames and Kamilah's and Heather's different stories of TTL. This chapter asks,

1. What frames for coaching were at play for Kamilah and Heather in their work with Mia?
2. How did these frames develop over time? Were there progressions of frames that were consistent across cases?
3. How did different frames provide different opportunities for TTL?
4. When productive reframing was accomplished in these coaching relationships, how did that happen? What can we learn from these cases about this interactional accomplishment more generally?

Through the investigation of connections between frames for coaching and teachers' opportunities for TTL, this chapter continues the work begun in Chapter 5 to explore alternative ways of understanding teacher-coach relationships. Understanding issues of power (Chapter 5) and framing (this chapter) supports more generative investigation than considering whether teachers are resistant or coaches have good "people skills."

6.1 Three Frames for Coaching Mediated Teachers' Experiences

Across the data, three frames for coaching were evident for teachers: coaching as *evaluating and fixing teaching*, coaching as *helping*, and coaching as *learning together*. These frames were linked with particular frames for teaching and for teacher learning.

6.1.1 Coaching as Evaluating and Fixing Teaching (Frame A)

The first frame for coaching that most teachers in the study operated within was *coaching as evaluating and fixing teaching*. In this deficit-focused frame, teaching is framed as a collection of best practices, and one's mastery or deficiency with these practices is presumed to be measurable. The coach is positioned as better at these practices than the teacher. A central

purpose for coaching in this frame is for the superior coach to evaluate the practice of the inferior teacher (in particular, to identify teaching weaknesses) and work to improve that practice (by fixing or ameliorating the diagnosed weaknesses).

In this frame, teachers are sole leaders of their classrooms, while coaches are observers outside of the classroom community. Teaching becomes in part a performance, with teacher as performer and coach as observer and evaluator. The coach is presumed to have the “right answers” and is positioned as the giver of these answers, while the teacher is the receiver.

Domains of control and responsibility for the coach and teacher remain distinct in this frame. The coach controls and is responsible for coaching, while the teacher controls and is responsible for teaching. Along with this responsibility for teaching, the teacher carries the risk; when things go wrong, it is the teacher’s practice that is presumed to be at fault. Coaches carry little risk. They could perhaps be judged ineffective, but the power relations make even this unlikely. If coaching is unsuccessful, blame can easily be placed on teachers; they can be (and often are) interpreted as unreceptive, slow, or deficient in any number of ways.

This frame renders certain forms of participation sensible for coaches and teachers. In coaching conversations, it makes sense for teachers to ask the coach for answers or evaluation (e.g. which teaching ideas are better than others, whether they did something right or well), to agree or disagree with the coach’s ideas or suggestions, to explain lessons or the classroom community to the coach, and to justify or defend their teaching. This frame supports coaches to evaluate teaching ideas, offer answers, or ask for background necessary to make good evaluations. In the classroom, this frame supports teachers to teach alone and coaches to watch, formulating evaluations, and diagnosing maladies. What gets taken up as the content of coaching, or what gets worked on, is determined by coaches and comes from their evaluations and assessments of teaching deficiencies. Coaches determine what needs fixing and then organize the coaching interactions as attempts to fix these things.

This frame sits squarely in the world of *US Schooling* and is thus readily available for teachers. This point is elaborated later in this chapter.

6.1.2 Coaching as Helping (Frame B)

Another common frame for teachers was *coaching as helping*. In this frame, teaching is still framed as a set of best practices, with teacher learning framed as the development of mastery of those practices. There is an underlying assumption that teachers need help and that coaches have the expertise to offer it. A central purpose for coaching here is to determine what help is most needed and to supply it.

In this frame, teachers are presumed to be more novice, or in more need of teaching help than the coach, who is presumed to be a more expert teacher. The coach is positioned as a giver and the teacher as a receiver of assistance. Teachers are still leaders of their classroom communities, although there is room in this frame for them to invite coaches in as participating guests. Coaches are helpful outsiders, with some more possibility for inclusion in the classroom going on. To operate within this frame during lessons, teachers must be willing to share publicly some of the ownership for teaching, and to be positioned as needing help, a move that is challenging for some teachers.

In this frame, the boundaries between domains of responsibility become blurred. The coach comes to have some say in the teaching and the teacher begins to assume some agency and responsibility for the coaching work. The coach is still responsible for making coaching helpful for teachers and the teacher is still mostly responsible for the success or failure of the teaching.

In the classroom, teachers must be vulnerable in front of students, risking the public perception of themselves as less expert. Taking on this frame requires then that teachers trust their coaches. Teachers must trust that their coach will handle that vulnerability gently and avoid actions that would undermine their authority or position in their classrooms. In this frame, the teacher's practice is still on display, although in receiving help she may be engaging in practices for which the coach shares some ownership.

This frame renders different forms of participation sensible for coaches and teachers. Since this frame implies teaching as a set of best practices, it makes sense for teachers to ask for help planning for or implementing these practices and for coaches to offer such help. Teachers still teach mostly alone but may make space for coaches to teach or to help in various ways during class. Coaches may take on some of the teaching, but this is done mostly alone, rather than collaboratively with the teacher. The content of coaching can be determined by the teacher and the coach. Coaching interactions serve to offer help, either help that has been requested by the teacher, or help that is offered by the coach.

Frame B, while less deficit-focused than Frame A, is still consistent with the world of *US Schooling*.

6.1.3 Coaching as Learning Together (Frame C)

The least common frame that was evident in the data was *coaching as learning together*. In this frame, teaching itself is framed as complex, contingent, and worthy of ongoing, collaborative investigation. This frame supports the assumption that all teachers (including the coach) can and should continue to learn with others about teaching and that all teachers have meaningful contributions to make to this collective learning. In this frame then, teachers and coaches are each positioned as experts *and* learners, each with different kinds of expertise and areas for learning. They share leadership in the classroom and support each other in teaching and learning about teaching.

In this frame, coaches and teachers share control and responsibility for both coaching and teaching. Generally, teachers remain the final word on what happens in their classrooms, but coaches have more voice in instructional decisions and share the responsibility for the success or failure of teaching. Teachers in this frame assume more control over coaching conversations as well. Responsibility for teaching successes and failures is shared and coaches and teachers can rejoice and reflect in their shared experiences.

In this frame, sensible forms of participation for teachers and coaches are more aligned. They can both share or ask for ideas. They both wonder about teaching aloud or say what they do not yet know or understand. They can each teach, either alone or together. Since teaching is presumed here to be complex and contingent, help-seeking makes sense in this frame, but the kinds of help sought are different from those in a *coaching as helping* frame. Rather than asking for help planning for or implementing best practices, teachers (or coaches) in this frame might ask for help taking on new and challenging practices or making sense of some of the complexity of the classroom. What gets taken up in coaching interactions is decided collaboratively between the coach and teacher based on what areas of collective investigation appear to be most rich for the teacher. These areas are generally connected to the teachers' own articulation of what she wants to be investigated in her own practice. (While this work is often oriented to teachers' questions, coaches and teachers engage together in investigations around the complexity and contingency of ambitious and equitable teaching. Thus *learning together* involves learning for both of them.)

Frame C is inconsistent with the world of US Schooling and sits squarely in the world of Ambitious and Equitable teaching. It is thus unsurprising that it was the least common in the data. This point is taken up in Section 6.4.1.

These three frames for coaching are summarized in Table 33 below, along with their accompanying frames for teaching and teacher learning, as well as their implied roles and sensible forms of participation.

Table 33. Frames for coaching

Coaching is:	Evaluating and fixing teaching	Helping	Learning together
Teaching is:	Measurable implementation of best practices.	Collection of best practices.	Complex, contingent, and worthy of ongoing, collective learning.
Improving teaching is:	Fixing teachers' deficits.	Developing mastery of best practices.	Ongoing experimentation, sense making and co-investigation.

	Teacher	Coach	Teacher	Coach	Teacher	Coach
Roles and positions	Novice with deficits that need fixing. Sole classroom leader Performer for evaluation	Evaluator and fixer of teacher deficits Outsider Holder of right answers about teaching.	Novice in need of help. Classroom leader with some sharing. One working to improve practice.	Helper Outsider invited in. Holder of better ideas about teaching.	Expert <i>and</i> learner Classroom leader and co-teacher Ongoing learner and sense-maker, with ideas.	Expert <i>and</i> learner Community member Ongoing learner and sense-maker with ideas.
Sensible forms of participation	Asking for right answers about teaching. Explaining or justifying teaching. Teaching alone. Agreeing or disagreeing with coach.	Giving answers. Asking for information. Observing lessons quietly.	Asking for help doing something better. Explaining challenges. Asking for help while teaching. Accepting help.	Offering ideas or help. Inquiring into challenges. Helping teach or teaching, mostly alone.	Asking for help navigating challenging teaching. Teaching together with coach. Trying new ideas together with coach.	Asking for or offering help with challenging teaching. Teaching together with teacher.

6.2 Frames Progressed and Differently Supported Teacher Learning

Primary frames at play for both Kamilah and Heather shifted over time. In the following sections, I trace these shifts and examine ways in which different frames were at play for teachers and connected with opportunities to learn during different phases of the coach-teacher work.

To be clear, these 3 frames are not mutually exclusive. There are instances in which a *coaching as evaluating* frame seems to be mostly at play for a teacher, but she also accepts help. There are numbers of interactions between Kamilah and Mia in which both a *helping* and a *learning together* frame seem to be at play for Kamilah. The phases I identify below, then, are

Vignette 1, Frame A: getting started.

Kamilah’s and Mia’s work together started off friendly, if a little stiff. Table 34 contains an overview of their first planning conversation, which lasted about 22 minutes, along with some comments related to frames. (Comments about frames include those both about evidence of Frame A in Kamilah’s talk, as well as talk from both Kamilah and Mia that might function to frame or reframe coaching. Points related to the latter are a more central focus of Section 6.3.) In the table, paraphrased talk is indicated with italics, while Kamilah’s and Mia’s own words are surrounded by quotations. The left column of the table contains line numbers that correspond to lines of transcript included in Appendix E.

Table 34. Summary of first Kamilah-Mia planning conversation

Lines	Kamilah	Mia	Comments about Frames
94-111		<i>Mia asks about what’s going on and what “you’re hoping for help thinking about.”</i>	Mia frames coaching as “help thinking about” things related to teaching.
112-143	<i>Kamilah responds by describing the functioning of the student groups in her class, some of which she is “struggling with a lot” and some of which are “so awesome.” After describing one group of 5 students, she asks about how to group students when 4 students per group isn’t possible. “Should I have two groups of 3 or should I have one group of 5?”</i>		Kamilah’s “Should I…” question positions Mia as expert with right answers, and herself as a novice needing these answers.
150-161		<i>“I can watch and see, I don’t think there’s a right answer for that… so let’s watch and see.” She asks Kamilah to say more about a group she had said she was struggling with.</i>	Mia frames teaching as contingent (“let’s watch and see”), contesting the framing of teaching as something with right answers.
203-271	<i>“I’m just really struggling with them being able to communicate with each other, and I feel like they get really stuck because they’re not talking to each other.”</i>		Kamilah frames her struggle as relating to something students are <i>not</i> doing that they should be. This is something to fix.
272		<i>She acknowledges this and says, “Let’s talk about the lesson.”</i>	Mia shifts talk toward the lesson, which Kamilah is responsible for.
273-295	<i>Kamilah describes the lesson she had planned, which drew from the district curriculum and dealt with scientific notation. She explains how the lesson will unfold, beginning with a video, then a “Do Now” activity asking students to identify patterns related to powers of 10, and then some problems from the curriculum to be done in groups.</i>		Kamilah explains her already-planned lesson, not yet asking Mia to think or work <i>with</i> her. She shares completed work, making space for evaluation and feedback.

Lines	Kamilah	Mia	Comments about Frames
296-302		<p><i>Mia asks about what math groups might talk about in the lesson. “Through his lesson as we look at it maybe tell me what is there for them to talk about. Like where would you hope there would be talk? and what do you imagine them talking about?”</i></p>	<p>Mia connects students’ communication, which Kamilah was concerned about, with features of the lesson, framing the issue as actionable, and in the domain of teacher responsibility.</p>
303-375	<p><i>Kamilah says, “right” and continues to describe the lesson, including a planned routine that she learned from the CI course called “checkpoints.” Responding to prompting from Mia, she describes how these have been going in her class so far. She ends this with, “Would you recommend me like, before they start getting into group work, like getting how to like do this kind of scientific notation or have them kind of discover it first?”</i></p>		<p>Kamilah ends this talk with the presentation of two different conceptualizations of teaching, asking Mia which she would recommend. Kamilah’s notions about teaching seem to be in flux, and she is orienting to Mia as “expert” who can recommend.</p>
376-458		<p><i>“Great question.” Mia talks about the content of the lesson, saying “it’s hard for me to find the conceptual teeth in it” and explaining that scientific notation is a convention, but that she doesn’t see multiple ways for students to see it and that it doesn’t force students to talk to each other. She suggests that maybe to avoid exacerbating “status issues,” this lesson could be organized with students working in pairs.</i></p>	<p>Mia acknowledges the question, but does not answer it. She instead connects back to the “conceptual teeth,” framing teaching as providing students opportunities to grapple with mathematical concepts together.</p>
509-513	<p><i>Kamilah agrees and asks, “Do you still imagine having checkpoints after they work with pairs?”</i></p>		<p>Again, Kamilah asks for Mia’s expert advice.</p>
514-565		<p><i>Mia suggests that K might be “run ragged” trying to do checkpoints with pairs and describes a similar structure that will avoid this.</i></p>	<p>Mia offers advice.</p>
567	<p><i>Kamilah agrees.</i></p>		

Lines	Kamilah	Mia	Comments about Frames
569-608		<i>Mia suggests, “We could experiment tomorrow with some pair structure when it doesn’t feel very groupworthy, but we’re still maintaining this [classroom] culture of togetherness, like learning is not something you do all by yourself. You have to watch out for each other too.” She ends with “Does that feel good?”</i>	Mia suggests that “we experiment...,” framing coaching as a “we” endeavor, and framing teaching as experimental. Her ending question implies that Kamilah has the power to decline Mia’s suggestions about how they work together.
609	<i>Kamilah agrees throughout, ending with, “Yeah”</i>		Kamilah follows Mia’s lead.
610-623		<i>Mia describes that during the lesson she will pay attention to those students Kamilah has said she is concerned about and try to “make sense of what is happening for them so we can think together about what the [pair] structure is doing for them.” She asks, “Does that feel useful?”</i>	Mia frames their work as involving thinking together about how teaching choices impact students. She ends with a question implying that coaching should “feel useful” to Kamilah.
624-627	<i>Kamilah says, “Okay” and then asks, “Should [group] roles not be a part of [the lesson]?”</i>		Kamilah asks another “should” question, continuing to position Mia as an expert with the right answers.
628-656		<i>Kamilah says that roles might be less useful than focusing on norms and lists some norms that might matter.</i>	Mia offers a suggestion.
657-670	<i>“Yeah.” Then they are out of time and wrap up.</i>		

Kamilah taught the lesson as the two had discussed it. She started with the video, did a “Do Now” (a lesson-opening type of activity that was a common part of her teaching routines) and then arranged students into pairs to work on problems from the district curriculum. She launched the pair work portion of the lesson by explaining that students would work in pairs and by naming some norms for pair work.

Today, we are going to do pair work, a new structure. We’re not going to talk about specific [group] roles, but we’re remembering to take care of each other, right? So, instead of 4 people, it’s gonna be 2 people, same kind of dynamics, taking care of each other, talking to each other, communicating, checking in with each other, like “Do you get it? Are we clear? Can we move on?” All that stuff is still going on in pairs, but not with four people.

She went on to list the problem numbers students would work on and explain the structure that she would use instead of “checkpoints.”

In this first planning conversation, Kamilah’s participation suggests that the frame for coaching of *evaluating and fixing teaching* was primarily at play for her. She explained her mostly-planned lesson to Mia, which she would teach alone. She asked questions that implied both the presence of right answers about teaching and Mia’s possession of these answers. When

Mia offered ideas or suggestions, she listened, agreed, and took them up. By participating in these ways, she positioned Mia as an outside expert who held answers about teaching and herself as the sole classroom leader who was ready to perform for Mia’s evaluation.

This conversation and the lesson that followed may have contained some opportunities for Kamilah to learn, but there is no evidence of transformative teacher learning yet (although the conversation may have set the stage for learning that came later). Mia offered ways to think about some aspects of teaching, to which Kamilah was receptive, but there is not yet evidence of Kamilah engaging in her own new meaning making about these things. Her participation in the conversation was open and friendly, but did not involve deep inquiry or investigation.

Kamilah’s Frame B phase: from first debrief conversation through third lesson.

Beginning in the debrief conversation of the first coaching cycle, Kamilah’s participation with Mia suggests that *coaching as helping* was primarily at play for her. During these conversations, she asked for and accepted help from Mia with various aspects of her teaching. In the planning conversations in cycles 2 and 3, she told Mia about some aspects of her plans for lessons and asked for Mia’s input in shaping them. (This contrasts with her talk about lessons in the planning conversation in cycle 1, where she reported to Mia about a lesson plan that she had already completed.) Below, I share an episode from the planning conversation for Cycle 2. I then examine how the *coaching as helping* frame is consistent with Kamilah’s participation and I describe the opportunities for Kamilah’s learning that are evident.

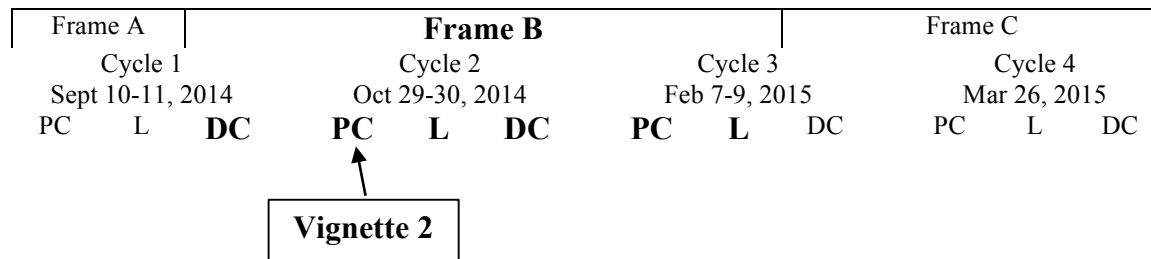


Figure 16. Kamilah’s *coaching as helping* phase, Vignette 2

Vignette 2, Frame B: Kamilah getting help.

The following episode took place during the planning conversation in Kamilah and Mia’s second coaching cycle. Earlier in the conversation, the two had identified that students often do not know what angles are (which is a more complex concept than many educators initially realize) and that this confusion can sometimes cause it to appear that students do not understand other ideas (such as congruence). (For an in-depth look at the conversation that led to these conclusions, see Section 4.3.2.) In response, they had decided to pose a “Do Now” prompt at the start of the next lesson asking students to articulate their understandings of what angles are. They were planning to then lead a whole class discussion in which students’ various ideas would be shared and combined into a more complete articulation of the concept of angle. Kamilah expressed concern about students’ participation in whole class discussions like the one they were planning:

Um, the other question I had is, um, I have a tough time with participation, I think I mentioned that before, my first period's really quiet? So, what if, when we're trying to have a discussion, what would be your suggestions on how to get [students] to share their responses and participate?

Here Kamilah is asking for “*how to*” suggestions, suggesting that it's possible for Mia to tell her how to engage more effectively in teaching practices related to soliciting students' oral participation. This is consistent with the *coaching as helping* frame, in which coaches are presumed to have mastery of the best practices of teaching.

Mia then asked a few clarifying questions and offered an idea:

I'm thinking about what the Do Now is going to be. It's around angles, generating- okay yeah, what if they get to generate (*3s pause*) Okay, so they're trying to explain what an angle is, right? So what if they do that on their own for a minute or two or something. And then they share with a partner, and then what you ask them to share out loud is something that they saw their partner do or something your partner said that you thought was cool or interesting or useful in some way.

Mia went on to say that this might create safety for students to share ideas out loud and then asked Kamilah, “Then do you think that would maybe get them to try it?” Kamilah agreed that this might work and that she would try it, which she did in the lesson. After students had worked on the Do Now, she asked them to talk in pairs and then invited them to share ideas from their partners. Various students shared ideas, and Kamilah, with some help from Mia, led a whole-class discussion combining these ideas.

During the planning conversation and during the lesson that followed, Kamilah asked for, received, and accepted help from Mia. She did not ask for a single ‘right’ way to do things (which would signal an *evaluating* frame). Rather, her participation was consistent with the notion that there were “good” teaching practices that Mia could help her with. By asking for this help, Kamilah positioned herself as a teacher working to improve her practice and as a novice in need of help. In turn, she offered Mia the position of helper and more expert teacher. These forms of participation and positions are consistent with *coaching as helping*. (See Table 33.)

Some opportunities for learning are evident in this episode as well. Mia offered Kamilah both new meaning-making (for example, about connections between a particular participation structure and students' experiences of safety, about how the complexity of the concept of angle might point to important learning opportunities for students, etc.) and new ideas for teaching practices connected to that meaning-making (for example using a partner share structure, or leading a whole class discussion that combines students' partial ideas about a mathematical concept). In accepting the positions offered by Kamilah, it is unclear whether Mia offered new or more productive ways to identify to Kamilah. Her use of “you” in “and then what you ask them to share” suggests that she is positioning Kamilah as the sole teacher and is not yet sharing the risk or responsibility of teaching, and may not yet be offering new sense of community or togetherness.

The fact that Kamilah took up the suggested practices and that the two debriefed around them, using them to make sense together of teaching suggests also that this episode was

productive for Kamilah’s ongoing learning as well as for her progress toward the *coaching as learning together* frame.

Kamilah’s Frame C phase.

Kamilah seemed to move through frame B toward Frame C relatively smoothly and the boundary between these phases is blurry. However, by the debrief conversation for Cycle 3, Kamilah’s and Mia’s participation suggests that *learning together* was most strongly at play for both of them. In the following episode, I describe some of what happened during their 4th and last coaching cycle, in which they were both operating strongly in *coaching as learning together*, and powerful teaching and learning was available. (The work the two did in this 4th cycle is described in detail in the opening of Chapter 4. The vignette is shared again here to support the analysis of framing.)

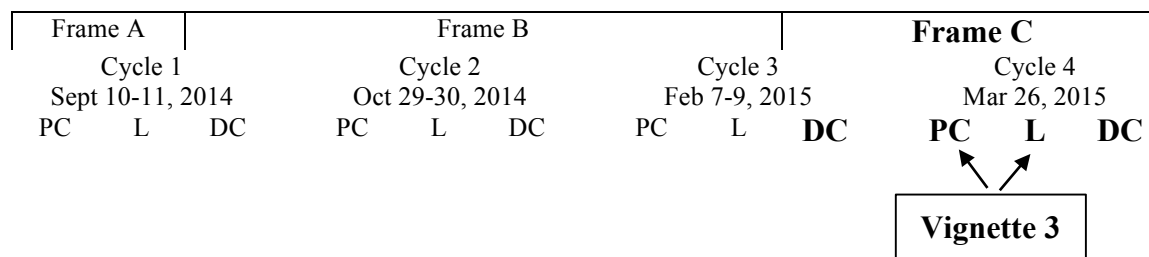


Figure 17. Kamilah’s *coaching as learning together* phase, vignette 3

Vignette 3, Frame C: trying out challenging teacher together.

Early in the planning conversation for the 4th coaching cycle, Kamilah told Mia that the next day’s lesson would be the second lesson in a series about supporting students to make sense of solving equations using a manipulative called “Algebra Tiles.” She explained that she was working in a whole class format and that she wanted to take up the issue of “how to make it more- less me up there and talking about how to do it and more them trying to figure out how to do it.” After some conversation, the two decided that they would try out an ambitious lesson structure that Kamilah had not previously attempted. Randomly selected students would be called to the front of the room to lead the class in figuring out a ‘legal move,’ or a manipulation to an equation that would not disrupt the equivalence of the expressions on either side of the equals sign. Students would be asked to come to the front of the room to propose and justify a manipulation to the equation or to ask the class for support in doing so. The students’ work at the front would be considered complete when the whole class agreed about how the equation might be manipulated and why that manipulation preserved the integrity of the equation.

This kind of lesson is challenging to teach, especially when it is the first time a classroom community has been structured in this way, as was the case in Kamilah’s class. It requires allowing students to be in control of the mathematics of the lesson, which in turn requires trusting that students are collectively capable of making sense of the mathematics without intervention from the teacher. It requires supporting students to take on roles and responsibilities that are new and scary as they are called on to share their partial or unsure thinking publicly and to trust the class to be both able and willing to support the development of their thinking in ways that will help them learn and that will strengthen or preserve their sense of belonging and acceptance in their community.

This high degree of challenge calls for the support of a co-learner and partner, someone with whom to share the challenges, risks, and rewards. In other words, taking on this kind of challenge is made possible, at least in part, by the *coaching as learning together* frame. And this challenging teaching together is rich in opportunities for learning. To teach this lesson, Kamilah needed to be a new kind of teacher, one who relinquishes control of mathematics to the students. She needed to see (and act on seeing) her students as mathematically smart, as capable of taking on challenging mathematics together, and support her students to see each other this way. During the lesson, she needed to be ready to support her students as they took on new roles and challenges and to do so in ways that did not undermine students or the classroom community. She needed to trust in Mia, her partner in teaching and learning, to do these things with her.

Kamilah was nervous about this lesson. She anticipated that students might “draw a blank” when they were on the spot. She understood that it would be her job to support them but also that in trying to do this, she might unintentionally undermine them. (For example, if she were to support a student by doing the thinking for her or by asking guiding questions, she would be sending a message to the class that she didn’t think the student was able to do the mathematics without that support.) When Mia asked Kamilah what she’d like her to do during the lesson, Kamilah asked her to be ready to join in if she got stuck supporting students who were leading the class:

So if I’m just- if they’re not like, making sure that they’re justifying clearly. Like if they need support in that, or like how can I support a kid- cuz I know like some kids I feel like are gonna have a blank stare and not know how to say it, so like helping me help them to come up with an idea.

Here Kamilah was asking for support, but rather than asking for suggestions about *how to* do something, as she did in the previous episode, she was inviting Mia to participate in teaching with her to navigate a challenge of the lesson. She was seeking help in ways that are consistent with framing coaching as learning together and framing teaching as complex, contingent, and worthy of collective practice.

Mia agreed to “play it by ear” and “join in” if it seemed useful. The lesson unfolded successfully. Students came to the front of the room and shared ideas, asked questions, got stuck, and fielded input and support from their classmates. Kamilah and Mia worked together to support them to do this, for example by working to establish the norm that students at the front of the room can and should ask for help when they need it. Kamilah and Mia provided only support for participation, but offered no mathematical ideas or feedback. Instead, they insisted that it was up to the students to determine as a class when they were satisfied with a mathematical idea that had been proposed.

As an example of students’ work at the front of the room, I describe the work of Emelyn. When she was called to the front, she told Mia and Kamilah that she did not know what to do. Mia thanked her and asked the class to support her: “She doesn’t know what to do. Awesome, let’s help her. Thank you for saying that. She wants help from her team.” Multiple students raised their hands and offered and justified ideas. Emelyn took up these ideas and manipulated the tiles, interpreting a ‘legal move’ suggested by other students. Multiple students participated in justifying this move, explaining that whatever you do to an equation must “keep it equal.”

After class was over, Mia rejoiced with Kamilah about the risky and challenging work the students had done and the possibilities that were created for the math classroom learning

community out of this work. For example, to start their conversation, Mia shared the following successes, with Kamilah smiling, nodding, and adding in “yeah!” throughout.

Yay! Yeah I mean, we just built so many awesome norms! I don't know if you notice all of them, but I think very successfully [students] made mistakes in the front of the room and were fine, right? They went up there randomly and knew they would be fine. Like people were scared and then totally taken care of. They got fully supported by each other. Emelyn went up there and said, “I need help from my class,” was willing to say that and got help from her class, which is amazing right?

After Mia enumerated more successes, Kamilah commented on her take on the lesson:

I like it! I mean it just kind of reminded me of like how important it is to make sense of it, you know. I want to do the same thing with my other two classes and then continue this with my 6th [period]. So, yeah, and then I feel like we just need to- like when we come back from [Spring] break, like doing it all over again.

This is coaching that supports TTL. Kamilah, supported by Mia and by the *learning together* frame, took up a deeper challenge than she was prepared to take up on her own. As a result, she had opportunities to engage in multiple strands of learning. Her tentative trust in her students' mathematical competence was reinforced, and she was supported in transformative meaning-making about what is possible for students' equitable learning of rich mathematics. She tried out teaching practices that support the development of student-led and equitable mathematics classrooms. She discovered her own capacity for taking on challenging teaching and accepted new positioning as agent in her own learning of teaching. She experienced togetherness and collaboration with Mia.

These possibilities stayed with Kamilah as she continued in her development as a teacher. In an interview that took place in September 2016, a year and a half after her work with Mia ended, Kamilah talked about having “learned SO much” from Mia. When pressed for details, she talked about this coaching cycle:

Another thing I feel like I took away from working with [her] is umm when [she] had me have students come up to the board and even if they weren't sure to come up, like that was so huge, so nice... just creating that uncertainty and making them feel comfortable about coming up and you know come up to the board and ask for help and you know, that was really cool.

While Mia's learning is not the focus of analysis of this dissertation, it is notable that by engaging with Kamilah in planning for, enacting, and reflecting on teaching and making sense of student thinking and the lesson enactment, she was engaging in learning alongside Kamilah. Thus, this was truly the accomplishment of *learning together about teaching*.

In the following section, Heather's frames for coaching during her work with Mia are examined and then conclusions are drawn across cases.

6.2.2 Two Phases of Heather's Frames for Coaching

Heather's and Mia's work together started off friendly, but distinctly awkward. As was clear in Chapter 5, Heather often began their meetings by describing her general sense of chaos and overwhelm, and did not express that she was glad Mia was there. There was little indication that Mia's visits occurred to her as any kind of reprieve or opportunity; rather they seemed to be one more demand on her time that she needed to juggle. Mia reported feeling unsure about what Heather wanted to learn from their work together and she struggled to find ways to interact with Heather that honored both Heather's communicated overwhelm and what Mia understood to be the purpose of her coaching work: to support the development of ambitious and equitable math teaching and learning. (As was clear in Chapter 5, these challenges were related to an imbalance of power associated with the positions available to each of them.)

Things went on mostly like this until the two sat down together to begin their fourth and final coaching cycle of the year in March, when a pivotal conversation unfolded, which shifted the trajectory of their work. (Heather later referred to this as a "come to Jesus" conversation, and it was the object of a good deal of focus in Chapter 5.) At the beginning of the conversation, Mia asked about how Heather was doing, and Heather again communicated that she was overwhelmed. This time however, she went on to explain that she was confused about their coaching work and unsure about its purpose and whether it was required. She was unhappy and expressed a sense of powerlessness, saying that she had not been consulted about whether or how she wanted to engage in the coaching work.

Mia listened and thanked her for her honesty and explained that she, too, had felt confused and unsure about their shared purpose. She described being unsure about what Heather wanted to get out of their work. She explained that engaging in coaching was not required and that she and Heather were free to choose whatever they wanted to do together, which could range from ending their work together immediately to crafting ways to move forward that would feel more supportive for Heather. One of the options that Mia mentioned was that she could teach Heather's class and Heather could take a break and watch. To Mia's surprise, Heather expressed excitement about this offer and took her up on it enthusiastically. As this portion of the conversation wrapped up, Heather expressed relief and pleasure ("This sounds great! Like I feel like I just took a shower right now!") and they went on to talk about the lesson that Mia would teach in Heather's class the following day.

The planning conversation, lesson, and debrief conversation that followed were strikingly different from those that had come before, as was demonstrated in Chapter 5. Heather participated in these conversations with enthusiasm. She decided early in the planning conversation that she would teach the same lesson as Mia during her classes that Mia would not be attending. She asked Mia numerous questions about this lesson, taking careful notes and accompanying many of her questions and comments with deeper pedagogical reasoning than she had shared with Mia prior to this. Also, in the planning and especially in the debrief conversation, she attended more to issues of student status and equitable participation than she had in other coaching conversations. She expressed vulnerability and concerns about her own competence as a teacher for the first time, for example by telling Mia that she was concerned that she would be "as good at this as you are."

Multiple lines of analysis demonstrate that the pivotal conversation shifted Heather's and Mia's coaching work and opened opportunities for Heather's learning that had not previously been present. The analysis of framing reveals that it, and the work that followed, also decisively displaced the *coaching as evaluating and fixing* frame for Heather, inviting *coaching as helping*

to become the primary frame at play for her. (It is unfortunate, for Heather and Mia and for the present analysis, that their work together ended when it did.)

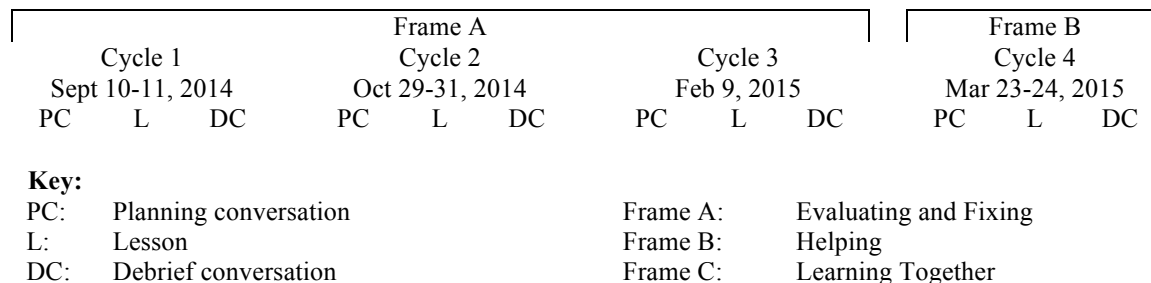


Figure 18. Heather’s primary frames for coaching over time

Heather’s frame A phase.

For Heather, the *coaching as evaluating and fixing teaching* frame dominated her experience for more time than it had for Kamilah. The dynamics detailed in Chapter 5 suggest that this may have been, at least in part, because Mia’s efforts to offer more productive positions and dislodge this frame were hindered by unrecognized power issues. (For more about Mia’s work to offer more productive frames, see Section 6.3). In the following sections, I share two episodes that took place in the Frame A phase for Heather. In each episode, I examine both framing and the opportunities to learn that existed (or were notably missing) for Heather.

Vignette 1, frame A: missing each other in the classroom.

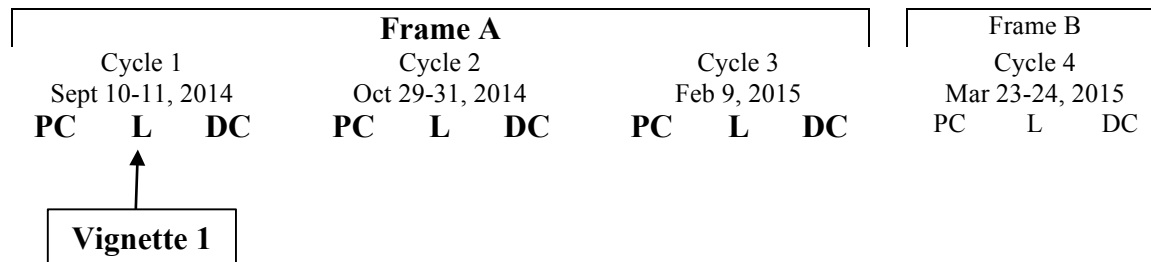


Figure 19. Heather’s *coaching as evaluating and fixing teaching* phase, Vignette 1

First, I share a vignette from the lesson that took place in Mia’s first visit to Heather’s classroom in September. This 50-second episode began shortly after Heather had launched the group work portion of a lesson about scientific notation. She had distributed task cards (papers containing mathematical tasks for groups). As is common in CI classrooms, she expected that students would read the task card aloud in their groups and share two task cards among four students.

Heather approached a group, leaned down, and spoke to them quietly. Mia approached from the other side of the room and stood a few feet away, watching and listening. One task card was positioned at the edge of the table, and Heather asked, “How is it working with the task card over there?” The student she was speaking to said something inaudible in the recording and she responded, “Okay, but how does everybody else get a chance to see it?” At this point, Mia

moved toward the group and suggested a way that students might get started. As she spoke, she stepped next to Heather and leaned toward the group, putting one hand on the table. Heather said, “Oh, sorry” and stepped back to give Mia room. Mia continued talking with students in the group and Heather turned and walked away. Mia finished what she was saying to students and moved away from the table in the opposite direction from Heather saying, “I’m sorry.”

In this episode, it appears that Mia intended to offer an idea related to Heather’s interaction with this group of students (seemingly operating within Frame B and offering help), but Heather either did not orient to Mia’s actions as help or rejected the help. If we consider that Heather was operating within the *coaching as evaluating* frame (which was evident in her conversation with Mia prior to this visit), her decision to walk away is sensible and this episode is understandable. In that frame, in which Heather is responsible for teaching alone and Mia is responsible for observing, Mia’s intervention in the group can be read as either a confusing and off-putting violation or as evidence that Mia saw a problem so severe that it needed to be immediately remedied and could not wait until after class. If Heather saw no such problem, she might then be both offended and confused and take this as evidence that she and Mia do not share understandings of teaching.

Here there is a clear absence of opportunities for Heather’s learning. She and Mia did not end up with shared experiences about which they could make meaning. Heather got no access to new or different teaching practice. Her sense of her own competence as a teacher may have been threatened by the perceived implication that she had done something wrong that needed fixing. She and Mia accomplished no sense of togetherness or community. In fact, this episode may have been distancing and alienating, creating barriers to the development of meaningful community between them.

Vignette 2, frame A: “You could try...”

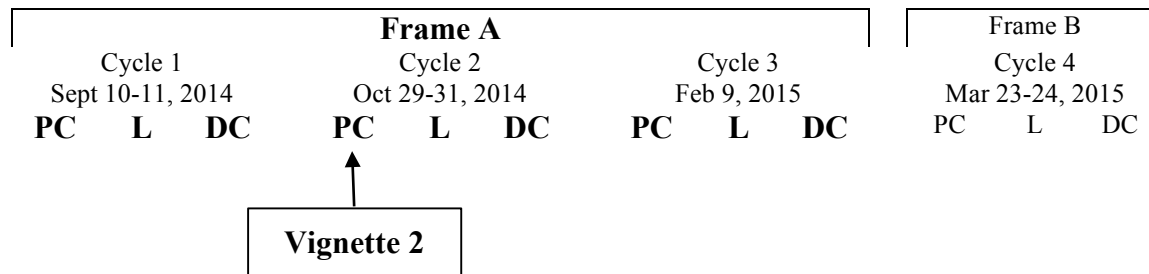


Figure 20. Heather’s *coaching as evaluating and fixing teaching* phase, Vignette 2

Mia’s and Heather’s second coaching cycle took place late in October, during the week of Halloween. Heather began this planning conversation by expressing a high degree of chaos and stress (“There’s just so much going on this week. You always come on like the most insane weeks. I don’t know why, but it’s like insane week and you show up.”). She went on to explain that due to a variety of recent events, including a police lock-down of the school that took place recently during 3rd period, she needed to teach 5 different lessons to her 5 math classes the next day. It was clear that Mia’s visit did not occur for Heather as an opportunity to receive support or to learn, but rather as an event that carried the expectation that she would do something more or different than she otherwise might, suggesting her perception of the need to “perform” teaching for Mia’s visit, consistent with *coaching as evaluating and fixing teaching*.

Heather showed Mia a math activity she was considering doing in 3rd period the next day. After a brief conversation in which Mia asked a few questions such as, “What do you hope [students] will be learning?” Heather said that 3rd period was behind so “we’re probably just gonna have to tell the kids that triangles are a hundred and eighty. I don’t know.” From there, an 11.5-minute conversation unfolded in which Heather and Mia each offered ideas for potential math activities for 3rd period, none of which seemed to resolve Heather’s indecision. She expressed tension between on the one hand not wanting to “take away from their learning” by telling students things they might otherwise discover and on the other hand needing to progress through material so students might be prepared for the district-wide assessment that was “rapidly approaching.” She also expressed a desire to realign her same grade-level classes so that she didn’t need to continue teaching so many different lessons each day.

Throughout this conversation, Heather shared some of her thinking, but did not ask for Mia’s or indicate a desire to negotiate her tentative ideas. Instead she reported to Mia what she did or did not know about what she would be doing the next day. Consistent with a *coaching as evaluating* frame, Heather positioned Mia as an outside observer and herself as the one solely responsible for the teaching that she will engage in, in part as a performance for Mia’s observation.

The following 2-minute sequence was part of this conversation. In it Mia offers a few ideas (positioning herself as a helper) and Heather rejects these ideas and continues thinking aloud, with *coaching as evaluating* continuing to be at play.

Heather	Mia
	Do [students] need anything like a make-up day? Or an opportunity to redo anything? Or would that be a logistical nightmare?
U:::m	
	(4s) [You could] do study teams like for, for like content, like they could self-select into content-based groups to work on practicing stuff in advance of the [district assessments] or whatever assessments you’re doing, like, “if you feel like you need more work on bla bla bla, go to that side of the room.” you know that kind of thing?
Mhm.	
	If you think they can handle that um,
(pause) They can’t really, but (laughs)	
	They can’t?
They’re so crazy. (holds her forehead, whispers) Yeah, they’re a little crazy.	
	Yeah.
They’re- I mean they’re just, they’re a rowdy bunch? They’re high level, but they’re a rowdy bunch. they get off task really easy.	
	Yeah yeah yeah.
Um, I mean it’s fi- maybe, I mean- (3s, head in hand) u:::m (pause) I know, in this unit we’re kinda like (pause) we’re sort of skipping around too like we skipped dilations to come back to it	
	Mhm.

Heather	Mia
because of the [district assessment], we're trying to make the [testing schedule] window, and all of the-	
it's just kinda <i>(pauses and rests head on hand)</i> we're at that point right now. <i>(laughs)</i>	Mmm.
And I've used up the pumpkin [graphing activity], a cat [graphing activity] and (I'm trying to think of what I'm gonna do.)	Mhm.
I could have them work on their creative design, <i>(4s)</i> I could do that. <i>(sigh)</i> they've probably lost it all by now. <i>(pause)</i> Um, hmm, alright, I'll- yeah, I'm kinda torn. I dunno.	You could have them design 'em. It's like graphing practice stuff, right? you could have them design- uh-
	Yeah.
<i>(looking at curriculum binder)</i> Hmmm <i>(pause)</i> .	

Here, despite multiple offers for help, Heather continued to participate in ways consistent with Frame A. She said what she did not yet know about her lesson, but did not ask for Mia's help to figure it out. Instead, she reported about what would happen or what she was thinking and gave Mia information that she might need to make informed evaluations. She continued to position herself as the one solely responsible for the teaching and offer Mia the position of outside (and not particularly welcome) observer. When Mia offered ideas, Heather responded coolly or with reasons that those ideas wouldn't work.

This episode, and others like it, is devoid of evidence of TTL. To the extent that teaching practice is up for conversation, it stays at the level of 'what to teach,' with no deep considerations of pedagogy, student learning, or mathematics. There is no evidence that either Heather's vision for teaching or her identity of competence are being supported productively. Her position remains fixed. There is no evidence that her relationship with Mia is yet progressing toward a shared vision of or responsibility for teaching.

Heather's Frame B phase.

Frame A did finally give way for Heather to Frame B. This shift may have begun in Cycle 3, but it wasn't until Cycle 4 that *coaching as helping* was clearly the primary frame at play for her. Below, I share a vignette that took place during the planning conversation in this fourth cycle, after the pivotal portion of the conversation was complete.

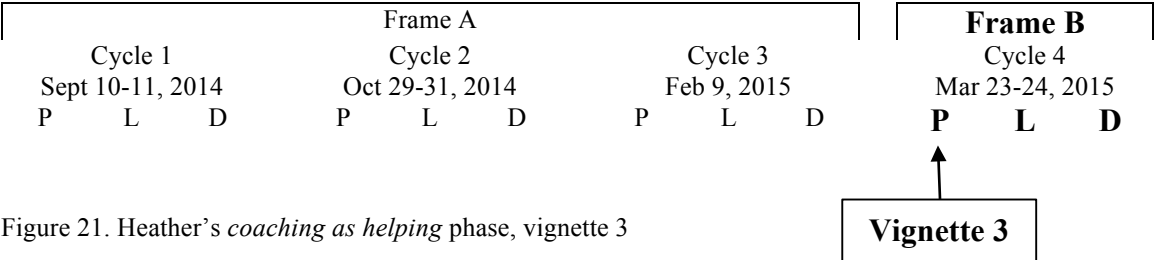


Figure 21. Heather's *coaching as helping* phase, vignette 3

Vignette 3, frame B: “Can I write this down?”

In this episode, Heather and Mia were discussing the lesson they would both teach (in separate classes) the following day. Prior to the segment below, Mia had been describing the lesson, which she had developed and co-taught with Heather’s colleague Lori the previous day. The lesson centered on one problem, in which students are asked to find (and defend) the shortest path that touches each fence (side) of a rectangular school yard once. Mia had shared some things she and Lori had done to support students to be willing to attempt a problem that they would not immediately have known how to solve, which they predicted would be a new and scary experience for students. At the start of the following segment, Heather was looking at a page of writing that Mia had shown her (she calls this the “opening notes” below), consisting of items on a “multiple abilities” list that Mia had used to launch the lesson in Lori’s classroom (c.f. the “multiple abilities orientation” strategy from Cohen and Lotan).

Heather	Mia
Your like opening notes are pretty important for this task, wouldn't you say?	
	Yeah.
I'm just wondering if I'm gonna be able to run it as well as you, like I don't know if I'm gonna have the same- if I do it for all the classes, I- unless I- like I feel like this one (<i>pointing to something in the coach's notes</i>) is like really key to like setting it up, how you are explaining it.	
	Well, I think there are a couple key aspects. I think there's a lot of room to play-
Okay.	
	and it'll just unfold differently. I think the key aspects are (<i>pause</i>) whatever you think you need to say to [students] to get them to be willing to try things that they don't already know
Ok let me, can I write this down?	
	Yeah, of course.
<i>(going to get a notebook)</i> cause I'm gonna forget all this.	
	Yeah.
<i>(arriving back to the table)</i> OK, so to open this and launch it, <i>(pause then laugh)</i> I was like this notebook's full! OK. (5s) OK, so launch, (3s) alright.	

In this vignette and in the rest of the conversation and the debrief conversation that followed the lesson, Heather’s participation suggests that *coaching as helping* was now at play for her, and not *coaching as evaluating*. She asked new kinds of questions, took notes, and expressed enthusiasm and desire to hear Mia’s thoughts. Many of her questions were about how to teach this lesson and not yet about deep and connected pedagogical concerns (which would have suggested *coaching as learning together*). Throughout these conversations, Heather positioned herself as a learner and Mia as a resource, which had not happened before this. By expressing the desire to “write this down,” which she had not done before, Heather framed this coaching conversation as useful for her.

These new ways of participating for Heather, connected to new framing for coaching, opened new opportunities for her TTL. Her questions invited new conversations about pedagogy (new meaning-making about practices of teaching). For example, her question above about how the lesson should be launched and her claim about what matters in that launch opened opportunities to consider how a lesson launch can support students' participation and learning. By telling Mia that she was concerned about her own capacity to teach this lesson, Heather invited identity negotiations into the coaching work, opening further opportunities for learning. While in such a short episode we cannot know how much Heather learned about launching lessons in general or whether her identity of competence shifted, this coaching work clearly invited new opportunities for TTL.

6.3 Learning to Learn Together: the Joint Accomplishment of Productive Framing

As frames for coaching are consequential for transformative teacher learning, with some frames more productive for such learning than others, it is useful to consider how productive framing of coaching can be accomplished. This is a sticky question that reveals a significant challenge for coaches. Any attempts to travel between frames, or to *reframe* coaching, are made within coaching interactions that are, themselves, governed by extant frames. For instance, if a coach attempts to reframe the coaching work away from *evaluating and fixing teaching* are understood through the lens of *evaluating and fixing*, how might any shift of frame get accomplished?

This section takes up this question. It begins with an examination of the coaching work that Mia employed that can be understood as work to reframe. It examines how Mia's reframing moves are situated within interactions, in that they both rely on opportunities provided by those interactions, and are received in interactions that are situated within extant frames. After examining coaching moves that Mia employed to support reframing, the focus shifts to the accomplishment of productive reframing for Kamilah and Heather (from *evaluating and fixing* to *helping* and from *helping* to *learning together*), asking what supported this accomplishment, given the challenges outlined above. Analyses reveal teachers' opportunities to participate in new ways were central in each instance of this accomplishment.

6.3.1 Mia's Work to Support Productive Framing in Interactions with Teachers

Throughout her work with teachers, Mia engaged in interactional work to support productive framing of coaching. Table 35 contains categories and examples of framing moves that Mia made in her work with Kamilah and Heather. In the examples that follow, the situated nature of this work is examined.

Table 35. Mia's coaching work to support productive framing

Name and content of category	Examples
<p>New Roles and positions:</p> <ul style="list-style-type: none"> • Stating that her role is not to evaluate or give answers. • Claiming that there is no right answer. • Inviting teachers to think together with her about teaching. • Talking about what she does not yet know or mistakes she is making while learning. 	<ul style="list-style-type: none"> • Teacher asks, "Should I have two groups of 3 [students] or 1 group of 5?" Coach says, "There's no right answer. Let's watch and see." And then goes on to consider ways these grouping choices sometimes effect participation and learning.

Name and content of category	Examples
<p>Coaching and teaching as experimental, playful, involving ongoing learning:</p> <ul style="list-style-type: none"> Talking about teaching moments that don't yet work (including math content that students are not yet making sense of) as normal, part of teaching always, and as resources for moving forward. Talking about moments of coach teaching or of co-teaching as "play" or experimentation that will support collective learning. 	<ul style="list-style-type: none"> After commenting on an algebra idea students were not yet making full sense of, "It doesn't mean they're not getting it sometimes and in some ways, but it means that there's deepening to happen still." After doing some teaching in a classroom, Mia says, "Well, thank you. That was a fun experiment." "What are you thinking? What did you learn from students?"
<p>Renegotiating risk and responsibility:</p> <ul style="list-style-type: none"> Coach talks about responsibility for perceived successes, challenges, and teaching moments that don't yet "work" as shared. This is often accomplished in part by the use of "we" or "us" in examination of teaching moments. Coach takes (and states taking) risks, trying things she isn't sure will work. 	<ul style="list-style-type: none"> "... the discussion we did at the beginning where we wrote [students'] ideas on the board, if felt really powerful that the sense-making we did was connected back to their thinking." In a debrief, coach calls attention to something she had done in the lesson. "I want to be transparent about why I wanted to do that and what I was trying to do and I don't think all of it was necessarily great work." To Kamilah, "Heather helped me understand a thing that I think I was seeing in your class that we could be more clear about on the task card." "You set up [group roles] awesomely. The kids totally got it. But then we didn't use them. Like we didn't go back to them to support what needed supporting."
<p>Teacher strengths:</p> <ul style="list-style-type: none"> Coach names teachers' strengths. Coach creates opportunities for teachers to name their own strengths. 	<ul style="list-style-type: none"> I think that the extent to which you were so clear about what you wanted them learning and making sense of and what it needed to sound like was super powerful. (k deb 949)
<p>Coaching to serve teacher:</p> <ul style="list-style-type: none"> Creating opportunities for teachers to state their questions or needs, and for coaching work to take up those questions or address those needs. Talking about serving teachers as a central purpose of coaching. 	<ul style="list-style-type: none"> "So how are you feeling about...?" "Where do we go from here? What do you want to do with it? What do you want to make sure students learn?" How are you feeling about participation issues? Is there anything there you want to talk about?
<p>New forms of activity:</p> <ul style="list-style-type: none"> Offering teaching activities to engage in together Proposing new coaching activities that support learning together. Talking about ways particular activities supported learning together. 	<ul style="list-style-type: none"> So let's talk about the lesson more broadly, and then we can think about what are the opportunities there for him to do smart things? And we can watch him do smart things. Cool, so we'll go around together and listen to groups talk about it. So then we'll be able to debrief around where students are with this [math] question. We can do as much thinking or planning about the lesson as you want. "We did a lot of thinking together in our planning about... We could reflect on that together. Like what did we try? What did we learn from what we tried?"

Name and content of category	Examples
<p>Framing teaching as complex, situated, and worthy of collaborative investigation*</p> <ul style="list-style-type: none"> • Asking important questions about students, teaching, and mathematics. • Relating considerations of teaching both to particularities of the classroom, the content, rich mathematical goals, and individual students, and to principles and visions for ambitious and equitable teaching. 	<p>This category is so closely tied with the ongoing meaning-making work that Mia did in her interactions with teachers (and thus captured in the Code Profiles shared in previous chapters), that I did not pull out separate examples. Mia does this kind of work frequently enough that coding for it was unnecessary. Basically, it's happening all the time and often overlaps with framing work captured by other codes.</p>

While these coaching moves are identified in the coach's talk, they do not exist outside of the interactions in which they occur. Each time Mia made a "move" to reframe coaching, she acted on the opportunities to do so provided for her in the interactions. And each move that she made landed into the interaction; the ways it could be taken up or understood by Kamilah or Heather were mediated by the frames that governed that teacher's experiences in these interactions.

In the following examples, I consider (1) the opportunities that were available for Mia to engage in reframing work, (2) Mia's reframing work, and (3) ways in which that work was (or might have been) taken up or understood by the teacher in the interaction, given the extant frames. The first example took place during Heather and Mia's first planning conversation (lines 385-415). In this example, previous conversations about logistics had wrapped up and Heather and Lynn (the apprentice coach who was present in these conversations) looked to Mia for what was to come next. Mia took this opportunity to frame the purpose of the coaching work.

Heather	Mia
	Okay so um, so the- um what I would like to know from you is what- what you're thinking you'd like my help with? How things are going? I think I know a little bit about the lesson- or I know a little about the curriculum,
Mhm.	
	but I don't know what you are planning to do with it or what your structure-
Mmm.	
	or what your lesson structure is. Or which problems you are doing or anything like that so we can uh talk about that. But I'd love to hear first sort of- what you're wanting some help thinking about which can then tell me where to direct my focus when I'm here.
Umm, what do I need help on? I think- (6s pause) Well, okay a couple things that are coming up. One is, well this is moving very slow, which I assumed was gonna to happen,	
	Mhm.
but we get to a point where I'm like, do we move on with this lesson?	

Heather went on to talk more about what has been happening in her class that leaves her unsure about when to "move on."

In this interaction, Mia talked about coaching as being in service of Heather (coded as *coaching to serve teacher*), and framed her own decisions about foci as dependent on Heather's

needs or desires for help. She asked what Heather might want help “thinking about,” which suggests a framing of teaching as complex and worthy of thinking together. Heather appears here to have accepted Mia’s invitation to ask for help, and there is no evidence in the short terms that she rejected Mia’s offered framing. However, as the earlier analyses made clear, Heather continued to experience the coaching as *evaluating and fixing* for quite some time.

To understand this, it is useful to take a broader view of the interaction within which Mia’s conscious framing work is embedded. Before this piece of conversation, the two had discussed video-taping and video permissions and had considered which class period Mia should watch. As discussed in Chapter 5, this decision-making process was rife with positioning and Mia’s deployment of power. It served to clarify that Mia would lead the coaching work, including determining the valued topics of conversation, and that Heather was expected to follow. So even before Mia made conscious attempts to offer productive frames, Frame A had been established and reinforced. Also, although Mia offered Frame B, nothing she offered contradicted Frame A. With Frame A mediating Heather’s understanding of Mia’s talk, it is reasonable that she heard Mia’s offer to “help” her in ways that were different than Mia intended. For instance, “what do you want help with?”, mediated through Frame A, could easily be heard as, “What are the deficits in your teaching that you want me to fix?” And her response to Mia in the segment above is consistent with this interpretation. Rather than asking Mia to help her accomplish something or make sense of something, she described an aspect of her teaching that wasn’t working.

In the following example, Mia did similar work with Kamilah to frame coaching explicitly, but into a different interactional context. At the time of this interaction, Kamilah was orienting to *coaching as helping*, and was thus differently set up to interpret Mia’s framing work. (plan 2, 121-167). Before this moment, Kamilah had been telling Mia about a recent meeting in which she and two other teachers had met with Arne Duncan, the current federal secretary of education. After wrapping up her story, she turned the conversation to her perception of its purpose, providing Mia with an opportunity for framing.

Kamilah	Mia
So, we’re basically just gonna talk about tomorrow’s plan, right?	
	Yeah, so what I was thinking we could talk about, um, and we can do- we can sort of go as deep as we want to,
Mhm.	
	or be as quick as we are able to, What I’d like us to get to in this conversation is just get me oriented,
Okay.	
	and figure out how to set us up for whatever we want to be able to talk about in the debrief, like, where do you want my eyes? what are you hoping to be thinking about together?
Okay.	
	Cuz that will help me figure out how to plug in in the class or how to observe, or what I’m looking at,
Yeah.	
	And sort of, taking note of so that I’m armed to help you with what you want help with.
Yeah.	
	Um, so that, that’s sort of the basics. The fundamental,
Yeah.	

Kamilah	Mia
	To set us up to get something good out of the interaction. And then um, (.) and then, we can do as much, sort of, thinking, or planning or whatever around the lesson as you want or are open to, we can play with it and tweak it and make some decisions, or not, whatever you- whatever is showing up as important for you.
Okay. (3s pause) So, I guess (.) well there's one- okay. I guess he's in my first period (<i>inaudible</i>), but um so I don't think- maybe he was there, Manuel, last time you observed?	

Kamilah went on from here to describe the challenges she was having with Manuel and to ask Mia to help her figure out how to support him. This conversation that developed out of this turned out to be important for Kamilah, one that she described in an interview more than two years later as particularly powerful for her learning.

In the segment of interaction above, Mia took up Kamilah's offer to set up the interaction with explicit framing work. She pointed to the importance of Kamilah's needs and questions (coded in the category *coaching to serve teacher*), stated the intention of thinking together (coded as *new roles and positions*), connected this to what the coach would do in the classroom (coded as *activity*), suggested something she and Kamilah could do together (coded as *activity*), and talked about the possibility of playing with the lesson together (coded as *coaching and teaching as experimental, playful, involving ongoing learning*).

To understand the probable impact of this framing work, it is useful to consider the extant frames that governed Kamilah's understanding of what was taking place. Kamilah was already orienting to Mia's coaching as *helping*, having moved away from her previous understanding of Mia's coaching as evaluative. Thus, it makes sense that Mia's work to frame the interaction as in service of Kamilah was understood as such, and Kamilah asked for help with a substantive challenge, which ended up being fruitful for her learning.

These examples demonstrate that Mia's work on framing is best understood not as a list of framing moves, but as ongoing, cumulative, and situated interactional work. Mia found opportunities to frame the coaching work, did so in various ways, and her work was received in ways that were mediated by extant frames. All of this leaves us with a sticky question: if a coach's framing work is taken up in ways that are mediated by current frames, it does not seem likely that this kind of framing work would be enough to accomplish productive reframing. So how does this accomplishment happen? The following section investigates this question by examining the productive reframing that *did* happen in the Kamilah-Mia and Heather-Mia cases.

6.3.2 How Were Productive Framing Transitions Accomplished?

First I investigate the work that contributed to dislodging the unproductive *coaching as evaluating* frame for both Kamilah and Heather. Then I consider how *coaching as learning together* was accomplished in the Kamilah-Mia case. Across these instances of reframing, I find that teachers moving into new frames can productively be understood as *learning about coaching* or *learning about learning together about teaching*. Seeing this as *learning* invites the consideration of the multiple, intersecting processes of meaning making, practice, identity, and community, but here in relation to learning about coach-teacher work itself.

The data show that in each case in which productive reframing was accomplished, teachers were given opportunities to make new meaning of coaching (largely through the

framing work described in the previous section) and to participate in ways that were consistent with new frames. They were also given opportunities to take up positions and other aspects of identity consistent with new frames and to experience community, or togetherness, with the coach in new ways. In this section, I identify ways in which these processes played a part in the accomplishment of more productive coaching frames for teachers. An important finding is that opportunities to make new meaning, to identify in new ways, and to experience togetherness with the coach, all of which can be seen in the coaching work described in the previous section, seem to be insufficient without new ways to participate in learning about teaching with the coach. As such, this section focuses primarily on participation, finding that in each accomplishment of reframing, the teacher and Mia participated in new ways that were outside of the extant frame and that participation appears to be essential for these reframing accomplishments.

Kamilah's shift from coaching as *evaluating and fixing* to *helping*.

Productive framing for Kamilah took place across the three components of the first coaching cycle: the planning conversation, during the lesson, and in the debrief conversation. Below, I consider opportunities to learn about coaching that she had in each of these settings, or opportunities to make new meaning, participate in new ways, identify newly in relation to the coach, and experience community with the coach.

This first planning conversation started out with some discussion of data collection logistics, such as permission forms and plans for video recording. Mia then asked Kamilah to describe “what’s going on in your class, what you’d like help thinking about” and “what you know about the plan” for the lesson that Mia would attend. Kamilah described some of how group work had been going and asked for some advice about how she should arrange students. She went on to describe her plans for the lesson and to ask for advice about her approach to the lesson. (For more detailed description of Kamilah’s talk in this conversation, see Section 4.3.1.)

Throughout this conversation, Mia engaged in several of the framing practices named in the previous section, offering Kamilah opportunities to understand coaching in new ways (meaning), to identify in new ways in relation to her coach (identity) and to see opportunities for togetherness with Mia (community). Mia offered more productive roles and positions 5 times; talked about coaching and/or teaching as experimental, playful and involving ongoing learning 3 times; and talked about the coaching work as in service of Kamilah 6 times. However, each of these attempts were made *into* Frame A. That is, Mia made moves to re-frame coaching, but the interpretations available to Kamilah of these moves was mediated by the frame currently at play. Thus, it is not surprising that in this conversation, Kamilah’s participation remained mostly consistent with the frame *coaching as evaluating*. We saw this in Section 6.2.1.

During the lesson in this first coaching cycle, Mia participated in ways that gave Kamilah access to new ways to understand the coaching work. She watched some portions of the lesson quietly and when students were working in pairs, she listened to them, took notes, and reported some of her observations back to Kamilah. In an interview that took place a week or so after the first coaching cycle, Kamilah said that during this lesson, it became clear to her that Mia wanted to help her students, and that this interpretation supported her to relax and worry less about Mia’s evaluations of her teaching.

I really appreciated like, it wasn’t just her just observing me and then like writing down notes and then like, “Oh this is how your lesson went,” but like she actually

participated in the lesson and like would jump in with conversations or like, she wasn't there just to observe, she was there to support my kids and my students and to, if she could help them, she would do it, you know?

This suggests that Mia's participation in Kamilah's class provided opportunities for Kamilah to make new meaning of coaching.

Mia began the debrief conversation following this lesson by setting up a conversation protocol focused on Kamilah's strengths and questions. (For a detailed description of this conversation, see Section 4.3.1.) This conversation, which began with some quiet time to think and takes notes, unfolded as follows: Kamilah took 1 minute, 47 seconds to talk about three strengths of hers that she thought had been apparent in the lesson. She then posed five questions, which focused mostly on what she "should" do in response to various challenges or how her lesson should have gone. Mia then took 7 minutes, 20 seconds to describe nine strengths of Kamilah's that she had observed. This talk included the following example, which turned out to be referred to throughout their coaching work together:

Kamilah	Mia
	You said something to a kid- as I was writing this- I can't remember. Maybe you can, because I wish I could remember the details. What I wrote down was- and I remember this. You said to a kid- I don't even remember who, "You made an awesome connection here." And you helped the kid connect something they had done to the problem. To the task the way it was printed in a way- and I don't remember. I wish I could (<i>inaudible</i>).
Oh, I think it was right here (<i>points</i>).	
	Okay. And what was the connection?
I think it was like um moving the decimal and looking at the exponent.	
	So, it was something- what I remember about it, at least my impression of it, was that it wasn't a connection that you were expecting. Like you were listening to the kid,
Oh right.	
	and you heard the kid say this thing. And you recognized the math in what they said and you recognized how that math was connected to the task,
Right.	
	even though it wasn't exactly what the task was asking for.
Yeah.	
	So, you were helping them to see how what they were doing was connected like to the formal task.
Oh yeah.	
	Does that feel right?
I am just trying to remember what it was.	
	I wish I wrote- took better notes. Err. Grr (<i>snaps</i>).
<i>(laughs)</i>	
	Anyway, it was a moment like that I think. So, what it told me was that you were listening for what the kids were actually saying, not for like, "Are they right?"
Yeah.	
	Or, "Are they doing the thing I'm expecting?"

Kamilah	Mia
Yeah.	
	But you are listening to what they are actually doing, you were making sense of it, and then helping the kids to see how it made sense. Which is a super powerful pedagogical skill.
Mhm, okay (<i>smiles</i>).	

Following the listing of strengths and questions, Mia directed the conversation to Kamilah’s questions, drawing connections between them and the strengths they had discussed.

Largely in response to the conversation protocol that structured their talk, Kamilah and Mia participated in this conversation in ways that were inconsistent with the deficit-focused *evaluating and fixing teaching* frame. Notably absent from this conversation was any opportunity for Kamilah to ask or Mia to offer her evaluations of Kamilah’s teaching deficits¹⁷. Kamilah named her own strengths and posed her own questions. She listened to the coach tell her about ways in which her current teaching practice was powerful for students and could productively be used to investigate her questions. None of these ways of participating is consistent with the *evaluating and fixing teaching* frame.

Heather’s shift from coaching as *evaluating and fixing* to *helping*.

The story of Heather’s shift out of *coaching as evaluating and fixing teaching* and into *coaching as helping* is different in that it required more time and more opportunities to participate in new ways. However, as with Kamilah, new forms of participation were essential for the eventual reframing accomplishment.

As she had with Kamilah, Mia did intentional reframing work in the first planning conversation. In class, she tried to offer help, but as we saw in Heather’s Vignette 1, her attempts fell flat. As was clear in the analyses of power in Chapter 5, Mia’s work to reframe productively was complicated by her talk that served to reify her and Heather’s distant positions and the uneven distribution of power between them. Also, data suggest that Mia may not have been aware of the extent to which the *coaching as evaluating and fixing* frame was mediating Heather’s experience, and may thus not have been prepared for her own participation to be understood through that frame. This is likely behind the moment described in Section 6.2.2, in which Mia entered Heather’s conversation with a group of students and Heather walked away.

Mia organized the first debrief conversation in the same way she had with Kamilah, setting up a protocol that focused on Heather’s teaching strengths and her questions about teaching. In doing so, she offered Heather ways to participate in the coaching conversation that were inconsistent with *evaluating and fixing*. Evidence suggests that participation in this conversation was powerful for Heather, even though it was insufficient to support a stable shift for her out of Frame A. Heather’s talk about this conversation in an interview a few weeks later reveals both the power of frames and the complexity of productive reframing. She recounted her recollection of what had happened in that coaching cycle: “We talked about what are my strengths and then some things that- to work on.” She went on to talk about the power of the strengths-based part of this conversation for her.

¹⁷ As discussed in Chapter 5, naming teachers’ strengths is evaluating and can thus cue an evaluative frame. However, the practice of naming strengths is inconsistent with an evaluation frame that is focused on deficits, as is coaching as *evaluating and fixing teaching*.

It was really nice to talk about strengths, like as a teacher, getting complimented on anything is very rare. Um, middle schoolers definitely are not very complimentary. And it's tough with everything, with administration, with, just getting people to appreciate what you do and all the hard work you put in doesn't happen very often. So it was really nice for her- to hear some compliments about things that I'm doing.

However, she had trouble remembering the rest of the conversation. She was certain that Mia had made suggestions related to what she could improve in her teaching, but couldn't remember what they were:

I can't remember exactly what we talked about. It was a little while ago, but we did talk about the lesson. We did talk about- I can't think off hand like what were her suggestions, but she definitely gave me some. (*laughs*)

What is interesting is that Mia made no such suggestions. The second part of the conversation protocol, following talk about Heather's strengths, was about Heather's own questions. However, in the deficit-focused *coaching as evaluating and fixing* frame, it is logical and expected for coaches to share their suggestions for teachers' improvement. The fact that Heather was sure this had happened (although it hadn't) attests to the strength of this frame for her.

Part of the strength of this frame for Heather was likely connected to Mia's unintended coaching moves. We saw in Chapter 5 that before Mia asked Heather in this debrief conversation for her questions and before she said that those questions would guide their work, she had constrained the scope of acceptable topics of conversation. Thus, some of the power of this coaching move may have been reduced. Heather may have heard Mia *saying* that her questions matter and would guide their work, but she also had experienced previously that some of her questions were sidelined and named *not central* in their conversations. Evidence suggests that while participation in this strengths-based conversation was powerful for Heather, it was insufficient to dislodge the *coaching as evaluating and fixing* frame.

Throughout the second and third coaching cycles, Heather and Mia had few opportunities to participate in new ways that could have dislodged this frame. My analysis suggests also that Mia struggled to find opportunities to offer Heather new meanings about coaching or new ways to identify or connect. This is evident in Table 36 below.

Table 36. Mia's framing work with Heather (frequency per hour)

	Frame A						Frame B	
	Cycle 1		Cycle 2		Cycle 3		Cycle 4	
	Plan	Debrief	Plan	Debrief	Plan	Debrief	Plan	Debrief
New roles & positions	9	2	4			3	7	4
Experimental / learning	8	6	4	9	9	5	13	20
Negotiating risk				2	2	2	4	5
Teacher strengths	1	25	1	2		7	1	3
Coach to serve teacher	9	3	8	5	2	2	20	5
New activity	3		1		7		9	
Total	30	37	18	18	20	19	53	37

What made a dramatic difference for Heather’s reframing took place in the pivotal conversation at the beginning of Cycle 4 and was a central focus of Chapter 5. In that conversation, Mia recognized and capitalized on new opportunities for productive framing. These opportunities were largely created by Heather, as she shared her discomfort and opened conversation about the purpose of the coaching work. By telling Mia that she was not happy and did not feel consulted, she brought the nature of the work into focus, where it was then available for negotiation. Mia took up these opportunities and stated her intention that coaching should be of service to Heather and that Heather should choose her own participation (or non-participation) in the work. Mia offered Heather new ways to understand the possibilities of the work of coaching, new ways to be positioned in that work with Mia (with agency), and new ways to understand their relationship.

This conversation also provided Heather with opportunities to participate in dramatically different ways. As part of the negotiation about what might happen moving forward, Mia presented various options to Heather about what the two could do together, including the opportunity for Heather to “take a break” while Mia taught her class. In other words, Mia invited Heather to participate in coaching work by talking about and watching teaching, rather than by teaching herself. Heather accepted this offer enthusiastically.

In this exchange, Heather and Mia together constructed powerful opportunities to participate in coaching in new ways, completely outside of *coaching as evaluating and fixing teaching*. Suddenly, Heather had opportunities to talk together with Mia about teaching without the threat of evaluation and to consider teaching from the position of observer. These new forms of participation in coaching rendered *evaluation and fixing* irrelevant and created rich opportunities for shifts in meaning, identity, and community related to the coaching work. And indeed, Heather did participate in new and more generative ways with this shift.

Kamilah’s shift from coaching as *helping to learning together*

By the end of the coaching work, Kamilah had shifted in to the ideal frame of coaching as *learning together*. In this section, I look at this framing accomplishment, again finding that opportunities Kamilah had to participate with Mia in new ways were powerful.

Table 37 shows the results of my coding for Mia’s reframing work in conversations with Kamilah. One thing that becomes clear is that through the period of time in which Kamilah was relating to coaching as *helping* (Frame B), Mia found many opportunities to offer new meanings, identities and togetherness to Kamilah.

Table 37. Mia’s framing work with Kamilah (frequency per hour)

	Frame A		Frame B				Frame C		
	Cycle 1		Cycle 2		Cycle 3		Cycle 4		
	Plan	Debrief	Plan	Debrief	Plan	Debrief	Plan	Debrief	
New roles & positions	10	17	14	16	4	13	2	11	
Experimental / learning	8	12	9	24		29	12	28	
Negotiating risk			1	18		7	14	15	
Teacher strengths		27	5	27	19	14	2	4	
Coach to serve teacher	16	10	7	15	4	6	18	15	
New activity	3	2	9	9		2	20	4	
Total	39	68	45	109	26	72	68	77	

A closer look at the coaching work reveals that many of these opportunities were connected to ways in which Kamilah and Mia participated together in activities related to teaching, or to their development of shared practice. Once Kamilah related to Mia as a source of meaningful support, she and Mia found numerous opportunities to participate productively in activities central to teaching. For instance, by Cycle 2, Kamilah was asking for Mia's help in planning her lessons. During the lessons in Cycles 2 and 3, Mia participated in teaching. In the Cycle 2 lesson, she helped to lead a whole class discussion supporting the development of students' ideas about angles, and in Cycle 3, she interacted with students during group work, asking them questions that both pushed and investigated their thinking about solutions to systems of equations in multiple representations.

Throughout this time, Mia and Kamilah were establishing shared practices. These shared practices supported Mia to do framing work and for this work to be meaningful for Kamilah. Also, these shared practices, along with the new ways being offered to Kamilah to identify as competent and to see herself as working together with Mia supported her to take on new and challenging teaching. This, in turn, supported her learning with Mia, and the eventual accomplishment of *learning together* as Kamilah's primary frame for coaching. Once again, Kamilah's and Mia's participation (both in teaching and coaching) appears to be essential for the accomplishment of productive new frames.

It is interesting to notice, too, that the more productive the framing, the more opportunities seem to exist for continued productive framing. We see that when Kamilah and Mia took on challenging new teaching together (which was both facilitated by and in turn facilitated Frame C), powerful opportunities for further framing and learning became available. Earlier in this chapter, we examine the opportunities for learning that were available for Kamilah in Cycle 4, where she and Mia together supported students to take on full responsibility for the mathematical work of the class. Here it's interesting to notice the opportunities for productive framing that came along with this learning, which we can see Mia capitalizing on in Table 37.

Opportunities to reframe productively.

The previous analyses reveal patterns that are useful for understanding how productive reframing of coaching can be accomplished. First, a number of challenges surface with respect to coaches' potential work to offer new frames for coaching to teachers.

The dominant world of *US Schooling*, in which teaching and learning are situated, supports teachers to orient to Frame A, and this is where each teacher in this study started. And, as we saw in this section, Frame A provides few opportunities for reframing. Moreover, teachers' understanding of coaches' talk, including talk that contains attempts to reframe, is mediated by Frame A. But as Frame A is so unproductive for learning, coaches need to figure out how to work with teachers to leave it behind.

A promising finding across these cases (summarized in Table 38) is that each reframing accomplishment was supported by participation that is inconsistent with old frames. This suggests that coaches who wish to disrupt *coaching as evaluating and fixing teaching* might find ways to offer opportunities to teachers to participate—and participate themselves—in ways that contradict this frame.

These analyses also suggest that once Frame B is accomplished, the work of continued reframing is easier. In Frame B, shared practice is available, and participating together in teaching and sharing the associated risks provides rich opportunities for reframing work, including for finding new forms of participation.

Table 38. Participation outside of extant frames that was part of each reframing accomplishment.

Framing Accomplishment	Participation <i>Outside</i> of Extant Frame
Heather: Frame A → B	<ul style="list-style-type: none"> • Mia teaches and Heather watches • Heather leads the coaching conversations
Kamilah: Frame A → B	<ul style="list-style-type: none"> • Mia engages with students • Mia and Kamilah talk about Kamilah’s teaching strengths • Kamilah’s questions guide conversation
Kamilah: Frame B → C	<ul style="list-style-type: none"> • Mia and Kamilah teach together, participate jointly in experimenting and risk-taking in the classroom

6.4 Conclusions and Discussion

6.4.1 Conclusions

The area of central concern in this dissertation is understanding and supporting teacher learning that leads to ambitious and equitable math teaching. In previous chapters, I fleshed out a framework for this ambitious learning and uncovered ways in which coaching supported this learning differently in different cases. In this chapter, I set out to investigate why coaching that may have looked roughly “the same” to Mia or to an outside observer played out differently in these two focal cases. To do this, I examined teachers’ frames for coaching, the ways in which these frames shaped their opportunities for transformative teacher learning, and the ways in which more productive frames could be accomplished as coaches and teachers interact.

The analyses uncovered three central ideas, which I restate and develop below. First, different frames exist for teachers, with different affordances for TTL. Second, particular kinds of coaching work can support productive reframing for teachers. Third, *coaching as learning together*, the optimal frame for TTL, is furthest from “normal” for teachers, and thus most challenging to achieve. However, *coaching as helping* provided many opportunities for the coach to frame coaching productively and was relatively accessible. It can therefore be seen as a bridging frame, supporting teachers toward *coaching as learning together*. These ideas are encapsulated in Figure 9 and I elaborate on each of them below.

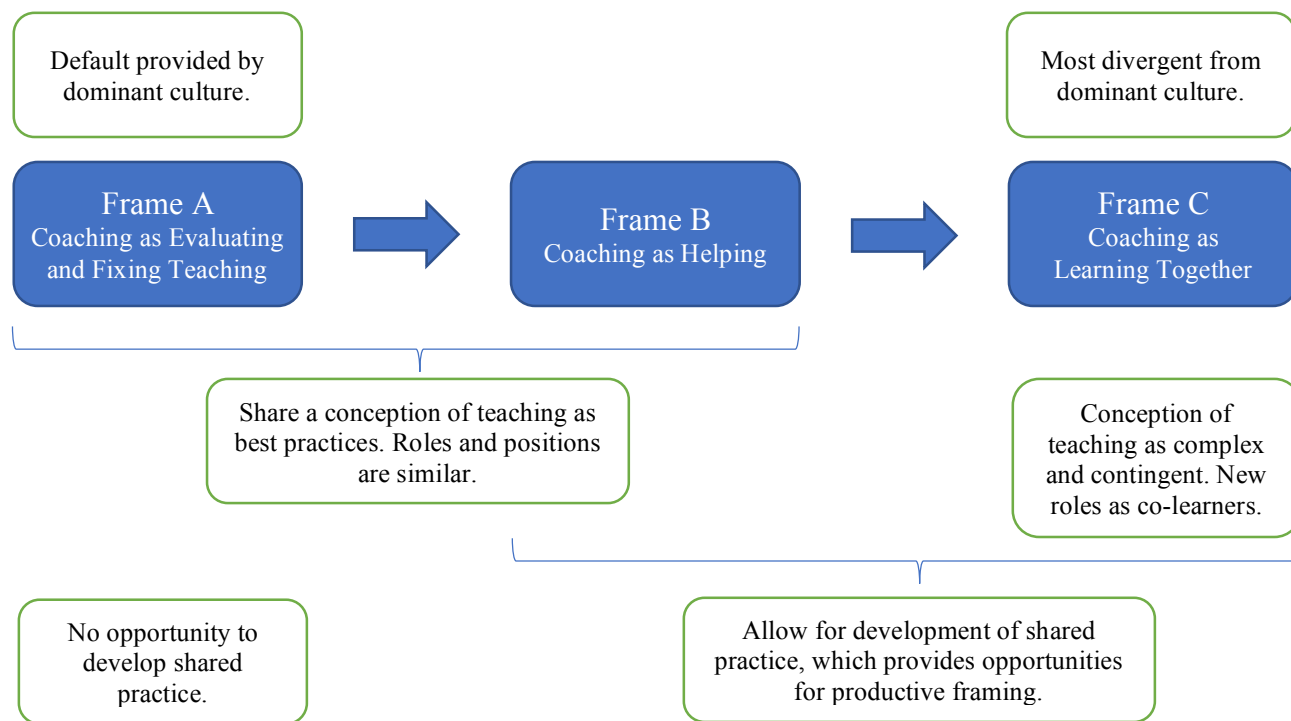


Figure 22. Development of productive frames for coaching

Big idea 1: different frames exist for teachers and differently support TTL.

Analyses revealed that teachers’ experiences with coaching were shaped by three distinct frames for coaching. Each was accompanied by frames for teaching and for teacher learning, and each frame for coaching had different affordances for TTL.

The first frame at play for Kamilah and Heather was *coaching as evaluating and fixing teaching*. This deficit-focused frame was a sensible default for them, as it is for teachers broadly, as it is tightly connected to their various experiences in schools and as the district CI project positioned Mia as an expert. (I return to this point later.) This frame for coaching was coupled with a conception of teaching as measurable implementation of best practices and of improving teaching as fixing teachers’ deficits in relation to these practices. This frame also carried a presumption that coaches hold “the answers” and are bestowed with the expertise to measure teaching; they can and should say what teachers need to work on and are thus the drivers of the work of coaching. Teachers’ questions and ideas are irrelevant.

This frame tightly constrained teachers’ opportunities for TTL. It offered roles and positions that maintained separation between teachers and coaches, limiting opportunities for shared sense making. It shaped sensible forms of participation in ways that left few opportunities for trying out challenging new teaching or for inquiring into questions of teaching that matter to teachers.

The next frame at play for Kamilah and Heather was *coaching as helping*. This frame differed from the first in that it was not focused on teachers’ deficits and teachers’ were presumed to have questions and ideas that matter for their practice. While coaches are no longer presumed to be in sole possession of expertise to evaluate teaching here, teaching is still

conceived of as a collection of “best practices.” However, teachers are positioned as having expertise that matters in the development of these practices.

When this frame was at play for Kamilah and Heather, they engaged in TTL. They had (and took) opportunities to inquire into questions of teaching that mattered to them. They had (and took) opportunities to make new meanings that matter for equitable teaching. They tried out (in Kamilah’s case) or observed (in Heather’s case) new classroom practices connected to their own goals for students. They had opportunities to negotiate their own identities as teachers, and to connect in new ways with their coach.

The final frame at play for Kamilah was *coaching as learning together about teaching*. This frame implied a new conception of teaching: as complex, contingent, and worthy of ongoing, collective investigation. The accompanying conception of improving teaching, then, is ongoing experimentation, sense-making and co-investigation. In this frame, Mia and Kamilah were positioned as co-learners, each with different experiences and expertise to bring to their collective learning. As co-learners, they tried out new teaching ideas together and reflected together on what they were learning as a result.

This frame supported Kamilah to try out more challenging teaching than she was prepared to take up alone. She and Mia together set up (and taught) a lesson in which students took on the responsibility for developing mathematical ideas together, relying on each other—and not on teachers—to decide when their ideas made sense and when they needed refuting or further development. Through this adventure into challenging teaching, Kamilah had opportunities to understand new and powerful possibilities for teaching. This experience influenced her teaching in lasting and powerful ways.

Big idea 2: coaches can support productive reframing of coaching for teachers.

Mia engaged in work with Kamilah and Heather that supported them to orient to new frames for coaching. Examination of the ways in which these framing transitions were supported (and unfolded) yields conclusions, both about possibilities for coaching and about the frames themselves, that may be useful broadly. Of course, our understanding of these dynamics would be enhanced by examination of more cases; however, there are conclusions suggested here that I contend are useful. First, when different frames were at play for teachers, Mia was differently able to find (and take up) opportunities to reframe productively. This suggests that frames differently afford opportunities to reframe productively. Second, while Mia’s reframing work was multifaceted, she could not accomplish teachers’ productive reframing alone. Teachers needed opportunities (which Mia provided or recognized in each case) to participate in new ways that were inconsistent with the old frame and consistent with the new ones. This idea is developed more in a moment.

Frames differently afforded opportunities for Mia to support productive reframing.

When *coaching as evaluating and fixing teaching* was the primary frame at play for Kamilah and Heather, it was challenging for Mia to find opportunities to frame coaching productively. Without some way “in” to the workings of the classroom, Mia was relatively restricted in her ability to share responsibility for the challenges of teaching or to contest the default positions of herself as a presumed expert and of the teacher as a novice. For example, recall the interaction between Heather and Mia during class in which Mia stepped into an interaction Heather was having with a group of students. To Mia’s surprise, Heather responded to her intervention (which may have been intended as an attempt to create shared practice) by

leaving. The interaction provided no opportunities for Mia to support Heather to understand their work together differently or for her to position herself as a learner alongside Heather.

When *coaching as helping* was the primary frame at play for teachers, Mia found more opportunities to reframe coaching toward *learning together*. When teachers were oriented to coaching as helping, Mia found opportunities to get into classroom activity (e.g. by doing some teaching alone or alongside the teacher), which then gave her opportunities to make her own ongoing learning explicit. This allowed her to contest the simplistic and limiting positions of coach as expert and teacher as novice and to frame teaching explicitly as complex and requiring ongoing learning. For example, when Kamilah asked for Mia's help supporting Manuel, Mia used the ensuing conversation to propose a Do Now activity and accompanying whole class discussion to surface, connect, and build on students' thinking about angles. She then participated with Kamilah during the lesson in surfacing students' ideas and connecting them. This gave her opportunities in the debrief conversation that followed to talk reflectively about her own practice and about what she was still learning, and to position herself and Kamilah as together in the joint endeavors of teaching and learning about teaching.

Productive framing transitions involved new ways for teachers to participate in coaching.

Analyses across each of these transitions revealed that Mia's work to offer new frames was insufficient without teachers' own participation in the work of coaching in ways that were incompatible with the less productive frames. Teachers needed to participate with their coach in ways that supported practices, roles, and positions *outside* of the frame they were otherwise in. For example, Heather's opportunity to watch Mia teacher her class provided her with ways of participating (e.g. watching), roles (observer), and positions (from one being evaluated to one being consulted about teaching) that were outside of *evaluating and fixing* frame. Similarly, Kamilah's shift to *coaching as learning together* was supported by opportunities she had to try out challenging teaching *alongside* Mia, taking up the role of co-teacher, and to think *alongside* Mia about their collective learning, taking the position of co-learner.

Noticing the importance of teachers' participation in these processes reveals an interesting dilemma with implications for coaching. Teachers' participation in coaching is constrained by the frames that are guiding their understanding of the coaching work. When they are guided by unproductive frames, their participation is unlikely to support the development of more productive ones. Here we see a mandate for coaching: coaches can create (or recognize and capitalize on) opportunities for teachers to participate in coaching in ways that would not otherwise occur naturally. We saw Mia do that by instituting a conversation protocol for debrief conversations with both teachers that disallowed participation consistent with Frame A and by teaching Heather's class. It will be instructive to uncover other strategies coaches can use to offer teachers ways to participate in coaching that "break out" of unproductive frames.

Big idea 3: each frame is situated differently with respect to *US Schooling and Ambitious and Equitable Teaching and Learning* and Frame B may act as a bridge to Frame C.

Here I examine the progression of frames that were primary for Kamilah and Heather in their work with Mia, and consider the logic of this progression—from Frame A to B to C. I start by considering Frames A and C and the ways in which teachers' experiences in cultural worlds support these two frames for coaching to be more and less logical or "normal." I then examine

the transition between frames (the two arrows in Figure 9, from Frame A to B and then from Frame B to C), and consider what these transitions might reveal about the importance of Frame B for the eventual accomplishment of Frame C.

Frame A is a logical starting point for American teachers.

Kamilah and Heather both began their relationship with Mia in the default frame of *coaching as evaluating and fixing teaching*. I contend that this frame was default for them, as it is for many teachers interacting for the first time with a coach, because of its centrality in the world of *US Schooling*.

There was nothing I could find in Kamilah and Heather's introduction to Mia that would have cued this frame, other than Mia carrying the title "coach." In fact, there were experiences that the three shared that might have supported them to orient to coaching quite differently. Before Mia came to coach at Adams MS, she had facilitated a week-long workshop about CI, which Kamilah, Heather, and 22 other teachers attended. While her role as facilitator must have bestowed her with presumed expertise, Mia had repeatedly positioned herself in that course as learner, posing questions she did not know how to answer and naming her own past and present "mistakes" or moments for learning publicly.

However, the frame *coaching as evaluating and fixing teaching* is logical in the world of *US Schooling*. Its general deficit focus on learners and its view of learning as fixing what is wrong or filling in what is missing are familiar to most American teachers. Before they were teachers, they were students themselves, steeped in US schools, which were organized to identify and "fix" knowledge problems. The world of *US Schooling* is situated within US society, which has a longstanding deficit view of teachers and simplistic "how to" view of teaching. As Heather said, teachers are rarely told what they do well. Narratives of "failing" children and schools connect to narratives of teachers who "don't know how to teach." It's easy to understand teachers as unskilled when teaching is seen to be a relatively context-free collection of practices to be mastered. Schools are organized in ways that isolate teachers and presume their individual responsibility for what happens in their own classrooms. Many schools lack a sense of shared responsibility for student learning, although at Adams MS, Heather had been working toward undoing this a bit in the math department.

Frame C is the most divergent from dominant culture and therefore logically the last.

Frame C, which is consistent with the emerging world of *Ambitious and Equitable Teaching and Learning* and inconsistent with *US Schooling*. For this reason, it is logical that it would be the most foreign and least accessible for many American teachers. It is connected to conceptions of teaching and of learning that are rare and teachers rarely have experiences in schools that would support them to orient to this frame, or even to see it as possible. Frame C, and the world of *Ambitions and Equitable Teaching and Learning*, suggest an orientation to improvement, or learning, as building on strengths, rather than fixing deficits. They conceive of teachers as ongoing learners, continually working to respond to the complexities of teaching. They conceive of teaching, not as best practices that could look the same in any classroom, but as complex, contingent, and always developing in response to teachers' learning and the particularities of students, their experiences, and the school environment. Frame C and the emerging world imply that teachers are not isolated and solely responsible for what happens in their classrooms, but that teaching should be organized with shared experimentation and shared responsibility. This is not how US schools are organized.

Given how far Frame C is from what is normal in *US Schooling*, we might expect that it would be difficult to achieve. However, the data suggest that this may not be the case, or that Frame C might be relatively accessible once Frame A has been disrupted and teachers are orienting to Frame B. (While Heather and Mia did not accomplish Frame C in the time they had together, their interactions in the final coaching cycle give no reason to believe that they could not have done so had they worked together longer.) This calls for a closer look at the transitions from Frame A into Frame B, and from Frame B into Frame C and consideration of the features of Frame B that allow it to act as a bridge between the polar frames of A and C.

From A to B: from coaching as evaluating and fixing to helping.

Supporting teachers to shift from *coaching as evaluating and fixing teaching* to *coaching as helping* involved dislodging some, but not all, elements of *coaching as evaluating and fixing teaching*. These two frames are different, but also share some aspects that may serve to make *coaching as helping* an accessible next step.

To accomplish this transition, Kamilah and Mia needed support to move away from the more limiting focus in Frame A on teachers' deficits and from the assumption that coaches' (and not teachers') ideas are relevant to improving teaching. With both teachers, Mia worked to move conversations away from any potential focus on teachers' deficits and toward their strengths and questions. This is most clear in the conversations protocol that she used in her first debrief conversation with each teacher, which created opportunities for discussion of both teachers' strengths that had been evident in the lesson and of teachers' own questions about teaching. Notably absent was any opportunity to talk about what Mia thought the teachers had done "wrong," or could have done "better."

However, the shift into *coaching as helping* required neither significant work to conceptualize teaching in new ways nor to create drastically new positions for coaches and teachers. In other words, it did not require movement between worlds. The shift from relating to teaching as *measurable implementation of best practices* (in Frame A) to *a collection of best practices* (in Frame B) is not a large one; it merely requires moving away from a focus on measurement or evaluation. Similarly, *coaching as helping* preserves the expert/novice positioning that is inherent in *coaching as evaluating and fixing teaching*, but with some more room for the (novice) teacher to have meaningful strengths and ideas to contribute; coaches are still presumed to have expertise to "help" teachers get better at the practices of teaching. The similarities in these frames, represented with brackets in Figure 9, may make Frame B a logical and accessible next step for teachers.

From B to C: from coaching as helping to learning together.

The transition that Kamilah experienced from *coaching as helping* to *coaching as learning together* was relatively smooth. And the reframing work that took place in the last Heather-Mia coaching cycle suggests that Heather could have taken up Frame C at some point had time allowed¹⁸.

One reason that this framing transition looked surprisingly smooth may lie in the observation made in a previous section: that when teachers were orienting to *coaching as*

¹⁸ While Frame C is positioned here as a terminal and ideal frame, reaching Frame C is not, nor should it be, the endpoint of Kamilah's learning. The goal of coaching in this project, was to support TTL in ways that result in teachers becoming life-long learners about teaching.

helping, Mia found numerous opportunities to engage in productive framing and found ways to work actively toward *coaching as learning together*. In Frame B, Mia and each teacher established some shared practice that facilitated the accomplishment of “togetherness” in making sense of teaching. (In this study, teaching together appeared to be important for the establishment of shared practice. Further research will be necessary to determine how else shared practice might be established.)

Taken together, examination of these two transitions suggests that Frame B may function as a necessary (or at least helpful) bridge between the logical and unproductive Frame A and the “abnormal” and highly productive Frame C. Frame B, which sits within the world of US *Schooling*, seems to provide opportunities to do some of the work required to move away from this world and into the emerging world of *Ambitious and Equitable Teaching and Learning*.

6.4.2 Contributions

In the investigation into frames and their implications for Kamilah’s and Heather’s learning, this chapter has discovered that there are multiple levels of teacher learning that are consequential. First, there is the learning related to the target content. Here that is how teachers can learn toward ambitious and equitable teaching, which was a central focus of the previous two chapters. This chapter brings to light another level of teacher learning in coaching that needs attention: coming to frame the work of coaching in productive ways, or teachers’ learning to learn productively together with coaches.

Previous literature has shed light on similar phenomena in relation to different learning in different settings. Discourse scholars concerned with learning have shown us ways in which students need to learn to navigate the discursive environments of classrooms, and ways in which this level of learning is more and less challenging for students depending on the degrees of difference between their home environments and those of school (e.g. Erickson, 1996, 2004). Hand et al. (2012) demonstrated that frames matter for students’ math learning in classrooms, that the dominant frame (here “doing school”) is unproductive for ambitious math learning, and that because of its dominance, it takes cultural work to disrupt.

This chapter applies this notion to teachers’ learning with coaches and provides some suggestions for what some of that cultural work, at least in the coaching setting, might look like. Like Hand and colleagues, I find that the dominant frame (here “coaching as evaluating and fixing teaching”) is unproductive and difficult to disrupt. Investigating the “cultural work” of reframing, I discovered that teachers need opportunities to participate in activities that are outside of unproductive dominant frames that support them to orient to new, more productive ones. (It is important to note here that we can expect that cultural work in the context of a coach-teacher relationship might be different from cultural work in the context of professional development workshops, teacher workgroups, or classrooms.)

This investigation of frames in the context of coaching provides new ways to understand longstanding and long recognized challenges of coaching. In research related to instructional coaching, there has been clear understanding that (1) there’s a lot of “it depends” in coaching (or that coaching practices may “work” differently in different contexts); (2) relationships matter for powerful coaching; and (3) some teachers are “resistant” to coaching or have “beliefs” that make them unable to engage in particular learning. (See Chapter 1 for further elaboration of each of these points.)

Some of the “it depends” nature of coaching has been investigated, often with a focus on factors external to coach-teacher interactions, for example support from school administrators as

in (Coburn & Russell, 2008). But little has been done to uncover the “it-dependence” within the ongoing interactional work of coaches and teachers. Why do coaching practices that appear to be the same play out so differently in the context of different coach-teacher relationships? Understanding the importance of frames lends a valuable insight to this question. Coaching practices that appear to be the same from the perspective of the coach, or of an outside observer, may be experienced differently by teachers who are relating to different frames for coaching.

Some coaching literature has come to the unsurprising conclusion that “relationships matter” in coaching and that good coaches are good at relationship-building with teachers. These findings are minimally useful for understanding the potential for supporting teacher learning through coaching. Human “relationships” are idiosyncratic, complex, and dependent on the personalities, compatibilities, and habits of the people involved.

This chapter suggests a more productive way to understand ways in which the interactions between a coach and teacher can come to develop in ways that increasingly support learning. Rather than suggesting that coaches should be good at “developing strong relationships,” we can suggest that coaches be good at supporting teachers (and themselves) to *learn to learn together*. They can consider ways in which they, and the teachers they work with, frame their interactions and work toward the development of frames that support ambitious learning together. This is something all coaches can work on and can consider in their interactions with any teacher, regardless of the personalities or habits of the individuals involved. It moves us away from an overly simplistic notion of “good” and “bad” coach-teacher relationships to more actionable understandings of what might need developing between coaches and teachers.

Similarly, these findings offer productive alternatives to simplistic notions of “good” and “bad” teachers as learners. All too often, supporters of teachers’ learning can explain away cases in which teacher learning is challenging or does not yet look successful by naming teachers as “resistant” or as having the wrong “beliefs.” When we decide that some teachers don’t learn because they are resistant or have the wrong beliefs, we set ourselves up to give up on teachers as learners, which is both morally dubious and counterproductive for the goal of supporting improved experiences for students. Considering issues of framing offers a more generative way to think about why learning is harder to support in some cases than in others. If we understand teachers as orienting to unproductive frames (and having good reasons for doing so), rather than as resistant, we can create actionable responses. We can consider how teachers might be supported to frame their learning environment differently, through new opportunities to make meaning about the learning environment and to participate in it in ways that preserve their agency, autonomy, and authorship.

6.4.3 Directions for Further Research

This chapter raises questions that could be investigated through further research. First, how common are the three frames for coaching identified here? Are there others? If other frames exist, what are the affordances of those other frames for ambitious and equitable teacher learning? And, in settings outside of coaching that are designed to support teacher learning, what frames can be at play? For example, what frames exist for math departments meetings? (See (Louie, 2016) for analysis of equity-focused teachers’ framing and opportunities to learn in their workplace interactions.)

How does the cultural work of reframing learning setting productively vary across contexts? For example, are there similarities (as well as the obvious differences) between the

“cultural work” I have examined here of reframing coaching and the work that might be required to support productive framing in professional development workshops or in math classrooms? Also, how might the “cultural work” of reframing coaching (or any other learning setting) be supported by the contexts within which it is embedded? (In her coaching work, Mia leaned heavily on “cultural work” that had been done in other settings related to the Complex Instruction professional development project, including the workshop she facilitate, district-wide facilitated planning time, video clubs, etc.)

This study also raises the question of why unproductive frames are differently difficult to disrupt for different teachers. How might teachers’ experiences in dominant school cultures relate to the ‘stickiness’ of dominant frames for them? For example, did Heather’s more extended time as a teacher in the dominant world contribute to the relative stickiness of this frame for her? Did her greater number of experiences being evaluated by administrators and other people with the title ‘coach’ support her to more easily relate to coaching as *evaluating and fixing*? Did her experiences as a middle class White student and then teacher in schools support her to question the dominant world less and thus have a harder time moving away from it? Did Kamilah’s experiences as a student and then teacher of color support her to more easily recognize and move away from some of the limiting elements of dominant culture, and therefore dominant frames? (The larger data corpus from which these two focal cases emerged support these tentative hypotheses. Heather was the only White teacher in the study and she had the most difficult time moving away from a *coaching as evaluating and fixing teaching* frame.) While we may never know this about these two teachers, these questions could be productively explored by new research.

Chapter 7 Conclusions

In this dissertation, I set out to investigate possibilities for teacher learning toward ambitious and equitable teaching through coaching. To do this, I aimed to articulate a rich picture of this kind of learning, and to investigate conditions of coaches' and teachers' work together that support (or fail to support) this learning. These investigations yielded a robust picture of (1) conditions that can support coaches and teachers to construct new, more ambitious and equitable worlds for themselves and for students; and (2) ways in which cultural frames and distribution of power can support or inhibit teachers' learning in coaching and ways in which coaches might productively attend to these issues. Below, I summarize the contributions to this effort of each chapter. I follow that summary with commentary about implications of this dissertation for research about, and the practice of coaching.

7.1 Summary of Dissertation

Chapter 1 introduces the dissertation, describing its main findings and situating it with respect to current literature related to teachers' learning in work-embedded interactions. It demonstrates that these bodies of research could benefit from a richer view of teacher learning toward ambitious and equitable teaching, and from methodological tools to support the study of such learning.

Chapter 2 works to contribute theoretically to our understandings of such learning by fleshing out a multi-strand framework for *transformative teacher learning toward ambitious and equitable teaching* (in short, TTL). This framework names four socially-negotiated and culturally-embedded learning processes—meaning, practice, identity, and community—and articulates ways in which each process takes place consistently with the dominant world of *US Schooling* or, alternatively, with the emerging world of *ambitious and equitable teaching and learning*. It names TTL as the shift in any number of processes from the dominant world toward the emerging one.

Chapter 3 details the comparative case study design of the dissertation, introduces focal teachers Kamilah and Heather and their coach Mia, and offers methods for the study of five strands of TTL: (1) negotiation of meaning about students, mathematics, teaching, and smartness; (2) participation in thinking and talking about teaching; (3) participation in classroom practice; (4) becoming a kind of teacher; and (5) positioning with respect to the coach.

Chapter 4 examines Kamilah's TTL—a story of coming to notice, be impressed by, name, and build on her students' strong mathematical thinking—and the coaching that supported it. It demonstrates ways in which multiple strands of TTL are interconnected and mutually supportive. It finds three coaching practices that together support all strands of Kamilah's TTL: (1) naming and building from teachers' strengths, (2) working from the explicitly-stated assumption that all students are smart in math, and (3) examining mathematical content to make sense of the ideas that students are and should be grappling with. Each of these practices is fleshed out, revealing ways in which their consistent, interconnected use over time provided opportunities for Kamilah's TTL.

Chapter 5 investigates Heather's TTL, which was found to be inhibited by issues of power, positioning, and agency. For much of her work with Mia, Heather was positioned a follower in the work of coaching, and as less expert than Mia. She experienced a lack of power

and agency, and this arrangement introduced serious challenges to her opportunities for TTL. In a pivotal conversation, Heather and Mia took up these challenges, renegotiated agency and power in their work, and created new roles, positions, and ways of participating for themselves and each other. After this conversation, Heather's engagement with Mia in thinking and talking about teaching was found to have shifted dramatically, and new opportunities for TTL were evident.

Chapter 6 looks across these two cases to consider ways in which teachers' opportunities to learn were connected with frames for coaching that mediated their experiences with Mia. Three frames were found to be at play at various times for Kamilah and Heather. Both oriented to coaching as *evaluating and fixing teaching* at the beginning. They each experienced a shift to making sense of coaching as *helping*, Kamilah early in her work with Mia and Heather after the pivotal conversation examined in Chapter 5. Kamilah came eventually to orient to coaching as *learning together about teaching*. Coaching as *evaluating and fixing teaching*, which is provided by the dominant world of *US Schooling*, was found to be unproductive for TTL. Coaching as *learning together about teaching*, consistent with the emerging world of *ambitious and equitable teaching and learning*, was found to be the most productive for TTL. Coaching as *helping* was found to be productive for TTL, and seemed to act as a bridging frame from the readily available, but unproductive dominant frame to the least available, but most productive frame. Productive reframing was found to be a joint accomplishment, and in every case to involve new opportunities for teachers and coaches to participate that were inconsistent with extant, less productive frames.

7.2 Takeaways About Teacher Learning Toward Ambitious and Equitable Teaching

This dissertation proposes—and then works from—a view of teacher learning toward ambitious and equitable teaching as progress away from the dominant world of *US Schooling* toward the emerging world of *Ambitious and Equitable Teaching and Learning*. This view, and the analyses consistent with it, flesh out the goal that teachers come to think, do, be, and belong in the emerging world. Given the relationship between these worlds (the omnipresence of the dominant one, and the nascent nature of the emerging one), this movement is revealed as a sizeable accomplishment. While the strands of TTL articulate some of the nuance of this learning project, their intertwined and mutually constituting nature supports a holistic view of teacher learning toward ambitious and equitable teaching.

Kamilah's story of coming to be "wowed" by her students provides an existence proof of this sort of ambitious transformation. Kamilah gave up deficit-focused perspectives, shifting to see her students as sensible, smart, and capable of making sense of challenging math together. She came to organize her classroom around this way of seeing, naming her students' smartness and organizing lessons that relied upon it. Her vision of what is possible in teaching expanded to connect student processes (e.g. productive struggle) to the mathematics they should be given opportunities to grapple with. She came to inquire deeply into teaching together with Mia, taking risks that allowed her to dive into ambitious and equitable teaching.

This dissertation supports understanding of ways in which the culturally-situated nature of TTL bears on its processes. TTL was found to be mediated by frames, which are part and parcel of cultural worlds. Kamilah's and Heather's stories of learning were both mediated by ways in which they, supported by their cultural worlds—and by Mia—understood the endeavors of coaching and of teaching.

A rich tradition of scholarship has focused on revealing what is required from students as they navigate the interactional spaces designed to support their learning. For instance, Erickson (1996), in his study of a first-grade classroom, shows how 6-year-olds must learn to claim and hold the “floor,” navigating turn-taking norms and fending off “turn sharks” in order to be included in classroom discourse. This dissertation supports a parallel perspective with teachers at the center. It reveals some of what teachers must navigate to benefit from interactions that are designed to support their learning. It shows that they must navigate negotiations of power, agency, positioning, and frames to co-construct with coaches—or, we might assume, other PD providers—an interactional “space” that effectively supports their learning.

7.3 Takeaways About Coaching Toward Ambitious and Equitable Teaching

The perspectives and analyses in this dissertation support a view of coaching as a dual project of working to build and maintain emerging worlds at the same time as inviting and supporting teachers to leave behind dominant worlds and take up these emerging ones. Like the view of teacher learning outlined above, this supports our understanding of coaching toward ambitious and equitable teaching as a sizeable undertaking that is both complex and contingent. The endeavor of coaching is further complicated by its own situatedness in cultural worlds. Mia worked with Kamilah and Heather to construct the emerging world and to coach from its premises and at the same time, the dominant world was evident in her coaching (through, for example, her failure to frame Heather’s concerns and questions as sensible and an important part of their collective learning project).

This dissertation offers some ideas about coaching from the world of ambitious and equitable teaching and learning. It does this in part by articulating some of what coaches might do to support TTL. A view emerges of coaching from strengths, rather than deficits. This played out in Mia’s practices of presuming, and building coaching and teaching practice from, teachers’ and students’ strengths. Her ways of investigating mathematical content with teachers carried these presumptions; talk about content was intertwined with talk about students as smart math thinkers. (One could imagine interrogation of math content being very different, focusing for example on student “misconceptions.”) Interrogating content here supported teacher-coach conversations to relate to students as sensible, and their struggles as evidence of navigating complex terrain, rather than evidence of their deficits.

Building new worlds requires ongoing maintenance and contention with dominant worlds, which in turn requires continual, collective learning along multiple processes. Coaching from the ambitious and equitable world also means *learning together about teaching*. Part of coaching toward this new world is coaches’ own continual learning, about teachers and about teaching. In order to *learn together* with teachers, coaches must attend to “togetherness,” taking on the issues of frames, positioning, power, and agency that mediate the extent to which learning is available to teacher in teacher-coach interactions and relationships.

While this dissertation offers ideas for what coaches might do, it also suggests that coaching is about more than that. It reveals that coaching practices that a coach or an outside observer might see as “the same” in different teacher-coach relationships can be significantly different for teachers. Teachers’ opportunities to learn come out of their experiences, which do not follow directly from coaches’ actions, but are mediated by frames. Thus, a “best practices” approach to coaching is insufficient. While this dissertation articulates practices that have the

potential to support TTL, coaches must also learn to attend to the situated particularities of each teacher-coach relationship, attending to issues of power, positioning, voice, and agency.

7.4 Implications for Research

These perspectives reveal potential pitfalls of narrow foci for studies of teacher learning and of studies that ignore the culturally-situated nature of this learning. Research organized around narrow, or decontextualized foci (e.g. teachers learning a particular practice or gaining a particular kind of knowledge), underestimates teacher learning and misses opportunities to understand teachers as sensible and their actions as logical responses to their worlds. For instance, if Heather's work with Mia had been examined for evidence only of shifting thinking or classroom practice, it would have been easy to conclude that she did not learn much and that the apparent failure of coaching was due to her resistance to change. The more holistic analyses here reveal that such conclusions would be incorrect. Heather was not resistant to change, but her learning processes were inhibited by missing agency and lack of power that resulted from the influence of dominant cultural worlds, both on her perceptions of coaching and on the coaching itself. This implies that research on teacher learning could benefit from studies that focus broadly on teachers' learning. Such studies would support our understanding of ways in which teachers' knowledge, practices, identities, and communities mutually constitute each other and are situated in the worlds that dominate their working lives.

This also implies that research might productively find ways to study teachers as participants in, rather than subjects of, their own learning. Broad views of learning might support researchers to examine processes of teachers' learning in ways that center their experiences and seek out what is sensible in their successes and in their challenges. Doing this here supported the discovery of phenomena that yield a more generative understanding of ambitious teacher learning through coaching.

Given the ambitious nature of this kind of learning, and given what is uncovered about its culturally situated nature, design-based research that attends to culture and includes teachers in the design of their own learning spaces is a promising direction for future investigations into what it means to support these kinds of teacher learning. Researchers engaged in this kind of work have demonstrated ways in which these approaches can yield understandings of ways in which activity systems can be co-designed with participants to support the development of tools, practices, norms, and frames that can support ambitious learning for teachers and for communities of teachers (Cole & Engestrom, 1997; Gutierrez & Vossoughi, 2010).

The strategies developed in this study for capturing the complexity of teacher learning toward ambitious and equitable teaching, while well suited for case-study analyses, are too time-consuming to apply at larger scale. It will be important for researchers to develop tools that allow for the examination of complex and ambitious teacher learning in ways that can be employed in various research designs that capture a broader range of teachers' experiences in coaching.

7.5 Implications for Coaching and the Preparation of Coaches

Conceiving of coaching as world-building carries implications for coaching and for the preparation and support of coaches. These are outlined below.

7.5.1 Implications for Coaching Toward Ambitious and Equitable Teaching

Building ambitious and equitable worlds with and for teachers is incompatible with common-place understanding of coaching as evaluating and fixing teachers and teaching practice. This suggests that rather than draw and share conclusions about which aspects of teachers' practice need improvement, coaches might more productively look for teachers' and students' strengths that are related to ambitious and equitable teaching and learning, and find ways to connect those strengths with the development of mathematical and pedagogical ideas and investigations. Coaches could then engage *with teachers* in these investigations, developing teacher-coach relationships around collective learning and investigation.

To accomplish this engagement with teachers, coaches might seek out ways to frame and reframe coaching with teachers in ways that support *learning together*. This dissertation suggests some strategies for doing this. Coaches can talk explicitly and directly about their interactions with teachers as being about learning together and talk about teaching as complex, contingent, and worthy of mutual investigation. Coaches can attend to positioning, working to position themselves and teachers as partners in learning together about teaching. This positioning work takes place in talk (by offering and accepting productive positions) together with participation (acting in ways that suggest particular positions). It matters that talk and actions support each other in this, as we have seen in this dissertation ways in which both talk and action can be interpreted by teacher in ways that do not accomplish the intended positioning work. (Recall the incident described in Section 6.2.2, in which Mia interacted with a group of students, likely intending to position herself as *with* Heather in teaching. The frame of *evaluating and fixing teaching* made it sensible for Heather, however, to understand Mia's action as an intrusion and indictment of her teaching.)

The case of Heather supports the awareness of coaches attending to teacher voice and agency, especially in teacher-coach relationships that occur as challenging, or in cases in which coaches may be tempted to understand teachers as resistant. This need raises tricky questions for coaching: how can coaches continue to support movement away from the dominant world toward a world of ambitious and equitable teaching while centering teachers' own questions and concerns? In the case of Heather, we saw Mia failing to do the latter in service of the former, which did not serve well to support Heather's learning.

Finally, this dissertation revealed the importance of coaches engaging with teachers—and offering teachers ways of engaging—that are inconsistent with extant, unproductive frames. In particular, coaches might consider ways of arranging coaching that disrupt the ubiquitous *evaluating and fixing* frame. Mia accomplished this through organizing conversations around teachers' strengths, leaving no room for naming deficits that need fixing, resisting teachers' answer-seeking questions about teaching, teaching *with* teachers, or, in the case of Heather, teaching *for* her, rendering Heather's own teaching practice unavailable for evaluation.

7.5.2 Implications for Preparation and Support of Coaches and the Design of Coaching Programs

Making sense of the culturally-situated and ambitious aspects of coaching requires more than learning about already-established coaching practices. It requires learning about practices that are promising (such as the strengths-based practices outlined here), as well as ongoing innovation and adaptation. As community can support students to learn rich math and teachers to make sense together of complex and contingent teaching, so too might community support

coaches in doing this ambitious work. Indeed, as we learn from Holland et al. (2001), world-building is a collective endeavor.

This suggests that coaches should not work in isolation, but should learn from and with other coaches about coaching. Coaching programs might therefore include dedicated time for coaches to be together, both in coaching with teachers, and in learning spaces designed for coaches to learn together. This suggests the design and support of coach learning communities as well as an observation and apprenticeship model for the training of new coaches. (The coaching program of which Mia was a part included both structures. Future research might productively investigate how these learning spaces support coaches in this program to develop collective practice.)

7.6 Ongoing Questions and Limitations of this Research

In Chapter 2, I commented on my own positionality as a researcher with respect this work, both in terms of my relationship to Whiteness and in terms of my relationship to the ideas and communities of Complex Instruction. It is appropriate here to acknowledge that research, like teaching and coaching, is situated in cultural worlds. As a researcher, my perspectives, participation, ways of being, and ways of belonging relate both to dominant worlds that perpetuate inequities and to emerging worlds of more equitable relations. Acknowledging the centrality of Whiteness in dominant worlds, and my own close relationship to Whiteness has implications for my ability, and the ability of my research, to support departure from inequity. In particular this acknowledgement implies that in order to engage productively in such a world-building project, I need community. Not only does world-building require collectivity, but my position in particular requires that I learn with and from those who are differently positioned than I am with respect to dominant worlds. The research presented in this dissertation reflects some of this sort of learning (with and from differently-positioned coaches, teachers, and program designers), as well as the limitations that result from what is yet left to learn.

This dissertation also raises questions about power, world-building, research, and Whiteness with respect to who gets to build new worlds. Whose voices are included in the collective activity of defining ambitious and equitable teaching or defining research perspectives and questions? I raise these questions here not to offer answers, but to acknowledge their importance. I can only hope to have opportunities to continue to investigate them collaboratively in the future and to learn from others who have done so.

A central aim of the research presented in this dissertation is to support my own and others' ongoing investigation and learning into what it means to support the kinds of teacher learning necessary for the achievement of ambitious and equitable classrooms, as we currently understand them. We know, however, that achieving such classrooms is a matter of much more than teaching and teacher learning. Thus, my hope is that ideas that come out of this study will be included among many others in efforts that address these issues at multiple levels, including cross-classroom arrangements of students and teachers; school and district organization; relationships between classrooms, teachers, schools, and the communities they aim to serve; local, state and federal advocacy and policy; and arrangements that govern which voices are included in research and policy conversations about education.

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Appendix A: Personalized Interview Protocols for Kamilah and Heather

Focused Teacher Interview End – Kamilah

Hello and preamble:

Thanks for taking the time to meet with me again. I know you're busy and I appreciate this a lot. Some of what I'll ask you about today will overlap with stuff we've talked about before. Don't worry about trying to remember anything you said before. I'm interested in your thinking now.

Development of teachers' ideas about math teaching and learning

OK, I want to start by learning a little bit more about your ideas of great math teaching.

1. Describe to me your vision of great math instruction. (If necessary, probe for detail with: What are students doing? What is the teacher doing? What makes the instruction great?)
2. Were there other people or experiences in your life, past or present, have been influential in building your vision of good instruction?
3. Has your work with complex instruction, this year or in the past, influenced your vision of good instruction at all? If so, how?

Experiences with CI in their own practice

4. Can you tell me, what is complex instruction?
5. What are your experiences so far using CI in your own classroom? (If necessary probe for detail with: How is it hard? Useful? Powerful? Rewarding? What are you appreciating about it? How has applying it to your practice shifted how you think about it?)
6. **For Kamilah:** You talked in September about the importance you were seeing of supporting students to struggle, and coming to see struggle as a good thing. Has CI supported that to happen in your classroom? Explain.

Development of teaching practice

7. I want to get a sense for what you were like as a teacher before I met you. Would you walk me through a typical day in your classroom before this year? (If necessary, probe with: what happens right after the bell rings? Can you continue from there?)
8. Thanks. Now would you walk me through a typical day in your classroom now? How is it different? How is it the same?
9. If it's not already been answered: So how would you say your teaching practice has shifted in the past year?

Perspectives on Coaching and on their own learning

10. In this research, we are interested in the relationships that coaches and teachers build that support their work together. Can you tell me about your relationship with Mia across the year? (How comfortable do you feel with her? Did that change over time?)
11. How did your work with your coach go for you throughout this year? Did it feel useful? How? Did you learn? What and how? Did it feel hard or frustrating? In what ways? (Listen to responses and ask probing questions here, pushing for specifics as much as possible that might help us connect their comments to our video data of the interactions. You can push with questions like: Can you remember any specific parts of your conversations with Mia that felt particularly helpful or challenging this year?)
12. **For Kamilah:** In September, you talked about wanting to get new strategies for getting your kids to talk about math. Has your work with Mia supported that? How?

13. As you worked with Mia this year, did new goals develop for you in relation to your practice? Tell me about that.

Things I want to follow up on **for Kamilah**, if they haven't come up already and **if there's time**:

- When we talked in September, you talked about struggling a bit with time in two ways: adjusting to lessons taking more time and also the time it takes to plan and prepare with your colleagues for teaching. How has that developed this year?
14. Is there anything else that you want to tell me that you think might help me understand your experiences with coaching or the complex instruction project in general?

Demographic stuff:

15. How old are you?
16. How many years have you been teaching?
17. How do you identify racially/ethnically?
18. Are there other aspects of your identity that are central for you?
19. Where and when did you do your pre-service training / get your credential?

Focused Teacher Interview End - Heather

Hello and preamble:

Thanks for taking the time to meet with me again. I know you're busy and I appreciate this a lot. Some of what I'll ask you about today will overlap with stuff we've talked about before. Don't worry about trying to remember anything you said before. I'm interested in your thinking now.

Development of teachers' ideas about math teaching and learning

OK, I want to start by learning a little bit more about your ideas of great math teaching.

1. Describe to me your vision of great math instruction. (If necessary, probe for detail with: What are students doing? What is the teacher doing? What makes the instruction great?)
2. What people or experiences in your life, past or present, have been influential in building this vision of good instruction?
3. Has your work with complex instruction, this year or in the past, influenced your vision of good instruction at all? If so, how?

Experiences with CI in their own practice

4. Can you tell me, what is complex instruction?
5. What are your experiences so far using CI in your own classroom? (If necessary probe for detail with: How is it hard? Useful? Powerful? Rewarding? What are you appreciating about it? How has applying it to your practice shifted how you think about it?)

Development of teaching practice

6. I want to get a sense for what you were like as a teacher before this school year. Would you walk me through a typical day in your classroom before this year? (If necessary, probe with: what happens right after the bell rings? Can you continue from there?)
7. Thanks. Now would you walk me through a typical day in your classroom now? How is it different? How is it the same?
8. If it's not already been answered: So how would you say your teaching practice has shifted in the past year?

Perspectives on coaching and on their own learning

9. In this research, we are interested in the relationships that coaches and teachers build that support their work together. Can you tell me about your relationship with Mia across the year? (How comfortable do you feel with her? Did that change over time?)
10. How did your work with your coach go for you throughout this year? Did it feel useful? How? Did you learn? What and how? Did it feel hard or frustrating? In what ways? (Listen to responses and ask probing questions here, pushing for specifics as much as possible that might help us connect their comments to our video data of the interactions. You can push with questions like: Can you remember any specific parts of your conversations with Mia that felt particularly helpful or challenging this year?)
11. **If this hasn't been answered already, for Heather:** When we talked in September, you talked about feeling overwhelmed with all the new stuff this year, like the new curriculum, and CI, and coaching, and your department chair work. As the school year progressed, how did coaching relate to that? Did it help? Further overwhelm you?
12. **For Heather:** You said in September that you felt like it was important for coaches to make clear to teachers that they are there to provide support, and not create more work. Did Mia make that clear to you? (If so, how?)
13. **For Heather:** You talked at the beginning of the year about wanting to become more comfortable with CI this year and have some things under your belt for next year. Did that happen for you? (If she talks about learning or improving, ask: What do you think supported you to learn what you described?)
14. As you worked with Mia this year, did new goals develop for you in relation to your practice? Tell me about that.

If there's more time and these things haven't come up already:

- Last time you talked about your experiences with two different [local new teacher support program] coaches and how one felt really supportive to you by checking in about how you were doing a lot. Did Mia do that too? Now that you've worked with her over the year, how did your experiences with her compare to your experiences with those two [local new teacher support program] coaches?
 - When we talked in September, you said that it had been really nice to hear from Mia about your strengths as a teacher and what was working well. Did you hear more of that throughout the year? Did it continue to be helpful?
15. Is there anything else that you want to tell me that you think might help me understand your experiences with coaching or the complex instruction project in general?

Demographic stuff:

16. How old are you?
17. How many years have you been teaching?
18. How do you identify racially/ethnically?
19. Are there other aspects of your identity that are central for you?
20. Where and when did you do your pre-service training / get your credential?

Appendix B: Transcript Conventions

Following are the transcript conventions adopted for this analysis. Note that in some cases, transcript included in the dissertation has been simplified (and deviates from these conventions) for readability.

Meaning	Inscription Used	Example (if necessary)	
Pause less than three seconds	(.)		
Pause of 3 seconds or more	Length of pause in seconds denoted in parentheses	<i>(4s)</i> or sometimes <i>(4s pause)</i>	
Nonverbal act of significance	Act described in italics and surrounded by parentheses	<i>(laughs)</i>	
Emphasis	Emphasized portion in all capitals	HE should have done it instead of me.	
Intonation rising, as in the end of a question	Use of “?”		
Intonation falling, as in the end of a sentence.	Use of “.”		
Interruption or simultaneous talk	/ used to indicate point of interruption; for extended simultaneous talk, another / used to indicate the end of overlapping speech	Do you know/what I mean?	/Yeah.
Elongation of a sound	:::	Oh, tho:::se students.	
Author’s insertion used to clarify meaning	Author’s insertion is surrounded by square brackets	[this class]	

Appendix C: Code Book for Analysis of Meaning-Making

Compliance (Yellow):

This is talk about student compliance, and whether and how students are doing what they are supposed to do. Talk about students being on or off task falls into this category.

Examples

- This kid doesn't do anything. He won't even like, really struggles with even taking out the Do Now and getting started on the Do Now, comes in tardy like almost every day.
- one particular kid that's a ton of work (Heather plan 1, 211)
- I'll just deal with the circus in 4th [period]. We have to like go over the rules and stuff. (Heather plan 1, 244, 245)
- is that there is so much going on, that there's so many behavioral things, that some of the groups that ARE good are like...(Heather plan 1, 429-431)
- like I don't know how far to trust/cuz some- this group over here barely got through the first problem, and then his group was like almost all the way almost through the page (Heather plan 1, 447-451)
- and I had some groups that barely even check-pointed this. Like one group in particular was goofing around so much (Heather plan 1, 476-477)

Examples that help us to clarify distinctions from other codes:

- So I have to really push him to work with his group (Heather plan 1, 859-860). *We consider this to be about compliance and not the social organization of the classroom because it is a behavioral consideration, about whether or not the student is doing what is expected of him, which in this case is to work with his group.*

Limiting Goals (orange):

This is talk about goals that are consistent with the limiting aspects of traditional education. This includes goals driven by procedural math (that is not examined as such) and goals driven by issues of content, pacing, and standardized testing. It also includes talk about “getting through” math problems or math tasks as desirable.

Examples

- like the idea here was to try to get the fact that like when we have like bases, we are adding exponents (Heather Plan 1, 505-509)
- I am not as concerned, we decided, about this stuff. It's more like commutative property, which is important, but I don't think it was like necessary for this unit, but the scientific notation is really big (Heather Plan 1, 555-562)
- Like if you look at the Milestone Task, they need to know scientific notation (979-980)
- The advanced kids, if they're pushing through this fast, like they went through this- actually pretty quickly. Like faster than I thought they would. Then I thought I could do... have them do volume (Heather plan 3, lines 608-615)

Example that helps us to clarify distinctions from other codes:

- but like not everyone's done with the page. Like do I go on to the next lesson? (Heather Plan 1, 465-466). *This is coded in this way not because of the questions, "do I go on?" but because the sentence before it shows us that the question of whether or not to move on is being driven by whether kids are done with the page and not by, for example, whether they have learned what we hoped they would learn.*

Exclusive Smartness (red)

Talk about ability or smartness as global, binary, and/or hierarchical. For example, statements that some students are smart, implying that others are not.

Examples:

- I wouldn't say they are like my smartest skilled class (Heather Plan 1, 676-677)
- Because Jaime is really strong. These two are EL and they're slower... Chelsea is like medium (Heather Plan 1, 722-725)
- She is really good. Like she's smart (Heather Plan 1, 792-794)

Students' Math Deficits (pink)

Talk about what mathematics students do not or cannot do, do not or cannot understand, or what they are doing, have done, or might do incorrectly.

Examples:

- He's really lost. He really is. (Kamilah Plan 2)
- He wasn't able to understand like, that's congruent to that. (Kamilah Plan 2)
- we got some struggles going on with exponents (Heather Plan 1, 497)
- they were all totally lost, all three of them (Heather Plan 1, 740-741)

Helpful non-example:

- And that is why I think that's the space where your kids are at right now. It is they were still challenged by how to build and how to solve using the geometric representation. (Katy debrief 1, 287-294). This is not a focus on what kids cannot do *or do not know, but where they are challenged right now, implying a continuum of learning.*

Social Organization of the Class for Learning (light blue):

This is talk about the social organization of the classroom environment, which includes talk about group work, norms, safety and risk taking, students' feeling about learning and working in the class, etc. General talk about social organization that does not relate to important equity concerns is NOT coded.

Examples:

- It's really hard [for Tony] to communicate because [he] feels like no one else is conversing with him, so it's really hard for him to have those [math] conversations. (Kamilah)

- [so sometimes when there is like kid drama that is really intense]-Sometimes it can kinda get in the way of our ability to learn together about what you really want to be learning about (Heather Plan 1, 223-224)
- Like how is group work happening? And how are the kids talking and thinking together about math (Heather Plan 1, 661-662)
- But they have amazing conver- They fight over problems, like tooth-and-nail, but they get really loud, but it is great conversation (Heather Plan 1, 686-690)
- Do you think they understand that that moment was cool? Like did they get that they learned more because they came together? (Heather Plan 1, 736-737)
- And you're team captain. Like how is that building people up? (Heather Plan 1, 750-752)

Examples that help us clarify distinction from other codes:

- The reason why I am asking you what kids know and how they understand things is because that helps us then think about what might be mathematically interesting and worthwhile to have them discuss while they are taking on this objective. (Katy Plan 1, 120-128). *Even though this is not a complete thought on its own, it's a place where we tag that Jess is relating this to the social part of supporting discussion in the class. This coded line falls between talk about goals for student learning (dark blue). In this chunk, we are focusing on the word "discuss." We don't mean she stopped talking about goals and then started talking about social organization; we are saying she is connecting these ideas together.*
- I mean the idea of giving them a shot of trying it / and honoring all the different answers that come up. *This is about building a culture by honoring all the different answers that come up. It's a culture in which an expansive notion of smartness is at the center. So, while it implies an inclusive notion of smartness (dark green) it's more directly about culture building. This is signaled by "honoring." It's not about strong student thinking (light green) because he isn't saying kids are going to have good ideas, but rather that their answers can be honored.*

Rich Goals (Dark Blue):

Consideration of goals for strong student thinking and considering what content matters for student learning. This includes talk about rich goals for learning as well as talk about whether the goals at hand are rich or not.

Examples:

- I think what I heard you articulate was that the big idea of this lesson, or this part, was that they understand, that they could make sense of these multiplying exponential expressions. They know what they mean, so that they understand that you are adding exponents and the bases are the same because it just means you are counting how many of them you have and you have that many more. (Heather Plan 1, 578-582)

Examples that help us clarify distinctions from other codes:

- So that [scientific notation] doesn't worry me too much. It's like a thing that they will need to understand at some point. (Heather Plan 1, 609-611). *This is Mia saying that scientific notation isn't that important. She's been saying that kids might have the big idea down fine and be missing a more detailed thing that isn't a big idea.*
- And to get that we do that, and we do that because it makes sense because of what the exponents mean (Heather Plan 1, 512-514). *Here Mia is pushing goals talk into the area of what the exponents mean, going deeper.*
- [In a conversation about letting students discover that without an agreed upon order of operations, the value of some numerical expressions is unclear.] You're giving them the experience that the world experienced. (Katy Plan 1, 1159-1160). *This is about a goal that students get something about why the order of operations matters, rather than just knowing the order itself.*
- So I think tomorrow we are going to go back because I think it is really important. Because I- I know that Natalie, when they get to eighth grade or Lu really appreciate their students being very familiar with algebra tiles and they start doing more like solving actual equations and like you know. So I think it is really important that we- and it is also for them like to understand. They need to understand this basic foundation stuff before they can do like. (Katy debrief 1, 751-756). *Here we code the latter part as rich goals, because it's about what students need to understand. The earlier goal statement is about vertical articulation. This seems to us to be right in between pacing goals (which we consider to be limiting) and rich ones, so we don't code it.*

Smartness as Inclusive (dark green):

This is talk about smartness that is inclusive, an opposite to the exclusive smartness (red) code. It includes talk that explicitly states that all students are smart or that is dismantling limiting views of smartness.

Examples:

- How is he smart? (Kamilah Plan 2?)
- Since all students are smart...
- If we could find ways to make it really clear to all of them that this is not the only smart student in the group (Heather Plan 1, 934-936)

Examples that help us clarify:

- We could listen for kids, listen and watch for kids to do smart stuff together (Heather Plan 1, 960-961). *This makes the assumption that all students have something smart to offer.*

Smart Math (light green)

Students' mathematical thinking (or doing) is being talked about as a resource or strength or as sensible. This code also includes talk about (1) creating opportunities for students to make sense

of rich and interesting mathematics, assuming that students are capable of doing this sense-making (see note below) and (2) recognizing or building on students' strong thinking.

Examples:

- You helped the kid connect something they had done to the problem, to the task the way it was printed. (Kamilah debrief)
- As [students] get into [the task], they are going to produce stuff that you can do, you know, that amazing listening you know how to do, you will have stuff to listen to. (Kamilah Plan 2)
- Um, Part A was really great, because they were looking at patterns of exponents, and they had to like discover that. (Heather Plan 1, 483-486)
- I got a lot of really good explanations [from students]. (Heather Plan 1, 523)
- He really explained it in such a cool way. (Heather Plan 1, 761)
- I was like, "Oh my god, he made so many connections." (Heather Plan 1, 813-814)
- And just saying you are all mathematically correct. (Katy Plan 1, 1146)

Note about coding for talk about creating opportunities for strong student thinking.

- Sometimes talk about creating opportunities includes explicit utterances assuming students' capability for strong thinking (e.g. reasoning, thinking about, etc.). This kind of explicit talk is justification for this code. When the talk is missing this explicit talk, we do not code it, unless there are context cues around it that make the case that it's assuming capability for strong thinking.
- The particular case of proposing the removal of 'scaffolding' is a central idea of creating 'groupworthiness' in Complex Instruction and it relies on us believing that students can figure stuff out without it. That particular kind of planning talk counts for this code, even without the explicit references above.

Examples that help us clarify here:

- They could very well have that like big idea very firmly and have this one wrong (Heather Plan 1, 599). *Here Mia is helping to point out that there may have been important, powerful thinking from students despite what Heather was seeing as wrong.*
- All of these answers in an ideal world could be correct. (Katy Plan 1, 1150). *In the context of a conversation about teaching order of operations, Thien is explaining that students could be doing correct arithmetic with an expression, but in different orders. So even though they get a bunch of different answers, their arithmetic was correct. He's acknowledging the correctness behind answers that may at first appear to be wrong, which is pointing out strong student thinking.*
- But Okay, so Jimmy knows how to do a bunch of math, but Jimmy doesn't yet know how to explain his ideas very clearly. (Katy debrief 1, 1317-1318). *Because of the word 'yet,' this gets coded as strong thinking. The 'yet' implies that the strong thinking will come.*

This is talk about mathematics of the following three kinds: (1) talk about math that is rich, connected, detailed, conceptual; (2) talk that is about whether or not the mathematics at hand is rich, connected, detailed, or conceptual with the idea that pushing for this type of mathematics is desirable; or (3) talk that is about what richness or complexity may be present in content that had not previously been related to as challenging or conceptual. This also includes talk relating to teachers or coaches trying to (or wanting to) learn more about mathematics conceptually.

Examples here:

- It's hard for me to find the conceptual teeth in it because it's just a convention...there's not really multiple ways to think about things. It's just like you get it or you don't. (Kamilah)
- But like where IS the angle? There's not a thing I can point to and say that's the angle. We try to represent it in diagrams, but then it's like, it's that non-concreteness. (Kamilah Plan 2?)
- Because that's just notation, that's all it is. It's not like an understanding thing (Heather Plan 1, 629-631)
- So it's like an order of operations and notation issue, and not the- the idea of exponents (Heather Plan 1, 603-607)

Non-Example:

- I think it was really cool for students to see what the power of ten was... (Kamilah debrief 1, line 90). *Not purple because it is only about what students are seeing. It's not about the math being cool only, it's about the kids SEEING that the math is cool, so they are acknowledging strong student thinking; in this context, "see" is a synonym for understanding or experiencing the math. Because it is past tense, she means that they already did see this, not so much what they might understand.*

Appendix D: Moments of Action for *Threads of Practice* Analysis

Kamilah Cycle 1

Mia asks, “what can I help with?”	
Kamilah expresses struggles getting kids to talk with each other about math.	
Conversation around this focuses on the nature of the math task, and whether it provides students with important stuff to talk <i>about</i> .	
Mia suggests grouping students in pairs, since there isn’t much for groups to talk about.	A
Kamilah agrees.	A
Mia suggests a practice of random pair check ins to support students to be ready to explain their pair’s thinking.	B
Kamilah agrees.	B
Kamilah asks if she should use group roles with the pairs.	C
Mia says no, but launch with clear expectations for pair work.	C
Kamilah organizes students into pairs and launches problem numbers (no mention of learning here)	A
Kamilah launches with expectations for pair work (take care of each other, check in).	C
Kamilah announces random check ins.	B
Mia suggests that Kamilah (1) tell students why they are doing these problems and (2) clarify expectations for pair work.	C
Kamilah stops the class and clarifies (important because it’s connected to science, I’m gonna check in in a few minutes, so make sure we’re getting stuff done); this feels distinctly awkward.	C
Kamilah checks in with groups.	B
K asks Mia about what she should be doing during random check ins.	B
K asks when to use pairs and when to use groups.	A
<i>Mia named strengths of K’s related to getting students to talk about math:</i>	
· <i>Launched with clear norms promoting collective responsibility: “we take care of each other”</i>	C
· <i>Students were talking to each other: reading task aloud.</i>	
· <i>K intervened in groups in ways that held students accountable while still maintaining safety and assuming kids’ best intentions.</i>	B
· <i>K made decisions based on learning, not rules (can we use a calculator?).</i>	B
· <i>K helped one group of students see how what they were doing was connected to the task.</i>	B
Mia turns K’s question about pairs or groups back to K.	A
K says, when it’s not group-worthy, we can use pairs.	A
Mia agrees and suggests that part of deciding pairs or groups is “what is there to talk about?” and suggests that we can do the math ourselves. If there’s something for <i>us</i> to talk about, then there’s something for kids to talk about.	A
Mia refers to her intervention with K during class, saying ‘sorry if that didn’t work out very well. It was an experiment and we can learn from it.’	C
Mia suggests that K’s questions about ‘flow’ and what to ask at check ins are related. She connects them to needing more opportunities to see and name students’ strong thinking, which K is good at doing.	B

Mia talks about supporting students to understand what productive participation can look like (e.g. asking questions, not just knowing answers) and connects this to the sentence frames.	D
K has a poster with sentence frames and offers to put up another one.	D
Mia suggests that participation quizzes can help, connecting them to allowing K to emphasize students' positive talk in groups to build more of it.	D
K says, 'I like that.'	D
Mia suggests that K and the teachers she works with can all work together on participation quizzes.	D

Kamilah Cycle 2

M suggests that they can talk about the lesson and think about ways to give themselves opportunities to see how Manuel is smart.	E
Together they plan a warm up surfacing and connecting students' thinking about what angles are.	E
M suggests figuring out a big question for students to think about, which will give them something to talk about.	E
K says, 'that's a good idea' and they work together on figuring out the big question.	E
M and K consider whether manipulatives might support the sense making.	F
M suggests for triangle task emphasizing norms again (we take care of each other), since there isn't much to talk about.	G
K asks for suggestions about how to get kids to talk in whole class discussions.	H
M considers the do now angles question and suggests a routine of asking students to partner up and then share one of their partner's ideas with the class, rather than their own.	H
K asks about pacing, saying she was considering moving on.	E
M suggests that if there's time, their big question for closing the class will provide lots of opportunities to surface student thinking.	E
K says, 'maybe I could have them reflect and share their thinking.'	H
K poses "do now" about angles	E
K begins WCD out of do now about what angles are, using the 'share an idea from your partner' thing.	H
M steps in and helps, naming students' ideas, connecting them, and assigning competence.	I
K poses big question to the class: how do you know that a triangle equals 180 degrees?	E
M suggests strategy for giving students time to make sense of the three angles. (build it under doc cam)	J
K takes it up.	J
K asks, how can we prove a triangle is 180 degrees?	E
M asks, what do you mean a triangles IS 180 degrees?	E
K sees there are 4 minutes left of class and asks Mia if she should pose the big question.	E
M says yes, maybe as an exit ticket.	E
K poses as an exit ticket: do you think the sum of the angles of a triangle is always 180 degrees?	E
M adds, why or why not?	E
K repeats, why or why not?	E
M writes the question on the board.	E
M asks K if they can have access to students' exit tickets so they can think about them together later.	E
After students leave, Mia points out that kids are doing a lot of reasoning in writing (as evidenced by the exit ticket writing they did), so they can think together about how to turn some of that into talk.	E

M recalls that K said she had wanted help with kids making sense of angles – we could reflect on that, maybe look together at exit ticket	E
K says let’s look at their exit tickets.	E
M shares why she had asked permission to step into the whole class discussion around angles. She wanted student thinking that K was surfacing to be written down so it could be a resource for assigning competence, for status (using students’ names with their strong ideas),	I
K says she did the same thing (wrote it down) in a different class afterward and said her students felt smart and that it was a good resource also for herself to remember what was said.	I
M points out that it helps encourage conversation too, demonstrating that no one has all the ideas and everyone has some of them.	G
M points out that K’s deep knowledge of students matters for managing status in WCDs.	I
M says the ‘share your partner’s thinking’ structure supported Gabriela to share smart thinking.	H
M proposes talking about planning next steps, given kids’ thinking. She proposes a way to use kids’ thinking from exit tickets as starting point for next lesson.	E
M says that K’s clarity about the learning objective was a strength that allowed them to watch for and make use of student thinking.	E
M suggests that in their next meeting they think about how to build on students strong thinking to create more out-loud math talk.	I

Kamilah Cycle 3

(Background: K has told M that she will be doing a multiple abilities (MA) launch.)	
K tells M she wants to write the MA list as she does the launch for the class (rather than have a prepared slide) (12)	I
M says that’s also how she does it, as it feels more authentic that way to her. She says there are lots of ways to do it. (37)	I
K shares items from her MA list. First, “think outside the box” (110)	I
M says it’s really smart and restates: “something about creativity or generating ideas you haven’t heard before or finding new ways to think about things.” Says all those could be included. (137)	I
K reads the rest of her items: “use different representations to justify your thinking,” “making connections between different representations,” “and then making sense of those connections like what does that mean?” (148)	I
M says ‘there are a lot of smart things inside’ the second one (use different representations...) and suggests that they articulate those so there are more smart things on the list. She names “understand similarities and differences in what we can learn from a table and a graph or what we can see in a graph that we can’t see in a table,” “make sense of point of intersection in a table, graph, and rule,” (158-209)	I
K says “that’s where I was going with ‘make sense of those connections and what does that mean’” (216)	I
M says, “there’s different sense making going on here: what is the intersection? Where do we see it in the table? What’s an intersection on a graph? What’s an intersection in the rules? And then there’s the connections.” (217)	I
M asks: “what connections are they gonna see?” And they talk about this. (229)	I
M suggests using the words “table, graph, rule” rather than just “multiple representations,” saying, “because they’re different.” (267)	I
K agrees and says “it’ll be good to have it, cuz it’s language that they’re familiar with.” (273)	I
M says, ok what else do students need to do? She names a few things (graph accurately, calculate with non-integer values, explain what you see in each representation, using representations to justify)	I

K asks if she should require students to use all representations. (396)	I
M says yes because students see the math in different ways through the different representations. (401)	I
K agrees and says what she could imagine her students saying in their explanations. (440)	I
M suggests therefore a rephrasing of part of the task. (removing two questions and adding “Jerrod wants to find the point of intersection of these. Use tables, graphs, and rules to help him. And be ready to explain what you’re finding.”) (447)	K
K mentions practices planned in this lesson: multiple abilities (492)	I
K mentions practices planned in this lesson: participation quiz (492)	D
K mentions practices planned in this lesson: group roles (492)	C
M asks K to introduce her to the class.	
K introduces M to the class.	
K begins a WCD about the Do Now. Tony student shares an idea and K asks “do you want to share another example of how that works?” to which Tony says, “No.”	H
M joins in and says his idea was “super important and I wanna make sure everyone caught it.” M leads a WCD about his idea and then hands the reins back to K.	H
K does MA launch with these items: “think outside the box, find new ways to think about things.” “understand similarities and differences between tables and graphs” “we need to be able to graph accurately and precisely.” “computing [with] rational numbers.” “explain what you see in each representation (tables, graphs, and rules)” and “making sense of a point of intersection”	I, E
K launches roles: RM middle space, team questions, F quick start and make sure everyone understands what to do, RR make sure everyone ready for checkpoint, help your group practice, TC make sure everyone is participating, recording ideas, keep group together and address off task behavior.	C
K directs RMs to get 2 task cards per group (it has the newly suggested wording for Part 2)	K
K circulates, often watching students without intervening.	J
M says H helped her understand something they could be more clear about on the task card. Students didn’t understand what was meant by “demonstrate your thinking using different representations.” (43) She suggests they reword it to “show/prove how you can see the intersection in the table, equation, graph.” (61)	K
K changes it and says “I like how you worded that.” (79). She restates “prove this is the point using tables, graphs, solutions.” (107)	K
K says students need more time to have conversations, to see there could be other possibilities for x values. She questions if she should finish up, spend another day on it, showing them the point using tables, graphs, solutions. (122-148)	J
M says that’s why she had wanted to grab Tony’s idea (substitution), to assign competence and to see if it was making sense for other students. (156)	I
M and K talk about what they heard in groups, what students are understanding and what they are not yet making sense of. (197-353) M asks where they should go from here, what K wants to make sure students learn. (428)	E
K wants to spend more time on the lesson, so students can make sense of the point of intersection that they can’t see written in the table. (433) and suggests a main goal is to understand there are many solutions. (471)	J
M agrees that it’s worth more time because the goal is a big, important idea and students are on their way to understanding it in a deeper way than if K just tells them. (571)	J
K says she doesn’t want to tell them, she wants them to play with it more and then the class can discuss it. (575)	J
K proposes a Do Now similar to what she did that day. (588)	K

M suggests a similar Do Now where they limit the domain to students can see non-whole number integers can also be on the table. (623)	K
K suggests a way she could debrief that Do Now. (675)	H
K says they need graph paper to reduce time spent on graphing. (803)	F
M asks about participation or status issues. (908)	
K is worried about off task, off topic conversations (915)	
M says K set up roles beautifully (gives examples) ‘but then we didn’t use them.’ (950) She suggests huddles or participation quizzes as ways to reinforce roles.	D, C
K says she tried to do a PQ in this lesson, but was running around too much. (968)	D
M suggests a huddle with task managers as an accountability tool and describes how it could go. (990)	D
K says she hasn’t done a huddle and ‘I need to try that strategy.’ (1008)	D
K says she’s been randomly assigning seating and changing it every two weeks.	D
M suggests having a particularly off-task student read the task card to get him into the task. (1054)	D
M describes asking a group which role is in charge of middle space, which also reminded the group about middle space. (1090)	G
K says she hasn’t been working on middle space, but wants to. (1097)	G
M talks about how powerful the middle space is. (1113)	G
K says she should have been practicing middle space from day one and acknowledges she is still learning (1141)	G
M talks about taking time at the beginning of class for students to clear tables (1192) and K agrees	G
M talks about a student at a group who could have benefitted from reinforcing middle space (1223)	G
M says she’s happy that this lesson was framed by a big question because it helps us to know if we should continue or not. In this case, we should continue, because students didn’t yet get to the big question. (1264)	E
M suggests launching the lesson with the learning goals and telling kids they made good progress toward those goals the previous day. M says she can’t remember if anyone ever articulated for kids what we hoped they would learn. (1376)	E
K says, “I’ll bring that up tomorrow.” (1386)	E
M suggests that when K and her teaching team get together to plan, they talk about what they want students to learn and then base their planning decisions on that. (1615)	E

Kamilah Cycle 4

M asks, “Do you want to give me something to think about before you go?”	
K says, “how to kinda make it less me up there talking on how to do it and more them trying to figure out how to do it.” (12)	
M asks her what do students know before the lesson about tiles and solving (30)	
K explains what content students knew and some difficulties. (69) She explains how students worked in pairs and took turns drawing vs setting up with the tiles (101)	
M asks for clarification on the lesson.	
K elaborates that she had students build while she walked around and checked that everyone had it correctly. (171) She says, “there was a lot of blank stares” when she tried to do a WCD (178)	
M explains there may be something to be gained from trying to give students a sense of play (208) (because students freeze up with solving and don’t know what to do next)	
M suggests a “focus on why” (234) – why do they want to do something next and why do they want to subtract or add a number to both sides, etc, to get a sense that there’s not one right thing to do at any given point.	E

M suggests still allowing time for whole class sense-making but having it kid led (referring to Kamilah's initial question) by having a kid build the tiles under the doc cam. (302) Then it's up to the class to agree or disagree with that the student did and to say why.	L
K asks if the class will be building the tiles while the student is also doing it under the doc cam (312)	L
K clarifies that if students disagree, this gives them an opportunity to talk about it. She also asks if she will be projecting the equation mat, not the worksheet.	L
M says yes and suggests setting up the worksheet on the white board some way. (327) She wants to make sure kids are writing, not K.	L
K worries about the SBAC coming up and feeling like she has so much material to cover. She worries the lesson will take the whole period and questions how it's going to pay off in the end (364)	L
M talks about the foundation around sense making is a barrier for a lot of kids since they are often really scared. (373) M says the SBAC doesn't count for anything that year.	
K laughs and says, "yeah, I know."	
M moves on. She suggests a student should be building under the doc cam for every step and has to say why they did it that way (401)	L
K asks if they should also do it on the board algebraically (423)	L
M suggests having another student on the board writing the steps the first student did algebraically. (426) She also suggests maybe having another student or themselves say it with words. She says the focus is making students responsible for saying whether they are convinced or not.	L
M talks about how important it is for students to feel safe and happy while they are doing this. That they should thank kids when they make mistakes (473)	G
K says, "sounds good." (496)	G
M suggests going through one problem to model what it means to draw, write algebraically, and write with words. And then giving the next problem to just pairs (503)	L
M says she has one recommendation to the worksheet, deleting a part of it and ask them to build the exact expression	K
K asks for clarification, "they're just building it here and drawing it... is that what you mean?" (545)	K
M explains they won't be distributing (??) (578) She elaborates more on how students will be working on task in class where students make a decision and have to say why.	L
K says she also needs a better understanding of the steps (flipping tiles over to the other side) (741) and how students should be justifying (675)	E
M talks about how students should see they are maintaining the relationships (651) and the difference between "why I want to add" vs "why I can add" (696)	E
M adds again how important it is to make it fun for students to go to the front. She suggests randomly calling on students (730) She says K is already good at making students feel really smart (756) and that making it clear that what the student did was useful makes it (math) less scary (766)	I
K says, "they're a great group. They'll be up for it."	
M asks what support K wants with, "should I just watch so we can debrief?" (788)	
K asks how can she support students to come up with an idea (not have a blank stare) (797)	L
M suggests turning it to the class, not judge, encourage them to ask the class for help so that volunteers from the class can offer support. (800) She says K is really good at listening for and pulling out the useful things kids says. M says she will join in with K on doing that.	L
M asks that K introduce her to the students so the students know she will be participating (825)	
M offers to AC if she sees an opportunity.	I
K says, "cool." (839)	
K asks about her Do Now. "Is it okay?" (843)	K

M suggests a quick Do Now to get kids to think about what “equal” means. She suggests giving them a couple different values of x and putting it into an equation, like multiple choice (674) “which of these values of x makes this a true statement?”	K
K explains the Do Now, reminding students they need to justify and explain “why and how it works”	E
K leads WCD out of Do Now pushing David for “why”	E
M joins in, assigning competence to David’s method.	I
K continues, calling on another student	H
M joins in again, again assigning competence to Jamar’s method and engaging other students in explaining and asking questions about his method.	I
K continues the discussion, continuing to push for justification, this time also encouraging student to re-explain and saying “that’s great” and supporting students to try things out loud.	E, I
S asks a question about the first problem and K goes back to explain it again, leading students in the process.	H
K asks students to clear middle space.	G
K launches, explaining that randomly selected students will come to the front to lead.	L
M and K work together to clarify for students how this student-led process will go and what students should do when they are confused or feeling stuck.	L
K draws a stick and calls on Ashley.	L
Ashley builds the equation, changing her mind a few times.	L
Mia asks her to explain to the class how she built it and M and K support her as she does so.	E
M writes her words down, assigning competence.	I
K explains the job of the next student and calls on Nicole.	L
Nicole writes the expression and says it out loud to the class.	L
M explains that the class should decide if they are convinced and ask, if not.	L
S asks a question, pointing to a mistake in Nicole’s work.	L
M says “N and I both forgot!” and students in the class explain that it should have been negative. Nicole fixed it.	G
M thanks the student, saying “that’s exactly what I want all of you to do.”	L
K calls on the next person and explains their job.	L
Ruvelin comes up and says quietly that she doesn’t know what to do.	L
Mia pushes for justification and asks other students to help justify.	E
K calls on the next student and explain their job.	L
Student comes up and leads next part, writing algebraically what’s left on both sides.	L
K asks students to keep these sheets, saying the class will continue tomorrow.	
A student stays behind and M and K together discuss how strong her method had been.	I
M: we just built so many awesome norms: names a bunch	G
M: students caught a mistake I didn’t catch	E
M: students were making sense of relationship btwn tiles and algebra, which is a big deal	L

K: yes! I'm gonna do it with my other classes tomorrow	L
M: once there's a rhythm, it will go faster and you don't have to do this with every problem. You can go back and for btwn whole class and pairs.	L
M: Algebra tiles is a great way to get kids to the front of the room leading math discussions. You can build on that with other content, though.	L
K: yes, I want to do it more, like keep doing it.	L
K asks a math question about the tiles.	E
M supports her to use the tiles to figure it out, like she would with students. M points out that that's the same thing you can do with students.	E, L
M asks about status implications of students calling on other students as they lead WCD. M talks about a moment in which a black boy was ignored by other students in WCD.	L
K says she noticed what M did with that, trying to make space for his ideas.	I
K suggests that she could do some intervening in these student-led discussions so opportunities to participate are more equitable.	L
M agrees, suggests a couple things (wait time, etc.)	L
K proposed another idea (calling on students after the student leader has)	L
M proposes a routine for this where groups check in with each other for a few seconds after each question and then RM raises hands to volunteer team ideas.	L
M wonders aloud how equitable the pair work is and proposes norms K could use for this.	G
K says she liked the "do now" because students were so lost and then made sense of substitution.	E
M talks about her efforts to shift status by assigning competence in that discussion.	I

Heather Cycle 1

M asks H what she would like help with. H says the class moves slowly and she doesn't know when to move on. Some students aren't challenged, some finish the page while other barely finish one problem; behavioral issues; sometimes she doesn't get to every group.	
M suggests the 'table' problem was with notation, not deep understanding, so it's not important.	E
H says 'right' and maybe she can address the issue as a Do Now tomorrow.	K
M suggests a problem to pose to support students' use of correct notation.	K
H suggests another way (pose 2 problems to compare / contrast).	K
M suggests that many groups could benefit from AC and suggests they could do it together. She worries whether the lesson will provide opps.	I
M relays her conversations with Kamilah about SN not being group worthy and decides to group students into pairs. She encourages H to tell kids that they are just learning a convention.	A
H wonders about whether to let kids use calculators.	F
H wants to push to make the task groupworthy.	K
M asks what would kids be able to talk about	K
H says "high kids" should be able explain to other kids.	K
M says 'hard' and 'groupworthy' are not the same. Pairs make sense and both kids should be able to explain.	K
M suggests H could do "spot checking."	D
M suggests a second Do Now problem and worries that pretending there's something to talk about will exacerbate status.	K
M says 'explaining SN' isn't worth a checkpoint, but could be an exit ticket.	D

M suggests stopping 10 min before class ends and asking students to show how SN makes sense.	E
M says it would allow H to assess students' learning and to AC.	E
H worries only "high kids" will be able to explain.	E
M suggests they listen together, hoping to prove H wrong. If H is right, she suggests not attaching names (not AC) when naming strong math thinking.	I
H feels like they're stretching it (by asking kids to explain SN). She asks, "How would you explain it?"	E
M says they need a different prompt. She suggests a few and says if it's not authentic, don't do it.	E
H asks for share outs on patterns from the second Do Now M suggested. She tells them to keep an eye on their work to see if they discover anything about patterns.	K
H tells her class they will be doing partner work instead of group work. She pairs students up and launches problem numbers.	A
H tells the class they will do "checking in" not check points with questions like, "I wanna see what your thoughts are."	D
H says she'll be doing a participation quiz	D
H has students clean up at the end of class. M and H do not AC.	
H does not have an exit ticket.	
<i>Mia described her strengths: she saw a clear launch, kids knew what was expected, they started right away, her launch into pair work was quick, clear, she explained what she was expecting, communicated high expectations and what their work should look like. Mia says one of the things she noticed was Heather's way of interacting with groups was different and effective</i>	
H is surprised her class was working so well	
M says pair work allowed students to share, move forward, not try to generate conversations that weren't really there, be willing to say they didn't know and to ask questions	A
M compliments H on an interaction where she gave one student an opportunity to speak which allowed another student to see that her peer had something to offer.	B
H asks how to make the lesson better, how to get the outcome she wants, where does she go from there, and closure.	E
H asks how to make partners work more efficiently bc it's her first time. How does she get partners that seem disjointed to work together? Does she change them?	G
M says there is room in her class to talk about what it means to take care of each other and fostering community. She suggests a strategy of picking a few students to attend to and find ways to support them when planning her lessons.	G
H mentions she could use a huddle to support a student with low self esteem.	D
M says exit tickets can give a sense of what did or didn't happen. The more clear H is about what she wants students to learn, the easier it is to frame that question.	E
H suggests an exit ticket "describe the pattern in the table" and explains the two ways students can answer that question. (1423)	E
M adds "describe the pattern and why it makes sense" that would give them more information about how students are making sense of it.	E
H says doesn't care if they don't understand the differences, she cares if they understand how to write it down (1732)	

Heather Cycle 2

M offers to: (1) get into planning and thinking of the lesson or (2) catch up and think about what H is hoping to get out of the visit and what to talk about in the debrief. H expresses concern about her 3 rd and 4 th period being at different places. M asks her what she's hoping her students will learn.	E
H says she wants to take up 'angle measuring' but doesn't know if it should be in this lesson.	E
M says there might be a warm up they can use to pull content out of kids.	K
H suggests using protractors since students don't know how to use them.	F
M says some kids may not know what an angle is.	E
H suggests adding a column to the original worksheet and have students measure angles. She suggests adding <i>what's the total of the triangle?</i> (725)	K
H sees that the measurements are off and says she could change them, but has already printed the worksheets	K
M suggests having students correct the numbers instead of a warm up.	K
(later in the day) H asks about K's lesson.	
M describes the Do Now: what is an angle? (1008)	E
H says, "I like that, okay."	E
M describes K's decision to pose the big idea question (will this work for every triangle? Why or why not?) with 10 minutes left in class. (1162)	E
H worries that if they design their own angles, they won't add up to 180	K
M assures her that the triangle sum theorem will work for every triangle and having students draw them out will support students to see that they aren't special	E
M brings back the big idea question for the last 10 min of class and	E
M says K was going to give them spaghetti	F
H asks what the spaghetti is for	F
M describes how it relates to the big question	E
H says "ooh, I like that, okay."	E
M asks if there are any other CI structures that H wants to work on	D
H says participation quizzes but admits her lesson might not be the right for it.	D
M suggests a participation quiz in the 10 min end discussion to reinforce what good group work looks like. She clarifies they could, but she's not suggesting they should.	D
H says she's too exhausted to even think about it.	D
M volunteers to do that part at the end of the class and a quick launch of the ending conversation.	D
H agrees and suggests putting up posters on the wall to write on.	D
M says it might be simplest to write the team numbers and notes on the board due to space issues. She says she'll do the launch and tell kids what they're writing and why.	D
H says, "that'll be fun, Sounds awesome! I'm super excited."	D
H tells M she forgot to change the Do Now. Instead, it is " <i>Name these points</i> " and defines what points are	K
M says, "No Worries."	
H launches the lesson by explaining "proofs by construction" are true mathematics.	E
H has students work in partners and gives them the materials and a recording sheet.	
H does not add the second question to the activity, but does have students draw 4 triangles themselves.	K
M asks H if she still wants M to do a participation quiz.	D
H says, "what ever you want."	D

There is no participation quiz (the ending discussion in which it would have happened never takes place.)	
H says her goals weren't clear and students did good stuff, but she hadn't been sure what they should be learning and that's why the lesson fell apart. She didn't have closure and didn't have a good set goal in mind. Students are confused about angles.	E
L suggests an applet or something for angles.	
M says K's Do Now was powerful and describes how it went.	E
H says I want to start with a do now next week of "What is an angle?" (this is the same as what had been proposed in the planning conversation) and give homework to help students see angles.	E
H describes ideas for multiple Do Nows to help students make sense of angles.	K
M says, ok, so you're gonna do some sense making around angles.	E
H says maybe that's what I'll do all day Monday.	E
M says it feels really worth it. Maybe you could do a combined lesson that has sense making about angles and how to use protractors.	E
H says maybe 'angle day' is Monday. She describes an idea for an activity.	E
M asks what we want students to learn from the angle day and proposes some ideas.	E
H says make sense of what an angle is, how to measure it, and notation.	E
M says if we want students to make sense of angles, they should generate their own sense making about lots of different kinds of angles. Suggests that kids can get practice with the protractor by using it to generate lots of different angles to make sense of.	K
H says maybe she could make a creative picture with lots of angles in it that students could measure.	K
M suggests that the questions they wrote can ground her decisions about lessons and what to do with kids. Says that it's important to decide what we want kids to learn before making lesson decisions and that it makes teaching easier.	E
(Lynn has found the lesson with lots of angles.) H looks at the screen and describes what she did with it before. Describes a few ideas of what she could do with it.	K
(at the end of this conversation) M said they can try participation quizzes next time. She says they can figure out a lesson that would be supported by this.	D
H says, 'that'd be great.'	D

Heather Cycle 3

H describes yesterday's lesson and the "big discrepancy." She says the next task is difficult because it includes trapezoids, but it's on the test.	K
M asks her what she wants students to learn: finding the SA successfully or generalizing a process?	E
H says the goal is to calculate the surface area of a trapezoidal prism. She adds generalizing would be great too.	E
M asks what they want students to understand and whether there are opportunities in the proposed task for them to articulate their understanding.	E
H asks if M has suggestions to make the lesson "meatier" in terms of vocabulary or getting at bigger concepts.	K
M suggests they could experiment with framing the lesson about what IS surface area, and proposes, "how can we find the SA of any prism?"	E
M asks if they can pose the big question at the beginning and come back to it with 10 minutes at the end of class for discussion.	E
H says, "I think that is a really good question."	E
H wants to add volume to the task.	K

H suggests the cereal box problem since its easier and includes both volume and SA (356). She says they could use blocks.	K
M explains Aya just did it and it didn't go as planned. She elaborates.	K
H proposes ways to get around those problems. She says it's a really great lesson to introduce volume vs SA.	K
H doesn't want to teach SA of trapezoidal prism, but it's on the unit test.	E
M says giving students a clear understanding of surface area is better than having them construct/calculate one once. She suggests putting trapezoidal prisms on the homework.	E
H says she did put them on the homework.	K
M suggests asking groups to come up with a summary statement about what surface area means that each student can explain and then listen to those conversations.	E
H worries that the "super high" kids will answer in an open class discussion and that skill levels are too divided for a good whole class discussion. She says again that she wants to push her high kids to do volume, but still pose the surface area question for all kids.	H
Mia clarifies they will pose the surface area question to groups (and not in whole class format) and do a shuffle quiz, requiring each person in the group to be ready to explain.	D
H worries that her high kids get really excited to do check points. She asks if the check point is only on finding surface area.	D
M explains they won't get excited because it's not on the board until the last section. She reiterates that it would be a shuffle where they would be randomly called on to explain the group's thinking (811)	D
H asks if she could random call and do checkpoints on finding the surface area (prior to the question about what surface area means).	D
M asks what she expects students to say.	D
H says they would explain how they found the areas of each shape and she might ask specific questions like "what do you mean? How did you find the area?"	D
M says it could be an opportunity to make sure students are connecting their calculations to their meaning. (850)	E
H explains the Do now, "Find the Area" of a rectangle and a triangle. She calls two students to come to the board. She reviews the Do Now and asks about the relationship between a triangle and rectangle.	
H launches the task and gives the class the closing question : "How do we find the surface area of ANY prism?"	E
In the lesson launch, H says she and Mia will be doing checkpoints at each table when the whole team thinks they can answer it. She says that every student in the group needs to have the ideas written down.	D
After teams have gotten started, M asks what the expectations for group work are since a lot of the task could be done individually.	C
H asks if she should make an announcement.	C
M says sure, if she thinks it'll help	C
H announces to the class that she and Mia will be "looking for groupwork participation, helping each other out, working on calculations, comparing measurements, that everyone has work on their paper, and working as a team."	C
M and H walk around the room and check in with groups.	
M encourages one group to talk with their team about their question before calling H over.	G
One RM calls Heather over for a team question. M suggests to Heather that someone else in the group ask it.	G
H says she usually has the RM ask team questions, but says OK and asks another student.	G
That student doesn't know the question, and Mia suggests that the team talk about it more and call them back over if it's still a question.	G

H and M leave the group.	G
Away from the group, M explains to H that the RM hadn't consulted with the whole group.	G
The student calls the teachers back over and asks her question, which Heather addresses.	
With about 8 minutes left in class, H tells M it's the end of class but doesn't feel like students are ready for the big question.	E
M says the big question would offer a chance to make sure students are connecting calculations to their meaning. She suggests she and Heather find a way to check in with the big question before class is over.	E
H suggests quickly going around to each table and says they only have 7 minutes left.	E
M suggests that they could direct teams to stop calculation and to work with their group on the big question and write down what they figure out. She and Heather could walk around and listen as groups work on that.	E
H expresses some doubt, but stops the class and redirects teams to the question, "how do we find surface area of any prism?" Tells groups to talk and then write it down.	E
M adds (to the class) that groups should be having conversations before writing and 'that's what we're going to be coming around and listening to.'	E
H and M go around checking with students.	
(reflecting on the lesson) M says she doesn't know what one group left the lesson thinking surface area was because we didn't ask. (118)	
M asks, what does it mean to do groupwork with tasks that aren't groupworthy? She suggests that it's even more important to emphasize norms to keep students together. (154)	G
H says even our big question seems procedural and not groupworthy. (348)	E
M says that because the big question isn't groupworthy, norms matter even more. (368)	G
H says that interactions with groups in class were good and says that in one group, Mandy can dominate. (460)	
M describes a group interaction in which she supported a low status student to speak for the group and the reactions of the students. (472)	
H says I'm glad you incorporated Vanessa. She has a lot to offer but doesn't always. (533)	B
H explains that she normally randomly selects students to share using cards, but this task wasn't 'cardworthy.' (601)	B
M says that maybe makes cards MORE important, not less. Says she forgot about cards and that could have worked. (609)	B
M suggests that she and H experiment with using cards for random selection with every group interaction, not just planned checkpoints so that students experience ongoing responsibility to each other. (625)	B
H says I like that. I want to use it with my 8 th graders too. It will hold students accountable to sticking together in groups. (685)	B
H proposes an idea for a surface area task for tomorrow to help students visualize 3D prisms from 2D representations. (794)	K
M agrees and suggests starting the next lesson with the big question they ended with. (834)	E
H suggests a checkpoint question: draw every surface on your paper with dimensions. (854)	E
M suggest the task could be to figure out how to draw a diagram to help calculate surface area. Then there's something for groups to talk about and smart stuff to do. (857)	K
M suggests two different prisms so there's more smart stuff for students to share. (945)	K
H suggests the task could be to find more than one way to find surface area (974)	K
M agrees and they work on refining the prompt (975)	K
H asks if she could give students a hint about combining shapes. (975)	K
M asks, why are we asking students for two ways again? (1109)	K

H says to address status and incorporate many kids' ideas. (1124)	K
M says for that reason we don't want a hint. (1130)	K
H asks, could I put actual 3D objects on tables? (1166)	F
M says that would be awesome and says anything that approximates a right rectangular prism can support students (a box from playing cards, shoe box, etc.) (1178)	F
H agrees	F

Heather Cycle 4

(Come to Jesus conversation where Mia offers to teach for Heather, a lesson that had been developed with Lydia, another teacher, 1-817)	
Mia describes the lesson, shows H the task and says they ran a participation quiz and told the students that teachers were not going to talk to them for the whole class.	
M describes the lesson beginning, starting with the Do Now, "write everything you know about the PT," not debriefed (873)	K
M says she and Lydia ran a participation quiz with posters on the wall. (877)	D
M says they stopped class halfway through and gave students two silent minutes to read the posters from the participation quiz, so they could see other things that were happening around the room. (884)	D
H says, "I like that idea. Let's do it." [M teaching the lesson as described.] (911)	D
M says, "there were a number of things we did that made it work" and describes using a paper in the middle and launching with the expectation that students' paper's needed to touch it at all times. (929)	C
H expresses happiness and appreciation many times: "I love it" and "this sounds great! I feel like I've taken a shower right now." (960)	
M proposes that if Joaquin keeps getting up, that they prioritize the learning of the class (1002)	C
M says students won't know the answer by the end of class, but that's okay because the content objective is that students use the Pythagorean theorem. (1040)	E
M describes a lesson decision with Lydia responding to students using unexpected mathematics (proportional reasoning) and not the PT.	E
M says Lydia had been worried about students getting stuck because there are so many decisions to make in the task, so they thought about what participation they needed to support so that students could get past that.	C
Describes the MA-like launch making expectations for groupwork explicit	C
Describes launching the PQ and stating norms that would matter	G
M describes the '10-minute rule' of not letting students ask questions the first 10 minutes of class. (1227)	D
H says, "I've done that as well, it's really powerful." (1234)	D
M describes using two colors in the participation quiz, one for things that are helping students move forward and the other for questions/things not helping/feedback (1220)	D
M suggests she do the PQ with Lynn with Heather watching. She will set up the class so that students know not to talk to H. (1283)	D
H asks if she should do this [lesson] for all periods the next day (1398)	
M says whatever portions H is comfortable with. (1399)	
M says students will have to be supported to try new things in the launch. (1416)	G
M suggests H do a mini-PQ, writing on the board evidence she hears of students being willing to try things (1418)	D
M describes set up for Participation Quiz. (1630)	D
H asks is she should do posters for her other classes cuz it would be hard for just one person (1658)	D

M describes a simplified participation quiz on the board, focusing on just the most important norms for this lesson (paper in the middle, being willing to try things) (1708)	D
H says, your opening notes are important for this task, right? She expresses doubt in her ability to launch the task as well as M. (1719)	C
M says there are just a couple key aspects (1726)	C
H gets paper and says she wants to take notes on the lesson launch so she doesn't forget (1735)	C
M describes important aspects of the launch: telling students how you'll give them feedback (1744), tell them the participation behaviors you're looking for, middle space, quick start, ask people for ideas, or say things like 'what should we try'. M says that's it. It doesn't need to be big deal. (1812)	C
M adds telling students the teacher won't talk to them because they can do it without the teacher (1815)	G
H asks if M didn't really talk to any of the students all period (1818)	B
M says pretty much. Started to talk to groups in the last 10 minutes to push participation. (1822)	B
H asks if she should still have facilitators read the problem to the group. (1830)	D
M says 'sure' (1831)	D
H asks if M did checkpoints. (1855)	D
M says no, I didn't talk to groups at all. (1859)	D
M describes assigning competence to a math idea and simultaneously pushing students to explore other math ideas, to direct them toward the content objective. (1876)	I
H asks if M said anything in the launch about giving students a really hard problem (1912)	C
H asks, did you give students calculators? (1941)	F
M says yes to support students to get into rich problem solving, rather than calculations. (1942)	F
H asks whether any groups said they figured it out and asked for a checkpoint. (1951)	D
M says no, and describes one group that was maybe thinking they were done, so I asked them to generate another pathway, relying on ideas from students who had not yet given them (1959)	B
H says, "I'm super excited." (2007)	
Mia taught the lesson as discussed and Heather observed.	
H says students in all 3 of the classes she taught took on the task without depending on her. (32)	
H says that with the 'high needs' of 3 rd period (which M taught), students were well behaved with a few exceptions. (65)	
H says that, as M pointed out, Kalea and Jimmy were dominating and their other two group members were feeling left out or maybe feeling stupid, so "it was kind of a good perspective you brought up" (185)	B
M elaborates on what was happening at that group and her response. Kalea was telling and not asking and told Thomas to shut up when he tried to talk. M tried to use the PQ to support a shift, but it didn't work partly because of where it was in the room: behind Kalea. She was the one who needed to make the shift, but she wasn't seeing it. (218-273)	B
M describes that she had asked H for permission to intervene in a new way (have that group come up with one more path that had to come from the other side of the table), acknowledging that it was hard for her to know if that was safe, given her limited knowledge of the students. (278)	B
M describes what she ended up trying: based on what she noticed on students' papers, she asked where the numbers had come from. She acknowledges their strategy as valid, but pointed out that it led only to approximate distances. She pushed for another strategy coming from the other side of the table. (338)	B

M says she chose to talk to this group about grades, telling them that what they would need to do to get an 'A' was by getting everyone's ideas into the conversation and explaining that she knew that students would learn more if they did that. (360)	B
M describes what happened after this, Kalea asked useful questions, even though she was maybe mad while she did it. (407)	B
H said that group was mad and Jimmy yelled at the group that they needed to talk because M told them they had to come up with an answer and that it felt threatening. (410)	B
M laughs and says when Kalea said 'how do you know?' to her team in a mad voice, she interpreted this generously and gave her credit for asking a good question. (462)	B
M asks if H would be willing to tell the group they got their A tomorrow, because she had run out of time. (471)	B
H agrees (473)	B
H describes a 'stigma' around Thomas as a bad group member who is often off task and asks how she can get that stigma off him. She says to M, 'I think you started getting there.' (557)	I
M says yes, it felt like a promising moment that could be built on more (559) and suggests that we ask students to be generous with each other and be ready to be surprised.	I
M says next time she would have found a way so that the PQ poster wasn't behind Kalea. (643)	D
H suggests it might have been a good time to do a group huddle with Kalea's role and elaborates on ways to use huddles (704)	D
H says she hadn't done any huddles yet but that she loved it from the PD (756)	D
H says it was nice to do an activity on a task card that wasn't really wordy. (805)	K
H says she loved the blue paper for the middle space and said it was great in all her classes. (822)	D
H describes an interaction with a group that had different numbers on all their papers, so she assumed they weren't working together. But in fact they had been. (984)	B
(After looking at student work and seeing that groups did not use the PT) H suggests telling students, "Okay, here's a path that somebody did. How can you use PT to try to go further with this?" (1130)	E
M says I like it, but suggests getting PT from student work, rather than just saying it, "here are three different groups that came up with ways to connect the PT... none of them finished yet, but that's super smart. Let's look at those." (1136)	I
H says that she did a gallery walk in another classes so students could see each other's work and suggests building from that, 'here are some highlights I saw from groups, "We're getting closer [to figuring it out]."' (1168)	D
M says it doesn't yet sound like telling kids they did smart math. She suggests ways to do that. (1174)	I
H describe kids who are scared to put anything on paper and says she challenged one group to take a risk and draw something. She says it was hard for them because they were scared to be wrong, but they did it. (1256)	B

Appendix E: Coaching Conversation Transcripts

Kamilah Cycle 1 Planning Conversation

	Kamilah	Mia
1		cool, so
2		what's up for tomorrow, first period right?
3	yeah oh and um-	
4		did you and Aya combine classes?
5		no
6		No okay
7	I'm fine (.)	
8	with it.	
9	But I just feel like	
10	we might be at different places	
11	I don't know if she's on a different day	
12		uh huh
13	umm, I mean I'm totally down to do it	
14		uh huh
15		uh
16		I wasn't asking cuz I was hoping that your answer would be any particular thing
17		but just because I wanted to know when I come in if I'll be coming in to (both) or would it just be you
18	no it just be me	
19		okay cool. Cool, ok
20	Yeah and	
21	the permission slips so	
22		oh
23	I had a hard time getting it back,	
24	I have 13 kids, and I got three,	
25	three said no.	
26	and three um returned the parent ones	
27	and some of them are going to give it tomorrow	
28		and do you know the 3 who said no what there issues were?
29	I think when I told them,	
30	when we read the letter	
31		uh huh
32	when it was like-	
33	and when you mentioned that it might be shown to	
34	people like in your	
35	research or program whatever	mhm
36		okay, I can check in with them in the morning and see how they're feeling.
37		Sometimes I've had kids once they talk to me they're like oh yeah it's fine
38		mhm

39 and sometimes where they say well lets put it, or if
you can put them so that there back is towards the
camera, so its mostly in the back of their head

40 right

41 they are more fine,
42 something like that.
43 I'm okay taping before the parent ones come in
44 and not using it until I have all the permissions
checked off

45 Okay

46 if thats okay with you

47 okay

48 And I can explain that to them

49 okay

50 and I can, you know if one of the parent ones doesn't
come back or comes back with a no,
51 then I figure out ways to not use that clip or share that
clip

52 okay, that makes sense

53 then I have to be careful with which video I use for
sharing purposes but its still yeah.
54 Is that okay with you?

55 mhm, totally

56 okay um,
57 and sometimes kids need to be off camera
58 if its not too disruptive
59 we might shift where they are sitting that day

60 yeah

61 so it's possible to keep them off camera

62 yeah

63 but we can play that by ear.
64 Are the three scattered around
65 in different places
66 right now?

67 um,

68 there's two here

69 at this table

70 and then there's one here,

71 In this front middle table

72 yeah

73 okay

74 um I feel like you can kinda convince this one

75 okay if not these two then maybe
76 I can set up the camara in that back corner
77 and be facing it this way so they're off screen anyway,

78 right yeah

79 cool, okay

80 and I don't want it to be a big disruption,

81 so
82 okay
83 awesome. sooo anything else I need to tell you about
that-
84 oh you know I want to get this just so we have this
dealt with.
85 uh huh
86 I don't think I ever got you to sign anything (laughs)
87 so I just happen to have that with me. (sound of papers
shuffling)
88 So I can get this from you later.
89 This is the one that I eventually need on file for you.
90 Okay,
91 don't need that right now?
92 No
93 Okay
94 We don't have that much time,
95 so let's use it for what's useful (*laughs*)
96 OKay
97 So what's up and what do you want me::
98 I guess what I would like to know is what ever we
have time for.
99 We have about 20 minutes it looks like, is that right?
100 1:18?
101 yeah
102 yeah,
103 um sooo
104 what- what you know about what the plan is
105 okay
106 um, what's going on in your class,
107 um and what you're hoping for help thinking about
108 okay
109 and that will inform me sort of what to focus on when
I'm here and
110 how to
111 train my eyes so that I can be/ thinking about things
/mhm //mhm that are more useful// for talking together about
112 uh
113 so this group, table 1 is the one that I'm like
114 yeah
115 is the one that I am/ struggling with a lot /ok
116 mhm
117 um table 2 is,
118 they are so awesome
119 because they're just like-
120 actually the kid that says he does not want to be
recorded
121 mhm
122 he's soo,

123 he's such a team player, like
124 mhm
125 He checks in with everyone/ like
126 /What's his name?
127 um Abdon.
128 say it again
129 A-b-d-o-n
130 okay
131 Abdon um,
132 he like checks in with everyone like, 'okay we got it?
are we ready to move on' like.
133 Oh, I just love/ like hearing him talk, /mm
134 mhm
135 um so he is like really helpful in that group
136 mhm
137 uh, and then the other group I have
138 So I have three tables cuz I have
139 one, two, and three? Ok
140 um, so I have a group of 5
141 okay
142 and that's another question I want to ask
143 Is like is that o-
144 should I have two groups of 3, or should I have one
group of 5 cause I feel like
145 the 5 is better than 3
146 okay
147 I'm feeling like.
148 okay,
149 um
150 I can watch and see
151 /in the beginning/ /yeah, I don't think/ I don't think there's a right answer
for that.
152 In my practice
153 I have trouble with 5's just cause I feel like it's too
easy for someone to hide
154 and not really-
155 for everyone to participate is really hard with 5 but
156 um
157 but 3's are hard too
158 I know
159 so let's just watch and see what-
160 yeah.
161 okay
162 Because a lot of times sometimes and you know
163 it's first period so some kids come in tardy
164 yeah
165 and so it's hard like when start group work
166 yeah
167 I have to rearrange groups

168 right
169 so it gets hard
170 three's are especially hard in an early class, thats true
right?
171 I know, so it gets really tricky-
172 cool
173 so in the beggining of class I have those. I have them
seating in that table,
174 but when we do group work they move,
175 okay
176 according to who's absent and like what spaces are
available
177 so this is table three?
178 table four
179 four
180 yeah
181 okay and then you have 4 students here.
182 4. 4...
183 Three
184 3.. and then 2?
185 3, oh wait
186 I can't do math,
187 Lynn: that would be fourteen
188 that would be 14
189 So four and four is eight... I have a three.. and a two
190 Okay mhm
191 yeah that's what it is, yeah
192 I see
193 and then those two pretty much just fill in the spots
who ever's absent as they come in
194 I see
195 cool
196 and sometimes it ends up with a group of 5
197 mhm
198 you're saying
199 and um..
200 so I would love to hear about how table three is going
in your opinion
201 /they're doing well /and what your/ struggles are like in table one,
202 or like what is hard for you
203 um..
204 oh my God.. (laughs)
205 this kid/ right here /yeah
206 yeah,
207 /he will not talk/ /is there a seating/ chart by the way that I can tell
208 yeah
209 or it's private
210 uh he does not talk,
211 okay

212 like nothing
 213 Like not even does he talk to you privately, like in uh,
 214 if I ask him a question
 215 he'll answer it? Ok
 216 like group work? oh my god,
 217 it's so-
 218 and that's what's really struggling for me cuz he
 219 andy
 220 and he is uh- scored that highest in the last test
 221 mhm
 222 and um
 223 Lynn: I just had him to take the CELT. Andy Lopez?
 224 Yeah. No, Tiejio.
 225 Lynn: oh
 226 He's not EL.
 227 I don't think he is.
 228 But, uh yeah,
 229 very independent.
 230 Very.
 231 okay
 232 uh,
 233 and this kid is sitting here now um (.)
 234 Antonious?
 235 Yeah,
 236 he goes by Tony
 237 Okay
 238 Uh so I'm just really struggling with them like
 being able to communicate with each other, and I feel
 239 like they get really stuck because they're not talking to
 each other.
 240 Cool.
 241 Um,
 242 and so then,
 243 and like they're friends so they got to get off task a lot
 wo having-
 244 who are?
 245 Uh,
 246 these 3
 247 okay
 248 this kid, ok this kid doesn't do anything (laughs),
 249 won't even like-
 250 mhm
 251 reallly struggles with even taking out the do-now
 252 and getting started in the do-now,
 253 comes in tardy like almost every day
 254 um (.)
 255 yeah
 256 okay
 257 but these two yeah,

258 and then so it's really hard to communicate cause then
it's like .

259 Tony feels like-

260 He feels like um,

261 like no one else is like conversing with him, so it's
really hard for him to have those conversations

262 mhm

263 They do have personalities like being able to talk
264 but like they feel awkward, because it's like-

265 I think it's also awkward cause they have this guy

266 mhm

267 and they're just like okay like

268 I don't know it's just the dynamic is interesting.

269 You'll see tomorrow.

270 Okay, okay

271 so this group is the one that works really well

272 okay.

273 So lets think about-

274 let's talk about the lesson

275 um

276 so it's gonna start with a video

277 *(background noise)*

278 We are in unit 2?

279 Yes,

280 we are in unit 2, yes.

281 *(turning pages and speaking softly)* forty one to forty
four (.)

282 So we're getting into scientific notation.

283 Today we um talked about exponents,

284 um..

285 and then..

286 some groups got into like base 10,
287 and like base 10 to the second and seeing what
happens

288 mhm

289 like when you're mutliplying by a power of 10

290 mhm

291 um, but we didn't- not all groups got to this.

292 So I feel like for a do now tomorrow I'm going to like
293 have this /and um talk about it. /okay

294 Cause I need to make sure we are all-

295 before we get into scientific notation

296 so what is there,

297 I'm asking this question to frame my thinking around
your um...

298 thinking about this group.

299 Um, So my question is what do you-

300 through this lesson as we look at it maybe tell me
what is there for them to talk about.

301 Like where would you hope there would be talk?
302 and what do you imagine them talking about?
303 right.
304 Um,
305 so we're gonna show video and then we're gonna do,
306 uh Eight forty one to eight forty four,
307 um so a lot of times how I am structuring these is
308 there is a checkpoint
309 after each problem um
310 And this is group work?
311 Eight forty one to eight forty four?
312 uh huh
313 OK (.)
314 and what is expected from them at the checkpoint?
315 just to like explain so they're answering-
316 like so I'll randomly pick someone and then umm
317 they'll tell me what happens when you multiply by
318 one point three nine,
319 umm
320 mhm
321 and then whatever their-
322 you know like just ask them questions depending on
323 what their answer is
324 mhm, cool. (4s)
325 And what's your experience so far:
326 with this group and checkpoints.
327 cuz you're randomly picking right?
328 right
329 so what what
330 have you seen them do with that?
331 Or does it just stress them out and they struggle (talk)
332 or
333 no, u::m (4s)
334 I feel like its slow with them
335 mhmm
336 so it's like sometimes like we won't even get to a
337 checkpoint,
338 because like
339 this kid is really like,
340 not doing much
341 so they have to like push each other to get-
342 mhm
343 cause they're not getting to those checkpoints
344 mmm, mhm
345 because like you have to slow the group down.
346 umm so often times it's like I-
347 I kinda force a checkpoint
348 because I like want to be able to have those
349 conversations with them

344 mhmm
345 umm, and then if I pick someone randomly,
346 mhm
347 um, even though they don't have something written
down,
348 even just asking them that question can get it going
349 mhm
350 um, but often times you have to like force
checkpoints.
351 And have they had success on them?
352 yea, umm,
353 I'm trying to think,
354 like Tony and Shaquir are like-
355 and Andy have been-
356 I don't think Manuel has ever had a checkpoint
357 (inaudible)
358 (inaudible) like randomly, yeah
359 yeah, uhuh, okay. okay
360 um, I'm trying to think (4s)
361 but yeah I think just that group is just slow.
362 ok (.) ok
363 um (5s)
364 so, I haven't decided
365 how I want to introduce scientific notation, but we're
going to watch a video.
366 I don't know if um
367 is that the one about like you go out into space?
368 uhuh
369 Lynn: the powers of ten, the Ames video?
370 yeah the ames video yea
371 okay
372 ok, so would you like recommend me like,
373 before they start getting into group work,
374 like getting how to like do this kind of scientific
notation or have them like kinda discover it first
375 and then (.)
376 Great question.
377 So this is like, uh, for me this is one of those content-
378 and Lynn maybe you can chime in,
379 this is one of those content pieces that's really hard?
380 mhm
381 because
382 it's just,
383 in some ways, I mean there's like-
384 it's hard for me I guess to find the conceptual teeth in
it,
385 because it's like, it's just a convention.
386 Lynn: right, it's not conceptual.
387 right?

388 so I mean there is-
389 it is related-
390 It's a convention that works because of our base ten
number system
391 you know, um
392 but it (.)
393 I feel like um (.)
394 yeah, like what is there-
395 it doesn't feel very group worthy to me,
396 so it feels like what- how-
397 right.
398 it doesn't force kids to talk to each other
399 right
400 because there's not like-
401 there's not really as far as I can find anyway
402 multiple ways to think about things,
403 mhm
404 it's just like you get it or you don't, /which can
actually
405 Lynn: there's no multiple representations involved, or
406 right, and the (.)
407 and so sometimes that can serve to sort of exasperate
status issues
408 right
409 because its one of those like,
410 Well, the same kids that I am used to thinking of-
(interruption from a student)
411 the same kids I am used to thinking of as the smart
kids
412 are the same ones who are like, who get this and like I
totally don't
413 because I am not very good at like figur-'
414 like parsing all of that is not an easy task, right?
415 like all the words and connecting it to the symbols
416 mhm
417 like there's numbers written in different places and
418 mhm
419 you know?
420 Um (.)
421 I know.
422 I am not looking forward to it
423 So it almost makes me wonder whether we just don't,
424 like maybe it's a pair activity where it's not framed as
group worthy
425 mhm
426 there like isn't something for a group to talk about
427 Lynn: that's ok
428 but your job is to make sure-
429 and maybe we use-

430 like focus on norm building that will support
431 nobody getting left behind in the pair,
432 you know like
433 mhm
434 I don't know how it's been talked about yet, so far in
435 this class
436 but like taking care of each other,
437 no one is done until everyone is done,
438 whatever those kinds of norms are.
439 yeah
440 and frame it as
441 just two people
442 who um-
443 and maybe
444 yeah
445 there's some kind of accountability for how do we
446 know that they both-
447 they both are like uh,
448 being supported
449 yea
450 to understand it you know.
451 um (.)
452 yea I worry a little bit about content like this sort of
453 cheapening group work a little bit before we have it
454 really well established or
455 right
456 like early in the year.
457 Because
458 Lynn: because it's not.
459 because it's not really-
460 I mean, when we have norms really well established
461 for group work, then it doesn't matter that much
462 right
463 and we can be like yeah, yeah, this one's not that
464 group worthy but you guys know
465 you are going to be checking in with each other
466 yeah
467 you are going to make sure everyone's got it, you
468 know
469 And that's why we're struggling a lot in seventh
470 because of our unit on rational numbers
471 not feeling very group worthy?
472 yeah, well I mean today-
473 I like the apprentice task that we did
474 yeah
475 but um
476 before that like all the other stuff was very hard to-
477 yeah
478 cause there was a lot of status issues that came up

472 yeah.
473 so maybe we can play with some other structures that
are still giving kids a chance to talk
474 mhm
475 cause I think that's important
476 Lynn: and maybe it's easier to get this kid to talk if
there's only one other person that he has to talk to
477 That's what I was wondering.
478 Yeah, and this kid.
479 If he feels really responsible to one other person
480 might show up in a way,
481 right
482 that he doesn't-
483 you know you can hide when there is/ three other
484 /right people doing the work, right?
yeah yeah that's true
485 but if it's just one
486 and like it's really easy to tell/ if there is any
487 /right conversation happening
488 or if there's sharing you know,
488 yeah
489 like the middle space in use can be the middle space
between the two
490 mhm
491 um, and you can launch it with clear expectations for
what is it that I want you to talk about.
492 This is- and you can just acknowledge,
493 This is kind of just a convention
494 we are trying to make sense of this convention that
someone came up with.
495 mhm
496 it's not a deep concept
497 but it's useful to make sense of
498 Lynn: it's useful
499 'because it's gonna keep coming up
500 and it's useful, you'll see it in your science classes.
501 So it's not super rich today
502 but let's support each other to make sense of this
thing.
503 So by the end of class
504 I hope that this way of writing numbers is making
sense,
505 yeah
506 so you're gonna work with partners to try to make
sense of it today,' or something
507 yeah
508 you know what I mean? (.)
509 yeah. (3s)
510 So then they'll just-

511 so do you still imagine like having check points
512 after they work with their pairs.
513 Like kinda having that same style but like in pairs?
514 *(side talk to with a student)*
515
516 I wonder if there's, um.
517 I wonder if you're gonna be run ragged if you have
518 pairs to handle in check points after every single
519 problem.
520 Although it's a small class.
521 It's a small class yeah
522 But I wonder if um
523 Lynn: And could I jump in and do check points
524 Could you?
525 Lynn: If I'm here
526 uh
527 you could,
528 sure.
529 Um,
530 I think that maybe (.)
531 There's also the flip-
532 so check points are when they call you over at a
533 certain time
534 and you've been saying that you've been forcing check
535 points
536 mhm
537 so that's actually another way were do it on purpose,
538 not making it- like just-
539 I should be able to come by at any moment
540 and randomly pick one of you guys
541 and that person should be able to explain to me where
542 you guys are
543 and how you-
544 what you are and are not understanding
545 right
546 so its not that they're responsible for being done
547 but they're responsible for explaining to you um
548 where they're at
549 where they're at,
550 what they're struggling with,
551 you know.
552 And then you can-
553 so you can kinda do,
554 if you suspect some people are not working together,
555 you can be like "remember I'm doing shuffle quizzes
556 and I'm thinking I might come to you in a couple
557 minutes."
558 You know what I mean?
559 So give them the chance be like
560 "oh, oh yeah what are we I gonna say to her?"

553 You know what I mean?
554 Um, so it's sort of the same structure but you're not
bound to-
555 And if you know-
556 if you can tell by watching that a group is doing fine,
557 and they're working together
558 you don't have to go to them.
559 yeah
560 I don't think there is any deep justification necessarily
that you are listening for anyway
561 okay
562 right?
563 yeah
564 I mean I don't know,
565 there might be.
566 What happens when you multiply (.)
567 Yeah not really,
568 I can just look at their work and see like, you know
(3s)
569 and some of these too,
570 I feel like what does this number mean?
571 Yeah
572 I don't frikkin know what that number means.
573 (laughs)
574 I mean, it means one nine nine with a bunch of zeros,
but what does-
575 it means really really big (laughs)
576 is what it means, you know
577 yeah
578 Lynn: as one of my students once put it, it's a big
humungous number
579 Yeah its a big humungous number,
580 that's kind of all the sense making there is right?
581 I mean you could write it.
582 you can write the thirty zeros and get-
583 and maybe understand why you don't want to write it
like that every time.
584 But as far as the deep- like what does that number
actually mean.
585 I don't know if that's gonna happen
586 Lynn: no
587 yeah,
588 and then they are having them write it
589 Lynn: I have to run to advisory.
590 yeah. Which I kinda like that.
591 and it won't take for-its only 30 zeros right or 28 of
them.
592 yeah
593 (to Lynn) You're running to advisory?

594 yeah
595 okay
596 *(the three talk briefly about schedules and classroom numbers)*
597 Lynn: sorry, see you later.
598 Cool, see you soon. (.)
599 yeah, so maybe we could experiment tomorrow with
some pair structure when it doesn't feel very
groupworthy
600 but we're still maintaining this like,
601 this culture of togetherness,
602 like learning is not something you do all by yourself
603 mhhm
604 like you have to watch out for each other too::
605 mhm
606 you're gonna be held accountable,
607 all that kind of stuff.
608 Does that feel good?
609 yeah (3s)
610 cool and I can listen for-
611 how we doing on time? Oh we're almost done okay.
612 I can listen
613 I'm thinking then I'm watching the pair structure.
614 I'm watching them work in pairs
615 and I'm listening for in particular the kids that you've
told me you're a little concerned about,
616 it's a small class so I can probably listen to all of them.
617 yeah
618 and um trying to make sense what's happening for
them
619 so we can think together about what that structure is
doing for them,
620 okay
621 what this task is doing for them
622 yeah
623 does that feel useful?
624 Okay
625 and then before
626 um I get into the pair work should I-
627 should the roles not really be part of it, right?
628 say that again,
629 roles?
630 Oh yeah,
631 no.
632 I don't think we're-
633 I don't think it's a roles day.
634 Yeah
635 I think it's a- yeah

636 I think what you spend the front of the room time
doing

637 is being really clear about your expectaions for what
work should look like today

638 yeah

639 so in- if we're doing a new structure.

640 Have they done pair work before?

641 no

642 okay so it's a new structure

643 and when we work in pairs,

644 your job is to stay on the same thing at the same time,

645 make sure both of you to have the same
understanding,

646 I'm gonna hold you accountable to that by

647 kinda like a check point

648 but I decide when I come to you

649 right

650 and also maybe make sure they get

651 when you come to them they don't have to have right
answers

652 okay

653 right, they don't have to be done,

654 they have to be ready to talk about it

655 okay

656 Does that sound good?

657 yeah

658 awesome I look forward to it,

659 sorry we didn't have much time to chat.

660 Lunch time is hard

661 maybe next time, I'll find a different time for our chat

662 yeah, cause I usually have kids here everyday

663 yeah I realized when I watched this why do I think
lunch times work

664 No I thought it would be fine too. I mean our
schedules are always crazy

665 yeah, yeah

666 maybe next time we can do an after school chat, yeah

667 okay

668 awesome well that was good

669 I feel excited

670 okay yeah cool

Kamilah Cycle 1 Debrief Conversation

	Kamilah	Mia
1		Ok, do you have paper or a ntoebook or anything?
2	<i>(goes to get a notebook)</i>	
3		Okay, so I have a suggestion for how we can start.
4	mmhmm.	

5 Um.
6 Thank you for letting me come into your classroom.
7 Of course.
8 I really enjoyed it.
9 Um okay.
10 So if we take a few minutes
11 to um
12 think both-
13 like start with some writing.
14 I am going to do it too
15 and then we will talk
16 Okay.
17 about um (.)
18 I like to do it in this T-chart kind of way,
19 so the strengths
20 of your own
21 or of your class
22 or of your kids,
23 but I would like you to try to own them
24 so, what you feel like you are really good at and
25 strong with that happened today in class
26 or that you feel you know
26 mhm
27 connected to for today?
28 And um
29 questions.
30 What are you feeling curious about, wanting to work
31 on
31 Okay.
32 Yeah?
33 And then we will do-
34 let's just think about that a little bit
35 and I am going to use my notes.
36 And are they in terms of today's lesson
37 or the (door slams) ?
38 Um,
39 well so I think the strengths um,
40 it helps to be really concrete,
41 so let's think about today
42 Okay.
43 And knowing that you have way more strengths than
44 we could name or see in one day.
44 uhuh.
45 Um
46 the questions, I think you might-
47 whatever is feeling pressing for you.
48 Uhuh.
49 Um
50 yeah.

51 I think it helps me to understand your questions when
they are connected in some ways to what we saw
together.

52 Mhm

53 Right? Because then I could be like

54 “oh yeah, I know what you mean. I saw this thing
happen.”

55 Mhm

56 “I get that.”

57 Or I can plug in more easily, but you can ask whatever
questions you want.

58 And then we’ll decide together,
based on the questions, which ones we want to take up
59 today,
because we can’t take up everything in one
60 conversation.

61 Yeah.

62 All right?

63 Okay.

64 Sound reasonable?

65 Yeah.

66 Cool.

67 *(moving papers around)* Too many things.

68 *(6 minutes of silent writing)*

69 Okay.

70 Are you ready?

71 Mhm

72 I see you pausing.

73 Okay,

74 I could probably keep on going, but I’ll *(smiles)*.

75 Yeah.

76 Um,

77 oh yeah and let’s just check on our time so we can be
(inaudible)/

78 *(inaudible)*

79 Lynn: 1:18 is it?

80 1:19?

81 1:15

82 1:15. Okay.

83 Lynn: I forgot to get ready for advisory.

84 Okay (.)

85 Cool (.)

86 So will you share yours first?

87 Um

88 I really liked the video.

89 Um

90 I think it was really cool for students to see what the
power of ten was and

91 I think it was um

92 interesting for them
 93 uh huh
 94 to see.
 95 mhm
 96 Um there was the comments they were making like
 97 "oh that's nasty." But like, you know, I mean it wasn't
 like-
 98 they were still thinking about,
 99 uh huh
 100 you know, what that means. You know?
 101 uh huh
 102 Um and then-
 103 yeah so that was I felt I really liked the video.
 104 Um and then I noticed like proximity really works
 well with my kids, um
 105 and like
 106 if they're talking and I come over
 107 they'll stop
 108 uh huh
 109 um, or like
 110 I felt like
 111 to me-
 112 in table one like,
 113 mhm
 114 who wasn't getting anything started, but when I came
 over
 115 um like there was that motivation to like "okay let me
 actually read or like try and do something."
 116 mhm mhm
 117 Like let me work with a calculator
 118 mhm
 119 or let me write something down.
 120 uh huh
 121 So I feel like my kids do feel like
 122 they do need to like do something in my class.
 123 I feel like it's positive that they are
 124 they're feeling like I am coming over and that they do
 have expectations and they /are trying to, /mhm
 125 you know,
 126 mhm
 127 fulfill it.
 128 Uhuh uhuh.
 129 So um that
 130 and then I felt like my students um-
 131 especially on the do-now problem I think it helped
 them like see
 132 patterns,
 133 like early on and then it kind of like
 134 overflowed and they were able to see-

135 I mean not all students but
136 I think most students were able to see
137 "okay the decimal is moving" or like "when we add a
zero, this is happening."
138 uh huh
139 Um I think the do-now problem kind of helped them?
140 with that.
141 uh huh
142 Um,
143 and then should I get into questions?
144 Umm
145 let me add to your list first
146 Okay.
147 and then we can go there.
148 Or (2s, *looking up*)
149 actually let's hear your questions-
150 let's hear em and then we can decide what we can do
with them.
151 Okay.
152 Yeah.
153 Um so the flow of class
154 of like whether or not-
155 I wonder what your were thinking about the flow.
156 Was it too slow?
157 Like how much should I have been pushing forward?
158 Like when you came in and checked in with me
during the lesson like you know,
159 "maybe set your expectations a little bit more."
160 uh huh
161 Like what was expected for them to have.
162 uh huh
163 Um so there's questions about that.
164 And then, what I should,
165 let's- so if we do, pair work.
166 uh huh
167 And also pair work versus group work.
168 uh huh
169 Like how to use that.
170 I mean like I feel with this small class that I have-
(*someone walks in*)
171 umm is it okay if I have students taking a test quietly?
172 Or I can just tell them to come back tomorrow.
173 (whispers) If that's okay, that would be better.
174 Okay. (to student) (inaudible) Thank you.
175 Student: Well tomorrow I have (?).
176 What was that?
177 Student: Tomorrow I have to go to (?).
178 Okay, you can take it next week. Yeah, next week is
fine (*smiles*).

179 (to student) Thanks!
180 Sorry I took your teacher away from you.
181 Sorry. Um
182 so yeah pair work versus group work.
183 Oh especially in the small class, I felt like
184 uh the pairwork worked well today
185 Okay.
186 like in terms of like um
187 them not having to like
188 check in with someone else?
189 You know it was like helping with the flow
190 because it was only one other person.
191 Mhm (*writing*).
192 Um (3s)
193 yeah so (.)
194 deciding like when to use pairs or groups.
195 uh huh
196 And then what I should be doing at check-ins.
197 Like if I'm doing pair work like what kind of
198 questions should I be asking?
199 mhm
200 Um is it kind of like a check point?
201 Mhm (*writing*).
202 Um (.)
203 and then uhh-
204 changing seats. Like
205 I feel like (.)
206 table one.
207 like Tony and Manuel are,
208 um
209 not working very well together,
210 uh huh
211 so like if,
212 you know, they have seats already- because I try to be
213 random.
214 uh huh
215 Um but I have seats like
216 and they are not working out, like
217 how long do I keep them together until I move them?
218 Like-
219 Did you notice that your class was totally gender
220 segregated? (.)
221 Is that randomness? (.)
222 I love randomness, that's the weirdest thing.
223 Yeah.
They were all groups of girls, except for that table
which was all boys.
At least today.
There might have been some absent people.

224 Lynn: There are some absent people.
225 Lynn: At this table.
226 Yeah
227 there is a boy here.
228 A boy, okay.
229 It was so interesting.
230 I was like “whoa I wonder if she did that on purpose
or is that like”
231 No.
232 That’s so interesting, huh
233 Yeah.
234 Cool.
235 uh huh
236 Um,
237 so like
238 yeah changing seats
239 uh huh
240 and then
241 just kind of like-
242 because table one is the one that is like struggling with
like getting stuff done.
243 uh huh
244 They tend to be unfocused.
245 Yeah.
246 So like, how can I help them?
247 Uhuh uhuh.
248 And yeah.
249 Okay, cool.
250 So,
251 I am going to be so efficient.
252 Okay (*claps once*)
253 tons of strengths,
254 uh so
255 I really appreciated,
256 like towards the beginning of class,
257 you clearly stated norms for them?
258 You told them you want them-
259 I think it was when you were saying you were going
to do pairs instead of groups.
260 Mmmhmm.
261 I think it might have been connected with that,
262 mhm
263 although I don’t totally remember.
264 But you said um,
265 in particular I remember you saying 'we still take care
of each other.'
266 mhm
267 We are still checking in and asking questions
268 and I really appreciated that clear

269 articulation of what we are about here.
270 Mmmhmm.
271 Um
272 the video I felt like it was also really nice
273 to have multiple media available
274 for different kinds of sense making.
275 I think it makes more available to kids um
276 mhm
277 I heard student voices.
278 You know I know you have articulated in my
experience with tiny classes and first period is it's
really hard to get any momentum happening
279 mhm
280 and maybe this is related to your question about flow.
281 Right.
282 I feel like it's a first period small class always problem
(*laughs*).
283 Yeah.
284 Um
285 and I was hearing voices
286 and they were reading aloud to each other
287 and I couldn't remember if you told them to
288 or if they had just taken that up as a norm.
289 Yeah
290 that is the norm
291 yeah.
292 That's awesome.
293 That's what I thought
294 because I didn't hear you-
295 I don't think I remember hearing you.
296 No I didn't say it.
297 And yeah when they broke into groups I thought
about that
298 and I looked around and I noticed that they were
already reading to each other.
299 Yeah.
300 Almost all the pairs just naturally started by reading
aloud,
301 which does multiple things.
302 It gives more access to kids.
303 It also breaks that silence barrier,
304 mhm
305 so it makes talking easier
306 yeah
307 because something has already been spoken right?
308 Um
I was really appreciating watching you intervene with
309 groups for different kinds of reasons when you were
asking what they were doing

310 and also when they were sort of off task.
311 Mmhmm.
312 That there was a very gentle sense
313 and I think
314 you had said something about how um those two
(*points*),
315 Manuel and Tony,
316 um
317 were
318 you know feeling accountable to something.
319 I can't remember how you said it, but like they want
to get something done
320 and so you come over
321 Right.
322 and like they care.
323 right
324 But I think also, my sense was that also has to do with
the way you interact with them.
325 Like, if you had gone over there and been like "get on
task," (*wags finger*)
326 you might have seen something really different?
327 Right.
328 Right?
329 And it would have been really easy to do that.
330 Yeah.
331 Um and I was really appreciating that your-
332 I think- what do you say to them? You said "What is
going on?
333 Can I help you?"
334 So your assumption when you entered into them
335 was like "you want to be doing the right thing.
336 How do I support you?"
337 Yeah.
338 Um
339 which holds them accountable in this way that is very
grounded in caring about them,
340 which I think gets you a lot of mileage.
341 So that's awesome.
342 Um
343 I was just noticing in general in the class
344 lots of safety for students to be themselves,
345 which I think is probably connected to what I just
said.
346 Right?
347 That you you- there is not a sense that like,
348 something I'm gonna do is going to make me a bad
kid.
349 Mmmhmm.
350 You know?

351 Which I think (.)
352 is a really nice foundation. (.)
353 Uhh I noticed students,
354 in some cases, voluntarily checking in with each other
355 and sometimes across pairs,
356 which told me that they were invested.
357 It told me like they felt like they needed other people,
358 which is a good thing,
359 and they were invested in success.
360 They cared enough to check in
361 mhm
362 and like pursue support.
363 And which groups were those?
364 I saw, what I am remembering right now was-
365 which was also connected to a status question for me
366 because of the particular people who were checking
367 in.
368 Right.
369 I saw uh (*looking at seating chart*)
370 Victoria?
371 mhm
372 and Itzel.
373 These two (*pointing to two chairs*) uhuh.
374 And they were not in the same pair.
375 Right.
376 They were kitty corner
377 and I wasn't sure
378 what Aliyah and Teresa's participation was in that
379 or what messages they were getting.
380 Uhuh.
381 You know, so like these two were clearly like
382 "I care about my success. I want to be right."
383 Yeah.
384 But then they are not checking with their partner but
385 they are checking with them.
386 Oh.
387 So what does that tell their partner?
388 Right.
389 I wasn't sure, but I also hadn't been there the whole
390 time,
391 so they might have already checked.
392 Right.
393 But I couldn't quite tell so.
394 yeah.
395 yeah.
396 Victoria sits here usually.
397 Yeah.
398 She never- that was the first time she sat there.

395 So I was wondering if that was giving us information
about status that we can think about.

396 Yeah.

397 That maybe Victoria and Itzel were both feeling like
398 "I am smart and you are smart
399 right
400 and therefore we can help each other."
401 Yeah.

402 And they maybe were not assuming that Teresa and
403 Aliyah had much to offer.

404 Yeah.

405 Right.

406 Maybe.

407 So that's just-
408 and it's good information right?
409 yeah

410 It happens in all classrooms.
411 Um (3s, *looking at notes*)
412 oh!
413 You were making a decision about a calculator.
414 The kid said "but we are not suppose to use a
415 calculator."
416 And you said "I'm okay with you using a calculator.
417 The biggest thing that I want you to notice is."
418 And you pointed them to the content.

419 mhm

420 So for me that was powerful-
421 You were telling them
422 "what matters here is the learning
423 mhm
424 and here is the exact learning
425 right
426 that I want to see happening."
427 Mmmhmm.

428 So the tools or like the rules
429 right
430 are less important
431 right
432 than the learning.
433 Right the answer (inaudible).

434 Or like the rules about what it says on the paper.
435 Like as long as you have access to this learning,
436 that's what I care about,
437 mhm
438 so I was really appreciating that.
439 Um
440 you said something to a kid-
441 as I was writing this-

439 I can't remember. Maybe you can because I wish I
440 could remember the details.
441 What I wrote down was
442 and I remember this.
443 You said to a kid-
444 I don't even remember who.
445 "You made an awesome connection here."
446 And you helped the kid connect something they had
447 done
448 to the problem.
449 To the task the way it was printed in a way-
450 and I don't remember. I wish I could (inaudible).
451 Oh, I think it was right here (*points*).
452 Okay.
453 And what was the connection?
454 I think it was like um
455 moving the decimal
456 and looking at the exponent.
457 So it was something-
458 what I remember about it,
459 at least my impression of it,
460 was that it wasn't a connection that you were
461 expecting.
462 Like you were listening to the kid
463 Oh right.
464 and you heard the kid say this thing.
465 And you recognized the math in what they said
466 and you recognized how that math was connected
467 Right.
468 to the task,
469 even though it wasn't exactly what the task was
470 asking for.
471 Yeah.
472 So you were helping them to see how
473 what they were doing was connected like to the
474 formal task.
475 Oh yeah.
476 Does that feel right?
477 I am just trying to remember what it was.
478 I wish I wrote-
479 took better notes.
480 Err.
481 Grr (*snaps*).
482 (*laughs*)
483 Anyway,
484 it was a moment like that I think.
485 So what it told me was
486 that you were listening
487 for what the kids were actually saying.

483 Not for like “are they right?”
484 yeah
485 or “are they doing the thing I’m expecting”
486 Yeah.
487 But you are listening to what they are actually doing,
488 mhm
489 you were making sense of it,
490 and then helping the kids to see how it made sense.
491 Which is a super powerful like pedagogical skill.
492 Okay (*smiles*).
493 Um (.)
494 I think just the fact that you kept a positive sort of-
495 yeah I think we could think about flow.
496 I think we could think about momentum in this tiny
497 first period class (*laughs*)
498 because it always happens right?
499 Like I share-
500 if I were teaching it, I would share that same
501 challenge,
502 but I think that given that challenge,
503 um kids were smiling,
504 there were voices happening the whole time.
505 There weren’t any like “forget about it!”
506 Or when kids were off-task,
507 which they were sometimes
508 Yeah.
509 it was still connected. Like they were off-task
510 together.
511 Mmhmm.
512 There was no, at least what I- I didn’t see anybody
513 like “I am now by myself
514 completely deciding that I don’t care about this
515 space.”
516 Yeah.
517 I didn’t see it anywhere.
518 Abby wasn’t here today so you-
519 Okay.
520 Yeah (*laughs*).
521 It might have happened if Abby had been here.
522 Okay (*laughs*).
523 Yeah.
524 Umm
525 yeah.
526 Okay
so (*looks at the clock*)
bahhhh.
I know.
How is lunch so short?
I know.

527 Okay um
528 I was going to ask you about how the pair structure
was for you.
529 And you brought up that question.
530 Yeah.
531 I was just curious because we had-
532 it was new right? And (then we) brought it up.
533 Um and then you told me that um
534 yeah
535 you felt like it went well.
536 Yeah.
537 I think if we did it in groups, it would have been
slower.
538 Yeah.
539 Yeah.
540 Yeah and I think it would have been easier, too, for
541 more kids to just sort of
be left behind in it
542 mhm
543 because there's not enough to say.
544 Right.
545 Right?
546 It's because it wasn't very group worthy, so it's like
547 yeah
548 they could do it in pairs,
549 yeah
550 you know?
551 So what is your sense?
552 You raised that question of pair versus group
553 Right.
554 and when do we do which?
555 So I guess yeah
556 I mean if it is not very groupworthy then I can
557 have them do pair work.
558 Yeah.
559 I think there's like questions you can ask-
560 yeah, I think that's totally how I would think about it.
561 Like what is there to talk about?
562 Right.
563 And just like,
564 I mean I think one um
565 a nice way to get at that,
566 which we have done some of in the planning we did
together,
567 mhm
568 is doing the math ourselves,
569 mhm
570 together.
571 Mmmhmm.

572 If you and I could find something to talk about
573 right
574 doing the math,
575 then you could expect kids to find something to talk
about.

576 Right.
577 If all we can talk about is
578 “you move the decimal point” ahhhh (*laughs*)

579 Yeah.
580 There might not really be anything to talk about.

581 Right.
582 So like when there is something rich to talk about,
583 right
584 groups need each other right? They need multiple-
585 they need people with different skill sets.
586 They need kids who are good at articulating,
587 kids who are good at listening.
588 They need, you know, all that.

589 Mmhmm.
590 In something like this, I think-
591 yeah I agree. And it is not just for flow reasons,
592 but I think also for learning reasons.

593 Yeah.
594 Like
595 yeah
596 um
597 yeah (.)
598 Yeah yeah.
599 I’m with you on that one.
600 Ummm (8s)
601 okay so there-
602 okay.
603 Hmm (.)
604 I’m trying to figure out what we should take up
605 in the time that we have.
606 Um,
607 I think these two questions (*pointing to her notebook*)
are connected in my brain.

608 The flow?
609 So the ones I wrote down were
610 the flow?
611 right
612 and related to like what we played with
613 yeah
614 in the middle of class.

615 Yeah.
616 And I don’t know how successful that was and I am
sorry if I disrupted your flow (*laughs*).

617 No (*smiles*).

618 Um
619 I like to be able to sort of experiment
620 yeah
621 and play
622 and then we can learn from it and see you know
623 "Err that didn't do any good.
624 yeah
625 Okay."
626 Yeah (*laughs*).
627 Um
628 and this question.
629 "What should I ask at check ins?"
630 Mmmhmm.
631 Um I feel like those are a little bit connected.
632 Okay.
633 Because I - for me um (.)
634 And I don't quite know-
635 (5s) I think you want more opportunities-
636 you know what you did with that group where you
were like uhh
637 "you made an awesome connection."
638 Mmmhmm.
639 Listening to the kid make sense of something?
640 mhm
641 that allowed you to connect with their math thinking.
642 Helped to connect their math thinking to the task,
643 which helps them learn.
644 Mmmhmm.
645 But you can't do that if you are not hearing that from
kids.
646 Right.
647 Right?
648 And you could there because you were.
649 Right.
650 So like
651 I wonder about
652 how we could think about
653 how to get them producing?
654 math,
655 in writing or in talk
656 that then is available for you to do more of that with.
657 Okay.
658 Do you know what I mean?
659 Like um-
660 so, and for me I think that maybe my little experiment
in the middle of class didn't totally work.
661 I don't really remember.
662 But for me, that's connected to
663 what do they think you're expecting from them?

664 What is it supposed to sound like?
665 What is it suppose to look like?
666 Right.
667 So like um-
668 so like what for this sort of 'off-tasky' kind of group,
669 I was wanting them to have like,
670 oh I can say out loud
671 what does this mean?"
672 That's useful participation'
673 right?
674 Okay.
675 I don't have to be like
676 "oh I know the answer."
677 Yeah.
678 Right? But useful participation
679 yeah
680 and good group work,
681 yeah
682 getting that happening can sound like
683 "Does anyone have an idea?"
684 Right.
685 It can sound like
686 um
687 it can sound like "well let's just write it down and see
what happens."
688 Right.
689 It can sound like proposing
690 a wrong idea.
691 Mmmhmm.
692 You know what I mean?
693 Um and I was wondering about ways-
694 and I don't have like
695 a "do this" kind of answer,
696 but I was wondering how they could get more
examples
697 right.
698 of what it sounds like
699 right
700 and what it looks like
701 and what you want them to say.
702 Right.
703 And do.
704 Right.
705 That's like concrete.
706 right
707 Do you guys use those role cards?
708 The orange ones?
709 Lynn: Mmmhmm.
710 Yeah are they orange?

711 So this wasn't even roles today so I don't know if that
would work.

712 But one thing that's on there is those sentence starters.

713 Oh yeah.

714 On the cards there's like

715 in quotes,

716 here's what this can sound like.

717 Mmhmm.

718 Um "does everyone understand?

719 Does anyone have an idea?"

720 So like that kind of like giving them practice

721 saying things

722 right

723 and even being clear like

724 "today I want to hear

725 right

726 the words

727 'does anyone have an idea?'" You will get at first kids

being totally goofy.

728 Yeah.

729 And being like (*exaggerated*) "Does anyone have an

idea?!" but it doesn't make any sense right?

730 I know, yeah (*laughs*).

731 But,

732 what will happen

733 or what I see happen alot

734 is kids do that

735 uh huh

736 and then all of a sudden there is a math conversation

happening.

737 Yeah.

738 Like it started in this joky kind of way,

739 yeah

740 but then someone is like "yeah I have an idea."

741 yeah.

742 And then there's an idea being talked about.

743 yeah

744 Right? And then like "whoa we are talking about math

and we didn't even know it."

745 No, that's a good point.

746 Um because I

747 like the first week of school, I handed out those group

cards.

748 Yeah.

749 And its in the um

750 but in the eight by ten.

751 Yeah.

752 And um so we had it,

753 but then um,
754 you know they're getting used to the roles now
755 yeah
756 so I felt like they didn't need it.
757 But I didn't realize that there are sentence frames on
there
758 and that could help them with conversations,
759 so I feel like that should always be-
760 And maybe in pair work you- like the roles is too
confusing
761 yeah
762 anyway so maybe it's just like some sentence frames
on the board.
763 Yeah.
764 Maybe it is in your launch.
765 Lynn: You could put sentence frames on that word
wall on that
766 Yeah.
767 I have another one of that (*points at the wall*), so I can
put it somewhere else.
768 Or even,
769 I don't know if you guys have played with
participation quizzes.
770 Yeah.
771 You could even do these targeted-
772 I don't know what they are called,
773 but there is like a targeted participation quiz too where
you say like
774 "I am looking for"
775 mhm
776 yeah
777 Yeah. "I am looking for bodies leaning in"
778 which this group (*points*) was not doing at all.
779 Okay.
780 Had they been doing- Shakir had a bunch of math,
781 yeah
782 but he was like this (*leans back and pulls papers off
the table onto her lap*).
783 yeah
784 And I don't think he felt safe to share
785 Right.
786 because he was getting clear messages that those two
guys over there
787 were not
788 yeah
789 invested or that- he was- there was some social risk.
790 yeah
791 Right? Like if he were to do that, he would be taking a
real risk.

792 Yeah.
793 Um so
794 Lynn: I need to (inaudible) (*gets up and leaves*).
795 Thanks for-. so like I'm looking for bodies leaning in
and work in the middle.
796 right
797 I am listening for
798 "Does anyone have an idea" or
799 the word "because"
800 right
801 or whatever is feeling like/ it will support// what's
802 /yeah //yeah happening at the moment.
803 Mmhmm.
804 Um and like give points for it.
805 yeah
806 Make a big deal out of it.
807 okay
808 You know like write it publicly.
809 yeah
810 Like put little quotes around what you are writing
811 mhm
812 showing that you are quoting these kids because they
813 are being awesome.
814 Yeah.
815 Right? Does that make sense?
816 Yeah.
817 I think that might support
818 the flow
819 and sort of the sense-
820 and then as they get into it,
821 they are going to produce stuff.
822 Right.
823 That you can do, you know, that amazing listening
824 you know how to do
825 Right.
826 You will have stuff to listen to.
827 Right.
828 And then they are going to get all of these messages
829 about how smart they are.
830 Yeah.
831 Because they produced something,
832 right
833 they saw you hear it,
834 yeah
835 they saw you take it in and take it seriously
836 yeah
837 and then they are like whoa, you know
838 Yeah.
839 Cool, yeah I like that idea.

836 Cool.
837 Fun fun,
838 and your bell is about to ring
839 and you have advisory
840 and (*bell rings*) ahhhh.
841 We get to learn.
842 We don't get to learn everything all at once,
843 but we get to learn right?
844 Mmmhmm.
845 And participation quiz is something you guys, as a
group, can work on together too right?
846 Mmmhmm.
847 Um.
848 Yeah I haven't-. I think I did it like once or twice so
far.
849 Yeah.
850 It often can support group work.
851 I felt like today it could have been one of those
targeted ones
852 Right.
853 or because it was not group work. Right?
854 mhm
855 But there is like "I still want to hear
856 right
857 this this this."
858 Yeah.
859 Thank you.
860 Yes, of course.
861 So are you going to come in-
862 when are you going to come in?
863 Are you observing?
864 How many times are you gonna observe us?
865 What ends up really happening,
866 I average,
867 or what I'm funded for is like four times
868 for each teacher.
869 What ends up happening usually,
870 is the teachers who really want to make use of me like
ask for me and they get me more (*laughs*)
871 right.
872 um and
873 I try to focus it toward the beginning of the year,
874 so like I can come in more in the fall
875 yeah
876 because that's when it feels like-
877 I don't know-
878 whatever.
879 okay
880 Um, so if you want, if you want more,

881 I can do more.
882 okay.
883 um are you hoping for more?
884 is that why you asked?
885 I'm just wondering,
886 like what should I expect,
887 another cycle of this.
888 I think we get to decide that together.
889 Yeah, and it doesn't always have to be everybody on
890 the same day, like if you
891 if you want, just come on in and hang out with me
892 yeah
893 and not everyone else is in that place yet,
894 I can just come hang out with you,
895 it doesn't have to be everybody.
896 okay
897 So, yeah,
898 so you should let me know- yeah, my favorite thing in
the world is for people to ask for me (*laughs*)
(*to student*) Hi

Kamilah Cycle 2 Planning Conversation

	Kamilah	Mia
1		How you doin?
2		Good!
3		Good, you look great.
4	Thank you.	
5		all glowy and happy
6	((<i>both laugh</i>))	
7		((<i>to Lynn</i>)) Doesn't she?
8		Lynn: Yes she does.
9	(OK, now you're gonna) make me nervous	
10		(<i>laughs</i>) That's what I'm here for,
11		to make you self-conscious
12		(<i>laughs</i>)
13		(.) uuuh, okay!
14		Lynn: Did Kamilah tell you about her exciting week last week?
15		Oh, yeah
16		Kamilah told me nothing (inaudible),
17		what am I missing?
18	I got to meet and talk to Arnie Duncan.	
19		What the hell?
20		How did that happen?
21	I don't even know, like,	
22	I guess	
23	there was this panel and so	
24	they,	

25 I guess Heather was invited?
 26 to go,
 27 and then she didn't want to,
 28 uh huh
 29 so then, um/
 30 Lynn: /(inaudible)
 31 The principal asked me
 32 and I was like, 'okay!' and then,
 33 I didn't know what I was getting myself into,
 34 but it was basically just a panel-
 35 should I sit here?
 36 Here would be great,
 37 or I could move that.
 38 I think I wanna shoot away from the windows so (we
 can get more faces).
 39 Um, that's awesome!
 40 Yeah
 41 Did you get to tell him how it is?
 42 Yeah/
 43 /You told him what's up (claps)!
 44 I told him!
 45 What'd you tell him?
 46 Um,
 47 I mean he basically wanted to have like an honest
 48 "How are, how's common core playing out this year,"
 49 like "What are some
 50 like, is it working,
 51 is it exciting,
 52 is it,
 53 uh huh
 54 you know, your struggles,
 55 your challenges,"
 56 so I was like/
 57 /What'd you tell him! (claps)
 58 Uh, I brought student work,
 59 so I like showed him, like,
 60 you know, it's been like groupwork,
 61 and like, having the kids to like justify and reason has
 been like huge,
 62 and like, um (Mia high-fives Kamilah), yeah!
 63 It was a lot of like,
 64 it was good,
 65 I was like, it's a lot,
 66 but it's like, we're doing a lot of work at the same
 time?
 67 Like, the transition?
 68 And how much work and prep and afterschool time
 we've been spending on this/

69 /Yeah, yeah
70 But, I mean, it's been,
71 we've been having exciting stuff happening inside of
the classroom,
72 and kids are like having math talk and (.)
73 reasoning, and,
74 yeah it was good.
75 Did you tell him how you're doing any of that stuff?
76 Cause that's not the Common Core.
77 Yeah,
78 um
79 I mean, the Common Core makes space for it,
80 right?
81 Yeah, I did (.)
82 Yeah, I talked about groupwork,
83 uh huh
84 um, I didn't say CI though,
85 uh huh
86 but (*laughs*), um
87 Lynn: He wouldn't know what that was (inaudible)
88 (inaudible)
89 That's so cool,
90 who was, who else was there?
91 There were like three other teachers from the district,
and then some other like (inaudible)/
92 Did you know anyone
93 (*Heather comes in*) Heather: Oh, sorry!
94 No, I didn't.
95 Heather: Are you (coming to see me after)? Sorry
96 Yeah, is that okay?
97 (*Door closes*)
98 I was just going to swing by after, at 3:30,
99 when school's out, cuz she and I didn't quite finish
our conversation.
100 Um,
101 what was I saying?
102 I was asking you, uh,
103 if you knew the other teachers.
104 Oh no I didn't.
105 Okay.
106 Did they say cool stuff?
107 Yeah.
108 So we were all just like, talking, and kind of like,
109 yeah, we totally have the same experience, like, yes,
110 you know, (inaudible) (in their head) and (.)
111 Yeah.
112 (Mouths to Kamilah: wow, that's so awesome)
113 Where were you guys?
114 At [local middle school].

115 Uh huh.
 116 I know.
 117 Go you! (*claps*)
 118 Very exciting.
 119 Yeah,
 120 um (.)
 121 So we're basically just gonna talk about tomorrow's
 122 plan,
 123 right?
 124 Yeah,
 125 so what I was thinking we could talk about, um,
 126 and we can do-
 127 we can sort of go as deep as we want to,
 128 mhm
 129 um, or be as quick as we are able to, um
 130 so, the the-
 131 What I'd like us to get to in this conversation
 132 is just get me oriented,
 133 okay
 134 Um,
 135 and
 136 figure out how to set us up for whatever we want to be
 137 able to talk about
 138 in the debrief, like,
 139 where do you want my eyes?
 140 what are you hoping to be thinking about together?
 141 okay
 142 um (.)
 143 Cuz that will help me figure out how to plug in
 144 Okay
 145 in the class
 146 or how to observe,
 147 or what I'm looking at,
 148 yeah
 149 and sort of, taking note of
 150 so that I'm armed to help you with what you want
 151 help with.
 152 Yeah.
 153 Um,
 154 so that, that's sort of the basics.
 155 The fundamental,
 156 yeah
 157 um, to set us up to get something good
 158 yeah
 159 out of the interaction.
 160 And then um, (.)
 and then, we can do as much,
 sort of, thinking,
 or planning,

161 or whatever,
162 around the lesson as you want to or are open to,
163 we can play with it and tweak it and make some
164 decisions,
165 or not,
166 whatever you-
167 showing up as important for you.

168 Okay. (3s)
169 So, I guess (.)
170 well there's one- okay.
171 I guess he's in my first period (inaudible),
172 but um so I don't think-
173 maybe he was there,
174 Manuel, last time you um observed.
175 I remember the name,
176 was he there or was he absent?
177 He was sitting (*points*)/ here/
178 /Yeah/, there (*nods*).
179 Yeah.
180 And um,
181 so we've been trying to figure out-
182 ((*looking at Lynn*)) so he's also in AVID (.)
183 second period.
184 Lynn: mhm
185 ((*looking at Lynn and Mia*)) And he's failing that
186 class
187 (inaudible)
188 ((*looking at Mia*)) I can check.
189 And he's failing my class.
190 He- I think he's failing like every single class except
191 (PE).
192 (inaudible)
193 (inaudible) And, um,
194 so we're trying to figure out how to support him, and
195 (.)
196 um (.)
197 I mean, of course,
198 I don't like the idea of having math support,
199 you know like how we have it here?
200 But, um (.)
201 so we're just trying to figure out like how to support
202 this kid, and like (.)
203 is having him in math support gonna be beneficial?
204 ((*looking at Lynn*)) Because he's failing AVID
205 Lynn: Mhm.
206 ((*looking at Lynn*)) And I don't feel like he's an
207 AVID candidate like for,
208 AVID students need to be kids who are motivated, to
209 like want to-

203 or like, those middle kids, you know?
 204 I think AVID targets those middle kids,
 205 and Manuel is (.
 206 Lynn: (coughs) Excuse me.
 207 Yeah.
 208 So (.
 209 I don't, I don't (know if this is) kind of off topic or
 not,
 210 but,
 211 um
 212 we're trying to figure out-
 213 like, this is like the whole like nother (story)
 (inaudible) decision.
 214 Like should he be in math support?
 215 Lynn: (inaudible)
 216 Mmhmm.
 217 Even though I'm like fully against like having there
 be a math support, but then it's like
 218 (even if) we have that structure in place,
 219 is it gonna help him?
 220 It seems to me,
 221 and I don't feel like I can weigh in on that cause I
 don't know the kid,
 222 yeah
 223 I've seen him only like once, um,
 224 but it seems to me that-
 225 I would hope that that conversation
 226 and that decision would be grounded in some thinking
 around, or some conver- some shared thinking
 227 among people who know him and work with him,
 228 around why we think he's failing.
 229 Uh huh.
 230 Around some- like, what are the barriers
 231 yeah
 232 he's experiencing.
 233 Cuz it feels like some barriers,
 234 um, might be,
 235 sort of supported or addressed in a math support
 environment?
 236 mhm
 237 I sort of suspect when you have a kid who's failing
 everything?
 238 that the barriers aren't about mathematical knowledge
 239 right
 240 or background
 241 right
 242 or at least not solely
 243 Right.

288 and the thing is that he says that he has anxiety?
289 mhm
290 Um, and maybe it's like anxiety over math?
291 mhm
292 But when he's in class, like,
293 there's another student that he talks to,
294 like he starts-
295 like he:-
296 I don't, I don't know if I like hundred percent believe
it.
297 Like,
298 I think he's scared of math and he like,
299 once he sees it he gets
300 you know, afraid,
301 but then I don't see that motivation in him.
302 Well, those could be (very very linked).
303 Yeah.
304 Right.
305 Like, I- again I think for (.)
306 again, I don't know this kid.
307 But I have known kids who have exhibited that kind
of behavior,
308 yeah
309 who I, um
310 I think (.)
311 mhm
312 became so deeply convinced
313 that they were not capable of learning,
314 either in math class
315 yeah
316 or anywhere,
317 or producing anything good,
318 or being smart,
319 and then they became so thoroughly convinced of that
320 that it's just too painful to continually be reminded of
it, so: (.)
321 why- like, why would you try and set yourself up
322 Right
To be disappointed again and again, and to be shown
again/
324 Yeah
325 that you're not good enough
326 right
327 or that you're stupid or whatever.
328 Um, which I feel like,
329 I mean I don't know what clinical anxiety really is,
330 but that is, like that kind of experience?
331 of like sort of fear of that um
332 yeah

333 (3s) sort of, threat to your dignity
334 and your sort of sense of self,
335 um,
336 can very closely correlate to what looks to us like lack
of motivation.

337 Yeah.
338 Right?
339 Because, you know, like why the hell would I invest,
340 Right.
341 you know. And I see it (.)
342 I see it in young kids, you know, it's, it's scary.

343 Mhm (.)
344 So I guess,
345 I guess for tomorrow I can try to like (.)
346 give him some competence, you know, make him feel-
347 like he definitely needs some sort of like
348 Do you know what he's good at yet?
349 Or what he's smart at?

350 (*sighs*) Um? (6s)
351 I mean honestly, like,
352 I mean (like, we've talked, like) 'don't say 'lo::w,'
353 like be more specific on what you mean by 'low' (*air*
quotes)
354 you know like a low student.

355 mhm
356 But like, yesterday we were doing like a patty paper,
357 like, um,
358 you know, like a figuring out what angles are
congruent,
359 and they were like drawing
360 and figuring out matching.
361 And like,
362 he wasn't able to like understand like,
363 that's congruent to that.
364 Like, I guess he doesn't understand like,
365 oh this is matched to that,
366 like he was just (picking) (.)
367 And so I had to-
368 it was just difficult for him to figure out congruent,
369 like he wasn't getting it.
370 what congruent meant?

371 I told-
372 I explained to him what congruent is, and then (*sighs*)
(.)
373 It was like I was having him like prove to me, like oh,
374 can you show me like how that's congruent?
375 And he was doing it, but it wasn't right, so then-
376 I guess (inaudible)
377 I don't know (.)

378 It was (.)

379 I guess what he had on his work

380 was not showing me that he understood congruence?

381 Mhmm.

382 But I felt like the activity that we were doing was very
like,

383 hands on and having him see what (was) congruent?

384 and so it's like worrying me that like,

385 we're doing this and like, figuring out and he still

386 mhm

387 Lynn: (With) the parallel lines through the
transversal?

388 Yeah.

389 Lynn: Mm, kay. Maybe he doesn't understand what
an angle is. (inaudible)

390 Yeah.

391 (*nods*) A lot of kids.

392 Because you know,

393 when you have- and this, for me, was new, I don't-

394 What?

395 This, this idea

396 or this issue came to me through other teachers.

397 Yeah.

398 Um,

399 and then I've seen it a lot since then

400 and been so thankful that it was pointed out to me that
like, (.)

401 because I do know what an angle is?

402 Right

403 it was hard for me to see how you would not know?

404 (*nods*) Yeah.

405 But like, where is the angle?

406 That's true yeah.

407 It's nowhere.

408 Lynn: Right.

409 There is no- there's not a thing I can point to and say
that's the angle.

410 yeah

411 We try,

412 we represent it in diagrams,

413 but then, it's like that non-concreteness?

414 mhm

415 I think, is weird,

416 which is very different than a point or a line, right?

417 Um, because you could say, well like okay a point is
right THERE.

418 Where's the angle?

419 Is it here?

420 So it's, is it, like something like area?

421 Yeah.
422 Lynn: Mhm.
423 Is it,
424 yeah
425 how much space it's taking up?
426 Right, so this idea of an angle as a measure of how,
427 so we were talking before about how open something
428 is?
428 right
429 Like how open is the door, how-
430 like that in itself I think is a sort of abstract? Or less
431 (*punches palm with fist*) uh,
432 less totally obvious and concrete I think,
433 unless we work to make it that way.
433 So I guess I'm coming in assuming that my kids
434 already know this.
434 So then I- I mean now that it/ makes sense/
435 /research shows/ that lots of them don't.
436 Right.
437 So /(inaudible)/
438 /Which/ could underly some things that otherwise
439 you're like,
440 how are you not seeing this?
440 Yeah, when/ (inaudible)/
441 /Because right/ if he's saying
442 if he understands congruence means sameness
443 Right
444 And he does understand that
445 right
446 but he doesn't /understand/
447 right
448 what an angle is
449 Right
450 Then what is the same?
451 Right.
452 He might be looking at something that IS the same.
453 Right
454 Lynn: /(inaudible)/
455 /And saying congruent./
456 Lynn: Like the rays, which are the same length.
457 Right.
458 Lynn: /Or something/
459 /Right/.
460 Or, just you're lining them up,
461 /so/ they're on top of each other, that's the same.
462 Lynn: Right.
463 Yeah
464 Right.

465 But yeah, that's so, so there could be some underlying
thing like that.

466 Okay.

467 Lynn: (You know I) have done a lot um (inaudible)

468 No that's a good,

469 I never really looked at it that way.

470 I didn't either, and someone pointed it out to me and I
was like,

471 oh yeah, that is super hard,

472 like how do you/ (even say)/

473 /Cause, yeah/

474 when- the only way and,

475 and you even notice when I was talking to you,
the only way I can talk about what an angle is is
476 through movement.

477 mhm

478 I can't say what an angle is without moving.

479 Lynn: Without (inaudible) (opens hands into an angle
shape)

480 Right.

481 Yeah. Because it's like-

482 right, I can do this (*swings arms open into an angle
shape*)

483 and say I'm creating an angle

484 right

485 here that it's increasing.

486 Or like I think about a door opening (moves hand
back and forth in a pulling motion),

487 you know what I mean?

488 Or I cu, I could think about holding two straight
things together ((holds two pens together)), and then,
489 you know, rotating them. /You know/

490 /yeah/

491 Lynn: (inaudible)

492 But when it's stable,

493 like, what do you even say.

494 Right.

495 Lynn: Right.

496 Lynn: Or, it really came home to me that they didn't
understand similarity.

497 Lynn: That two things have, have proportional size

498 Lynn: and the angles are congruent,
Lynn: and they wouldn't understand how the angles
499 could be the same in a triangle this big (makes small
triangle shape with fingers)

500 Lynn: and a triangle this big (moves fingers widely
apart). /(inaudible)/

501 /They're not the same,

502 I'm/ looking at them and they look /different.

503 Yeah, what are you talking about,
 504 they look different!/
 505 Lynn: /(They look different). They're the same./
 506 Right.
 507 Yeah.
 508 Lynn: /(inaudible)
 509 /So what is the same about it/
 510 Lynn: What's the same, what's the same about them is
 511 that it's longer
 512 Uh huh.
 513 Lynn: So thinking about the radius.
 514 Yeah.
 515 Uh huh.
 516 Lynn: It's a hard thing to (get).
 517 Lynn: It's some sort of like algebra
 518 Yeah
 519 Lynn: (Making them abstract)
 520 And I like questions like that,
 521 like asking,
 522 what is the same about it?'
 523 Lynn: Yeah.
 524 And what isn't the same about it.
 525 Cause kids then can then sort of find,
 526 like grapple with that,
 527 like how do you describe that thing?
 528 There is a thing that looks the same, /but/
 529 yeah
 530 how can you even describe it right.
 531 Yeah.
 532 Uummm, okay.
 533 So do you have experience-
 534 do you have any-
 535 can you call to your memory right now experience
 536 with things yet that he
 537 IS smart at,
 538 or that you see in him (.)
 539 And it's okay to say no,
 540 cuz that happens.
 541 That doesn't make you a bad teacher I /promise./
 542 ((laughs))
 543 /Yeah./
 544 Umm, I'm trying to think (6s).
 545 I mean in terms of like,
 546 his math skills, right?
 547 or anything
 548 or understanding a way of making sense of things,
 549 or does he know
 550 like the right question to ask
 551 that proves something,

549 or does he-
 550 you know, that sort of 'math'
 551 but like the broad definition of math that involves (.)
 552 finding ways to do it.
 553 yeah
 554 Participating (in practices).
 555 (5s) I guess it's still, I'm, learning more, /I mean it's
 still early
 556 /Yeah, okay.
 557 yeah
 558 That's totally a good answer.
 559 I mean it's an honest answer,
 560 and it's one that I think is constructive
 561 right
 562 for making progress.
 563 So if we want to figure out how to support him
 564 yeah
 565 then sometime-
 566 so, what that might mean
 567 is giving ourselves opportunities to listen
 568 and watch closely.
 569 mhm
 570 And try to learn that.
 571 Cuz you can't assign competence (.)
 572 if you don't know what to assign competence to (so
 that's great)
 573 yeah
 574 So then we can think about- So let's talk about the
 lesson,
 575 more broadly, and then we can think about
 576 what are the opportunities there?
 577 where he might do things
 578 and we can watch him do things.
 579 okay
 580 Or listen or provide opportunities, or/-
 581 (you can)/ think more concretely about (inaudible)
 582 /Okay/...Okay, cool.
 583 So today (.)
 584 This is eighth grade right?
 585 This is eighth grade, yeah. (5s, *flipping through*
curriculum binder)
 586 And that's-
 587 so Heather's third period is also 8th grade?
 588 Lynn: Yeah
 589 Is that right?
 590 Lynn: Mhmm. (7s)
 591 Um (.)
 592 ((*Shifting her laptop toward Mia*)) So what the plan is
 (.)

593 So the kids did this today. ((*Looking at curriculum binder*)).

594 So they had, um-

595 so they're trying to figure out which other measures
were congruent? (.)

596 Um.

597 And this is they

598 they were able to know this because of the patty paper
work that we did yesterday?

599 Lynn: mhm

600 They noticed that- which angles were congruent?

601 So finding the measures of other angles.

602 Lynn: Are they using (vocabulary)

603 Yeah, so then I also had them, like, um,

604 name like what type of angles are in here?

605 Lynn: Mhm.

606 They're vertical angles, which angles are vertical,
607 so they have to write down that stuff too?

608 Um,

609 and then, tomorrow then

610 would be (.)

611 doing the triangle sum conjecture?

612 Lynn: Okay.

613 So having them like,

614 understand that the triangle has a hundred and eighty
degrees?

615 Mhm.

616 And I don't think this is gonna take long (right). (.)

617 I've never done it.

618 So Heather was saying that her experience was that it
didn't take long?

619 Okay

620 But I'm wondering

621 if this gives you an opportunity then, that-

622 coming from what we were just talking about (.)

623 So understanding what an angle is

624 is really central to this making any sense.

625 Yeah.

626 Lynn: Mhm.

627 Right?

628 So I'm wondering what- and given this activity is not
a big time

629 Yeah

630 user? I'm wondering if it gives us room to think about
a way

631 to build in a little sense-making around what an angle
is.

632 Mhmm.

633 Like before they get into this.

634 Before they're trying to line 'em up and see anything
about them,

635 mhm

636 so they know what they're lining up and seeing.

637 Right. (.)

638 So maybe having a discussion, like,
639 about what is an angle?

640 (nods) Ye::ah.

641 "How many angles are in this triangle?
642 How do you know it's an angle."

643 Yeah, Like maybe even- what if there's like a warm
up?

644 I'm just brain storming

645 Uh huh?

646 What if the warm up,
647 or do now or whatever,

648 mhm

649 is like just asking them to "in your own words,
650 explain?
651 what an angle is,
652 and draw a few examples."

653 mhm

654 Um,
655 and then
656 you can have them-
657 you can have a little discussion where they share out
some ideas
658 and you put their diagrams up and then,
659 I think it might be an opportunity to make clear, uh (.)-
660 so there's an opp- anytime we figure out something
that, that it's hard for kids to do?
661 that we didn't realize was hard,
662 it presents us with an opportunity.

663 mhm

664 To assign competence?
665 and make sure that they know that thing that they just
figured out is not trivial,

666 Right.

667 it's hard. Right? And so-
668 and, and calling things out as hard can be super
constructive.

669 mhm

670 And can support kids in situations like (.)
671 Manuel, Miguel- Manuel.

672 Manuel, yeah.

673 Which is it? (laughs)
674 Um, and other kids too.

675 Yeah.

676 Yeah, um,

677 so like even just like saying “well, what words
678 COULD we use to say that,”
679 and like “how could you-
680 where are you pointing to?
681 How do you draw a diagram of something like that.
682 Where are you even pointing at?”
683 yeah
684 And you could even like
685 mess with like-
686 you could intentionally misunderstand people a little
687 bit to give space for other people to misunderstand?
688 Yeah.
689 You know, so if someone says the angle is right here
690 (*drawing on paper*),
691 “oh, so an angle is a curved arc?”
692 Yeah
693 “No! It’s just right there!”
694 “Where? So the angle is this space right here?”
695 Right.
696 “So then that means that (*drawing on paper*)
697 this one is smaller?”
698 Uh huh?
699 (*Mia shows Kamilah her drawing*)
700 You know?
701 Right.
702 Could draw the same angle with
703 Yeah
704 with shorter rays? right,
705 so you mean this one then is smaller?
706 And some of them might say yes,
707 right?
708 Right
709 And so you can surface all that stuff and be like “See,
710 it’s really hard!”
711 Yeah.
712 And you can get them to do this kind of stuff
713 (*opening and closing arms*),
714
715 you know, or be like “Well, what’s the difference
716 between my arms being like this (*holds arms close
717 together*)) and like that (*opens arms farther apart*)?”
718 Yeah.
719 (*opens arms even farther apart*) “Or like that.
720 What’s bigger about this.
721 My arms didn’t change!”
722 Lynn: Yeah.
723 “My body didn’t change.”
724 Yeah.
725 “My shoulders didn’t change.

718 So something changed ((*opens arms wide apart*)),
719 what is it.”
720 Yeah.
721 And so,
722 get them to articulate it, it’s some sort of openness
723 ((*spreads hands*)),
724 or rotation,
725 or-
726 so get- give them some opportunities to make sense of
727 that so that then they’re taking that into here ((*points*
728 *to Kamilah’s lesson plan*)).
729 Mhm.
730 Okay.
731 And you can even call back some of the stuff from
732 congruence that come up yesterday
733 Yeah
734 and say, “So when we were looking at-
735 when we’re holding things on top of each other
736 ((*layers hands on top of each other*)) to see if they’re
737 the same,
738 or seems they’re congruent,
739 it really matters what we’re thinking is the same.”
740 Right, and it doesn’t actually matter if the rays are the
741 same,
742 it doesn’t matter-
743 what else doesn’t matter?
744 Lynn: The vertex. (inaudible)
745 Well you’re gonna line them up to see, right.
746 But, but even if they weren’t lined up,
747 ((*spreads hands apart*)) you know
748 Yeah.
749 What matters is the sort of opening thing.
750 yeah
751 /How/ open (.)
752 What’s the relationship between these two rays
753 around the vertex,
754 yeah
755 that that’s what this is a measure of.
756 Okay.
757 Um (.)
758 That seems kind of cool, okay.
759 Okay.
760 So yeah, we can have that discussion.
761 And so this one-
762 so basically I (cut) out a triangle they cut it up and
763 they break it into three parts?
764 and then
765 Lynn: ((*scooting closer to Kamilah*)) Cause we also
766 did, we did this two ways.

757 Lynn: We did this this way one time, and then one
time we had a (colored pen).

758 Lynn: It involved a lot of coloring. (4s)

759 Lynn: I don't think that they measure them.
(12s, *Lynn and Kamilah are looking at the lesson
materials, Mia is writing in her notebook*)

760 Lynn: (inaudible) do they know what (an acute
triangle is)?

761

762 Some kids do. (18 s)
(*All looking at Kamilah's activity*)

763

764 Lynn: So they have to measure-

765 Lynn: and it takes a while for them to measure with a
protractor.

766 Lynn: That's really hard,

767 Lynn: for them.

768 Yeah, I don't think I wanna (3s)

769 I mean, cause this is like what it is right, they break it
up, and then they make-
770 cause right now my kids understand that it's uh,
771 a line is one hundred eighty degrees.
772 uh huh

773 Um, so they could break it up and just match it up
/like this

774 /And see the line?

775 And see it's a line.

776 And are they doing that with triangles that are
different from each other,
777 so they know it's not just about /(inaudible)

778 Lynn: Yeah, they're supposed to be drawing it on
triangles.

779 Lynn: But this, this lesson comes from um
Discovering Geometry.

780 Uh huh.

781 Lynn: So it's a high school lesson.

782 mhm

783 mhm

784 (.) Okay, so is this an individual activity? They're
doing this on their own?

785 And then comparing with their group to (.)

786 Lynn: They're supposed to have in each group like
four different triangles.

787 Lynn: So each person does a different triangle but
(then) as a group they're

788 Lynn: reaching this conjecture.

789 Mhm. (.)

790 I guess I'm trying to get my-

791 I'm trying to wrap my brain, brain around something
about learning objectives.

792 Or like what (.)

833 Lynn: mhm
834 Right?
835 Um, and the way it's even structured is like
836 there's a blank to fill in.
837 Right.
838 "My goal is to fill in that blank."
839 Yeah.
840 "With the right answer."
841 So,
842 I'm wondering, um-
843 I feel like there ARE good questions, like-
844 I mean even just asking why.
845 Why does this work for any triangle?
846 Can you figure out a triangle that it doesn't work.
847 mhm
848 And why would it not be able to?
849 I feel like that's a hard question?
850 and I don't even know an answer to it?
851 mhm
852 But that's fine with me,
853 like getting kids to talk about a hard question and be
854 like "well, because"-
855 they might even just say things like "well,
856 because they're attached at the corners,
857 you know,
858 if you like make one angle smaller it opens up the
859 other ones."
860 mhm
861 You know, they might like,
862 start to reason around relationships between angles,
863 or um
864 Lynn: It gets at the relationship between the sides, too
865 though. (And those are) complicated.
866 Does it get at the relationship between the sides?
867 Lynn: Well if you open up the angle,
868 Lynn: then the sides don't meet?
869 No what I meant by opening was yeah,
870 so here can I have a-
871 yeah so, if we have a, um,
872 if we have like a triangle like this ((*constructs a*
873 *triangle out of pens*))
874 and we're reasoning around it,
875 we can reason around like
876 "Okay, well let's say"- by open I just meant like make
that angle wider.
Lynn: /(inaudible)/... Okay.
So if I increase that angle,
"Oh look! These two are getting smaller,
Lynn: /I see/

877 /while/ that one is getting bigger.”

878 Mmmm

879 So it’s not like getting me at one eighty,

880 but it’s reasoning around why there would be a
constant value.

881 mhm

882 You know?

883 why is it staying the same?

884 Why is that always the same-

885 even that question.

886 Like, why is it always the same.

887 Um, can you come up with a triangle where you’re
reasonably sure it’s not the same.

888 And they might go to like,

889 “What if you have them so close together here”

890 and then they’d have to figure out “well like,
that angle is so close to 90 that it’s okay that that one
is like two degrees.” ((*demonstrating with pen
triangle*)).

891

892 mhm

893 They’re still adding up. You know,

894 yeah

895 or something like that.

896 Um (.)

897 so anyway that’s where my brain was going.

898 Is there something we can give them to talk about

899 yeah

900 where there can be room for sense making

901 yeah

902 and it’s not just fill in the blank.

903 And the reason why is not because I think it’s wrong
to end up with a fact?

904 But what I worry about is when you end up with a fact
like this

905 that some people walk out with the fact and some
don’t.

906 mhm

907 And some have some sense of what that means,

908 and some it’s just a number that got written down,
and they walk in the next day like nothing ever
happened.

909

910 Yeah.

911 And then they’re not set up with (what you need).

912 Yeah, yeah

913 You know what I mean?

914 (That’s a good point). (4s)

915 So:: (3s)

916 Should we set it up in the way where we have like
questions that they have to answer about it?

917 like in their groups maybe?
 918 Like, you were saying what happens if one angle like
 (.)
 919 is bigger than the other? or (.)
 920 how do the other angles get-
 921 uh huh
 922 or how are the other angles affected when one angle
 increases? or (.)
 923 /what if
 924 /I think it's more of a question like, like- "Okay,
 925 I'm going to ask you guys a question that's really hard
 to answer.
 926 There's no-
 927 I don't even know what the exact right answer would
 be.
 928 But it's an important question to make sense of.
 929 So in your groups, I want you to talk about
 930 why does it make sense,
 931 when you're done with this"-
 932 like you could, you could even be like,
 933 "Step one, get here,
 934 where it's one eighty.
 935 Step two,
 936 now I want you guys to talk about why does it make
 sense that that would be true
 937 yeah
 938 a:lways,
 939 for every triangle in the whole universe."
 940 Yeah.
 941 In the plane, right? ((laughs))
 942 "Why is that true?
 943 Ummm,
 944 and be ready to share your ideas with the class."
 945 So it's not like, answerable necessarily?
 946 /but get them/
 947 /(inaudible)
 948 and- yeah,
 949 and get them,
 950 some of their reasoning out.
 951 Umm
 952 Lynn: Do you think they would need something to
 play with?
 953 To manipulate, yeah.
 954 Lynn: Spaghetti /(inaudible)
 955 /Yeah./ Cause when I was doing that/
 956 /(inaudible)
 957 That made-
 958 yeah, that /helped a lot.
 959 Lynn: /What about spaghetti?

960 Spaghetti?
961 Lynn: (inaudible)
962 Yeah
963 Lynn: (inaudible)
964 I have some, at home.
965 I have the like, linguini ones that are thick
966 That's nice.
967 Yeah.
968 And they could break 'em/
969 Lynn: /(inaudible)/
970 /which is nice too for (making their own triangle size).
971 Lynn: Makes a little bit of a mess, but it's not too bad.
972 Yeah
973 Pretty easy to clean up./
974 /yeah/
975 /As long as they don't walk on it.
976 Lynn: Right. /(inaudible)
977 That could be fun, yeah I don't know if that feels
978 useful to you
979 but I'm wondering if getting them to do-
980 is there a way-
981 yeah
982 I'm just looking for a way to get something to talk
983 about
984 /yeah/
985 some sense making so that some /learning through
986 grappling
987 /yeah/ right
988 is going on.
989 So,
990 when they get the triangle,
991 mhm
992 and I have them cut it up, and I'll say "Break it into
993 three pieces,"
994 mhm
995 do I tell them to put them together?
996 Like how do we get to here?
997 ((all lean in to look at Kamilah's activity))
998 Yeah, it tells them.
999 Lynn: ((reading)) "Arrange them so that their vertices
1000 meet at a point"
I feel like we need to talk about what vertice is too
Uh huh./
/no, (inaudible)/
/(inaudible) vertices is the plural of vertex is also not
at all clear?/ right?
Lynn: /No, it's not at all clear.

1001 It's not at all clear to a lot of people
1002 Yeah, cause why would it be?
1003 mhm
1004 Good ol' english language with all its weird stuff
1005 Lynn: It's actually Latin.
1006 So maybe when we're-
1007 when they do the do now- you know how we're gonna
have that (.)
1008 bringing in the angle and talk about what an angle is,
1009 mhm
1010 and how do you know,
1011 mhm
1012 maybe we can talk about what a vertex is
1013 mhm
1014 and how that
1015 mhm
1016 kinda helps us figure out
1017 Mhm
1018 Lynn: parts of the angle (aside from the vertex)
1019 Yeah,
1020 the vertex and two / (rays)
1021 /and if you have them make it with their body?
1022 like this ((*opening and closing arms*)) or even, you
know, like this way ((*spreading arms out to the side*))
1023 yeah
1024 then they can figure out where is the vertex?
1025 What part of you is the vertex?
1026 "Oh, it's my
1027 center, you know my chest." Um
1028 ((phone rings, Kamilah gets up to answer phone, talks
for a bit about a student))
1029 ((*returning to the table*) Alright.
1030 Okay,
1031 uummm.
1032 Cool. So we're-
1033 so what I'm hearing is some kind of warm up around
1034 getting them making sense of what's an angle and also
bringing in the vocabulary vertex and vertices.
1035 Okay
1036 Right?
1037 Yeah
1038 Um this,
1039 maybe there's some discussion around what an angle
is.
1040 Then there's this ((*points to Kamilah's activity*)).
1041 Kids do it.
1042 It's not that group worthy.
1043 There's not that much to talk about,
1044 really.

1045 I think.
1046 Yeah
1047 Other than helping each other through the directions
1048 yeah
1049 so you can maybe emphasize some, like,
1050 “we’re all in this together” kind of stuff/
1051 yeah
1052 so they can help each other
1053 yeah
1054 and “don’t leave people behind” or something
1055 yeah
1056 And then, some kind of conversation at the end-
1057 some, some seeded conversation that you get groups
to talk about, like
1058 “why would this make sense” and then maybe end
with them sharing out some ideas
1059 yeah
1060 around why it makes sense?
1061 okay
1062 or what did they-
1063
1064 did they figure anything out about why it makes sense,
or wh-,
1065 whether there might be triangles that it doesn’t work
for.
1066 right
1067 And they have the
1068 manipulates to- in that conversation.
1069 Is that what I’m hearing?
1070 Yeah.
1071 The linguini, yeah.
1072 The pasta.
1073 Um, the other question I had is, um,
1074 I have a tough time with participation,
1075 I think I mentioned that before,
1076 mhm
1077 my first period’s really quiet?
1078 mhm
1079 So,
1080 what if,
1081 like when we’re trying to have a discussion,
1082 like what would be your suggestions on how to like,
1083 get them to share their responses
1084 mhm
1085 and participate?
1086 Mhm (.)
1087 By participate do you mean say stuff out loud
1088 yeah
1089 in whole group format?

1090 Or are they doing that in small groups hard, too

1091 Um,

1092 I guess small groups is not as bad, but

1093 I mean,

1094 as a do now like

1095 it's usually like the whole groups style?

1096 yeah

1097 unless I wanna change it up tomorrow and make it,

1098 have them talk in groups

1099 and then whole group?

1100 (.) I'm thinking about what the do now is gonna be,

1101 it's around angles, generating-

1102 okay yeah, what if they get to generate (3s)

1103 Okay, so they're trying to explain what an angle is,

1104 right?

1104 Mhm.

1105 So what if they do that on their own for like,

1106 a minute

1107 or two or something.

1108 And then they share with a partner,

1109 and then what you ask them to share out loud?

1110 is something that they saw their partner do

1111 or something your partner said

1112 that you thought was cool or interesting or useful in

1113 some way.

1113 Okay.

1114 So it's a little less scary cuz they're not sharing their

1115 own work,

1115 yeah

1116 they're sharing someone else's,

1117 right

1118 but you're framing it as a positive thing

1119 right

1120 because they're not also saying, "My partner didn't

1121 know anything."

1121 yeah

1122 Um,

1123 like find- your job is to find something in your

1124 partner's explanation that you think is useful or

1125 interesting/

1124 /yeah/

1125 /or different or whatever.

1126 Okay.

1127 Then, do you think that would (.)

1128 Maybe::

1129 Okay, yeah

1130 get 'em to try it?

1131 Yeah.

1132 Do you feel like-

1133 do you do like
 1134 I have sticks
 1135 /call, cold calling, do you do that/
 1136 Uh huh
 1137 /with them, and how does it feel in that class?
 1138 It's fine,
 1139 /so you could cold calling or whatever, equity sticks/
 1140 yeah
 1141 /with partner work,
 1142 which sometimes can create more safety.
 1143 Okay.
 1144 Um,
 1145 or you could strategically
 1146 call on people depending on whose voice you want /in
 the space
 1147 /right/
 1148 /and who-
 1149 maybe who-
 1150 cause that can also serve to assign competence to the
 partner?
 1151 Lynn: mhm
 1152 So if you've seen
 1153 that there's something cool going on that this kid did
 and they could use some public/
 1154 /yeah/
 1155 /assignment of competence,
 1156 then calling in their partner might be be a constructive
 thing?
 1157 That's just a brainst-
 1158 I'm not like putting that all out there as a good thing
 to do.
 1159 Okay
 1160 I don't know/
 1161 /yeah/.
 1162 No, I was just like trying to/ think of (like)/
 1163 /yeah, no/
 1164 Cause I want them to go deep into the angles,
 1165 I want to make sure we have like a really good /rich
 1166 /yeah/
 1167 /discussion/
 1168 /yeah/
 1169 /about it, so that would be my concern is like
 1170 hopefully getting to that. Um,
 1171 Also, if you have them creating diagrams/
 1172 /yeah/
 1173 /as part of their,
 1174 um, do now?
 1175 Uh huh
 1176 Then you can just take the diagram,

1177 put it under a doc cam, and then ask them something
about it./

1178 /yeah/
1179 /and that might make it safer-
1180 they know what to say/ right?/
1181 /yeah/
1182 /like, like, "What did you mean by this?"
1183 or "I saw you doing this part here,
1184 can you explain to us what you were thinking?"
1185 yeah
1186 Or something, so you get those ideas surfaced/
1187 /okay/
1188 /in a more- in a way that's more structured.
1189 Yeah.
1190 Okay.
1191 Um (.)
1192 cool,
1193 so then the other thing I'm thinking is-
1194 so, so I'm picturing-
1195 I'm trying to picture kids.
1196 And what we want kids doing,
1197 what we want them to look and sound like throughout
the lesson.
1198 So I feel like I have a pretty good sense of this
warmup,
1199 and how we want them.
1200 During this activity ((*pointing to curriculum binder*))
(.)
1201 I'm feeling less clear about it
1202 okay
1203 Not because you're not clear,
1204 yeah
1205 because I'm not clear
1206 partly because I haven't read the damn thing.
1207 Um
1208 No, I mean it's my first time too, so
1209 Look at this picture of kids working together. That's
so (not what this activity is gonna be)
1210 (*laughs*)
1211 Lynn: And there's always one kid in a wheelchair.
1212 I know
1213 Lynn: One of my students asked me one time how
come none of the kids in the, uh, math book had any
logos on their T-Shirts.
1214 I used to be in charge when I was working on
curriculum development of the art?
1215 We contracted with an artist,
1216 and I was in charge of- like he would send me proofs
1217 and I would tell him what we wanted.

1218 yeah
1219 And there were rules,
1220 like we had to have some number of (.)
1221 pieces of art with students with physical disabilities,
1222 we couldn't do logos,
1223 all kinds of crazy rules. (.)
1224 Anyway, um,
1225 for good reason maybe,
1226 mhm
1227 Um (.)
1228 so do you see this as like,
1229 individual work, checking in, getting help with
directions?
1230 Do you see it as pairs
1231 Well if I'm going to have four triangles
1232 oh, right
1233 then I would need groups of four.
1234 So they each- but they each get one,
1235 so if they're doing-
1236 so measuring the angles is individual, right?
1237 Mhm. (5s)
1238 Lynn: Have you shown them how to/ measure
1239 /this is not gonna ever be 180, right?
1240 Lynn: yeah (9s)
1241 how big are these and how do they relate to the size of
the protractor?
1242 Lynn: I don't know, cuz this one calls for them to
draw their own.
1243 Oh.
1244 yeah, cuz this sheet is not in the, um,
1245 thing, so I'm gonna have to create it.
1246 No, they're drawing their own triangles. (.)
1247 right?
1248 Lynn: yeah
1249 mmm
1250 ((reading)) 'Start by drawing different types of
triangles.
1251 Make sure your group has at least one acute and one
obtuse triangle.'
1252 Okay so they can each draw their own.
1253 yeah
1254 make em big
1255 Lynn: gotta make sure (inaudible) they are all
different.
1256 (.) Although a lot of times,
1257 when people think 'triangle',
1258 they think equilateral.
1259 Lynn: yeah
1260 or at least isosceles

1261 right.
1262 Or a right angle
1263 Lynn: oh, right yeah
1264 yeah
1265 (something with the words 'instructions' and 'set up')
1266 Um,
1267 or I can have this already made.
1268 you could. (.)
1269 If they draw their own, I think there's something
1270 about drawing their own that could be important,
1271 maybe,
1272 which is,
1273 people can think this is kind of a trick, like
1274 you want them to get to, 'it's a generalized
1275 phenomenon that works for all triangles'
1276 right?
1277 ((*nods*))
1278 And if you hand them the triangles,
1279 they could think it works for some triangles,
1280 like 'she made some special triangles that have this
1281 special property'
1282 yeah
1283 whereas if they generate themselves,
1284 it could be a little bit more clear that it's - like well,
1285 'I drew it,'
1286 yeah
1287 right?
1288 so,
1289 should I have them use a protractor
1290 or just have them draw big triangles () size.
1291 Oh, you were thinking (.)
1292 Well they don't use the protractor to draw it.
1293 They just draw it with a straight edge, right?
1294 yeah
1295 So, this ((pointing with pen to the curriculum binder)),
1296 the way this is stepped through,
1297 oh I'm sorry I'm remembering what you said.
1298 The way this has the steps
1299 is that they measure it with a protractor,
1300 they add them together numerically,
1301 mhm
1302 then they tear them off and put them in a line.
1303 And I think what I heard you say is you were gonna
1304 skip these two steps.
1305 mhm
1306 Sorry, I'm writing in the book.
1307 no no no no, totally fine
1308 (*laughing*) I'll at least get a pencil.
1309 Um, that you were gonna have them skip these,

1305 and just do the 'create triangles'

1306 yeah

1307 then do something, figure out the relationship of the
three angles together.

1308 yeah

1309 tear off the corners

1310 Lynn: mhm

1311 figure out which parts of the corners are the angles

1312 Lynn: right

1313 ((*laughs*)) and line 'em up.

1314 Like /(inaudible)

1315 /yeah./ I mean I'm fine with doing that too-

1316 Lynn: I think if what you're getting at is the hundred
eighty, you don't need this ((pointing)) /and this is
(inaudible)

1317 /And they never add up to one hundred eighty
anyway.

1318 Lynn: They won't because the protractors aren't that
accurate

1319 /That's a whole different lesson/

1320 /They're not that accurate,/ so they'll add up to one
hundred seventy two

1321 right

1322 a hundred eighty five

1323 yeah

1324 and they won't see those as the same

1325 yeah

1326 Lynn: /some of them will come up with two hundred
twenty five/

1327 /((*laughing*)) (inaudible)

1328 Lynn: yeah

1329 about estimation,

1330 yeah

1331 and what we mean by the same,

1332 yeah

1333 and all that.

1334 yeah

1335 So I think you're skipping one and two, right?

1336 Okay, yeah

1337 Lynn: and they know from that vocabulary exercise
you did that a straight angle is a hundred eighty

1338 yeah

1339 yeah (.)

1340 So a really nice thing,

1341 what I'm liking about this-

1342 and even if some groups forget that, we'll get to 'it's a
straight line' and then you can remind them

1343 yeah

1344 that that- but then again,

1345 there's that thing about the um ((*drawing*)),
1346 like if you have this ((*moving drawing in front of Kamilah*)),
1347 and you say 'this is a hundred and eighty degrees,'
1348 what's the this? (.)
1349 Right?
1350 What does it mean that a line is one hundred eighty
degrees?
1351 right
1352 Lynn: mhm
You- especially if you haven't made sense of an
1353 angle being an opening ((*gestures with her two arms
straight and opening to create an increasing angle*))
1354 yeah
1355 that is a non sensical statement.
1356 right
1357 Lynn: mhm
1358 right, a line is a line,
1359 what the hell are you talking about
1360 right
1361 there's not a hundred and eighty of anything right
there
1362 Lynn: right.
1363 Lynn: there's no degrees at all.
1364 there's no degrees.
1365 What the hell!
1366 What- what's going on?
1367 There's no vertex.
1368 What?!

1369 yeah
1370 I'm confused!

1371 yeah
1372 right?
1373 so there might be opportunities here to make sense of
like, 'well,
1374 where do we see a hundred and eighty degrees,
1375 and what the hell does that mean?'

1376 yeah
1377 'oh, we see it in,
1378 if we imagine this as an opening of the door'

1379 yeah
1380 'the door is all the way open,
1381 it's () all the way there.

1382 yeah
1383 with this movement.

1384 yeah
1385 you know.
1386 So I like that you're cutting out this.

1387 You're getting them to this place where they can
actually have something to make sense around?

1388 mhm

1389 so you're getting to it quicker, which means that this
end of class conversation that we are talking about
might actually happen and have some time

1390 okay

1391 right?

1392 yeah

1393 So then, this is sort of like, there's some individual
parts,

1394 draw the triangle

1395 yeah

1396 figure out how to cut it out, tear off, line it up,
but then we are getting back together and we're
saying,

1397 'what are we seeing?'

1398 'oh there's this same thing happening with all of
these.'

1400 right

1401 'how do we describe that thing (when we see that)

1402 so have them draw out their own triangles then?

1403 Lynn: /mhm/

1404 /mhm/ I think so.

1405 okay

1406 why not? why would you/ () time/ and make all those
copies?

1407 Lynn: /(inaudible)/

1408 right, with a ruler.

1409 yeah

1410 ((Phone rings))

1411 As long as they are using a straight edge and it has
three vertices, right?

1412 ((Kamilah is on the phone and Mia and Lynn are
(on the phone) talking))

1413 (inaudible)

1414 Lynn: and hopefully they won't make it like so acute
that it can be () they'll make it big.

1415 ((Kamilah returns))

1416 well really acute would be okay, right?

1417 Lynn: yeah, but if they drew it really small and it was
really acute, then it would be really hard to tear that
/you know what I mean?/

1418 /oh no, take up the paper/

1419 you want them to like

1420 I'll give them and eight by ten

1421 yeah, and say 'use a lot of it'

1422 yeah

1423 Lynn: yeah

1424 Cool.

1425 I just looked at the clock and we almost have to be done.

1426 So (.)

1427 Okay, so you think this would take the whole period?

1428 Cuz I was gonna get into the

1429 the next part ((*flipping the page in her binder*)),

1430 which is the exterior

1431 mhm

1432 but

1433 Lynn: I think if you're gonna have them explore

1434 yeah

1435 Lynn: with pasta (.)

1436 it's gonna take a while

1437 yeah

1438 yeah, and I think if you ask them a good meaty question, like 'does this work for all triangles'

1439 yeah

1440 or 'why does it make sense that it would?'

1441 yeah

1442 I think also your do now conversation might take a little bit of time

1443 yeah

1444 And I think it's a re::ally important one.

1445 yeah

1446 I think it's a big thing that's like- supporting kids to make sense of it is totally not impossible,

1447 yeah

1448 but no one ever does ((*laughing*))

1449 yeah

1450 because we just don't know

1451 yeah

1452 Lynn: right

1453 ((*laughing*)) and so they go through years and years and years and they get to be seniors in high school /()don't know what an angle is.

1454 Lynn: (cause nobody said)- shocked that they don't understand what an angle is

1455 right.

1456 And you can see how it happens. (.)

1457 Um,

1458 Yeah I think so.

1459 That feels like a full day to me.

1460 Does it feel full to you?

1461 yeah?

1462 I guess- yeah

1463 Lynn: you might want to have the next one ready, just in case

1464 oh, why?

1465 Lynn: you might want to have the next one ready just
in case.

1466 mhm

1467 Lynn: in case they all understand completely what an
angle is and they solve a hundred and eighty degrees
and they're all happy.

1468 But I feel like-

1469 like, um,

1470 in that ending conversation around, like,

1471 'why does it make sense?

1472 that it would work for all of them?'

1473 there's a lot of opportunities, if you have time, which
you might not,

1474 but there are a lot of opportunities

1475 to let kids share their thinking publicly?

1476 and to assign competence to it, because it's a really
hard thing to explain?

1477 mhm

1478 right?

1479 yeah

1480 and make sense of, so any progress they make in
making sense of it

1481 is opportunity to like surface

1482 yeah

1483 sense making publicly

1484 yeah

1485 and be like 'that's what that looks like,' right?

1486 yeah

1487 um,

1488 so I feel like you could just sort of take up whatever
time you have with that

1489 right

1490 and it would be a really good use of time ((*bell rings*))

1491 yeah maybe if I'm like-

1492 if I really like have extra time,

1493 I could just have them reflect,

1494 maybe give some questions to reflect on the activity?

1495 uh huh

1496 and then we can discuss,

1497 their thoughts,

1498 like,

1499 some of the stuff

1500 ((*nodding*))

1501 () about 'what does that mean?'

1502 and 'does it work for every triangle?'

1503 or (.)

1504 yeah

1505 mhm ((*nodding*))

1506 So I could see it playing out ().

1507 well the question I would ask you if we had time,

1508 and I'll just put it out there, is um,

1509 in that ending discussion,

1510 what do we need to do?

1511 to support those conversations to be equitable and
useful.

1512 ((*nodding*)) yeah

1513 How do we need to,

1514 structure the conversation,

1515 provide support,

1516 is it a roles thing,

1517 do we,

1518 do you support, like I see ((*pointing at the wall*))
beautiful awesome sentence starters up there?

1519 yeah

1520 do you support by telling them what you wanna hear?

1521 right

1522 and like reinforcing it?

1523 maybe I can make a list of questions that like-

1524 like pocket questions? that I could like

1525 use?

1526 ((*nodding*)) you could but I'm less concerned about
what to do if they get stuck

1527 as I was about like what participation do you need
from them to make sure that everyone can benefit
from those conversations.

1528 Do you know what I mean?

1529 mhm

1530 Like, somebody could just say,

1531 'well

1532 it makes sense because bla bla bla' and they'll just be
like 'okay'

1533 yeah

1534 and nobody pushes further,

1535 and nobody evaluates,

1536 and nobody tried to find a new way to explain it,
you know what I mean?

1537 yeah

1538 um, so: (.)

1539 or like how do you make it, um,

1540 maybe there's a product expectation in it like,

1541 they're grappling with this question and as a team
their job is to come up with a way to explain
why it makes sense OR if they think it doesn't, why-

1542 how you can show that it doesn't always work or
something like that

1543

1544 mhm

1545 and make sure everyone in your group is ready to explain that?

1546 And maybe, I don't know if there's safety for this yet?

1547 I don't know how it's feeling, but like

1548 maybe you can say 'I'm gonna randomly call on one member from each group

1549 to share your group's ideas with the class.'

1550 mhm

1551 Maybe given what you told me about Manuel that might not be safe right now.

1552 mhm. ((writing))

1553 So being able to explain that like, um,

1554 how it works, like how (.)

1555 /a triangle

1556 /I think we'll/- yeah, let's figure out what the question is we're asking, we haven't quite done that.

1557 ((Moves notebook closer to Kamilah and picks up pen)) So I think the question is, what is the question?

1558 What are you ()

1559 Being able to explain how a triangle equals a hundred and eighty degrees.

1560 Lynn: how the sum of the angles is a hundred and eighty degrees for any triangle.

1561 ((writing)) why:: is the sum of the angles (.)

1562 and I think for me the answer is-

1563 the question is not so much why is it a hundred eighty degrees,

1564 but why is it the same

1565 Lynn: the same, right

1566 ((writing)) why is the sum of the angles

1567 of a triangle

1568 the same,

1569 or any triangle,

1570 always the same? ((looks up from writing))

1571 mhm

1572 like why does that make sense?

1573 mhm

1574 even when triangles are really different. Or, uh,

1575 And then that's where I'm gonna bring in the pastas too

1576 yeah. ((writing))

1577 ((writing)) So maybe like (4s) (inaudible)

1578 Or I feel like maybe, you could even,

1579 so there's also this question ((showing Kamilah her notebook)), which is similar,

1580 but is asking for a counter example.

1581 Can you find an example of a triangle where it doesn't work?

1582 I feel like this could be one that everyone can try to
do?

1583 mhm

1584 Lynn: mhm

1585 right?

1586 Um (.)

1587 if people don't know how to approach this question,
which is kind of a big crazy question.

1588 Lynn: mhm

1589 so I feel like you could almost present them with both
of these,

1590 and say, 'pick one.

1591 and work on it and be ready to explain what your team
figures out.'

1592 Lynn: mhm

1593 Or something like that.

1594 So this would probably be like have them draw more
triangles and say if they could-

1595 Well, they would do it with the spaghettis,
1596 right?

1597 But then how would they put that in a line?

1598 Oh,

1599 I see what you're saying. (.)

1600 Good question.

1601 Good question.

1602 Lynn: except we're not asking them to prove that it's
one eighty, we're asking them to prove () why is it
the same. ()

1603 Like you mean the-

1604 You mean in this question here? (*pointing to
notebook*)

1605 Lynn: yeah, I'm just trying to

1606 yeah, not really prove, I don't know how to prove it,
1607 but I think it makes sense to around why would it
work, why would that work,

1608 um,

1609 and for me what I would be happy with would not be
a proof, but would be like,

1610 that issue of like, 'oh cuz when you change one angle
it automatically changes/

1611 /yeah?

1612 others in the opposite direction,'

1613 right, or

1614 that kind of thinking

1615 yeah

1616 but you're right, this one would be really hard to do.

1617 You're right.

1618 they'd have to do

1619 without measuring with a protractor,

1620 right,
1621 which I was thinking they would ()
1622 Lynn: but if they made ()
1623 Lynn: two set of sides that were the same,
1624 Lynn: out of the pasta, right,
1625 Lynn: and then tried to create two different triangles
with those sides,
1626 Lynn: they're not gonna be able to do it. (.)
1627 Lynn: yes they can (). nevermind.
1628 what's in your brain () yet?
1629 so should I still do the pasta thing?
1630 Do you think that will be important still?
1631 I think if they're playing with this question, yeah.
1632 okay
yeah, like what happens when you change things in
1633 triangles could be one of those pocket questions you
have
1634 yeah
1635 like,
1636 u:::h
1637 what happens when one angle gets bigger
1638 Lynn: mhm
1639 right. (4s)
1640 I don't know, I feel like it's a little risky,
1641 so I want to put out there that this whole conversation
could totally flop.
1642 mhm
1643 Lynn: or maybe () isn't gonna work.
1644 Lynn: Or they're not expecting to
1645 yeah
1646 Lynn: find an answer, they just want to think about
the idea.
1647 what do you figure out when you try to work on that.
1648 I- I feel like maybe it's not quite worded right yet, or
it's not quite-
1649 I don't quite have a clear sense yet of exactly what the
question is?
1650 That I'm posing them, and that's why it feels risky.
1651 mhm
1652 um
1653 Lynn: what does your question say?
1654 () why is the sum of the angles of any triangle always
the same?
1655 Lynn: how about if you say, instead that () the sum of
the angles in all our triangles were the same, so you
think that this is always true? (.)
1656 wait, I'm sorry, say it again?
1657 Lynn: the sum of the angles in all the triangles that we
made

1658 mhm
 1659 Lynn: is the same.
 1660 Lynn: a hundred and eighty degrees.
 1661 Lynn: Is the same. Do you think this is always true?
 1662 mhm
 1663 why or why not?
 1664 That might be a much simpler question
 1665 Lynn: yeah
 1666 and then with the why or why not added on the end,
 1667 that IS this question, right,
 1668 but it's in a way that's,
 1669 yeah, I think that's much more-
 1670 ((*touching Kamilah's arm*)) Does that feel better to
 you?
 1671 mhm
 1672 I feel like (*video ends here*)

Kamilah Cycle 2 Debrief Conversation

Kamilah	Mia
1	Yeah grab your notebook.
2	I have my notebook. (.)
3	Woo! (inaudible)
4	Teachers work hard!
5	I know.
6	(<i>laughs</i>)
7	Crazy
8	I know,
9	it's amazing.
10	It's amazing. (.)
11	Okay so
12	You left this thing on (<i>points to voice recorder</i>) and them my second period was going on and I looked down and it was still recording
13	<i>laughs</i>
14	<i>laughs</i>
15	And then I left Aya's class and I left it in there (<i>laughs</i>)-
16	it's too much
17	but we can only do our best right?
18	mhm
19	And that will have to be good enough.
20	Um okay so:;
21	let me just get back in my head (3s)
22	Umm (6s)
23	so I'm just going to restate what I remember you telling me
24	that we wanted to talk about?
25	and then we can sort of revisit,

26 given what we did and what happened
27 (to student) (no no not today)
28 what do we want to- what do we want to-
29 how do we want to structure our conversation
30 so that it feels maximally useful and whatever,
31 for whatever we're going to do next.
32 mhm
33 Um so you wanted some help thinking about Manuel.
34 mhm
35 I think once again I don't have much for you. (.)
36 I think that I was attending to other things,
37 because he went over there (*points*) right?
38 No he tried/ to go over there/
39 /He wanted to/
40 and then you brought him back.
41 yeah
42 Umm (.)
43 so, I apologize.
44 (shakes head no)
45 I feel like my intention was sort of (*moves hand*),
46 in other spaces.
47 mhm
48 So
49 maybe th- I can come and actually focus on him for a
50 day
51 mhm
52 at some point
53 if that's useful or especially- yeah
54 yeah so we can see if that feels useful. Um (4s)
55 I'm trying to think if I have- have anything, maybe.
56 U:m (3s)
57 um so we did a lot of thinking together in our
58 planning around angles and trying to help kids make
59 sense of what angles are?
60 and how that might support their work.
61 So I think we could sort of reflect on that together?
62 like what did we try?
63 What did we think about?
64 What did we learn from what we tried?
65 And like what do we- what do we think the kids are
66 taking from it?
67 So we- we talked a little at the end of class
68 mhm
69 about maybe looking at their exit tickets together?
70 mhm mhm
71 um
72 which (they'll seem) like it might help us.
73 mhm
74 U:m (.)

71 and then I had a sort of metapoint that I wanted to
make about um-

72 uh Lynn's bringing- coming up in a minute she's
going to bring copies (*taps paper on table*)-

73 do you remember that lesson planning template?

74 um that we've worked on- on the- on the uh follow-up
day?

75 It was like the bare- like had all the boxes in response
to these kind of questions. (*shows her a paper*)

76 I think so, yeah.

77 Yeah?

78 I felt like the planning that you and I did together for
this lesson was so beautifully-

79 like I think- I think it was a really nice model?
80 of lesson planning in particular ways
81 that I was thinking that maybe relating it to that
82 template might help you,
83 continue it and also share it with your group,
84 mhm
85 when you guys are working- planning together.
86 mhm
87 Because I think there's certain kinds of thinking that
88 we got to do together
89 that were awesome,
90 I think.
91 mhm
92 Like around the warm-up,
93 uh huh
94 like well what the hell do we want them learning?
95 Right
96 And um
97 and what does it mean like- like what questions do we
98 have to ask to try to get at that?
99 Yeah
100 How do we structure it?
101 You- we got to think about like,
102 the partner structure- like
103 how do we get them talking?
104 Because that talking will be important for this
105 learning,
106 you know what I mean?
107 mhm
108 And so like the- and- and you had to do some
109 adjusting to our plan for the end
110 which often happens, right?
111 (*Someone walks in and says something*) No worries,
112 hi!
113 so it's not that everything that we planned like played
114 out exactly how we planned it,

108 that's not the point,
109 but I feel like you had a really principled
110 understanding?
111 of what you were doing and why you were doing it
112 through the whole lesson,
113 that I feel like helped me feel really grounded in the
114 lesson.
115 And it helped me to think about-
116 like I was free to think about how- what kids were
117 doing
118 Umm
119 Right
120 because we knew what we wanted them to be doing
121 and why
122 Yeah
123 Right?
124 You knew what you wanted them learning,
125 mhm
126 which focused my attention as a (.)
127 well as an observer, but also as an instructor to the
128 extent that I was
129 playing that /role/ a little bit too right?
130 /Yeah/ yeah
131 Um (.)
132 so I just think that's super powerful,
133 and I'm wondering if you could harness that,
134 because it didn't take us a lot of time right?
135 mhm
136 One of the things that happens with that lesson
137 planning thing is that people are like "Mwreeh (hand
138 gesture)
139 Yeah
140 this is so huge, it's too much!"
141 We didn't spend that much time,
142 mhm
143 right?
144 Right
145 We had a conversation,
we talked about some other stuff and then we were
like-
really asked some pointed questions /of ourselves
/Right, where/ we wanna go
Yeah
Yeah
Yeah like what would we do and why- and remember
that like a-
we were thinking about the prompt for the end of class

146 and we were very grounded in like trying to figure out
what's the right thing to ask,
147 mhm
148 that's very grounded in-
149 'well what do we want them making sense of'
150 Right
151 and which thing is going to get them there
152 and remember we weren't quite finding words and
Lynn found the right words
153 Yeah
154 but it was all grounded in what we want them,
155 mhm
156 getting out of it
157 Right
158 Right,
159 so I just think that's super powerful and I- and I- I um-
160 and the more that you and your team can kind of take
that up
161 as like a habit of planning? (.)
162 um and recognize that it- how much leverage it gets
you
163 I think that would be awesome.
164 So the- um (distracted by someone at the door) she's
got keys.
165 It's not locked right?
166 yeah
167 (inaudible) walking in.
168 It's not locked Lynn!
169 She'll figure it out, she'll get in here somehow. (.)
170 Anyway
171 so she's bringing that so we can look at that a little bit.
Um (3s)
172 okay, so given all that,
173 I would like to hear from you,
174 given what happened in the lesson today
175 Yeah
176 like what do you want-
177 what do you want us to focus on in this conversation?
What do you hope to walk away with
178 out of this conversation? (*Lynn sits down*)
179 Oh gosh
180 It's a hard question
181 I know
182 super hard
183 Lynn: That was a fun class
184 (inaudible)
185 Yeah
186 Umm (3s)

187 I don't know. I think like looking at their responses
would be like

188 *(Mia points to copies; Lynn hands them to Mia)*

189 Oh

190 Thank you

191 looking at

192 like what they wrote for their exit ticket would be
helpful.

193 Yeah

194 Could we look at that?

195 Totally

196 Okay (gets up)

197 Yeah (4s).

198 Oh and I want to be a little transparent,
199 can we talk a little bit about the uh- the um-
200 the opening discussion?

201 Mhm

202 That I- that you so beautifully let me step in with
(points to board)

203 (chuckles) (inaudible)

204 um

205 because uh

206 I want to share with you and be transparent about why
I wanted to do that

207 and what I was trying to do,
208 and I don't think all of it necessarily was great work
but I just what to be clear about what-
209 why-
210 the why's.

211 Um is that okay?

212 Mhm (nods).

213 So why uh-

214 So like again it was grounded in- because you were so
clear about what you wanted them learning
215 we had that conversation where we really uncovered
this thing about angles

216 Right

217 Right?

218 So I knew that we wanted kids making sense of what
angles are not in a like (.)

219 U::h we wanted them like using their own words
220 and we had talked about (hand motion) this motion
kind of around

221 Right

222 kind of idea that we felt like was important

223 Right

224 for kids to be making sense of it.
225 So- and then you were surfacing,
226 their thinking,

227 beautifully,
 228 but it wasn't getting written down?
 229 mhm
 230 so I wanted it on the board
 231 Mm right (points)
 232 because I wanted it to be a resource
 233 for- for many things.
 234 One for assigning competence (points to finger on
 hand)
 235 because when it's up there (points to board)
 236 Yeah
 237 we're able to go back to it
 238 Yeah
 239 and say "Oh yeah, this round idea (hand motions) is
 super important
 240 and look Guadalupe had that too.
 241 u- you know what I mean- and like pull (pulling
 gesture) with their names.
 242 I love that!
 243 I also used it on my- when I did my third period I did
 the same thing
 244 Uh huh
 245 Yeah
 246 How did it feel?
 247 It was good.
 248 Cool
 249 Yeah they- I couldn't tell that they felt like "Oh
 250 she's putting what I said up there,"
 251 you know like feeling competent or whatever.
 252 Yeah
 253 And um (.)
 254 even for ME
 255 because there were things being said and I forget
 256 Yeah
 257 you know like I needed like a refresher on what was
 said before and like
 258 going back /to what they were saying/
 259 /You can't keep all that in your head/
 260 yeah, no way!
 261 Plus it does this beautiful thing, I was saying this to
 Lynn earlier
 262 that I love- it gives me pleasure
 263 where like
 264 nobody in the room offered a complete beautiful,
 perfect, articulation,
 265 because it's hard
 266 but together they did.
 267 Right
 268 Right, so we could pull the pieces

269 pieces, yeah
270 and we got this example of why we're better together.
271 mhm
272 Right "and you said something smart and you said
something else smart and you said something else
smart" and when we put those all together we get this
more complete
273 Right
274 deeper understanding
275 which I feel like is a
276 Yeah
277 those nuggets are awesome
278 No yeah
279 Lynn: Especially that group where they're not
inclined to talk to each other
280 yeah (laughs)
281 Lynn: for them to know that these pieces are all there
282 Yeah
283 Lynn: right?
284 Yeah
285
286 and no one including Victoria or whatever her name is
had them all.
287 Right,
288 Right
289 she had a part of it,
290 she did have part of it
291 and other people had parts /right?/
292 /Right/
293 but we needed all of those together,
294 so that was
Lynn: (and so so Tony) went to the restroom in the
295 middle of that because he had a good part but he
wouldn't say it.
296 Yeah?
297 Lynn: Yeah
298 no, that kid is really smart
299 mhm
300 Um
301 yeah.
302 (4s) Okay, so um
303 yeah like I said I was noticing when I was up there?
304 how much I wished I had your knowledge,
305 (laughs)
306 of the kids,
307 right? Because it was really uncomfortable for me
308 to be leading a discussion like that
309 and not knowing
310 the history of this group of kids together.

311 Right
312 Because I didn't- I mean it was a couple of
313 exceptions, so I knew- cause you've told me that
314 Victoria tends to like
315 claim a lot of status
316 Yeah
317 um and that um
318 you know, you were concerned about Manuel.
319 I knew that.
320 but then there were all these other kids in the room
321 and I didn't know
322 and like I wanted to know-
323 mhm
324 I wanted to know
325 and I bet in like third period you got to do
326 more powerful work with that
327 Right
328 because you know them right?
329 right
330 So like you know
331 Guadalupe had that around thing (.)
332 mhm
333 I don't know is she- like
334 it could be th- cause that was a super important idea
335 and it could be,
336 that taking that from her and naming it as hers
337 was like a powerful
338 mhm
339 social move in the class
340 Yeah
341 Lynn: mhm
342 or it could've been like "Eh she always says smart
343 stuff."
344 Yeah
345 I don't know.
346 No she usually- yeah
347 So but as- just as an example,
348 so I was just reminded of how much I wished I could
349 think with that information that you do have and you
350 CAN think with.
351 Right
352 You know, like you can really be intentional
353 Yeah
354 about like
355 not just the content you want out of those
356 contributions
357 Yeah
358 but also the- the sort of
359 class culture dynamics

352 Yeah
 353 you want out of those /contributions
 354 /Yeah/ yeah yeah.
 355 No I mean definitely they-
 356 she had her moment there,
 357 but I feel like
 358 luckily I have been able to like see smartness from all
 of'em
 359 Ye::ah
 360 you know? So it's like
 361 I know that Guadalupe was capable of
 362 Yeah of course /yeah
 363 /you know/
 364 saying that,
 365 like it wasn't a shock to me?
 366 Yeah
 367 but at the same time for her to like um
 368 I don't think- I think she got picked
 369 right it wasn't just- like she didn't raise her hand.
 370 Well it started with your- the pair structure
 371 Right
 372 and I was her partner
 373 Oh right
 374 so I got /to do it
 375 because I was with her
 376 /oh right that's what it was/ Uhuh
 377 but if you had known that she had that idea from
 listening to her
 378 and some other kid was her partner,
 379 mhm
 380 you could've cold called the other kid
 381 Right
 382 like you don't have to do the sticks
 383 Right
 384 you can cold call
 385 Yeah
 386 for those reasons,
 387 especially when you have the um,
 388 share what your partner said,
 389 mhm
 390 kind of thing
 391 mhm
 392 um and it particular if it's framed as like 'share the
 smart or interesting stuff your partner said'
 393 so that they're not being invited to say "My partner
 didn't know"
 394 Right
 395 (laughs)
 396 Lynn: I thought that structure worked really well

397 Lynn: cause they were willing to talk about what their
partner said

398 Lynn: in a much more (.)

399 Lynn: definitive way

400 mhm

401 Lynn: than they did about their own work.

402 And I think they feel a little bit more confident saying

403 Lynn: Exactly

404 that and then

405 but it feels good to have someone else say your idea
right?

406 Yeah

407 feels to hear another voice

408 say that you did something

409 yeah

410 mathematical.

411 yeah

412 Lynn: mhm

413 Yeah. (.)

414 cool and then- and we talked about also the um-
that there's this interesting challenge where they're
415 not wanting to speak (.)

416 in the public- like in the whole class discussions

417 Yeah

418 but they are totally willing to generate words

419 Right

420 Right? They were writing

421 Right

422 readily.

423 Yeah

424 I was really surprised given the fact that they were
like not speaking

425 Right

426 I was surprised that when you were like 'write an exit
ticket' they were like

427 "Okay!"

428 and I saw all these "because"

429 and like-

430 kids like not being all minimal about it

431 Yeah

432 but actually like writing things

433 Yeah

434 um

435 Maybe because it's the routine too we've been doing
that.

436 Yeah which means you've supported that routine
really well I think

437 um,

438 which is awesome (.)

439 that's powerful
440 cuz that means they're walking out of the room
441 with some mathematical thinking
442 mhm
443 you know?
444 Not walking out of the room with like-
445 and we just did some stuff and cleaned up
446 yeah
447 you know?
448 Lynn: right
449 Which is awesome,
450 I really love that.
451 So should we look at those?
452 uh huh
453 and figure out like what are kids-
454 what are we trying to think about with them.
455 We're trying to think about what are kids
456 understanding about-
457 how are kids making sense of this whole, angles and
458 triangles sum thing together
459 Yeah.
460 This is Tony.
461 Okay
462 "Yes, because you need 180 to make a triangle"
463 Okay
464 Lynn: And you can see he crossed out this which was
465 actually good work
466 Oh that was his do now / with the- where he drew the
467 um
468 Lynn: /Yeah where he drew the arc/
469 He drew an arc
470 and was calling that the angle
471 Why did he scribble it?
472 Lynn: Because he thought it was wrong because I
473 asked him questions about it.
474 Isn't that interesting?
475 Lynn: And then I told him that I thought it was really
476 interesting he says "You mean I was right?" and I said
477 "Yeah."
478 Ya::h
479 Yeah
480 I wonder about letting him out of the room. (.)
481 I wish he'd been here
482 Lynn: I wish he'd been /here too
483 /Yeah/ I know,
484 but he told me it was an emergency so I wasn't
485 Yeah
486 I mean
487 You definitely don't want to get- mess /with/ that

481 /Yeah/ yeah
482 (laughs) worse things can happen I can tell you a story
483 but I won't
484 Lynn: (laughs)
485 Ummm,
486 (*reading*) "angle is the degree of rotation" okay.
487 "I think all triangles add up to 180" no reason yet
488 this is Andy
489 no justification, okay.
490 And then Abdon
491 Lynn: Andy's a bit of a puzzle to me.
492 So the do-now what is an angle
493 "an angle looks like straight line maybe with a break"
494 Lynn: Ohh
495 Something about- does it say measure?
496 (*reading*) "A measured line that is"
497 "Wiggly?"
498 What's that say?
499 Usually?
500 usually part of a shape." Huh,
501 part of a shape.
502 So that was another thing I realized was that we
503 hadn't really thought about was we were talking in the
504 do-now about angles?
505 Right
506 in space?
507 Yeah
508 and then they were seeing them as
509 a part of a triangle
510 Right
511 and they look a little different maybe?
512 Right
513 and I was curious
514 like how is that mapping onto this for them
515 Yeah
516 Lynn: Somebody else /said /part of a shape,
517 Lynn: I think it was Teresa
518 /mmm/ One thing I did in third period because I think
519 that was hard for them to see,
520 was um
521 I had- I- with a marker
522 when I was like showing them the
523 movements kind of like what I did with first period
524 uh huh uh huh
525 and putting up from the original to like
526 uh huh uh huh
527 putting all angles together
528 I put an arc
529 when it was originally like-

526 the original triangle
527 Yeah
528 so they could see the three triangles and then put all
the angles together
529 Uhuh uhuh uhuh
530 Lynn: mhm
531 Cuz some kids were having a hard time in third
period, um,
532 I had to like run around too-
533 was that they weren't putting the angles together
534 like the vertices.
535 That's why I made you ro-
536 do you remember I asked you to put it back into a
triangle in front of them?
537 mhm
538 Because I was wondering what they were thinking,
539 I didn't know,
540 but what they were thinking
541 Right
542 was the relationship between that thing they were
looking at
543 Right
544 and a triangle
545 Right
546 Right?
547 Yeah
548 and I don't know that it did anything good for them
but um
549 Yeah
550 that sounds really smart
551 and I was also wondering-
552 oh,
553 the sentence
554 "A straight line IS 180 degrees"
555 I was worried a little bit about
556 because that-
557 how does this- I was wondering
558 how does this relate
559 to what we were talking about an angle is
560 Uh huh
561 because unless I have a sense that there's like a point
562 Yeah
563 that there's a vertex
564 and that we've maybe started from here and opened
565 Right
566 then this feels like just a whole different thing
567 Yeah
568 that feels nothing like that
569 mhm

570 right?
 571 That we talked about this with their hands?
 572 so it made me wish that in the opening conversation
 maybe
 573 we had take in their hands and gone all the way
 574 Right
 575 O::::h yeah
 576 to flat
 577 Lynn: That's- yeah
 578 That would've been cool
 579 That would've been cool yeah (inaudible)
 580 Lynn: Cuz Joshua in the other class was saying "It's a
 half a circle," and that got us the/ idea of it goes
 around
 581 /Yeah/
 582 /Yeah yeah/
 583 /Yeah I had/
 584 Lynn: like a rotation
 585 /Yeah/
 586 /Yeah/ because we did transformations before this
 587 Yeah
 588 so my kids do know like 180 degrees and
 589 Yeah
 590 and 360 and
 591 so
 592 Yeah
 593 in my third period I had kids saying like
 594 "Yeah it makes a half circle."
 595 You did transformations before this so they have
 rotation!
 596 Yeah
 597 Lynn: That's what I was /saying this morning/
 598 /That's awesome.
 599 Lynn: was I was wondering about the order of that
 600 Lynn: /doing rotations before this/
 601 /That's awesome./
 602 I think that really supports what we were trying to do.
 603 Lynn: Okay
 604 That's why it's in the unit (*laughing*).
 605 Remember when were like "Why is this in here?"
 606 Lynn: "Why is this in here?" Yeah
 607 I feel like that-
 608 I mean I don't know if that's what the people were
 thinking but I feel like that does support it
 609 Lynn: I /don't think anybody's thinking that/
 610 /and I feel like your kids-
 611 (laughs)
 612 your kids were more ready than I expected them to be
 613 to- to- to name the

614 opening.
615 It still felt a good- it didn't feel like a waste of time
616 Yeah
617 Lynn: Not at all
618 but it was um- I felt like they were more on board than
I was necessarily expecting
619 Yeah
620 with that?
621 and maybe it comes from having done the
transformations before this
622 Yeah
623 That's interesting.
624 Huh
625 cool.
626 Um anyway,
627 so we were looking at this
628 so "I think it will be"- "it will always be true because
the angles of all triangles add up to 180."
629 So "I think it's true because it's true"
630 is basically what this person said
631 Yeah
632 Lynn: Yeah (laughs)
633 Yeah
634 Cool (laughs).
635 We got some work to do (on what justification is
really)
636 Lynn: (laughs) Which person, was that Abdon?
637 Yeah that's Abdon.
638 Uh huh (laughs)
639 awesome.
640 Okay
641 so two here-
642 Lynn: He's one of our great mathematical thinkers/
643 /?Like what/ kind of a stupid ass question
644 because it IS."
645 "Do you think that angles in triangles add up to 180
degrees?"
646 "No, because different angles have different degrees."
647 This was Shakir yeah
648 um (.)
649 I'm almost happier with that
650 Lynn: Yeah
651 Yeah
652 Right?
653 Lynn: Right.
654 Because it tells me he's actually thinking
655 Lynn: /Right/
656 /Right/
657 of

658 the pieces involved
659 Yeah
660 Lynn: Right /instead of saying/
661 /and there is no reason/ that you would really believe
it yet
662 Lynn: Right
663 Right?
664 Lynn: Right instead of saying it's a fact that I learned
/so it's a fact/
665 /Right right right/
666 so this tells me that he's reasoning around
667 well tria- angles can be different
668 Lynn: Right
669 Right? Triangles can look different from each other
670 so they can have different angles,
671 so why would it always be true?
672 Okay
673 cool.
674 Umm
675 Lynn: (on a plane)
676 Uh who's this, Alea?
677 Yeah
678 Yeah?
679 Yeah
680 Uh those kids with tiny handwriting
681 I know, I know
682 "I don't know.
683 I guess the way you placed them could add up
differently."
684 hm
685 Okay
686 "Yes you can make a triangle 180 degrees but you
could also make it less than 180 degrees"
687 Victoria
688 Lynn: Okay
689 I love it when high status kids are wrong!
690 Yeah
691 (laughs)
692 Right?
693 But she was like willing to
694 like make a statement right?
695 Yeah
696 Bold statement,
697 she did not say why.
698 Uh "Yes because each of the lines may make 180
degrees," "may,"
699 who's this,
700 do you know?
701 I think it's Teresa,

746 remember
747 she came in late.
748 But this is a different response than the people sitting
with her.
749 Wasn't she sitting over there?
750 Lynn: Mhm
751 Yeah
752 She was the one who was sitting over there
753 and all /her group were
754 I don't under- understand what happened between
them.
755 /I don't know why Tony/ was like not-
756 Lynn: I don't either
757 Okay
758 So /the rest of her group/ said "Yes because yes"
basically right?
759 right
760 And she said no.
761 so that means that she's actually created this on her
own
762 Lynn: /(he was trying to)
763 Yeah
764 Right?
765 Yeah
766 And who knows how random it was or not
767 Yeah
768 but
769 Yeah
770 she definitely took it up
771 Yeah
772 and didn't just write down what someone else said
773 Yeah
774 cause it (inaudible)
775 she really felt that way.
776 Yeah
777 Guadalupe:: "Do you think the angles in (inaudible)
why or why not?"
778 "No because a triangle's angles can have a large
number and when added together, be more than a
hundred eighty degrees"
779 So she said "No (inaudible)"
780 Which is very intuitive
781 right?
782 Mhm
783 like you can change 'em,
784 you can make the angles bigger
785 yeah
786 so why would it add up to 180
787 yeah

788 so because we didn't yet
789 get the time or do the thing with spaghetti
790 Right
791 they didn't get to see that yes
792 yeah
793 but when wa- make one bigger /what/ happens to the
794 others
795 Lynn: /(inaudible)/
796 Yeah
797 Lynn: Right
798 which
799 you could choose to go back to or not.
800 Yeah
801 Or maybe you could do-
802 you could even do like a little
803 Lynn: I think
804 warm-up kind of discussion about it?
805 with- you could put spaghetti under the
806 Yeah
807 doc cam
808 Lynn: I think there's also maybe an applet.
809 Lynn: I would have /to look. If I we do that/ that
810 would-
811 /Oh yeah
812 I'm sure there is/
813 Lynn: and so you could project it
814 See how it's
815 Lynn: with a triangle that
816 Yeah
817 Lynn: if you pull one point-
818 Lynn: it- probably with Geogebra
819 Oh yeah
820 yeah
821 Lynn: Right?
822 I mean you could even do it in word or anything
823 Yeah
824 like where you can take corners
825 Lynn: Right
826 and just pull 'em.
827 It doesn't even have to measure the angles for you
828 Right
829 you can see- you can ask
830 well like when I pull this over here
831 what happened to that angle?
832 What happened to these two angles?
833 Yeah
834 Lynn: Right if you do it in geogebra it will give you
835 the sum
836 Yeah

834 Lynn: and it will show you that the sum is constant. (.)
835 Lynn: but yeah.
836 Yeah I- so my third period was having the same thing
too,
837 they were saying like “Yeah a bigger triangle would
be greater than one eighty”
838 So what I did is- we had a- we made a big triangle
839 Bigger in area they were thinking?
840 Bigger in area, yeah.
841 Ah
842 So then,
843 we’re like “Okay, why don’t we try this big triangle
then?”
844 So angles and area are still getting conflated a little bit
845 Yeah
846 Cool.
847 good to know
848 so then um,
849 we broke that up
850 and then I was like- and then we- I shut- they didn’t-
851 I just did it up here
852 Yeah
853 I was like here’s a bigger one
854 let’s try that
855 and then we did and like
856 “Oh look here are the angles and”
857 Uh huh
858 and they’re like “Hmm,”
859 just kind of like (laughs) were thinking.
860 Did they do an exit ticket too?
861 Yeah they did so we can look at that too
862 Oh okay,
863 cool
864 and the same exit ticket
865 Lynn: Oh
866 Oh Manuel,
867 we don’t want to miss him.
868 “I think you can make another type of triangle.”
869 You totally could.
870 Lynn: Oh he’s thinking
871 Yeah!
872 I mean I think this is really
873 And she wasn’t here today
874 Lynn: and /he/ did make him cut out a triangle
875 /Okay/
876 And what?
877 Lynn: He cut out a triangle

922 and not- and I don't think you need to frame the exit
tickets like it's a misconception?

923 but like "I see you guys are making sense of this, and
you're totally right!

924 You can make a triangle look different" Right?

925 "You can take

926 Yeah

927 a triangle and you can-

928 you can take an angle,

929 and you can make it bigger,

930 so it seems really logical that then it would add up to
more

931 Yeah

932 so let's play with that

933 Yeah

934 and let's see what does happen." You know what I
mean?

935 Yeah

936 So you're connecting it back to their thinking

937 Yeah

938 um,

939 so they can kind of hook in

940 and be like "Well that's where I am with that."

941 Yeah

942 You know what I mean?

943 Yeah

944 (.) And I think that uh-

945 I just want to say because I was so impressed with it
and I want to just

946 say it before we run out of time, (.)

947 I think that the extent to which you were so clear
about what you wanted them learning

948 and making sense of

949 and what it needed to sort of sound like

950 was super powerful.

951

952 In the beginning?

953 Yeah, in the whole-

954 in the whole lesson.

955 I think you had it in the beginning

956 Uhuh

957 we knew-

958 we knew what we wanted that opening discussion to
do

959 and what it should sound like

960 mhm

961 kind of right?

962 And then you knew-

963 what we- we didn't know what it would look like,

964 I think we had some unsureness what this exit ticket-
like how they were gonna respond

965 Yeah

966 we didn't know that

967 Yeah

968 but we knew we wanted them thinking

969 about what goes on in this triangle,

970 in triangles when you change them

971 Yeah

972 and why?

973 Right?

974 So because you knew that,

975 I think it just set you up to do-

976 to like marshall their learning in a powerful way

977 that then leaves you

978 equiped to take if forward in a powerful way too.

979 mhm

980 So just-

981 I'm just saying that so we can like keep it

982 Yes

983 do that again

984 Okay

985 do that more (laughs)

986 (laughs)

987 You know what I mean?

988 And sometimes it's so easy, especially when we're
rushed

989 Yeah

990 to just like

991 "What's the next lesson?

992 How do we do it?

993 What are the parts?"

994 Right

995 without ever getting ourselves

996 Yeah

997 to "Well wait,

998 what do we want them learning?"

999 Yeah

1000 Lynn: mhm

1001 and I think um- I was telling-

1002 I think before you came in Lynn, I was telling

1003 Kamilah that I think

1004 the thinking that we did lesson planning was so (.)

1005 we thought about ea- each part of the lesson in a really

1006 principled way

1007 and it didn't take us that long.

1008 Lynn: mhm

1009 We just had to ask the right questions.

1010 Yeah

1009 Right?
1010 We had to be like-
1011 we had to- an- and being clear with ourselves about
1012 “Well, what do we want them learning?”
1013 drove all of the other decisions,
1014 so it wasn’t like “Well, should we do thi::s
1015 or should we do that?”
1016 /Yeah/
1017 Lynn: /Right/
1018 “I don’t know. That’s my (time) dadada” You know?
1019 Yeah
1020 We did have this back and forth,
1021 because we knew what we needed.
1022 Lynn: No I think it was very /clear/
1023 You know what I mean?
1024 Lynn: which parts of the lesson you didn’t need to do
1025 Lynn: to get to what you wanted,
1026 Lynn: right?
1027 Yeah right.
1028 Lynn: (I feel) that is helpful
1029 Right,
1030 should we measure the angles or not,
1031 we have a reason to answer
1032 Right
1033 a way to answer that question
1034 Right
1035 cause we’re like “Well, what do we want them
learning”
1036 /Yeah/
1037 Lynn: /Right/
1038 “and does it support that?
1039 Nope,
1040 okay cut it out.”
1041 Lynn: Right
1042 Yeah
1043 Right?
1044 Yeah
1045 So I think um
1046 Yeah because I didn’t realize
1047 like-
1048 I mean I thought they’d understand-
1049 you I didn’t like- hearing them
1050 tell me what an angle is-
1051 it was just like surprising to hear
1052 what they were saying
1053 Uh huh
1054 you know cuz I’m assuming that they know
1055 and they like,
1056 understand it

1057 Yeah
 1058 and how it works
 1059 Yeah
 1060 you know?
 1061 Lynn: Yeah
 1062 and it's like
 1063 they don't (*laughs*)
 1064 Yeah
 1065 And so it's hard- it was just like an eye-opening for
 me
 1066 because I'm coming in assuming that my kids know
 1067 Yeah
 1068 what this is
 1069 Yeah
 1070 and what it means.
 1071 Yeah,
 1072 well a lot of grown-ups don't know what that is
 1073 Yeah
 1074 Lynn: Nope
 1075 Well they- it's both
 1076 they don't
 1077 and they had lots of good ideas
 1078 Right
 1079 right?
 1080 They couldn't figure out how they all fit together
 1081 Right
 1082 but they all had some sense
 1083 Right
 1084 they had some sense that could be used
 1085 Right
 1086 Right?
 1087 Yeah
 1088 Um (.)
 1089 yeah.
 1090 So yeah,
 1091 I think a meta point for you guys as a planning team
 1092 is that you can do that kind of planning routinely.
 1093 It doesn't take- I mean I think people feel like, "This
 takes so long,
 1094 we don't have time!"
 1095 Lynn: /It doesn't/ yeah.
 1096 but it doesn't have to.
 1097 Like if we get good at asking ourselves the right
 questions
 1098 it doesn't actually have to.
 1099 It can be pretty like
 1100 Right
 1101 like "Where are we trying to go,
 1102 what's our goal?"

1103 Yeah "What's our goal?"
1104 Yeah
1105 and like if- so if there's a decision to be make
1106 "Well, where are we trying to go?"
1107 mhm
1108 Lynn: Right.
1109 Lynn: and it also will help you,
1110 Lynn: you know cause there's so much in this new
1111 curriculum,
1112 Lynn: there's so much stuff
1113 Yeah
1114 Lynn: right? It will help you get rid of
1115 Lynn: all that extra fluff,
1116 Lynn: that you don't need.
1117 mhm
1118 And that would drive you insane!
1119 Yeah
1120 Lynn: Trying to teach angles with a protractor is a
1121 nightmare and-
1122 Yeah
1123 Lynn: They don't know don't have to do it to get the
1124 point you're trying to make.
1125 Right and they could do that in a different lesson
1126 when that's the point.
1127 Lynn: They can do that in /high school when they
1128 have to/
1129 /Right right/ right. Or like and Aya too
1130 was doing a FAL,
1131 like a Formative Assessment Lesson thing that was
1132 from the binder
1133 but it had like all these different pieces
1134 and she was able say well like,
1135 "Okay too much.
1136 what do I want them getting?"
1137 Right
1138 "Which parts of this get at that?"
1139 Right
1140 Done.
1141 Right
1142 Your lesson just got simplified twenty thousand times
1143 and way more powerful
1144 and /it took like two minutes
of thinking, right?/
Lynn: /And there was-
Lynn: and there was/ plenty of material, it wasn't like
"Oh, I'm not going to have enough for them to do."
Lynn: There was tons.
Oh no there was tons
and there always is.

1145 I feel like I can run classes on one question
1146 becau- if those questions are good or deep enough,
1147 right
1148 because there's always room to make sense of what's
1149 happening
1150 and to share our sense making and learn from each
1151 other.
1152 Yeah I wish I taught (the last class) this way too.
1153 Yeah
1154 Lynn: Yeah
1155 Yeah /we didn't have time for that/ (anything the way
1156 we ran it)
1157 Lynn: /Yeah yeah/ we probably wouldn't have had
1158 time for the pasta
1159 I know.
1160 Yeah
1161 Lynn: You know?
1162 Yeah
1163 So did good thing you forgot it. (laughs)
1164 Lynn: But I think
1165 Yeah
1166 Lynn: I think it would be a fun follow up
1167 Yeah
1168 Lynn: but probably not tomorrow
1169 Well she might do a- she was saying she might do like
1170 a warm up
1171 /I think I'll just/ do it- yeah
1172 a /demonstration/ (thing)
1173 /maybe up here/
1174 Lynn: I have a feeling we're going to have um light
1175 attendance tomorrow
1176 Who? Oh light attendance
1177 Oh
1178 and the parade's tomorrow too
1179 Lynn: That's why
1180 Yeah,
1181 I remember last year- no two years ago
1182 Yeah
1183 /from that they want/- there were- kids didn't come to
1184 school on the parade,
1185 /they went to the parade yeah
1186 Lynn: /It's supposed to rain tomorrow./ /Right that's
1187 why I think I (inaudible) I don't think, not cause of
1188 Halloween
1189 Oh the Giant's parade is not today
1190 Lynn: Yeah no it's /tomorrow/
1191 /tomorrow/
1192 Oh (inaudible)
1193 And two years ago I remember

1184 kids did not show up to school.
 1185 And it's Halloween
 1186 on parade day yeah
 1187 Although a lot of times I think kids especially younger
 ones want to /come to school on Halloween
 1188 Lynn: /They want to go to school on Halloween
 1189 Yeah
 1190 Lynn: (and the After School Center is doing a big
 thing in the afternoon now) but I think / (cause a lot of
 them won't come)
 1191 /They want to come in costume they want to
 1192 Lynn: except it's supposed to rain so (.)
 1193 Lynn: Gonna rain on the Giant's parade
 1194 Okay so how are you feeling?
 1195 (inaudible) yeah
 1196 Lynn: I've got /to run to advisory/
 1197 /Are you feeling like you're taking/ away something
 1198 Yeah
 1199 you want to be taking away?
 1200 No,
 1201 yeah of course,
 1202 yeah!
 1203 Okay (bell rings)
 1204 Ah
 1205 Lynn: Thank you Friend
 1206 Thank /you!/
 1207 /Okay so/ the next time what we're going to take up-
 1208 I feel like the thing that we didn't totally take up,
 1209 but I'm going to write this down so I don't forget
 1210 Yeah
 1211 Next time what I wanted to think with you about,
 1212 if you want to,
 1213 is how we can capitalize on that good sense-making
 they're doing
 1214 and create more talk out loud
 1215 Okay (.)
 1216 yeah
 1217 (.) I mean I don't think- actually
 1218 we don't need to wait until next time.
 1219 I mean I think you have ideas,
 1220 already
 1221 Oh yeah
 1222 of things you're going to play with
 1223 Yeah
 1224 so let's check
 1225 Yeah
 1226 in and see how that's going
 1227 Yeah
 1228 and see if that feels like a thing /we could (inaudible)/

1229 /Cause/ the things that we used-
 1230 the strategies did work.
 1231 I mean like having them share out with a partner
 1232 and then picking sticks
 1233 and (.)
 1234 what else did we do?
 1235 I also think the more that that /kind of thing happen/
 1236 /Oh/ having them write down what they're saying,
 1237 that was huge too yeah.
 1238 Yeah I was just going to say
 1239 I think /that/ same thing,
 1240 I think the more that happens,
 1241 where they see-
 1242 "I spoke out loud and I got to feel smart."
 1243 /Yeah/ yeah
 1244 and my ideas got to be part of the lesson
 1245 Yeah
 1246 they'll want to do that more often
 1247 Yeah
 1248 it'll become like a (.)
 1249 a thing they want to participate in
 1250 Yeah
 1251 You know what I mean?
 1252 Yeah
 1253 I think
 1254 Yeah
 1255 maybe,
 1256 we'll see.
 1257 Yeah
 1258 Awesome,
 1259 thank you so much!
 1260 Yes
 1261 I learned a lot
 1262 and I'm
 1263 I know /it was fun! (laugh)/
 1264 /loving to get/ to know your kids.
 1265 I had a good ti::me!
 1266 Yeah
 1267 I miss teaching!
 1268 I was just like-
 1269 yeah it was really cool.
 1270 I'm leaving this with you,
 1271 and I want to- I want to- and I- I want you guys to end
 1272 up with a stack of copies of this
 1273 in the binders you plan with.
 1274 Ahh
 1275 okay
 1276 So when you're planning
 Right

1277 you can just like grab it and scribble in it.
 1278 Okay
 1279 If that's useful
 1280 Yeah
 1281 cause I think you're making sense of planning in a
 way that could be really powerful for your team.
 1282 Okay,
 1283 cool.
 1284 Um
 1285 so, yeah
 1286 So I'll get my stuff
 1287 out of your way
 1288 so you can teach.
 1289 Well it's advisory
 1290 Oh right.
 1291 Oh right right.

Kamilah Cycle 3 Planning Conversation

Kamilah

Mia

1 play it from there, I don't want to like
 2 have this ready
 3 and then this, this is what I do next,
 4 and then this is what I do next
 5 and that's what I do next, y
 6 ou know, like
 7 Oh, do you mean project it like on a prepared slide?
 8 yeah
 9 O:::h, I see.
 10 Yeah yeah yeah.
 11 /Mhm
 12 /and I want it to just like look and sound more organic
 and it's just gonna look
 13 different
 14 gotcha
 15 the kids are gonna feel like I'm like
 16 putting a show on
 17 and I don't want them to feel that way,
 18 like I want them to do what I usually do.
 19 So a lot of time what I do,
 20 so I also,
 21 well I don't know- I think people are just so different,
 22 like my colleagues and I are different about this
 23 yeah
 24 you can tell from this morning.
 25 My-
 26 I never do a multiple abilities launch that is previously
 written.
 27 mhm

28 Or, like I'll have it in my notes,
29 right
30 for myself
31 right
32 I've thought about it ahead of time,
33 I create it.
34 but you write it down
35 I write it while I'm talking
36 right.
37 But I do-
38 I write it in a way that they can see it,
39 so that it's like,
40 not just my words
41 yeah
42 that can-
43 so the kids can be like 'bla bla bla bla'
44 right
45 but somehow like supporting it visually.
46 right
47 Um,
48 I never do it on powerpoint.
49 Usually I do it like-
50 Yeah, I used to do it old school,
51 on the um
52 yeah
53 overhead projector
54 yeah
55 with the transparencies is how I always did it.
56 yeah
57 And I would write a new one
58 for four different classes.
59 right
60 like if I'm doing the same exact multiple abilities
(*laughing*),
61 right
62 just cause I need to write it.
63 right. yes
64 And like I do that also with the CI group,
65 like I have notes from last year,
66 for like
67 if I do the course again,
68 I have notes
69 right
70 for the multiple abilities launch that I use for this task
71 right
72 but like-
73 and other facilitators
74 do that differently.
75 They take their notes from last year and they use 'em

76 and they talk through 'em
77 and it works for them,
78 but for me I have to like recreate it each time
79 or else it feels- I don't feel as connected to it
80 and I don't feel authentic or something?
81 mhm
82 So it sounds like maybe you're having
83 yeah
84 a similar kind of thing.
85 Yeah
86 I think so, yeah.
87 Yeah, for me too.
88 yeah
89 And the way that Marcel did it
90 here today, totally worked for him
91 right
92 wouldn't work for me.
93 right.
94 yeah
95 No. (3s)
96 Yeah.
97 Or I don't know that I always feel that way about
98 roles.
99 Like sometimes I put the roles on the task card
100 mhm
101 Um, ((eating))(.
102 So you wanna talk me through your lesson again?
103 Cause I forget?
104 yeah
105 or what it-where you went to
106 after we talked?
107 so I just added multiple abilities
108 you created it already?
109 yeah yeah
110 can you read it for me?
111 yeah, so one is 'think outside the box',
112 like I /know it's pretty-
113 what does that mean?
114 like,
115 because
116 for them
117 to get to that point five, right?
118 Like
119 uh huh
120 I feel like they're so like
121 thinking that the table is all that there is. right?
122 mhm
123 but it's like thinking outside of that,
like there could be more possibilities.

124 I mean, I don't know how to word that
 125 mhm
 126 but I think that's something that just,
 127 it's very-
 128 no I think that's totally smart,
 129 so maybe,
 130 is it something like, um (6s)
 131 is there something there about creativity or about
 132 generating ideas you haven't heard before,
 133 or
 134 um
 135 finding new ways
 136 to think about things
 137 yeah
 138 I mean all those things could be on there. (4s)
 139 uh huh
 140 cool.
 141 yeah,
 142 and then other ones,
 143 use different representations to justify your thinking.
 144 (4s)
 145 K. Keep reading.
 146 I might have a suggestions for that one, but I'll see
 147 Making connections between different representations
 148 ok
 149 and then making sense of those connections,
 150 like what does that mean.
 151 ok, mhm
 152 that's what I have so far.
 153 OK
 154 so four.
 155 Great,
 156 but let's take that second one
 157 the using different representations
 158 mhm
 159 yeah
 160 (.) there's a lot of different smart things that are all
 161 inside of there.
 162 right?
 163 uh huh
 164 Can we say what they are?
 165 so that we have more smart things that have been
 166 named?
 like the types of representations?
 yeah, but in particular, so let's think about this
 problem
 or this- what we're asking them to do.
 So they're gonna have to

167 understand the relationship between-
168 they're gonna have to compare- like understand the
relation-
169 the similarities and differences maybe?
170 between what we can learn from a table and a graph,
171 right?
172 Or something like that.
173 mhm
174 Right? like we talked about that the table is like a
subset-
175 holds a subset of the solutions.
176 A graph shows
177 a representation of continuous solutions, right?
178 and the table shows only some of them.
179 right?
180 right? so
181 yeah
182 kids are gonna have to make sense of that.
183 yeah
184 or what we can see in a graph
185 that we can't see in a table.
186 or something like that?
187 mhm
188 um,
189 they're gonna have to- so what was they way you
worded it originally?
190 use different representations to justify your thinking.
191 mhm.
192 so they're gonna have to um, (.)
193 and what they are being asked is,
194 'is there a point of intersection' right?
195 right
196 or find it
197 or prove that there isn't one.
198 prove it, right.
199 uh huh.
200 So they're gonna have to
201 understand?
202 or they're going to have to
203 make sense of um
204 point of intersection
205 in a table, in a graph, and in a rule.
206 wait, I'm sorry,
207 can you repeat that again?
208 I said they're gonna have to make sense
209 of what a point of intersection is
210 yeah
211 in a -
212 I said,

213 one of the ones- remember the last one was
 214 make sense of those connections,
 215 and what does that mean.
 216 That's kind of where I was going.
 217 So there's different sense making going on here,
 218 right?
 219 there's making sense of what is the intersection,
 220 where do we see it in the table,
 221 what's an intersection on a graph?
 222 What's an intersection in a rule,
 223 right?
 224 or in the rules.
 224 mhm
 225 And then there's connections-
 226 what are the connections?
 227 Let's talk about that.
 228 What connections do they- are they gonna
 229 Like see that like
 230 that that intersection on a graph can also be
 231 represented in a table.
 232 so the intersection IS the connection, is what you're
 233 saying.
 234 ok,
 235 mhm.
 236 like to see it in all representations /the
 237 point of intersection
 238 /So we can just do that.
 239 so
 240 Cause that's more specific than make connections
 241 right
 242 it's a particular kind of connection, right?
 243 So they're gonna have to
 244 make sense of the
 245 point of intersection
 246 in a table,
 247 in a graph,
 248 in a rule, (9s)
 249 or in a rule, in the rules
 250 or equations
 251 or whatever you guys are calling them.
 252 Um, (.)
 253 mhm (.)
 254 Read em to me again?
 255 your other ones?
 256 um,
 257 making connections between different representations
 258 and make sense of point of intersection in different
 259 representations,
 260 what does that mean? (3s)

258 So I keep feeling- tell me -
 259 you don't have to agree with this
 260 but I'm having the compulsion that I want to hear the
 261 words table, graph, and equations,
 262 or rules
 263 rather /than just different representations
 264 /should I-/ Ok
 265 or maybe having them in parentheses or something,
 266 like I want them itemized
 267 ok
 268 because they're different,
 269 but I don't know, if your kids are totally know what it
 270 mea-
 271 right
 272 what different representations /mean really well?
 273 /right, yeah yeah yeah/ no, I think it would be good to
 274 have it, yeah.
 275 um
 276 cause it will be language that they're familiar with.
 277 OK (5s)
 278 cause like some kids, for example,
 279 if you're seeing them like separate abilities, like (.)
 280 one kid might really make sense of it in a table,
 281 and one kid might really make sense of it in a graph,
 282 and those will be different.
 283 that's not just one thing.
 284 right
 285 right, those are different things
 286 right
 287 so somehow like articulating them as different
 288 is kind of nice because it opens up the space for lots of
 289 different
 290 yeah
 291 ((aside)) thank you.
 292 the more it can feel like different, um,
 293 like cuz part of the purpose
 294 of the multiple abilities launch is to convince them
 295 that there's so much up there
 296 right
 297 and some of it they're good at.
 298 right
 299 right.
 300 um, (6s)
 301 Okay, what else do they have to do.
 302 They have to (.)
 oh, graph!
 mhm
 right, like
 they have to be able to graph accurately

303 because they're gonna need their accurate graphs,
 right?
 304 (31s) there's calculations in there with um
 305 non integer values, right?
 306 mhm
 307 (4s) they're gonna have to
 308 the fractions,
 309 yeah.
 310 should I put that in too.
 311 mhm
 312 um, (4s)
 313 compute...
 314 you could say-
 315 depending on what words-
 316 so you want a balance between it sounds fancy
 and the kids know what you're talking about
 317 ((laughs))
 318 right.
 319 yeah.
 320 um, so
 321 you COULD say, if it- something like
 322 'evaluate expressions with non integer values?'
 323 cuz that sounds super fancy
 324 yeah
 325 and then if you want to use that language you could,
 326 and then say
 327 what that means.
 328 OR you could use different language.
 329 You could say,
 330 whatever language will work for your kids around
 that.
 331 Um, (3s)
 332 compute with rational numbers,
 333 such as fractions,
 334 decimals (inaudible)
 335 mhm ((sounds of typing))
 336 there's a whole bunch of stuff around explaining?
 337 Explaining (4s)-
 338 explaining what you see in each representation,
 339 or something like that? ((15s))
 340 What is the task card looking like at this point, or-
 341 yeah (5s)
 342 (inaudible) title what is a solution
 343 ((18s quiet, reading))
 344 um (.)
 345 so there's something around, um, (5s)
 346 using representations to justify,
 347 or using representations in an explanation.
 348 mhm

349 So it's not just like building them
 350 and doing stuff with them,
 351 but being able to /fold them into your explanation
 352 /explain it/ yeah
 353 right?
 354 that's a smart thing.
 355 should we add that in?
 356 to the task
 357 sure.
 358 so
 359 No no no, it's already there,
 360 I'm saying.
 361 Because you said 'demonstrate your thinking'
 362 and then when everyone is able to present your
 reasoning/
 363 /oh ex-
 364 I was thinking about adding it to the multiple abilities
 list
 365 Oh!
 366 right
 367 oh, right right,
 368 yeah yeah
 369 it's an ability in there
 370 ((someone else says something)) yeah thank you
 371 thank you! And we're still here.
 372 We're here till 3:30.
 373 yeah, ok, thank you.
 374 um yeah, I did put that-
 375 I did have it earlier,
 376 was 'use different representations to justify your
 reasoning.'
 377 ok, cool, sorry
 378 mhm,
 379 awesome
 380 mm ((11s, typing))
 381 yeah, and if it comes after this,
 382 you can just say in your language 'these same
 representations'
 383 mhm
 384 not only are you gonna-
 385 not only are you going to explain- I mean these might
 be redundant,
 386 I don't really know.
 387 You can decide what works for you.
 388 But you're going to have to explain them
 389 and you're going to have to help- use them to help
 you make an argument, right?
 390 mhm
 391 Cool, okay,

30 it was interesting because there was a lot of confusion,
31 but I feel like I have to tell myself that the confusion
was good.

32 uh huh!

33 Um,
34 Heather helped me to understand a thing that I think I
35 was seeing in your class
36 that we could be more clear about.

36 yeah
37 on the task card.

38 uh huh
39 if we're gonna use it next year, which I think you
40 should hang onto it
41 cuz I think it's really useful

41 yeah
42 um,
43 I think kids didn't know what 'demonstrate your
44 thinking,
45 by using the representations' meant
46 and she didn't either

46 right
47 so she thought it

48 oh, you mean Heather

49 yeah

50 uh huh
51 so she like,
52 she check-pointed the kids

53
54 and let them go when they'd circled it on the graph, or
55 O:::h
56 or were able to name it from circling it on the graph,
57 like name it as one point five zero
58 but just the graph and not the table.

58 /yeah
59 /yea::h/ so we should reword this as something like,
60 you know, 'show how you can see,
61 that the- /the intersection in the table/
62 /the point of intersection in all/
63 in the equations

64 right!
65 and on the graph

66 OK, yeah yeah yeah
67 um, because they didn't,
68 yeah

69 I'm gonna change that right now on the [Google]
drive.

70 yeah OK (5s)
71 mind if I eat?

72 No! of course. (.)
73 Busy day for you, huh?
74 yeah, busy day (.)
75 Fun day.
76 So, um,
77 what did you say again?
78 I like how you worded that.
79 what did I say? I said something like,
80 'show' (5s)
81 um (3s)
82 or she had it with the word 'prove' I think.
83 That might be nice.
84 mhm
85 like prove that the point- /prove/
86 /prove/
87 the point of intersection, (.)
88 prove that this point is the intersection, using the
graph
89 ((typing)) this is the
90 or you can- you might want to change it to solution,
91 given your Do Now, I don't know-
92 but somehow prove that this is the point,
93 I don't know quite how we want to say that,
94 using
95 the tables,
96 the equations,
97 and the graph.
98 ((7s, eating)) cuz you know how we were seeing your
kids,
99 like thought they were done
100 after
101 right
102 they circled the point
103 yeah
104 they thought that was it, you know?
105 We were like, 'uh, no!'
106 'prove that this is the point using tables, graphs, and
equations'
107 yeah
108 ok, cool. ((31s, eating sounds and turning pages))
109 yeah, so, what are you thinking? What did you learn
from them (.)
110 first period?
111 like, the misconceptions,
112 but I feel like we kind of predicted that too
113 mhm
114 like going off,
115 like I was like 'yeah, i feel like
116 they're not gonna see,

117 they're gonna think that those tables are the only
 solutions that could work'
 118 um,
 119 mhm
 120 (3s) and then,
 121 I don't know. I just feel like there needed to be more
 time for them to, like-
 122 it-
 123 I mean 50 minutes
 124 is such a short time to get
 125 mhm
 126 really deep into like this kind of work
 127 mhm
 128 and like,
 129 mhm
 130 I feel like they needed,
 131 like they saw the point of intersection,
 132 and then there was like-
 133 needs to have conversations about like
 134 ok, could there be other possibilities for x values.
 135 than what's in the table you mean?
 136 yeah
 137 mhm
 138 um, and I don't feel like those conversations were yet
 happening-
 139 but it's not like it wasn't going to happen
 140 but I feel like if there was time, it could happen.
 141 mhm
 142 um,
 143 mhm
 144 so it's like, I don't know where to start tomorrow.
 145 like, finish this up?
 146 have them spend another day
 147 like showing there-
 148 showing that point of intersection through a table, a
 graph, and equation?
 149 mhm
 150 and then also substitution I feel like was
 151 you know, if you- and I also pointed that out to you
 that they
 152 didn't feel-
 153 like we haven't done a lot of substitution?
 154 so, um
 155 yeah, which was one of the reasons I wanted to, like
 grab Tony's idea
 156 mhm
 157 right.
 158 because he so clearly did?
 159 yeah

160 and I wanted to make sure,
 161 I wanted to assign competence
 162 yeah yeah
 163 for one thing
 164 and then I wanted also to make sure
 165 that that was making- or to sort of see
 166 if that was making sense for kids
 167 yeah
 168 and it seems like at least for some kids it was
 169 yeah
 170 so that was nice,
 171 yeah
 172 right?
 173 I wasn't expecting that.
 174 yeah. *((laughing while talking))* And Tony literally
 175 came in like,
 176 that's why I love Tony-
 177 he comes in five minutes- or he has to do his check in
 178 with the counselors in the morning, so that's why he
 179 comes in late
 180 mhm
 181 but he comes in,
 182 sits down,
 183 doesn't have anything out,
 184 totally like gets it,
 185 and like has something to answer,
 186 you know
 187 uh huh
 188 that is totally smart,
 189 and I was just like, 'Tony, you're awesome' like-
 190 and then doesn't do anything else for the rest of the
 191 day
 192 *((laughs))* I know. But you are so smart, Tony. Like-
 193 /if you would apply yourself
 194 /It's like dammit, I assigned competence to you!
 195 *((they both laugh))* would you please (pay me back by doing something)
 196 yeah
 197 um (3s)
 198 ok, so
 199 let's be clear about-
 200 so the misconceptions that we saw (.)
 201 so, did you hear that group say- I can remember what
 202 you were listening to and what you weren't.
 203 That group said to me
 204 which one,
 205 table one?
 206 group one, yeah
 207 uh huh
 208 I said, 'is there a point of intersection?'

204 they said 'no.'

205 I didn't hear this,

206 no.

207 yeah, they said 'no.'

208 And I said, 'ok, what is a point of intersection?'

209 but they circled it, right?

210 I know.

211 And they labeled it 'point of intersection.'

212 ((they both laugh))

213 and then,

214 this is awesome, right?

215 So then, I said, 'what is a point of intersection?'

216 'it's where the two graphs cross.'

217 'ok, do these graphs cross?'

218 'yea:h.'

219 ((both laughing)).

220 I was like, 'ok,

221 so ((laughing))'

222 yeah

223 I wish I could remember exactly what,

224 but it'll be on video, cuz it was an awesome

225 conversation.

226 So, they had figured out,

227 so then someone ((flipping through pages)) Arturo?

228 yeah

229 had articulated the idea, 'well maybe there,

the- it's not in the table because there aren't enough

points in the table'

230 mmm

231 but there could be more.

232 mhm

233 so he-

234 brilliant-

235 got it

236 yeah

237 right?

238 yeah

239 awesome

240 yeah

241 so we could totally build on that

242 yeah

243 and, and like give him credit for it.

244 yeah, I remember when he said it

245 yeah

246 I think I was there

247 and that's when you came over and said, 'let them talk

about it' right?

248 mhm

249 yeah, and he pointed that out

250 so they went out this way.
251 yeah
252 so they added four, five, six,
253 negative four, negative five, negative six
254 *laughing laughing*
255 kept going
256 (*laughing*) oh, god!
257 I love it.
258 So I came back and I was like,
259 ‘can you guys explain what you’re doing?’
260 so he articulated again,
261 ‘yeah we figured out that it’s not in the table cuz
there’s not enough points,
262 so we’re adding points to the table.’ ((both laughing))
263 (*laughing*) (*laughing*)
264 oh god!
265 So it’s gonna cross somewhere else.
266 (*laughing hard*) (*laughing hard*)
267 It’s somewhere out there!
268 So there’s-
269 OK, so this was one thing that was sort of coming up
for me, (.)
270 a wondering I was just having that I haven’t figure out
how to put words on yet, but I was wondering (.)
271 It feels to me from that conversation (.)
272 like on some level, they’re not- which makes total
sense-
273 but on some level they’re not yet (.)
274 really seeing
275 that the- the rules and the table and the graph are the
same,
276 mhm
277 like it’s the same thing being described in these
different ways.
278 right?
279 and you articulated nicely in your launch of the class
that like,
280 the ways that we represent have different affordances,
or I mean you didn’t use those words with them,
281 yeah
282 but have different, like they’re different,
283 they show us different things
284 yeah
285 but it’s about the same relationship
286 right
287 they’re all describing the exact same relationship,
288 so if it crosses on the paper,
289 there has to be a way that it’s crossing here?

290 and I think they're not yet totally feeling those as the
291 same,
292 you know what I mean?
293 I don't know.
294 I feel like (.)
295 I mean, we've done SO much work on those four
296 representations,
297 mhm
298 like,
299 I mean we've reiterated that over and over again
300 mhm
301 I think it's more that
302 because that intersection point wasn't on the table? (.)
303 but I mean I see what you're saying.
304 If it's not it's, yeah.
305 I mean, I don't know.
306 So I feel like and it doesn't mean they're not getting it
307 sometimes.
308 mhm
309 and in some
310 ways,
311 yeah
312 but it means that there's deepening to happen still.
313 yeah
314 which is,
315 I mean that's what we do all through high school.
316 yeah
317 right
318 yeah
319 so it's not an alarming thing
320 yeah
321 it's not a problem.
322 I think-
323 because what would be evidence of like a deep
324 understanding?
325 yeah
326 consistent, deep understanding that they're all
327 connected,
328 would be if kids were saying
329 'well the graphs cross, so there has to be
330 a point of intersection. It's right there.
331 So therefore, oh look, it's between
332 one and two'
333 yeah
334 'for the x right?'
335 yeah
336 on the x axis,
337 between one and two,
338 so between one and two is here [in the table]

334 right
 335 and I didn't hear that anywhere yet.
 336 mhm
 337 not to say they wouldn't have gotten there given more
 338 time
 339 yeah
 340 like you said,
 341 yeah
 342 they need more time to get to it, right?
 343 yeah
 344 so that's just super interesting to me and I think, um,
 345 it doesn't mean anything's wrong,
 346 it doesn't mean anything has happened wrong,
 347 it means that- it just feels like an indicator of like a
 348 place
 349 /we're gonna see deepening.
 350 /to have a discuss-/ yeah
 351 right? Um
 352 I think, also, I think these kids don't understand that
 353 like the whole line? is a solution, like
 354 yep
 355 Like I think for them,
 356 they think these points are the only ones.
 357 yep,
 358 clearly.
 359 yeah
 360 oh yeah, that's the other thing they said.
 361 oh, yeah ((claps))
 362 that's where it went.
 363 I love this conversation! (.)
 364 'there's no point of intersection.'
 365 'ok, what is a point of intersection?'
 366 'it's when they cross.'
 367 'do these lines cross?' -oh,
 368 'what is a point of intersection?'
 369 'it's the POINT where they cross.'
 370 uh huh
 371 'do these lines cross?'
 372 'yes,
 373 but not at a point.'
 374 mmmm
 375 so this was the logic,
 376 yeah
 377 why it was totally working for them
 378 yeah
 379 that there is no point
 380 right
 381 of intersection
 382 mmm

380 because sure they cross,
 381 right
 382 but it's not at a point
 383 right
 384 so there is no point of intersection
 385 right
 386 there's an intersection,
 387 right
 388 but it's not a point ((*laughs*))
 389 right, yeah.
 390 Which is awesome, right?
 391 yeah,
 392 so that feels like actually pretty easy
 393 yeah
 394 to take up, right?
 395 right
 396 um,
 397 yeah
 398 yeah, I forgot about that part,
 399 yeah, that was really awesome
 400 yeah. (.)
 401 but I think that's normal in
 402 like the way that this unit has like played out,
 403 like we've never had,
 404 I mean we've only been like doing points,
 405 like we haven't
 406 like whole number point?
 407 like we haven't talked about-
 408 yeah- we haven't talked about, like
 409 mhm
 410 decimals or whatever
 411 mhm
 412 so, I mean, I think I told you that I had a feeling that's
 what they were gonna think.
 413 yeah, you did
 414 yeah
 415 yeah, no,
 416 I mean ALL those things,
 417 you totally predicted.
 418 yeah
 419 you clearly know your students
 420 very, very well.
 421 ((*laughs*))
 422 cuz you knew.
 423 And you were right.
 424 yeah
 425 OK,
 426 awesome,
 427 so where do we go from here?

428 What do you want to do with it?
429 ((big breath))
430 What do they need out of this to move on?
431 And what do you want to make sure they learn?
432 um,
433 I think I want them to spend more time on this.
434 mhm
435 Like I think it'll be really, um,
436 like I feel like, and even with my other class, in 3rd
437 period,
438 it was like they stopped in the same place,
439 where they were like, 'oh, point of intersection' and
440 like, 'ok, now what?'
441 you know, so having that conversation,
442 I felt like they needed more time to think about where
443 that could be in your table.
444 I mean I had groups be like, 'yeah it would be in
445 between here.'
446 like there were kids in my third period saying
447 Oh!
448 yeah, um, and then they were-
449 awesome
450 they actually added a point five.
451 And there was another kid
452 we actually have it on video.
453 It was this kid.
454 He start- he made-
455 he created a whole other table and it was halves.
456 mhm
457 And he started doing like, negative three,
458 and he did negative two point five,
459 he did negative two,
460 he did negative one point five
461 mhm
462 um,
463 so he started doing that.
464 Um, and then like the bell was about to ring and then I
465 was like,
466 'oh, what are you doing?'
467 Like can you share with your group?
468 Like what are you thinking there?'
469 uh huh
470 um, and then- it's just,
471 we just need more time
472 mhm
473 like, and I feel like they-
474 once they see it in table,
475 and the graph,

471 and then the equation part I feel like they're really
 struggling with,
 472 on how to substitute.
 473 uh huh
 474 um, I don't know if I should worry too much about
 that,
 475 right now, if we're just trying to-
 476 I think our main goal is for them to understand that
 there's many solutions
 477 and it could be anywhere on that line,
 478 right?
 479 yeah,
 480 the only reason I get a little,
 481 like (.)
 482 the piece of me that wants to lobby for the equation,
 483 mhm
 484 it's not because I care about the skill
 485 right
 486 so much of substituting
 487 yeah
 488 but I think it's another,
 489 I think it's a way of understanding what solution is
 490 that enriches all the other ones.
 491 and allows those representations to stay really glued
 together
 492 yeah
 493 conceptually
 494 right,
 495 yeah
 496 so, it's like (.)
 497 And like it's kind of magic in some ways for kids in a
 cool way, that can be sort of empowering when
 they're like,
 498 alright, so for example if we,
 499 not in this task, because this is about something else,
 500 but if we wanted to look at all of these being
 solutions,
 501 like the fact that
 502 it's one equation
 503 and you can do different stuff with it
 504 and it still works
 505 mhm
 506 and continues to work,
 507 and then all of the number pairs that make it work
 508 are in a pattern
 509 right
 510 that make a picture,
 511 like that's kind of magic.
 512 yeah

513 right?
 514 so somehow like, um,
 515 being able to rec-
 516 and I think-
 517 yeah, like you were saying they don't get yet that the,
 518 all- the whole line is
 519 made up of solutions.
 520 right.
 521 right? And I think that um (.)
 522 what- I don't even know what I'm trying to say, I
 don't feel very articulate about it right now,
 523 but there's something rich about understanding
 solution algebraically
 524 as well as sitting here [the table]
 525 mhm
 526 and in the graph
 527 that I think can just sort of round out
 528 their thinking around the big idea here.
 529 mhm
 530 of what is a solution
 531 yeah.
 532 does that feel?
 533 yeah
 534 and it doesn't mean they have to like-
 535 they could use a calculator,
 536 right,
 537 it doesn't mean they have to be, like this (*snapping
 fingers*)
 538 right
 539 with the calculations, but if they get (.)
 540 that that, /if it's a solution,
 541 /input ()?
 542 those two numbers
 543 should be able to
 544 /match
 545 /boop, pop right in there
 546 yeah
 547 and work
 548 yeah
 549 that's what that means.
 550 right
 551 you know what I mean?
 552 yeah.
 553 um,
 554 yeah, so you're still-
 555 yeah I'm with you, because I think,
 556 I'm with you as far as
 557 spending more time on it?
 558 yeah,

559 because you want the-
 560 cuz it's a big, important idea,
 561 yeah
 562 right,
 563 and you want them to-
 564 like the whole purpose is this,
 565 what is a solution?
 566 and they're on their way
 567 to getting it, like really
 568 yeah
 569 in a MUCH deeper way
 570 I know
 571 than you could just tell them.
 572 And I don't want to tell them, right
 573 yeah
 574 because I want them to play with it more
 575 and then we can have a discussion about it
 576 yeah,
 577 yeah
 578 yeah
 579 I'm with ya,
 580 yeah (4s)
 581 so I'm wondering about-
 582 yeah, so what are your thoughts about then how we
 583 would take it up,
 584 like what would it look like to take it up tomorrow?
 585 ((sighs)) So I think like a do now,
 586 I mean, (4s)
 587 well, one, my concern is substitution still.
 588 mhm
 589 so maybe we can have a Do Now that (4s)
 590 like, where kids can see the table
 591 and the equation,
 592 kind of like what we did today, right?
 593 where we had those table points
 594 and we plugged it into the equation
 595 to see if it would make it true?
 596 I was just trying to-
 597 I was thinking about-
 598 this is not formed yet in my head, but what you were
 599 telling me was-
 600 I was thinking about what if there were (.)
 601 I'm trying to think of (.)
 602 OK, let's say we have a linear graph,
 603 and there's like lattice points
 604 mhm
 605 like this, right? (3s)
 And you asked the question today,
 like how many points could go on this table?

606 And I think by the end,
 607 your kids got
 608 that it could be /infinite,
 609 right, keep going/
 610 /right, yeah yeah yeah, they were/ all agreeing
 611 yeah, yeah.
 612 Um, which, awesome Do Now, by the way.
 613 I think that's a really important thing you got them to
 614 recognize and talk about.
 615 I'm wondering if you could do something similar,
 616 where
 617 you were like 'how many points could go in your
 table, if they could not go that way
 or that way' (*pointing to the left of zero and right of
 618 two in the horizontal direction on the graph*) or
 something like that.
 619 This isn't it yet,
 620 this doesn't work yet
 621 yeah
 622 but do you know what I mean,
 623 where you limit the domain
 624 right
 625 you say like, between,
 626 you can not choose any number smaller than zero,
 627 or- not zero- smaller than one
 628 mhm
 629 or larger than three.
 630 How many numbers can you put in your table? (.)
 631 right
 632 yeah
 633 And so some kids will go,
 634 well /one, two, and three/
 635 /one, two, three/ that's it.
 636 only three
 637 yeah
 638 And then, really,
 639 are there any-
 640 can you think of any numbers
 641 yeah
 642 between one and three that are not one, two, or three?
 643 yeah
 644 Can you think of any of them?
 645 yeah
 646 and somebody in the group is gonna be like,
 647 'oh. /one and a half./'
 648 /one half/.
 649 yeah.
 650 especially cuz some kids have (.)
 651 figured out / like () the conversation right now,/

652 / (inaudible) / right right
653 it's like what is this point five,
654 like this doesn't make sense?
655 yeah, right,
656 so some kids will go to a half
657 and then some kids also will have the further
658 misconception that there are not numbers
659 between one and one and a half and two
660 right.
661 right?
662 So like, 'what about more'
663 and like push them to have-
664 like until you see tables with like,
665 yeah
666 you know with eight, nine, ten entries in them
667 yeah
668 'more! we need more!'
669 yeah
670 until they really get, like 'oh you could keep going.'
671 yeah
672 and then in between and in between and in between
673 and in between,
674 yeah
675 and that's why it's a solid line, right?
676 And maybe that's where I could be like, alright,
677 so if we were to plot that like look,
678 it's all along the line
679 and these are all still solutions right?
680 yeah, every single one of them!
681 every single one of 'em
682 And the reason this is solid
683 is because all those points, there are so many that they
684 touch each other
685 I know, they're making a line!
686 it's crazy!
687 It's actually points,
688 but you can't see them
689 yeah, i know
690 right?
691 so like that idea
692 yeah, so closing off with that.
693 well I feel like the do now
694 that gets them into that space might support you
695 yeah
696 support their reasoning.
697 cuz some of them like you said are right there
698 anyway, right?
699 yeah
700 so then let's just think about that.

697 If they took that Do Now-
698 If they took that sense making out of the do now
699 into the rest of this task
700 then I- then you know,
701 they can hopefully get to like,
702 'ok, so we can make more.'
703 yeah.
704 And they can see from the graph, 'oh, ok,
705 it's between one and two
706 right
707 so let's like let's /zoom into this space/
708 /let's expand this table/ yeah
709 between one and two.
710 And we can also give them permission,
711 which a lot of kids feel- don't feel permission?
712 maybe the do now could do this secondary thing of
giving them permission to make tables out of order.
713 mhm
714 right?
715 yeah
716 Like if you have a table that has
717 one two and three,
718 yeah
719 like if you want your x to be one and a half,
720 you can think about what it is here [between one and
two]
721 yeah
722 that might help you visualize it
723 yeah
724 right?
725 um, but it's ok to put it here [at the right side of the
table]
726 yeah
727 it's just another point.
728 yeah
729 it's alright
730 yeah
731 um (.)
732 or what if you even gave (.)
733 but then, how-
734 and then I feel like kids are gonna
735 get stumped about like,
736 ok, well how do we find the y? (.)
737 Well they could use the pattern too. (.)
738 how do we find the y
739 for the point of intersection?
740 yeah,
741 so what's halfway in between both of those
742 yeah

743 right?
744 So that's halfway between there,
745 they can reason about it being halfway between there,
746 they could just read it off their graph and just decide
that's good enough
747 right.
748 they could read it off their graph and check it
749 yeah
750 with this,
751 right?
752 that's the cool thing about multiple representations
753 yeah
754 is that you have all those tools,
755 mhm
756 right? that are all,
757 they all support each other.
758 mhm
759 I was even wondering if you could do this ((writing))
760 or something.
761 Like if you were doing a do now like this
762 and you showed them a graph like this
763 and then you gave them like,
764 'ok, I started this,
765 I found three points.
766 I found three points that
767 are on this line,
768 and I wrote them here.
769 Your job is to find
770 five more
771 yeah
772 without going that way'
773 or,
774 maybe that's not the way to phra-
775 I don't know,
776 I totally trust you to figure out how to pose it
777 or how to get them into it,
778 but I was just sort of trying to play with
779 mhm
780 whether there's a way to just give them a jumbled
order table,
781
782 so that they have to be comfortable with it ((laughing))
783 mhm
784 cuz they have to
785 yeah
786 or maybe that doesn't matter too much.
787 What I just don't want is them to say-
I don't want it to be a barrier

788 for them to think about the infinite number of points
in between

789 mhm

790 that they don't have space on their paper.

791 right.

792 you know what I mean?

793 yeah

794 Um,

795 but I think,

796 whatever.

797 And I don't want them to spend twenty minute
copying down new tables

798 yeah

799 and that's the other thing *((laughing))*

800 yeah,

801 yeah.

802 They gotta have that graph paper. *((laughing))*

803 I know, huh?

804 That was SO smart of you.

805 I was, yeah

806 *((laughing))* I didn't realize,

807 like how long it was gonna take.

808 yeah, which is another one of those things, I was like,

809 'oh yeah, we didn't think about that.'

810 we were just like, 'graph 'em'.

811 ok, move on.

812 yeah, and then when Marcel came to my third period

813 I was like, can you please make these copies for my
third period,

814 cuz I didn't have any

815 oh, he told me *((laughing))*

816 for them. *((laughing))* I was like,

817 'I don't want them to start graphs,

818 they're gonna spend twenty minutes on it.

819 yeah

820 yeah

821 um, cool, ok,

822 so some kind of do now getting into the non integer

823 yea

824 coordinates,

825 right?

826 which will hopefully have them think about it in a
table form.

827 yeah

828 here when they get back to it.

829 yeah.

830 Then they get back to it, and we make sure they
understand even though we didn't word it all that
clearly

831 what they are expected to do cause/
 832 /right
 833 did you have,
 834 in your third period did anyone get to this checkpoint
 yet?
 835 no, no no
 836 so Heather's, they got past it,
 837 but then I realized that's because,
 838 no that's because she misunderstood
 839 what we were looking for
 840 in a checkpoint
 841 Oh, so they, like the graph was the only
 842 they just said, there's the point of intersection.
 843 Or they were able to name the coordinates/
 844 /o::h
 845 by looking at the graph and then they moved on.
 846 So she's gonna go back.
 847 ok
 848 and have them sort of re-checkpoint it
 849 yeah
 850 and show-
 851 so we, you might want to do a little,
 852 support this
 853 yeah
 854 so they know what this means
 855 yeah
 856 or what we meant by this
 857 yeah
 858 and you can say,
 859 'sorry our bad
 860 yeah
 861 we didn't make this as clear as we thought it was in
 our heads.'
 862 ((laughs)) um
 863 yeah,
 864 that'll be awesome
 865 cool
 866 and I think it's gonna be an awesome conversation
 867 cuz they're right there
 868 ((sounds of someone else in the room)) hello
 869 Other: Oh, hi, sorry.
 870 No, it's OK.
 871 ((man's voice asking K for money))
 872 um (4s)
 873 cool,
 874 and then going into this will be so much richer, right?
 875 oh, right, yeah
 876 cuz then when they say no,

877 you can make them show it in all the representations,
right

878 ((*laughing*)) or they're gonna be even more like,
'wait, what is this!'

879 yeah,
880 which is great.

881 ((*laughing*)) I know, they're gonna be like, 'Ms
Kassis, really?'

882 but then you ge- yeah,
883 and you can say remember when you thought this one
was no?
884 well, this one is really no. ((*laughing*))

885 ((*laughing and clapping*)) they're gonna be like,
'wait, what?'

886 no this one has to have a point of intersection now.

887 ((*laugh*)) (*laugh*)
888 they'll continue out their tables for like ever.
889 'it's coming!
890 it's gonna be there!'

891 They're gonna start putting in halves and quarters into
their tables to find it.

892 ((*laugh*)) (*laugh*)
893 no they won't
894 cuz they'll have their multiple representations
895 sense making,
896 yeah
897 yeah?
898 And you're gonna give them more of that crazy graph
paper.

899 oh, yeah.
900 so they don't have to graph forever

901 yeah
902 oh good

903 which reminds me, I hope I have another copy. (.)
904 I'm sure I do ((*laughing*))
905 there's one more in there somewhere.
906 ((*looks through papers*))

907 How are you feeling about participation issues and
stuff
908 and is there anything there you want to talk about?

909 um,
910 you mean, like as in whole group or?

911 whatever you want.
912 Are there status concerns you're worried about or-

913 ((*sighs*)) I mean I guess I'm just worried about, like,
914 off topic,
915 off task conversations.

916 mhm
917 um, (.)

918 (inaudible over sounds of pages turning) John and
 Tony and then ((laughing))
 919 you came up to me about that ((inaudible))
 920 I can't even get them on task.
 921 ((*laugh*)) (*laugh*)
 922 Remember you came up to me and you were like,
 923 they're not even (*laughing*)
 924 I tried
 925 and it didn't work. Um
 926 ((laughing)) oh, yeah.
 927 Oh yeah, I had an idea about that.
 928 yeah
 929 or a question,
 930 an idea that wasn't a fully fledged idea
 931 yeah
 932 so,
 933 I thought you set up roles beautifully.
 934 uh huh
 935 At the beginning of the lesson.
 936 Did you? ((*flipping pages*))
 937 Am I right?
 938 (inaudible)
 939 what did you say?
 940 yeah I did.
 941 yeah
 942 ok,
 943 I have more copies,
 944 yeah
 945 so I wonder, and actually this came up in another
 classroom I was in too, in Aya's class,
 946 so I wonder if you guys could just talk about it
 together when you're planning.
 947 Uh (5s)
 948 you set em up awesomely.
 949 The kids totally got it.
 950 But then we didn't use 'em.
 951 Like we didn't go back to them to support what we
 needed supporting.
 952 yeah
 953 so I feel like it's sitting right there for you
 954 right
 955 so I feel like you could do that- the roles that you've
 already done
 956 right
 957 could be your answer
 958 to managing that
 959 yeah
 960 yeah,
 961 so (we're gonna like)-

962 So like huddles
963 right
964 right?
965 Um reinforcing like through
966 participation quizzes or whatever or just
967 I tried to do a participation quiz ((*laughing*)),
968 I set up the poster paper,
969 but I just felt like I was running around so much
970 yeah, no worries.
971 I mean I was planning on it, but.
972 yeah, no, that's fine.
973 I didn't feel like you had to.
974 But I was wondering like, so that group back there
that was,
975 off topic every thirty seconds
976 yeah
977 like,
978 it's like an accountability tool too,
979 right
980 you can be like, 'ok so task manager'
981 you call a huddle.
982 'task managers,
983 I'm seeing some awesome thinking
984 but then people keep getting derailed from it'
985 yeah
986 'and we're not getting traction'
987 yeah
988 'and this is like important learning,
989 so task managers,
990 I want you please to go back to your groups
991 and make sure that in five minutes, when I come by,
992 everybody can tell me bla bla bla'
993 yeah
994 'or everyone has their graph done'
995 yeah
996 or whatever the thing is
997 yeah
998 And like, '5 minutes, you got it.
999 So that's what the clock says-
1000 ss- you got it?'
1001 yeah
1002 'go back to your group,
1003 tell them that's what we're doing and then in five
minutes,
1004 hold them to it.'
1005 yeah
1006 yeah?
1007 I know, I haven't done a huddle yet.
1008 I need to try that strategy.

1009 this dude?
1010 the whole time you were doing your launch,
1011 he was talking to her.
1012 yeah
1013 I know,
1014 which means,
1015 and you stopped a couple times and waited,
1016 and he stopped for you and then started talking again.
1017 yeah
1018 which, I wasn't that worried about as a compliance
1019 thing,
1020 but what it meant to me was that he missed
1021 yeah
1022 everything you said.
1023 Like he missed the roles launch,
1024 he missed the multiple abilities
1025 yeah
1026 he missed all of that
1027 right
1028 so any good that could have done him
1029 right, right
1030 just didn't
1031 right right
1032 um,
1033 and I don't know,
1034 she might have missed it too
1035 right
1036 cuz it's hard to hear two things at once.
1037 right
1038 you know
1039 right
1040 so,
1041 yeah
1042 yeah
1043 might be a seating thing
1044 I've been doing shuffle seating
1045 uh huh, yeah
1046 this semester
1047 great,
1048 I love it.
1049 Yeah!
1050 I change it every two weeks
1051 awesome.
1052 so maybe you could have him read it aloud.
1053 you know get him in
1054 to, yeah
1055 get him into what YOU'RE doing,
1056 right
1057 so that he can't be detracting from what you-

1057 right
 1058 cuz it didn't feel like
 1059 he wanted to detract.
 1060 right
 1061 it didn't feel like he was trying to undermine anything.
 1062 yeah.
 1063 he just like,
 1064 he just walked in with stuff going on.
 1065 right.
 1066 and wanted to talk about it,
 1067 which is a totally normal thing
 1068 for someone to experience,
 1069 he just wanted to talk about his weekend
 1070 or whatever he was talking about with his friend,
 1071 and that's normal
 1072 yeah
 1073 but if you just keep him too busy to do that
 1074 yeah
 1075 doing something else
 1076 yeah (4s)
 1077 um,
 1078 ok so yeah, roles.
 1079 Roles I thought we could think together about.
 1080 Like how we could- cuz
 1081 I wouldn't say that (*coughing*)
 1082 in every classroom,
 1083 but you set them up so beautifully, and the kids totally
 clearly are used to them
 1084 mhm
 1085 and they got it
 1086 mhm
 1087 in one group I said, like
 1088 'could you remind me
 1089 which role was supposed to be doing the middle
 space?'
 1090 and that allowed them to get reminded about the
 middle space.
 1091 mhm
 1092 and they knew
 1093 yeah
 1094 they could totally answer that.
 1095 They totally got it, you know.
 1096 yeah.
 1097 That's another thing too that I haven't been doing this
 year that I need to work on,
 1098 is having them use-
 1099 I mean I have-
 1100 we've talked about middle space in pairs?

1101 o::h
 1102 cuz that's been more with like task cards, I've been
 like
 1103 having them make sure
 1104 oh
 1105 that everyone has access to it?
 1106 uh huh
 1107 but in terms of like keeping our work in the middle
 1108 o::h
 1109 is something I haven't reinforced.
 1110 So that was really new for them today.
 1111 Okay
 1112 yeah
 1113 single most powerful thing.
 1114 yeah
 1115 well, for me that's like
 1116 money, because it's easy?
 1117 yeah,
 1118 I know
 1119 it's not complicated.
 1120 and it just changes ((*lowers voice*)) everything
 1121 yeah
 1122 because in order to work,
 1123 especially on these big tables,
 1124 I mean these big tables are hard.
 1125 yeah
 1126 but in order to put my work in the middle,
 1127 yeah
 1128 look where my body has to be.
 1129 yeah
 1130 and then when my body is like this,
 1131 I'm oriented toward my group.
 1132 yeah
 1133 then I'm gonna hear them
 1134 right right
 1135 ((*chuckling*)) right? And I'm gonna talk to them
 1136 yeah
 1137 It just like totally transforms.
 1138 I mean today was one of those things where I was
 like,
 1139 oh my god,
 1140 I should have been doing this from day 1,
 1141 cool
 1142 but it's like just another CI strategy, you know, like
 that-
 1143 I know that I can't do everything all at once
 1144 yeah yeah yeah
 1145 and I'm still learning,
 1146 you know, like

1147 oh yeah,
1148 and your kids are doing amazing work.
1149 You're doing awesome stuff,
1150 so
1151 ((laughs)) yeah
1152 yeah
1153 for sure
1154 but that was something that I was like,
1155 oh my god,
1156 I should be doing this all the time,
1157 but I don't.
1158 so and the one thing that I was always bad at
1159 remembering as a teacher, and I feel like as a coach,
1160 yeah
1161 I'm seeing the power of it,
1162 and I'm getting better at remembering it
1163 because of course it's not my classroom.
1164 yeah
1165 is um,
1166 the, the the twenty seconds that it takes at the
1167 beginning of class,
1168 um, to get them to clear.
1169 clear desks, yeah, like
1170 oh my gosh,
1171 when I'm working and there's like this, this and that
1172 ((moving items on the table))
1173 yeah
1174 and someone's notebook is behind that
1175 yeah
1176 like,
1177 yeah
1178 nobody's seeing what I'm writing.
1179 yeah
1180 nobody ca- and then,
1181 even if a kid sitting over there wanted to see it,
1182 it's socially very risky
1183 yeah
1184 to be like,
1185 'could you move your thingy so I could see what
1186 you're writing.'
1187 yeah
1188 you know. ((laughing))
1189 I did have them do it
1190 at that table.
1191 They had a lot of like binders and cute little pencil
1192 cases
1193 yeah
1194 and stuff
1195 right ((chuckling))

1191 and at the beginning I asked them
1192 yeah
1193 if we could move it onto one of the empty tables
1194 and they were totally fine with it.
1195 yeah
1196 and some of them put it underneath, um,
1197 and it did facilitate some
1198 yeah,
1199 I'll keep that in mind.
1200 it's interesting that you say you haven't focused on it
1201 because
1202 (3s) I'm trying to remember.
1203 In group one,
1204 did we ask them to put stuff in the middle?
1205 I mean I fee like at some point we did.
1206 /they like slid things forward
1207 /well you told me about/ Michelle.
1208 and then I came up and moved her notebook
1209 and was like, 'hey, can you like
1210 put it more in the middle.'
1211 o:::h right
1212 and that was new for her.
1213 Huh,
1214 ok.
1215 because they were reasonably using the middle space.
1216 They were.
1217 but I don't think I told them
1218 although I think,
1219 yeah,
1220 I did in some of the groups, I think.
1221 Um, yeah, that's interesting. Yeah.
1222 I'm down for that being a big deal.
1223 Because um,
1224 they were doing good talking,
1225 group one, ((*shuffling pages*)) names, names names-
1226 Dulani?
1227 uh huh
1228 Had good ideas, as far as I could tell.
1229 I wasn't listening very closely actually cuz I was
1230 trying to stay out of the video
1231 mhm
1232 and was totally willing to share them and he checked
1233 in with his teammates,
1234 but he did it all like this.
1235 mhm
1236 and he still was doing it,
1237 it was still helpful,
1238 but I feel like
1239 he would have had more success-

1237 I mean he did have success,
1238 it wasn't like bad things happened.
1239 mhm
1240 I feel like there would have been more momentum of
talk
1241 yeah
1242 had it been here.
1243 right,
1244 yeah
1245 yeah,
1246 just like the physical leaning in toward the middle and
having things out is so powerful.
1247 yeah
1248 yeah,
1249 yeah I need to keep that in mind.
1250 cool ((sound of flipping pages))
1251 um, ok, so you-
1252 what were we,
1253 ok, go back ((pages flipping)), so i know
blablablabla,
1254 did we talk about anything that we wanted to think
about together
1255 that we haven't yet thought about? (11s)
1256 not really,
1257 I mean I'm trying to think.
1258 I believe you,
1259 I just don't remember
1260 yeah
1261 we planned this lesson,
1262 um
1263 I know, how day 2's gonna play out
1264 I mean I feel really happy
1265 that we framed this lesson around a big question.
1266 uh huh
1267 and I think, um,
1268 because it helps,
1269 for one thing it helps us as teachers
1270 to think about,
1271 do we want to continue or not
1272 mhm
1273 like is it worth going back or not, right?
1274 mhm
1275 and if I- and I wasn't sure,
1276 and I look up to the top of the page and I see that and
like oh.
1277 yeah.
1278 yeah
1279 we have to go back.
1280 I know.

1281 right ((*laughing*))
 1282 yeah
 1283 because we haven't yet taken up that question
 1284 yah
 1285 deeply enough, right?
 1286 yeah
 1287 they're on the way,
 1288 and it's SO important, right?
 1289 yeah.
 1290 um,
 1291 u::::h,
 1292 I think I had- I could be totally-
 1293 I was in three different classrooms today,
 1294 four, I was in four classrooms today
 1295 wow
 1296 so I could be blending.
 1297 I ended up going back to Aya's because the lesson
 1298 that we planned together kind of fell apart-
 1299 it didn't fall apart,
 1300 yeah
 1301 but there was just something that sh- we hadn't
 1302 anticipated
 1303 that really changed it.
 1304 And so she,
 1305 actually,
 1306 she teaches it three times in a row
 1307 all three times
 1308 and she on the fly changed it,
 1309 yeah
 1310 like she modified the do now,
 1311 yeah
 1312 a different do now,
 1313 she modified the manipulatives,
 1314 yeah
 1315 she like changed it.
 1316 So I wanted to come back
 1317 yeah yeah yeah
 1318 she told me
 1319 and see it changed
 1320 yeah
 1321 um,
 1322 she's so amazing.
 1323 Um,
 1324 u:::m,
 1325 I was wondering
 1326 in some classrooms today
 1327 and maybe in here?
 I was wondering what do they think is the purpose
 what do you mean?

1328 For what they are being asked to do, the students.
1329 Like, and this is always a question for me.
1330 So it's not a question based on anything you did?
1331 mhm
1332 but I always wonder, like why do kids think
1333 that I'm asking them to make this graph
1334 or find a point of intersection or,
1335 whatever it is I'm asking them to do.
1336 mhm
1337 and sometimes I feel like it's helpful
1338 to just be really clear about what I want you to learn.
1339 We're doing this so we can make sense of this
1340 important idea
1341 and this idea is going to stay important
1342 all the way through all your high school classes,
1343 your, well Algebra,
1344 Advanced Algebra,
1345 mhm
1346 Precalculus,
1347 Calculus
1348 mhm
1349 all of it.
1350 yeah
1351 it's gonna really need you to understand solutions.
1352 It's a hu:::ge deal.
1353 yeah
1354 So that's why we're investing ime
1355 right
1356 so you might even employ that kind of thing in why
1357 we're coming back.
1358 right
1359 because I was so excited by the conversations you
1360 guys were having getting toward
1361 yeah
1362 really making sense of this.
1363 and if we can get a deep understanding of this
1364 right
1365 out of this activity,
1366 it's gonna be like
1367 yeah
1368 it's gonna carry you far,
1369 or something.
1370 You know what I mean?
1371 yeah yeah yeah
1372 um,
1373 and I knew it was here,
1374 but I wasn't sure we had-
1375 ((whispering)) I can't remember ((laughs))
1376 yeah

1374 I can't remember what was articulated either by you
or by them

1375 mhm

1376 around what are they trying to learn

1377 mhm

1378 from doing this.

1379 Yeah.

1380 I'll bring that up tomorrow.

1381 Cool. (3s)

1382 woo hoo, go us!

1383 Anything else you wanna talk about

1384 or questions you are having, or

1385 I mean, are we gonna get to see the footage, or

1386 yeah

1387 yeah

1388 yep,

1389 we'll see it.

1390 In the past what happens

1391 is there's some process that I'm not a part of

1392 where it goes from being on the camera to being

1393 on a, like

1394 on a computer

1395 yeah

1396 or what he's been doing, I think in the last video we

1397 took, by a private YouTube thing

1398 Marcel shared it with us

1399 uh huh

1400 so he set up a

1401 password protected or something, youtube

1402 right right

1403 um yeah,

1404 so then I think what we should do,

1405 what I would love to do is watch it together

1406 uh huh

1407 and then we can figure out,

1408 um

1409 I and some coachy people

1410 will probably be like, 'yes, I think we can use it,

1411 here's the section we want to use'

1412 uh huh

1413 you're the final word, so

1414 right

1415 if there's anything you don't want to use

1416 right

1417 we'd never use it.

1418 right

1419 um

1420 and, uh,

but you and I would get to talk about it

1464 yeah
1465 with each other.
1466 And I think there was a lot of interaction there.
1467 you feel like everyone was participating equally?
1468 I don't know.
1469 I don't know.
1470 yeah
1471 I have to watch it.
1472 yeah
1473 I mean I think everyone was participating at some
point
1474 yeah
1475 the girl in that group
1476 I think that, um,
1477 right
1478 was less
1479 fluidly participating?
1480 yeah
1481 but I th- at the beginning anyway,
1482 but I think her group was maybe doing an awesome
job of like pulling her in.
1483 yeah
1484 although I want to watch and see
1485 what they did
1486 yeah
1487 but it seems like,
1488 I saw people talk,
1489 I saw them turn to her, while they were t-
1490 cuz the other three felt like they were very easily
interacting?
1491 right!
1492 and she was sort of not?
1493 but I saw them
1494 trying to ask her questions?
1495 maybe it was asking,
1496 maybe it was telling,
1497 maybe it was checking in 'do you get it?'
1498 yeah
1499 maybe it was asking her for ideas
1500 yeah
1501 I have no idea what it was.
1502 yeah
1503 so,
1504 but somehow including her,
1505 so that was very impressive.
1506 which is so easy to not do?
1507 yeah
1508 um,
1509 yeah,

1510 and we'll just-
 1511 we'll learn a lot about them, that'll be awesome,
 1512 and we'll get to watch this group that Marcel was
 videotaping
 1513 yeah, table 2
 1514 yeah, in uhhh second period
 1515 yeah
 1516 or was that second period?
 1517 third period.
 1518 third period, right.
 1519 yeah, which, at the end they were like,
 1520 'Ms Kassis, that was so intimidating!' ((*laughs*))
 1521 I'm sure, yeah.
 1522 They seemed really like they were,
 1523 humming along despite it.
 1524 yeah, I'm like 'no, we're trying to learn from you!'
 1525 and they're just like- it's just like-
 1526 they don't understand how we're,
 1527 I mean I should explain it to them more about the
 process, and
 1528 yeah
 1529 how we're learning from them
 1530 yeah, yeah,
 1531 and it's hard for them to see /like how are you big
 fancy grown ups learning from us/
 1532 /^yeah it's hard for them to be like, 'wait, how is this/
 how are you learning from us?
 1533 like they don't understand ((*laughing*)),
 1534 how is this so interesting for you?
 1535 yeah yeah
 1536 like,
 1537 you don't even know.
 1538 so I'll find out from Marcel, um,
 1539 I don't know what the process- like how long it takes
 him
 1540 yeah
 1541 to get it to us?
 1542 yeah
 1543 um,
 1544 I'll find out,
 1545 so you and I can plan another meeting where we can
 sit down and watch it together,
 1546 or watch parts of it together,
 1547 and um
 1548 go from there.
 1549 cool.
 1550 yeah, so exciting!
 1551 so then, we won't meet on Thursday then?
 1552 yeah, I don't think we need to,

1553 unless at that time, if we already have the video
1554 yeah,
1555 unless we/ have the video
1556 /then we might use that time
1557 yeah
1558 yeah,
1559 for, for video
1560 yeah
1561 um,
1562 why am I getting out my computer,
1563 it doesn't make any sense.
1564 It'll take me like 10 minutes to get online and fix my
calendar,
1565 when I can just write it down.
1566 god, i wish I had this ready,
1567 in the beginning.
1568 I would have saved like ten minutes.
1569 live and learn
1570 yeah
1571 ((flipping pages)) Um,
1572 I have an idea.
1573 It's really interesting
1574 to talk with all three of you
1575 and to go into your classrooms all in the same day,
1576 which is what I've been doing every time
1577 mhm
1578 I don't know if I've done that ever before
1579 yeah
1580 in a school
1581 where I've gotten to do that, so
1582 connectedly (.)
1583 I think (.)
1584 can you talk to me about your process planning,
1585 when you guys plan together.
1586 All three of you teach seventh and eighth?
1587 mhm
1588 so, when you plan together,
1589 what does that look like?
1590 um,
1591 we have our laptops
1592 yeah
1593 we have our [curriculum] binders
1594 yeah
1595 we start out with like our timeline
1596 uh huh
1597 I'm sure you've seen
1598 uh huh
1599 and we talk about where we're at
1600 and how we're feeling

1601 yeah
1602 about the stuff
1603 yeah
1604 and then we addressed it the way that we need to
1605 uh huh
1606 and then we start looking at our units
1607 and then planning for the next week.
1608 uh huh
1609 like where we wanna go
1610 uh huh
1611 um,
1612 we remake a lot of stuff too,
1613 or recreate it,
1614 like the task.
1615 I think it would benefit you guys as a team
1616 uh huh
1617 to make sure
1618 that you take at least a minute.
1619 or two or three or maybe five
1620 for each lesson that you're planning
1621 together,
1622 to talk about
1623 what do we want students learning?
1624 like for this. Like we were like,
1625 'what's really important that we want to get them to
understand?'
1626 yeah
1627 cuz that frames all our decision making, right?
1628 yeah,
1629 I agree.
1630 OK.
1631 Cuz I'm seeing,
1632 in some,
1633 I'm sometimes seeing (3s)
1634 In response to like,
1635 'well what do we want our students to be making
sense of?'
1636 mhm
1637 Like- so I think you and Heather planned the surface
area stuff together maybe?
1638 the nets?
1639 yeah
1640 uh huh
1641 And I talked with her only- we had only a very small
amount of time for planning,
1642 yeah
1643 so we didn't get to get deep into it,
1644 yeah
1645 but for that conversation, we got to

1646 what do we want- what are we wanting our kids to get
out of this?

1647 surface area.

1648 what about surface area?

1649 that- for me, that's not a learning objective,
1650 'surface area.'

1651 yeah

1652 what do I want my kids understanding?

1653 yeah

1654 what is that gonna look like and sound like?

1655 yeah

1656 what is the math they need to be wrapping their heads
around?

1657 mhm

1658 cuz I feel like if we don't have that,
1659 we're just-
1660 it makes it really hard,
1661 to hold kids accountable for it.
1662 cuz we don't even know what it is,
1663 right?

1664 yeah

1665 /you know what I mean?/
1666 /I see what you're saying/ yeah

1667 so things can- and it's really hard with some content
like
1668 Heather and I were talking about
1669 the the content in Geometry that is really formula
1670 use kind of often?

1671 mhm

1672 it's really harder to do that in some ways?

1673 Um (.)
1674 but we:.,
1675 but like we should be getting-
1676 I want to know in a- when I'm in a classroom, like
1677 what should my kids be able to explain to me?
What should I- what would I ask them if I had a
1678 chance to talk to them

1679 mhm

1680 that would tell me
1681 whether this lesson is doing what I want it to do.

1682 right,
1683 yeah.

1684 like clearly a right answer on paper is not doing that
1685 right
1686 cuz that could happen in a bazillion different ways
1687 right
1688 they could be getting it from their neighbor, right
1689 yeah
1690 that's not telling me anything

1691 yeah
1692 so what is it that would tell me something?
1693 yeah
1694 you know what I mean?
1695 mhm
1696 Um,
1697 and then when we go into groups,
1698 we know what we're holding them accountable for,
1699 when we do checkpoints
1700 we know what we're listening for.
1701 We know whether it's okay to move on.
1702 yeah
1703 we know whether if this is taking five times longer
than we thought,
1704 'oh well, they got the big idea out of it because I knew
what the big idea was.'
1705 yeah
1706 'and I heard them saying it,
1707 so, okay whatever,
1708 they didn't finish all the calculations.'
1709 yeah
1710 you know what I mean?
1711 yeah yeah
1712 so I feel like that would be,
1713 that would be-
1714 this is feedback that I gave to the district about their
curriculum, too,
1715 is that it doesn't yet have objectives.
1716 mhm
1717 for the lessons
1718 mhm
1719 it has objectives written for lesson series?
1720 right
1721 but it doesn't have objectives
1722 and sometimes it's really hard to know
1723 for lessons
1724 yeah
1725 like what did the authors think kids were supposed to
be learning today
1726 right
1727 I see some problems
1728 right
1729 but that doesn't help-
1730 right
1731 there might be a really good learning objective in
there
1732 yeah
1733 but it's hard to dig out, right
1734 yeah

1735 um
 1736 yeah,
 1737 I think that's a good point.
 1738 /so I think/
 1739 /I mean I/ (.)
 1740 yeah
 1741 go ahead
 1742 cuz going into this lesson when we were planning it,
 1743 I mean that's what I was thinking,
 1744 right?
 1745 yeah
 1746 I was like I want them to understand a solution
 1747 yeah yeah
 1748 and so that was on the back of my mind
 1749 and, you know, it wasn't about, like
 1750 'how do they graph the points?'
 1751 you know like no,
 1752 that was not important, right?
 1753 yeah,
 1754 we're like let's get to the point,
 1755 let's have this conversation about what that point of
 intersection was
 1756 yeah
 1757 so,
 1758 yeah
 1759 and how are we-
 1760 cuz once you know what you want them to learn,
 1761 'how am I going to get them into that?'
 1762 right
 1763 'how am I going to get them talking about that?'
 1764 right
 1765 and so I think the- that-
 1766 what do we want them learning?
 1767 and then when you're getting into how it's going to
 unfold,
 1768 'how do I need them participating?'
 1769 right
 1770 so given what I want them to learn,
 1771 what should they be talking about?
 1772 yep, yeah
 1773 like what- is there some individual time?
 1774 yeah
 1775 which sometimes is fine.
 1776 yeah
 1777 do I need group conversations?
 1778 what should they sound like?
 1779 yeah
 1780 what- you know what I mean?
 1781 um, I think that would be-

1782 that would support (.)

1783 yeah

1784 your collective planning together

1785 and you guys to learn from each other really well,

1786 cuz those are also awesome learning conversations to
have with colleagues.

1787 yeah

1788 right

1789 yeah

1790 cuz then you're going to get into what's important

1791 mhm

1792 and you're not all going to agree,

1793 all the time,

1794 yeah

1795 about what's the important math here

1796 right

1797 and one person's going to say, 'I really need them to
do this'

1798 right

1799 and you're going to say,

1800 'I don't care if they do that,

1801 I want them to do this'

1802 right

1803 right? and that's gonna push you guys, to think about

1804 right

1805 and compare notes around

1806 what's really being valued.

1807 yeah

1808 yeah

1809 ((inhale)) cool. (3s)

1810 Awesome,

1811 and maybe I can come visit a planning meeting at
some point.

1812 yeah!

1813 I think we're supposed to-

1814 the other school hasn't contacted us.

1815 who is it do you remember?

1816 oh god.

1817 ((laughing)) I can't- my brain exploded trying to-

1818 ((shuffling papers)) I'm stealing one of these, but I'm
not going to steal your cover.

1819 (shuffling papers)) trying to, um,

1820 keep track of

1821 those plans was kinda crazy.

1822 What am I looking up, oh

1823 it was Jefferson?

1824 Was it Jefferson?

1825 mmmmm

1826 Was there something with Union?

1827 Jefferson,
 1828 yeah.
 1829 they haven't contacted you and did I-
 1830 did I drop the ball on it?
 1831 Or did I put you guys in touch with each other?
 1832 you emailed us and gave us their, um,
 1833 contact. Jenna?
 1834 uh huh,
 1835 Jenna and Chris, uhuh
 1836 and I replied
 1837 OK, I sent it to them,
 1838 on February second and I haven't gotten a response
 1839 to me or to them?
 1840 to them (4s)
 1841 let me check what we sent. here.
 1842 Oh was it all?
 1843 that was before I sent the last one, I think, right?
 1844 oh, yeah. U:::m, (11s)
 1845 yeah
 1846 okay,
 1847 so you told them when you were meeting
 1848 mhm
 1849 uh, and they, haven't answered yet.
 1850 okay. (.)
 1851 okay.
 1852 Well,
 1853 we hope something will happen.
 1854 yeah
 1855 and everybody's doing a ton.
 1856 yeah
 1857 do you want a piece of gum?
 1858 sure,
 1859 thank you.
 1860 Alright cool, so I have tomorrow (.)
 1861 yeah.
 1862 I'm excited.
 1863 I wish I could be here to listen to them.
 1864 ((*laughs*)) I know (make more) sense of that.
 1865 I'll try to send Marcel back.
 1866 hm?
 1867 I can't be here but maybe I can try to send Marcel
 back.
 1868 mhm
 1869 I can talk to him and see if he wants to come back
 1870 I can tell him you guys are continuing this same
 lesson and pushing these conversations further
 1871 and see if he has time.
 1872 So Heather's gonna go back into this too?
 1873 yeah.

1874 she's gonna go back and have them re-checkpoint this
 1875 part
 1876 around looking at the
 1877 point of intersection in the graph and- I mean
 1878 table
 1879 in the table and the equations,
 1880 yeah.
 1881 Cuz she just
 1882 didn't realize that's what we were going for there. (.)
 1883 so she had some groups working on this,
 1884 but I don't think anyone finished that.
 yeah

Kamilah Cycle 4 Planning Conversation

	Kamilah	Mia
1	I wanted to use the bathroom, but I can wait until after.	
2		No, do your thing. Do not wait.
3	You sure?	
4		Yeah.
5		Do you want to give me something to think about before you go?
6	Um like how to	
7	Um	
8	I'm using this right now.	
9	and we are working on this as a whole group	
10	and that was like taking the whole period basically,	
11		mhm
12	And how to kinda make it more-	
13	less me up there and talking	
14		mhm
15	on how to do it	
16		mhm, okay
17	and more them trying to figure out how to do it.	
18		yeah.
19		got it.
20	does that make sense?	
21		yeah
22	OK, cool.	
23		(looks through notes) And you're gonna eat right?
24		yeah
25		oh good. I ate at home, so I'm fine.
26	<i>leaves the room</i>	
27		<i>(writing in her notebook)</i>
28	<i>(Kamilah comes back)</i>	
29		so, um,
30		can you tell me a little about what they know so far
31		what they know before this lesson about tiles

32 and solving
 33 yeah so zero pairs,
 34 okay
 35 they do have like taking stuff away
 36 (.) Um
 37 from an equation or an expression
 38 (.) expression.
 39 okay
 40 this is the first time we are doing equations
 41 mkay
 42 I mean the reason why I didn't do that cuz I didn't
 43 want to get that too extreme yet,
 44 but they know how to distribute
 45 expressions.
 46 (.) um
 47 do they know how to build that (*pointing at paper*)
 48 with tiles?
 49 yeah
 50 they do.
 51 mhm
 52 ok. (writing)
 53 cool,
 54 So and how did it go before and what do you-
 55 how are you feeling about it.
 56 Like when you did it 4th period you said- I heard you
 57 say you want my help thinking about
 58 how to make it less you up there
 59 showing
 60 how to do stuff
 61 and more of them figuring out how to do stuff.
 62 Is that right?
 63 yeah
 64 can you tell me a little more about what happened?
 65 um
 66 like
 67 you know they know how to like set this up as tiles,
 68 and they know this is left,
 69 this is right,
 70 they are using these equations (inaudible) they are
 71 using that part
 72 ok
 73 but the part where they're like
 74 ok, what do I do now?
 75 mhm
 76 Right like do I add four?
 77 do I add six?
 78 do I add six and then- flipping over,
 79 like we talked about that on Tuesday,
 80 this is just the second day.

77 and how did that get talked about
78 on Tuesday?
79 Just basically like, this is how you make a zero pair.
80 so it wasn't,
81 I mean
82 ok
83 I don't think it's as deep as- I don't' know how-
84 OK,
85 so it's been started, right?
86 So I'm hearing you say that there's more to go as far
87 as them internalizing sense making around that.
88 uh huh uh huh
89 but it's been begun
90 yeah
91 right? ok,
92 cool.
93 So that's a great place to be.
94 Yeah.
95 Ok, um
96 and then the way this lesson went was you were up
97 there
98 with this paper under the doc cam
99 we did this one (pointing at the paper) together.
100 So I had them do it in pairs
101 yeah
102 so, um
103 as we were doing it, like,
104 one person is doing the drawing and the other person
105 is setting it up on the equation mat
106 and do they take turns?
107 yeah and then,
108 um and then they do the algebra
109 and they take turns and then they do the explanation.
110 So they write it.
111 But we did it together as a whole class and then
112 their task today was to do this one with their partners.
113 (getting up) OK, can I grab tiles because
114 yeah
115 I want to get clear on what happened
116 so I can make sense of it.
117 so (sitting down with tiles),
118 so you are up there at the front,
119 and do you build it?
120 no, they built it
121 they built it themselves
122 yeah
123 and then how did you get it up there?
124 I just had this (pointing to the worksheet) projected.
125 oh, you didn't have tiles up there at all.

122 no
123 oh, ok.
124 You had this projected before they built it or after?
125 Like when you say we- sorry I'm just trying to get a
picture for this.
126 mhm
127 When you say we did this together,
128 mhm
129 what does that mean?
130 Like how did this unfold
131 So
132 from the blank paper that had no writing on it.
133 right, didn't it start with just equation?
134 Just that typed stuff, right?
135 yeah just (going through papers, finding one and
putting it in front of Mia)
136 It started looking like a (blank) worksheet, right?
137 it looked like this.
138 right right right.
139 Ok then, so how did it go from looking like that to
looking like that.
140 Um,
141 so we built it with tiles.
142 Like they did it with their partners
143 Mhm,
144 and then we talked about, OK what should we do.
145 okay
146 We could add six,
147 so then we flipped it together and brought-
148 to the other side.
149 When I flipped it,
150 I showed them how that looks algebraically (pointing
to paper).
151 OK, so they, so you said,
152 um, build this
153 yeah
154 with your partner.
155 uh huh
156 And this was written on here too,
157 yeah
158 the distribution was written on here too.
159 yeah, the distribution was given to them, yeah
160 ok,
161 um,
162 build it,
163
164 uh huh
165 and then, when you said "WE talked about-

166 WE built it on here”
167 did you ever build it?
168 or did each pair build it
169 /I never built it/
170 /and you walked around/ you walked around
171 I just walked around and I checked to make sure
everyone had it (correctly) yeah.
172 I see I see I see.
173 OK and then they-
174 and then you said, as a whole-
175 in a whole class discussion kind of format, now what
do we do?
176 yeah
177 ok, uh huh
178 and there was a lot of blank stares
179 yeah, yeah
180 yeah
181 yeah, cool.
182 OK, thank you,
183 it helps me to get a picture
184 So I kind of (had to) tell them, ok, what could we do,
185 and then,
186 you know, could we do this?
187 and then they’re just like, ‘ok, I guess”
188 (*laughs*) so
189 uh huh, ok
190 I don’t know if they know that-
191 or the biggest thing I don’t know if they know that it
doesn’t really matter where you start
192 yeah
193 right?
194 you said they don’t know that
195 I don’t think they really understand
196 yeah yeah yeah, ok. (*writes*)
197 Yeah,
198 that’s awesome.
199 That’s awesome to identify
200 because I think it’s very common?
201 that something that um
202 freezes kids up?
203 with solving?
204 is they think there is A thing
205 they are supposed to do next and they’re not sure what
it is,
206 so they don’t do anything.
207 yeah
208 and so there’s something to be gained by trying to
give them a sense of play?
209 mhm

210 like as long as what you're doing makes sense, it's not
wrong.
211 Like you can do-
212 like so what
213 yeah
214 if someone solves it in four steps and you solve it in
twelve,
215 mhm
216 you know what I mean?
217 yeah
218 Like there isn't a way.
219 You can just pick.
220 right
221 pick a thing to do
222 yeah
223 and as long as um,
224 as long as it doesn't violate the equation
225 mhm
226 right, it doesn't violate the relationship between the
two expressions being
227 mhm
228 that they are equivalent, right
229 yeah
230 um (.)
231 so I'm also hearing that, um uh,
232 maybe something we could think about is how
233 to integrate into their sense making?
234 a focus on why.
235 Like why can we do one thing and not an-
236 not so much- there's two different kinds of why's.
237 there's a why do we want to do this thing next,
238 like why would I subtract or add six to both sides?
239 And then there's the why CAN I,
240 like why is it legal,
241 why does it not violate this expression,
242 mhm
243 why is it mathematically permissible.
244 That's the one I think we're focusing on,
245 okay
246 for today.
247 The other one is like,
248 because I want to.
249 right
250 I could also add ten to both sides.
251 right
252 That would be totally fine.
253 yeah
254 There isn't a
255 yeah,

256 like I don't think there's a good understanding with
 them about like,
 257 what this means,
 258 yeah
 259 they're both equal.
 260 Like I don't think they really
 261 mhm
 262 have a good grasp of understanding like-
 263 yeah
 264 yeah
 265 yeah cool!
 266 so let's work on it.
 267 okay cool, yeah
 268 Um ok, so what I'm hearing is (*counting on fingers*)
 we want them to be making sense of why,
 269 we want them to get a sense- like freed up a little bit
 270 that there's not like one right thing to do
 271 yeah
 272 at any given point,
 273 yeah
 274 right.
 275 We want them-
 276 we want it to be less you focused
 277 yeah
 278 more them focused,
 279 uh huh
 280 right?
 281 um,
 282 cool.
 283 I think this structure is really nice.
 284 It supports a lot.
 285 ok
 286 so one idea,
 287 can I just throw some ideas at you?
 288 mhm
 289 I feel like we're a little bit rushed for time
 290 because lunch time is short.
 291 yeah
 292 um
 293 so one idea would be
 294 to still allow for some whole class sense-making
 295 because it's helpful,
 296 right
 297 I think,
 298 but have it kid led.
 299 So the first thing that we ask them to do
 300 is to build it
 301 mhm
 302 and we have a kid come up and build it

303 mhm
304 under the doc cam.
305 ok
306 and then we have- and so we set up this routine that I
think could maintain through many solving with tiles
kinds of lessons
307 where a kid is up there doing stuff,
308 the rest of the class is doing the same stuff
309 and then they have to-
310 um it's up to the class, not you,
311 to agree or disagree with what the kid did /and to say
why
312 /but as they are doing it, are the kids doing it too?
313 yeah
314 ok, the same move, even if they don't-
315 yeah
316 but if they disagree, then they can have a talk about-
317 yeah,
318 so then they build it up there (*pointing to the front*),
319 they build it here (*gesturing toward student tables*),
320 and then there's a moment of like,
321 so what do we think?
322 right.
323 So that- thing that would be projected is just
324 not this sheet (*worksheet*) but this (*equation mat*), the
equation mat
325 mhm
326 OK
327 and then maybe something like this (*pointing to*
worksheet) could be set up on the white board if we
want a way for kids-
328 because I think we still want this (*pointing to the*
worksheet)
329 right
330 I just want kids writing on it,
331 right
332 not you
333 right
334 and saying why
335 they're doing stuff and therefore, what's gonna
happen
336 is not such a clean solution like yours,
337 which might help us support that sense of play
338 yeah
339 like they might add ten.
340 and as long as they can justify why it's
mathematically viable,
341 like they are doing it to both sides so it maintains the
equality

342 mhm yeah
343 then sure, let's add ten.
344 So this might end up having more steps
345 yeah
346 right?
347 yeah.
348 yeah.
349 the thing with that.
350 it's just-
351 as a teacher it's so like hard, to like
352 let them play. I know it's so important,
353 but it's like when you have such pacing,
354 and the SBAC's coming up and everything,
355 and feeling like you have to cover so much material,
356 it's just like-
357 the only thing that's on my mind right now is like,
358 Okay do we-
359 I know this problem is going to take the whole period
360 when I do it with you
361 yeah
362 and it's like
363 then we're gonna spend another day,
364 you know just like
365 instead of moving- I mean I know
366 how it's going to pay off in the end?
367 but-
368 and not just for you in this class in the end,
369 it's gonna pay off in eighth grade, it's gonna pay off
370 in 9th grade,
371 it's gonna pay off in eleventh grade,
372 yeah, yeah.
373 I have to keep reminding myself that.
374 it's huge
375 yeah
376 yeah, the foundation around sense making around
377 solving
378 is like a barrier for a lot of kids and it's big.
379 yeah
380 it's the thing that kids can, like often are really scared
381 of
382 and this, this little moment
383 can support them to totally get over that
384 and have fun with it
385 yeah
386 which is like
387 yeah
388 really big.
389 but I get it.
390 yeah

386 I get the-
387 sometimes it's just hard to-
388 yeah
389 SBAC doesn't count for anything this year.
390 I know.
391 do you know that?
392 (laughing) yeah
393 like it doesn't matter
394 yeah
395 at all.
396 yeah
397 doesn't matter.
398 I know.
399 ok,
400 um,
401 so then there's this routine that I picture,
402 where a kid is up there for every step, and it's a
different kid every time.
403 mhm.
404 for every step
405 mhm
406 ok, so not the same kid.
407 OK
408 yeah,
409 so one kid goes up and builds it.
410 We all- do we agree with it or not.
411 OK, so next another kid is gonna come up and
propose something we can do with these tiles.
412 Um,
413 and we-
414 and so the routine is kid up there
415 and every single time the kid has to say why
416 or try to say why
417 or ask for help saying why if they need to,
418 but out- students vocalize why you can do this
419 ok
420 right?
421 why is it ok
422 when they do that,
423 should we also do it on the board too algebraically?
424 that's what I was thinking was have some version of
this (*pointing to worksheet*) on your board
425 ok
426 and have another kid maybe?
427 up at the board figuring out- like so one kid is with the
tiles
428 and proposes a step
429 and then another kid is like how do we write down
430 what that kid just did algebraically

431 and then,
432 maybe the how do we say it with words could just
(gesture of hand from mouth)-
433 I don't know
434 say it, yeah
435 we could have another kid,
436 or we could just like do it,
437 or I don't know.
438 But I think everything-
439 kid says it,
440 we say why
and we give it- we make it the kids' responsibility, the
441 class's responsibilty to say if they are not convinced
or if they are convinced,
442 right?
443 ok
444 we did this with Aya
445 on Tuesday,
446 uh huh
and what was super interesting
447 was when we had kids up there and not her-
448 like she has great rapport,
449
450 right
the kids love her,
451 they totally pay attention to her,
452 and still
453 when it was students up there,
454 everybody in the room was like (*sits on the edge of*
455 *her chair and leans forward*).
456 oh wow
like they are just attending to it because there's
457 something kinda
458 mhm
459 on the line, right?
460 mhm
461 in a way that they're not attending to it
462 right
463 when it's her
464 right
465 so it felt like it makes that whole class thing-
466 it does all kinds of good stuff
467 yeah
468 including just, they focus on it more
469 yeah
470 you know, and think about it more
471 and participate more.
472 yeah
473 and then we- and then our job would be,
474 or your job,

475 or however we want to do it, would be
476 to just like
477 heap love on them.
478 Like make sure every time a kid goes up there
479 it's safe,
480 it's happy,
481 we're thankful,
482 we tell them how awesome it is,
483 mistake or no mistake.
484 mhm
485 If they make a mistake we thank them for it
486 because we point out that like,
487 that ten other people would have done that same thing
488 yeah
489 but just kept doing it for the next week if you hadn't
just done that.
490 yeah
491 so thank you,
492 that's super imp- you know what I mean?
493 yeah
494 like we just (*circle gesture with hands*)
495 okay
496 yeah?
497 yeah,
498 sounds good.
499 and it's super fun.
500 And then um,
501 and then uh,
502 yeah, we just see how far we get. And yeah,
503 I would say to go through one
504 up there
505 with someone modeling at the front
506 and then you could give the next one to just pairs,
without any,
507 without any kind of whole class,
508 if there's time
509 yeah
510 this might take most of the class
511 mhm
512 right?
513 um but you're modeling
514 what does it mean to draw it,
515 what does it mean to write it
516 algebraically,
517 what does it mean to write it with words.
518 mhm
519 which is gonna support them moving forward
520 yeah
521 right?

522 I have one recommendation I would make
 523 for an adjustment to this (*tapping worksheet*),
 524 which is
 525 I think that one of the things that can happen that is
 526 um,
 527 challenging for kids,
 528 is they're looking at the tiles,
 529 they're trying to understand how this like bunch of
 530 plastic
 531 is the same as this algebraic expression.
 532 And that process
 533 they have to repeat a whole bunch of times.
 534 Like every time there's a new set,
 535 they have to be like attending to how are these
 536 symbols and letters
 537 and numbers the same as this- right?
 538 yeah
 539 and that coordination is both really important and
 540 really hard
 541 And I think the more we can make the tiles look
 542 exactly like the expression
 543 and not different,
 544 the better.
 545 So my recommendation is that we don't do this
 546 (*pointing to part of the worksheet*),
 547 that we actually write that out or cover it up and that
 548 we ask them to build
 549 this exact expression, cause they know how to build
 550 that, right?
 551 yeah, oh.
 552 They're not doing the thing.
 553 They're just building it here and drawing it.
 554 That's the only step (inaudible).
 555 Not doing-
 556 is that what you meant?
 557 Like they're only doing,
 558 for the tiles part they are only drawing and building it.
 559 yeah yeah, so what I'm saying is this.
 560 So this is what I want them building (*placing Algebra
 561 Tiles on the table*)
 562 because I think it will support some kids.
 563 You said they know the distributive property.
 564 yeah
 565 I'm pretty sure some kids are struggling with it.
 566 ok yeah
 567 just cause some kids always do.
 568 yeah
 569 so,
 570 which is negative, red?
 571

562 mhm

563 Are they doing it as rectangles or are they doing it as
groups, like three groups of x .

564 How would they build that?

565 so I have them

566 when they are building just that expression

567 build x minus two three times.

568 yep.

569 they would do it like that.

570 mhm

571 OK.

572 So then I would say take this out.

573 (I'm gonna put) this closer (*moving the Algebra Tiles*)

574 would they do it like it's actually a rectangle?

575 yeah, mhm

576 ok, cool. Awesome. (*they adjust the tiles together*)

577 So I would have them actually do that

578 and not distribute for them.

579 So then they build-

580 so the first person's job is gonna be-

581 because we're actually gonna solve it with tiles not just
build it with tiles, right?

582 mhm

583 so then the next person would do

584 four x minus one. (*building with tiles*) We're gonna
run out of ones here.

585 (inaudible)

586 We have x minus one, right?

587 yeah okay

588 times four.

589 So then we would actually take a minute

590 yeah

591 to make sense of why is this,

592 that we have there (*gesturing to tiles*)

593 the same as that expression (*covering the distributed
expression and leaving the original one*).

594 And make sure numerous kids can say why.

595 Then the first algebraic thing we might do

596 is rewrite that,

597 because the fun thing about tiles and distributive
property is actually doing the distributive property is
not doing anything

598 right,

599 mhm

600 because it's already sitting right there.

601 yeah

602 so all we're doing is writing it differently,

603 mhm

604 which is we are recognizing
605 we are grouping it differently,
606 mhm
607 so we are recognizing that this is three x minus six.
608 Um,
609 does that make sense?
610 yeah
611 as a shift?
612 yeah
613 So then we have someone write,
614 algebraically, now that we've built it,
615 what's the first algebraic thing we can do is-
616 oh, we can just write that in a different way that
makes it a little easier to work with.
617 mhm
618 we can write that as three x minus six and if they want
to,
619 they can do that (*moves algebra tiles away from each
other so they no longer form a rectangle*).
620 It's the same, or they can-
621 you know what I mean?
622 (*nodding*) yeah
623 um, then the next person who came up
624 for the tiles,
625 we would say, ok what's something we can do
626 to this (*gestures to tiles*) without messing up the
relationship between these two sides.
627 uh huh
628 what's something we can do to make this
629 different,
630 maybe simpler,
631 maybe easier to look at.
632 And so somebody might add six,
633 they might add four,
634 right they might
635 (they're gonna) do this (*moves tiles from one side of
the equation to the other*).
636 they're gonna move those over there?
637 Mhm
638 cool. so every time anyone does anything we're gonna
639 say why?
640 how does that keep them the same?
640 So,
641 I don't know, I think that for me, I need a better
642 understanding of that too (*moving tiles*)
642 yeah
643 so the reason why we flip it is because (*flips some red
unit tiles from the right side of the mat to their yellow
side on the left side of the mat*)

644 have they already seen flipping it?
645 mhm, they have. So normally I would say don't even talk about
646 flipping it for a long time,
647 mhm
648 um, ok but, so we're gonna wanna do-
649 so the reason-
650 so anything we do
651 we have to be able to justify why it's maintaining the
652 relationship between
653 right
654 the two sides.
655 right
656 So what I've seen kids do to get to flipping it,
657 but usually it's after a few days
658 mhm
659 of doing other things like
660 they might say we can take away four from both sides
661 (*removing four from both sides of the mat*) because
662 oh, right
663 four is the same as four
664 yeah
665 so it's still gonna be equal.
666 right
667 they might say we could add six
668 positives to both sides
669 right
670 cause that's gonna keep it equal
671 right
672 and that's gonna make these nice zero pairs we can
673 get rid of
674 over here.
675 They might say that.
676 Um-
677 but then how is adding six justifying that it makes it
678 equal
679 because what you do to o-
680 like you're taking the six away from the other side
681 too,
682 when you're adding six
683 so you would say, so adding-
684 if I wanted to add six to both sides, I would say ok,
685 well why is that OK
686 mhm
687 and the kid would have to say,
688 well because six, these six that I'm putting over here
689 (*reaches for bag of tiles*) and we would need to make
690 sure we have enough of them.
691 These six I'm putting over here-

684 (toward door) not today
685 and these six I'm putting over here are the same,
686 so I'm adding the same thing
687 to the both sides,
688 so I'm changing this (*taps left side of mat*) by the
same as I'm changing that (*taps right side of mat*) so
if they were equal before, they are still gonna be
equal.

689 right
690 Thats-
691 yeah
692 yeah
693 because yeah (*points to tiles briefly*)
694 because you're adding yeah (*nodding*)
695 does that make sense?
696 and that's not the same as why I want to add six.
697 right?
698 that's the why I CAN add six
699 can, right
700 which is the /one that we need to make sure
701 right
702 that they're
703 /right, yeah, that they understand/
704 understanding too
705 and why we want to add six at this point we don't
care.

706 or, cause we want to make zero pairs
707 right
708 and get down to-
709 yeah, but like if they wanted to add ten,
710 right
711 sure,
712 right
713 we don't,
714 like I think going to strategy for how to do it
efficiently
715 yeah,
716 yeah
717 will come with time.
718 ok
719 um,
720 and then um,
721 yeah, so then we just make sure it's really fun to go up
there.
722 We try to work on quick transitions-
723 how do you call on kids?
724 Do you do equity sticks kind of stuff?
725 oh, yeah, I have- I do it-
726 I haven't been good at it this year but I have 'em.

727 You have a random way though.
728 yeah
729 and so you can just say at the beginning,
730 I'm gonna randomly call on kids.
731 What your job is when you come up here
732 is to help us make progress,
733 and progress can look like
734 telling us something you think and explaining why
735 or progress can look like asking a really good question
that the rest of us can respond to.

736 so then, so I don't choose a student to come up here.
737 Randomly?
738 yeah,
739 you do.
740 ok
741 yeah.
742 you choose a student to come up and build.
743 You choose another student to write the algebra,
744 you choose-
745 when everyone agrees and that student is done, we're
like "yay" (*clapping*),
and then you choose another one to come up and do
746 the next tiles manipulation up there (*pointing to
front*),
747 yeah.
748 ok
749 Um
750 and I think the- that one-
751 yeah,
752 that's how I see it.
753 And we just say why every time
754 and we give them, like-
755 like you're so good at that right?
756 Giving, like, helping them feel really smart for what
they do that's smart,
757 Like we don't just let it go by,
758 mhm
759 we don't let them sit down without making it clear
how useful what they just did was,
760 mhm
761 whatever it was, right?
762 mhm
763 and then the more we do that,
764 the more kids are gonna want to come up
765 ok
766 and it won't be like, (*in kid voice*) "ahhhh, that's
scary."
767 uh huh
768 And we acknowledge at the beginning,

769 the first people it's gonna feel scary.
 770 yeah
 771 We totally know that
 772 and we love you for it
 773 and we're gonna support you
 774 and you know
 775 yah
 776 and like that.
 777 (.) ok
 778 what do you think?
 779 yeah
 780 worth playing with?
 781 yeah,
 782 I mean, they're great group, so-
 783 yeah
 784 they'll be up for it.
 785 um, cool. so, what-
 786 what would you like my participation or support or
 anything with?
 787 Um
 788 /should I just watch so we can debrief?/
 789 /um, just the why part/
 790 because that's new for me
 791 yeah
 792 so if i'm just- if they're not like,
 793 making sure that they're justifying clearly.
 794 ok
 795 like if they need support in that,
 796 or like how can I support a kid-
 797 cuz I know like some kids I feel like are gonna have a
 blank stare and not know how to say it,
 798 so like helping me help them to come up with an idea.
 799 (nods) yeah.
 800 well, I think if a kid is struggling with an idea, what
 we do is turn it to the class.
 801 Cause we want to set up this dynamic where when
 you go up there,
 802 the rest of our job is to support you/
 803 uh huh
 804 in what you're doing
 805 and not to like judge you for what you're doing
 806 mhm
 807 so when you're struggling,
 808 what I want you to do is ask for help from the class
 809 and then volunteers from the class can offer support
 810 ok
 811 like ways to say stuff
 812 ok
 813 um,

814 and one thing I feel lik you're- yeah, you're super
good at

815 is when kids- and I just want you to keep it for today
because it'll be helpful,

816 is when kids,

817 when kids say partial things or things that are not yet

818 totally right,

819 you're really good at listening for the thing that's
useful in there

820 and pulling it out.

821 uh huh

822 and I think that will help support this today.

823 And yeah, I'll join in with you to help you do that too

824 ok, cool

825 So I think maybe at the beginning, if you just
introduce me

826 and let them know that I'll be participating so it's not
weird

827 yeah

828 when all of a sudden I'm talking to them

829 and they're like, who the hell is that

830 yeah

831 then maybe we can just sort of play it by ear and

832 yeah

833 You'll do it and then

834 yeah

835 I will just jump in /if (inaudible) something to say or/
836 /yeah, we've done that before, so/

837 I'll assign competence if I see an opportunity, or

838 ok

839 whatever

840 cool

841 Um

842 what about my do now (*looking toward white board*),

843 is it ok?

844 It's just

845 Well, I was wondering.

846 The one thing I was wondering about with the do now
is-

847 I hadn't even processed that (*gesturing toward the
board*), but um,

848 mhm

849 the one thing- you said earlier that you don't know
that they really necessarily know why you can do
things,

850 right, which is super natural,

851 yeah

852 but the foundation I think we want for them

853 that we're going to base everything else in

854 is that-

855 is the significance of this (*pointing to the equals sign on the equation mat*).

856 Like what equals means.

857 Like what it means that these two expressions are

858 yeah

859 equal to each other

860 yeah

861 so I wonder if we can make a quick do now

862 that would get them in touch with that

863 and give you a chance to frame the lesson around,

864 um, around

865 something getting their brains into

866 this means these two things are equal,

867 so we have to keep them equal (*bell rings*)

868 so solving it means finding the value that keeps them equal

869 yeah

870 you know what I mean?

871 (*some talk about video permission*)

872 Um, yeah, so what would a do now be?

873 Like, um, (4s)

874 can we give them something with a couple different values of x?

875 like give- put an equation?

876 and say,

877 um, which of these-

878 like almost multiple choice.

879 Like which of these values of x makes this a true statement?

880 or something like that that helps them focus on it being true for some values

881 yeah

882 or something like that

883 yeah, yeah

884 does that seem useful?

885 ok, for just like a two step equation or like- or

886 yeah, where they can just plug in pretty easily.

887 Nothing that's about solving really,

888 yeah

889 but just that they can be thinking about, it can even be like,

890 you know (*writing*) like x plus two equals three x.

891 Would that work?

892 No, that's weird. That would be one,

893 which is kind of a weird one. Um,

894 let's see. What if x were two.

895 what about that? (*shows her notebook*)

896 (*looks for 8s*) that's hard! (*laughs*)

897 wait, what is that?
898 it's two.
899 It's x is two, right?
900 I thought the other one was easier.
901 I know but ones are weird because they're the
identity,
902 so they make things, uh, (*writing*)
903 uh, ok, so how about we just do this. (*Shows*
notebook)
904 (*nods*)
905 there's just one x
906 yeah, ok

Kamilah Cycle 4 Debrief Conversation

Kamilah	Mia
1	Yay!
2	yeah I mean,
3	we just built so many awesome norms.
4	yeah
5	I don't know if you notice all of them
6	yeah
7	But I think very successfully
8	yeah
9	they made mistakes in the front of the room
10	yeah
11	and were fine
12	yeah
13	right?
14	They went up there randomly and knew they would be fine.
15	yeah
16	like people were scared
17	and then totally taken care of
18	yeah
19	they got fully supported by each other
20	yeah
21	We had ruvelin,
22	went up there and said I need help from my class
23	yeah
24	was willing to say that
25	and got help from her class
26	yeah
27	which is amazing
28	yeah
29	right?
30	um,
31	AND we set the norms of like what does it-
32	'you have to say why'

129 and it won't be quite so (.)

130 slow.

131 I think.

132 yeah

133 yeah.

134 And you don't have to do that with every one.

135 with every equation.

136 yeah

137 Like going back and forth between that kind of sense
making to pairs

138 yeah

139 and hopefully what you will see is,

140 you know,

141 when you go next to pairs,

142 some of the kids won't do it right.

143 yeah

144 they just won't.

145 that's just the way it goes,

146 right?

147 yeah

148 they'll be trying to make sense of it and they'll get
really stuck

149 yeah

150 but like each time you do that whole class thing led by
students

151 yeah

152 they're gonna,

153 like more of them will be like,

154 "Oh, that's the thing that I wasn't thinking about."

155 uh huh

156 You know what I mean?

157 ((K yawns))

158 um,

159 awesome,

160 and I also feel like.

161 I don't know,

162 so tell me.

163 Uh,

164 how much have kids been in front of the room

165 so far this year?

166 ((shaking her head)) not a lot

167 this is one of the reasons I love algebra tiles.

168 Cause it's such a way to get them up there

169 where they don't have to be all-

170 It like opens up that space ((pointing to the front of
the room))

171 as a kid space

172 yeah

173 because they don't have to be all polished and clear

174 yeah
 175 it's like
 176 coming up there is just being one of the sense makers.
 177 yeah
 178 you're just guiding the class in their sense making
 179 yeah
 180 which is what we all do
 181 yeah
 182 right, you don't have to
 183 yeah
 184 it's not like I have to be up there with my perfect,
 185 ready to show off
 186 presentation
 187 yeah
 188 you know what I mean?
 189 um,
 190 so depending on what else you're doing this year,
 191 that might be something you can build on
 192 yeah, yeah
 193 and like use that momentum
 194 when kids are now used to it,
 195 it's a lot easier to get them- like
 196 what if kids lead the do now
 197 right
 198 um debrief.
 199 sometimes.
 200 or like
 201
 202 whatever whole class debrief, if there is one at the end
 203 yeah
 204 or like getting kids up there to clarify like,
 205 "wait what did we learn today?"
 206 yeah
 207 or, what was this about,
 208 you know?
 209 yeah ((yawns)) sorry,
 210 I'm just / tired
 211 /no no ((Laughing))/
 212 it's totally ok.
 213 So tell me what you're thinking and what you-
 214 um,
 215 no I like it.
 216 I mean it just kind of reminded me
 217 of like how important it is to make sense of it,
 218 you know.
 219 mhm
 220 um,
 221 I want to do the same thing with my other two classes
 222 and then continue this with my 6th [period].

221 mhm
 222 So,
 223 yeah,
 224 and then I feel like we just need to-
 225 like when we come back from break, like
 226 doing it all over again.
 227 like, especially with solving
 228 just like practice
 229 and practice,
 230 so,
 231 it's gonna take time but
 232 mhm
 233 I think it'll be worth it in the end.
 234 mhm
 235 so
 236 yeah, I totally think it'll pay off
 237 yeah
 238 and not just this year, like I said.
 239 It's so foundational
 240 yeah
 241 right?
 242 they need it for the next
 243 it's so foundational and it's something that's so-
 244 it's almost like,
 245 you know how they say algebra is a gate keeper?
 246 yeah
 247 I feel like symbolic manipulation
 248 yeah
 249 is also a gate keeper,
 250 or like a little gate keeper in there
 251 yeah
 252 it's like the thing that often has separated kids
 253 ((*gestures with her two hands splitting apart*))
 254 yeah
 255 into like, ((*left hand moving to left*)) I feel really
 256 stupid in algebra
 257 yeah
 258 ((*right hand moving to right*)) I feel really great
 259 yeah
 260 you know.
 261 my question is like
 262 you know,
 263 it's hard for me to make,
 264 or like explain how it makes sense.
 265 Like you know how when we get down to equations
 266 where it's like,
 negative x
 oh yeah
 is equal to eight.

267 ((getting up and walking across the room)) let's do it.
 268 yeah I saw on your explanation paper you had divide
 by negative one.

269 yeah, like how can I-
 270 do you need an equation mat?
 271 yeah
 272 I'm looking for a mat (inaudible)
 273 ((pointing)) they're over there. ((gets up))
 274 in here?
 275 ((walks to her))
 276 how do you get cleaned up so fast ((laughing))?
 277 It's like one of the first things,
 278 like do you notice?
 279 Right when the bell rings,
 280 I'm like cleaning up.
 281 ((they both walk back to the table))
 282 yeah, it's amazing!

283 I feel like my experience as a teacher is when the bell
 rings I'm like ((freezes with a blank look on her face))
 284 ((laughs))
 285 And then at like five o'clock and I'm like/ oh crap
 286 It's when I sit down, like right now I'm sitting down
 287 like and my body is shutting down.
 288 ((getting Algebra Tiles from bag)) yeah, yeah.
 289 ok, so we have
 290 negative x ((places a tile on the mat)),
 291 right?
 292 yeah
 293 ((places more tiles)) equals whatever, two.
 294 ((Puts bag of tiles aside)).
 295 Yeah,
 296 so what are the legal things you can do.
 297 with that.
 298 you don't want a negative x there,
 299 you want a positive x.

300 mhm
 301 ((does something with tiles))
 302 if you make this positive,
 303 then you have to make this negative.
 304 but why?
 305 yeah.
 306 can you do it with zeros? (7s)
 307 Like
 308 what if we just got rid of that?
 309 uh huh
 310 ((Mia places some tiles and Kamilah reaches over
 and removes some.))
 311 yeah

312 o:::h
313 ((Kamilah flips a tile, looking at Mia))
314 Don't flip em cause you can't say why.
315 Put em back.
316 ((Kamilah puts them back, smiling. She adds tiles to
each side of the equation quietly.))
317 Uh huh!
318 That's why you can flip 'em!
319 OK
320 right?
321 ok,
322 yeah
323 you can make a zero there ((gesturing to one side of
the equation mat))
324 and see what happens there. ((nods))
325 And then eventually people like-
326 I feel like with enough repetition
327 then people get really comfortable with,
328 "Oh that's the same thing as flipping both sides."
329 right
330 But then we're like well why-
331 as long as you can explain why it's the same thing,
332 yeah
333 then you don't have to do those steps every time.
334 yeah
335 But like the flipping over to the other side
336 is one I would insist that they
337 ((interruption from Patty Eldridge coming in and
some talk among all three about Kamilah's recent
engagement and her new ring.))
338 patty: I enjoyed watching you [Mia] the other day.
339 Oh, thanks.
340 Patty: It was great.
341 It was fun to see you there.
342 ((Patty leaves))
343 I taught Heather's class
344 Yeah he officially proposed to me this morning.
345 a:::w, (inaudible) you, but you were already planning
a wedding.
346 yeah, cause we got this ring custom made. I mean I
like it, but it wasn't exactly what I wanted, like I
wanted these stones to be smaller ((they are looking at
the ring together))
347 uh huh
348 around, they're huge
349 (inaudible) that's a lot of diamond on that
350 I know, so it's too much- like it's a little too bling for
me. Like I wanted these to be smaller. But the thing
that I think happened- I'm sorry, I'm going off topic.

351 No, do it. ((they both laugh))
352 It matters too.
353 ((laughs)) Um, the thing that- cause we- his grand- it
was his grand aunt's ring, who passed away. So she
354 sent it to me, so we redesigned it, so we used the
stones from that, so I think that's why it got big.
355 You can't make the stones smaller. You're not gonna
like
356 yeah
357 cut her diamonds down
358 so that's what happened.
359 I think it's beautiful.
360 I don't think it's blingy.
361 I'm kind of anti bling sometimes too
362 yeah
363 but it's classic enough to me.
364 I don't think it's super blingy.
365 I'm getting used to it.
366 At first I was like 'whoa, that's not what I was
expecting' like ((laughs))
367 /oh that's awesome
368 /Now that's it's like on my finger I'm just like
369 so now it's public,
370 now you're telling people.
371 Were you not before today?
372 um, I mean all of our close friends and like coworkers
know and everyone,
373 but it's like, um, we weren't like ((air quotes))
officially engaged.
374 When are you guys getting married?
375 Well,
376 OK,
377 well we're actually getting married this Sunday.
378 ((laughs))
379 It's a whole (inaudible).
380 So my dad's super strict, right?
381 yeah
382 Especially because he's white,
383 and uh,
384 he wants me to marry in my culture.
385 And so I told him like a month ago
386 about him.
387 He kind of knew about him, but he thought we were
388 friends.
389 And then, um,
390 I told him I wanted to marry him,
and then he,
so he had to convert
He had to convert to:::

391 Islam
392 OK
393 so he's Muslim ((*air quotes*)).
394 I mean but we're both not religious. It's really just for
my dad.
395 yeah
396 and like making him feel OK about the whole thing.
397 And so he converted
398 and then they met each other two weeks later
399 and he was just like,
400 'he's a good person, but, of course I think you should
marry in your culture,
401 but if this is what you want to do,
402 then that's fine.'
403 yeah
404 And then,
405 so we're getting our religious marriage done-
406 so spring break is next week,
407 so we're going down to LA on Sunday for our
religious marriage,
408 /but the guy who's marrying us
409 /Is your dad gonna be part of it.
410 yeah.
411 So the guy who's marrying us
412 says he only does it if you do your state marriage,
413 or like your legal marriage or whatever.
414 So we're doing that at the same time.
415 yeah
416 And then in July is like the big one
417 a wedding
418 yeah
419 with your friends
420 Yeah, so that one is kind of like for us and publicly
people we're telling married,
421 but for now we're just saying engaged.
422 uh huh, uh huh, yeah. awesome.
423 My parents got married three times
424 yeah?
425 three times and divorced twice.
426 oh really
427 and they ended up divorced. how does that work out.
428 wait, divorced, so they remarried.
they got married, tehn they got married again and then
429 they got divorced and then they got married again, and
then they got divorced.
430 oh wow. and now they are?
431 divorced
432 ((*nodding*)) ok

433 yeah, they got married in college, my mom's parents
 insisted that they graduate
 434 ((Mia explains about this.))
 435 but you won't do that.
 436 You're just gonna do two marriages and end it there.
 ((both laugh))
 437 yeah
 438 that's enough
 439 yeah, it's like today I was like, 'oh my god' I don't
 know what the kids are gonna do
 440 so I was like freaking out this morning'
 441 cause he like- so he works here.
 442 yeah
 443 he proposed to me at the same place that we first met.
 444 which was here?
 445 downstairs outside the office. ((laughing)).
 446 it was like 7 in the morning.
 447 So we woke up this morning and he was like, we have
 to go early to work this morning,
 448 and I was like oh my god, why,
 449 and he was like I have a meeting and bla bla bla,
 450 and he was like making up this whole story
 451 mhm
 452 and he told me that the ring wasn't gonna be made
 until after spring break
 453 cause he's like 'yeah, the designer said that he
 couldn't get it in on time'
 454 so he was like telling me this.
 455 so I was getting upset, cause I was like, 'I want it'
 456 I was hoping for it to be this week.
 457 yeah
 458 so I had this like-
 459 I thought I wasn't even gonna get it.
 460 mhm
 461 so it was like a total shocker
 462 and he was there and one of our co-workers was video
 taping,
 463 so we have it videotaped ((laughing))
 464 yay! so (cute)
 465 yeah it was so funny. and I was freaking out this
 morning cause I was like oh the kids are gonna say-
 466 like what do I do?
 467 what do I say?
 468 cause they've known that there's something between
 us
 469 but we've never said,
 470 yes, we're dating or no, we're not.
 471 mhm
 472 so I'm like I don't know how to like

473 I mean I just have to tell them now ((*laughs*))
 474 yeah, we're engaged.
 475 we're getting married.
 476 It's happening.
 477 but yeah,
 478 no one has asked me yet,
 479 so I'm not gonna say anything until someone does.
 480 what does he teach?
 481 science
 482 what grade?
 483 seventh
 484 so you share students
 485 yeah
 486 whoa
 487 I know and a lot of his stuff is like,
 488 there's a lot of math in it too,
 489 so I was like thinking maybe next year,
 490 we need to make sure,
 491 like maybe we could plan out our units to make sure
 they are aligned too
 492 oh
 493 I mean in terms of if we're doing like graphing and
 they're doing graphing in science too.
 494 mhm
 495 so
 496 cool. awesome. yay! ((reaching for her notebook)) it's
 gonna be so fun! Awesome.
 497 Alright um,
 498 where were we?
 499 ((looking at her notes)) you were saying you wanted
 to do this with your other classes.
 500 right
 501 starting tomorrow.
 502 mhm
 503 Um,
 504 you were wondering
 505 about something, but I think we did it,
 506 right?
 507 oh right,
 508 yeah.
 509 yeah, cause I was just gonna say
 510 um I think just what we just did
 511 is what you want to do with kids.
 512 yeah
 513 just make sure they can say why
 514 yeah
 515 and so eventually,
 516 they'll get to being able to do more complicated
 things

517 right
518 and being able to say why
519 right
520 but they probably won't now
521 right
522 Like today,
523 somebody suggested the flip over
524 yeah
525 Oh I did have one question came up for me today.
526 So first of all,
527 I wanted to say,
528 like,
529 was that weird,
530 I just kind of took over a bunch of/(inaudible) today.
531 No dude.
532 Was that weird for you?
533 I love it! No, please.
534 OK.
535 No.
536 I mean-
537 it sort of felt to me like that's
538 no
539 kind of what we agreed
540 Yeah,
541 no
542 but then I was like doing a lot
543 no no dude, like no 'cause (*laughs*) yeah
544 Ok, ok.
545 (*laughs*) yeah
546 I just like-
547 that particular flow
548 is a flow I've done before,
549 yeah
550 so I wanted to help you to make sense of what it was,
551 yeah
552 because we also didn't have that long to plan,
553 yeah yeah
554 so thank you.
555 no it was great, because
556 I wasn't feeling that comfortable with it. I was like,
'how is this gonna go?'
557 ok, ok, cool.
558 Um,
559 so one question came up for me
560 about,
561 I think it was when,
562 that name,
563 Rivulen
564 Ruvelin

565 Ruvelin (inaudible)
566 It's so beautiful and I just can't remember it.
567 Where's it from, do you know?
568 I don't know.
569 /Ruvelin/
570 /I've never heard it either.
571 Like Evelyn
572 Ruvelin
573 Um,
574 so uh, when Ruvelin was up there and she said,
575 'I need help'
576 she called on the very first person whose hand went
577 up really really fast,
578 and then when I kind of asked her to wait a minute,
579 I was like, 'let's see, let's just give some more people
580 time'
581 you remember that?
582 and three or four hands went up
583 and she called on David?
584 mhm
585 do you remember that?
586 mhm
587 Is David a pretty high status student?
588 mhm
589 He seemed really comfortable
590 yeah
591 to share out loud,
592 so
593 I had one little worry,
594 which was just like when kids are up there
595 picking kids that, yeah
596 picking other kids,
597 is there-
598 are we reinforcing status
599 /right
600 /stuff because they're gonna pick the kids they think
601 are the smart ones.
602 right
603 right?
604 And also, one other little statusy thing happened that I
605 tried to address there,
606 which was that very dark kid who
607 /sounded like he might have just moved here recently
608 /ye:::ah, I noticed that, /
609 I noticed that-
610 what you were doing.
611 You were correcting what she did,
612 cause you were like, 'wait, but you said something
613 and that was right.'

609 you were trying to reiterate.

610 Yeah, and the assumption /was that because

611 /'originally what you/ said was fine

612 Right,

613 so he was searching, he was searching for words

614 right

615 She assumed he didn't know anything

616 right

617 because that's what we assume about English

618 language learners

619 right

620 always, right.

621 So she saved him

622 yeah

623 Which is just something that we have to get kids to

624 not save each other

625 yeah

626 right.

627 Um,

628 But at the same time (.)

629 do it too.

630 wait, wait

631 yeah

632 Like support-

633 maybe there's room to talk about what does support

634 look like?

635 right!

636 Give people time to think.

637 right

638 we all want to hear your thoughts

639 right,

640 yeah

641 right and then if they ask for help

642 then

643 step in and help

644 right

645 right?

646 Um, so were was that little moment,

647 um, and then,

648 right,

649 and then I was wondering when Ruvelin was up there

650 ((Says the name a few times and they both laugh))

651 Oh, my god.

652 Um,

653 I wondered a little bit about what we could do

654 to sort of mitigate the potential status issues that

655 happen when they're calling on other kids.

656 yeah

657 Maybe at first, you call on them? (.)

654 I wanted to give her the power.
655 Like I wanted to do that thing where like 'you're in
charge'
656 yeah
657 'you don't need me,
658 you got it.'
659 yeah
660 Like I could just go sit down and put my feet up
661 yeah
662 and this would be totally fine.
663 right
664 which is what you're working towards, right?
665 right
666 um (.)
667 but of course,
668 kids are not going to attend to status.
669 right
670 nor should they
671 yeah
672 Like,
673 that's not their
674 yeah
675 What do you think?
676 I mean yeah, I could do that.
677 I think it would be good,
678 especially in the beginning because
679 this is a whole new process for them
680 and like way of doing it,
681 mhm
682 so
683 I think
684 there should be some intervening
685 on my part.
686 And you're gonna give,
687 yeah like you'll attend to giving students
/opportunities to talk who we haven't heard from yet.
688 /students, yeah
689 Maybe even more wait time,
690 right
691 to give more students a chance to get their hands up
692 right
693 maybe even if you think a kid has an idea but they're
not raising their hand
694 right
695 you can be like ((gestures with pointing to an
imaginary student))
696 right, yeah
697 you know mhm (5s)
698 Or also like,

699 maybe if we wanna
700 try to get voice from other students,
701 like we could have them call on someone
702 but then also like ask,
703 other people like,
704 'oh what were you gonna say
705 or what were you gonna say'
706 you know.
707 ((writing)) mhm, mhm.
708 Ooh, I wonder if there's a structure that can help us
709 with that?
710 (.) yeah (.)
711 What if,
712 sometimes,
713 and this wouldn't happen every time because we
 would never solve a single equation.
714 yeah
715 But I'm wondering if um,
716 what if sometimes
717 we set up this little routine
718 were someone has a question,
719 we give groups like 30 minutes to talk,
720 like 30 minutes to like figure out if anyone in your
 group has any ideas,
721 like just check in about the question, bla bla bla bla
 bla.
722 Resource managers
723 mmm
724 or whoever, raise your hand from the group
725 right.
726 um
727 and report
728 and report.
729 yea
730 what your group came up with or talked about.
731 yeah
732 and again,
733 we wouldn't do it every time,
734 right?
735 yeah
736 but I wonder if that could help us,
737 cause there goes-
738 there it goes
739 yeah
740 The status stuff is just gone,
741 yeah
742 right there,
743 it's just randomized
744 right

745 and roles,
746 AND that everyone gets to consider those questions.
747 mhm
748 you know, like everyone gets a chance to hear it
restated
749 yeah
750 if they were spacing out
751 or whatever
752 yeah
753 right?
754 yeah
755 ((writes in notebook))That'll be fun to play with. (9s)
756 Cool.
757 Do you have any other questions about it?
758 or concerns or-

759 Yeah, I mean the biggest thing was this ((*tapping the
equation mat with tiles on it*)).
760 yeah
761 I never learned solving this way, you know?
762 yeah.
763 yeah yeah yea
764 It's so new.
765 yeah.
766 um,
767 so yeah,
768 that's really cool (see)
769 cause I was always like,
770 'Oh (there's one left) ((*picking up and putting down a
tile*)) and it's a negative ((*laughs*))
771 but I didn't know why.
772 I know,
773 yeah yeah yea ((*laughs*))
774 yeah, um (9s)
775 I guess that's it.
776 it seems like a structure that will work-
777 I mean because we did something so, like
778 guided today,
779 yeah
780 we didn't get to just watch what happens when they're
solving in pairs
781 right
782 because we didn't get to that
783 right
784 Um,
785 so I didn't get to think with you about like,
786 yeah
787 how shared is that?
788 Are they making sense together?
789 Yeah

790 Um.
791 But that's something that you can keep your eyes on
and just see
792 mhm
793 What you might need to do is institute-
794 and you maybe already did
795 yesterday or something
796 and then we forgot-
797 and then we just didn't have a chance to reinforce it
today,
798 but you may have to institute like,
799 when you're solving in pairs,
800 um,
801 you know, Person A does one step,
802 Person B does the next step
803 mhm
804 you're both writing it down,
805 but you're taking turns with your hands on there.
806 right
807 Otherwise what will often happen I think is
808 /Individual/ yeah
809 /one person's hand will do it every single time
810 yeah
811 and the other person
812 maybe will be following
813 yeah
814 maybe will just like not even
815 yeah
816 get it
817 yeah
818 ((big breath)) Awesome.
819 Fun solving stuff.
820 yeah
821 your kids were so nice to me.
822 ((laughs)) yeah.
823 I told you they're a good group.
824 Um,
825 I also like the do now a lot because it was like,
826 they were so lost ((laughs))
827 ((laughs)) they were so lost.
828 You were so right,
829 yeah I was wandering around and /I was like/
830 /I was like/ ((laughing))
831 Oh Kamilah totally knows her kids,
832 because not-
833 I did not see a single person who actually answered
that on their paper
834 ((laughing)) yeah

835 Some people meticulously wrote down every single
word
836 that you had up there,
837 yeah
838 Some people wrote down like an abbreviated version
of what you had up there
839 yeah
840 Some people wrote nothing
841 *((laughing))* yeah
842 No- I saw nobody *((laughing))*
843 *((laughing))* yeah
844 *((laughing))* *((laughing))*
845 So it was so cool to see how like within five minutes
they had nothing
846 like no idea to like,
847 ‘oh, I get it!’
848 like, yeah.
849 Oh, (inaudible) I was trying to do,
850 so what is it- what’s Jamar and his status?
851 High
852 High *((nodding))*, OK.
853 yeah
854 So then we didn’t really use that to reshift any status,
855 but I was trying to assign competence
856 you know, um
857 But dude, David,
858 that was super cool what he was saying with the do
now. *((laughing))*
859 I never thought of it that way.
860 *((Nods with a look of astonishment))* That’s what we
kids to be doing,
861 right?
862 I know,
863 yeah
864 That’s what kids almost never do.
865 That’s what we want them to be doing.
866 yeah
867 just like really making sense of the meaning of that
868 and reasoning
869 yeah
870 That kind of stuff is written into the common core and
I’m always like,
871 ‘yeah, right.’ *((laughing))*
872 How often is that really gonna happen.
873 yeah
874 ‘Students reason that bla bla bla bla bla.’
875 And with that explanation that he had,
876 if he really thought really deeply-
877 cause he was the one who said flipping, right?

878 yeah
879 and if he thought more deeply
880 and using what he did in his do now,
881 he could have reasoned
882 why we flip.
883 Tell me more about that.
884 How (inaudible)
885 *((leaning forward and looking at Mia's notebook))*
886 Like,
887 because he was saying,
888 where was the problem?
889 *((turning her notebook pages))* Do we even have it?
890 The do now problem?
891 yeah
892 it was
893 this one,
894 oh no it was four x *((turns her notebook around to face Kamilah))*
895 So he was breaking this *((pointing to page))*
896 apart, right?
897 yeah.
898 yeah.
899 So three x plus x
900 yeah, he was doing,
901 in my mind I think what he was doing was, *((turns the notebook back to herself and writes))*
902 if he had three x,
903 what someone might write down was,
904 he would say three x plus two equals $3x + 2$
905 yeah
906 right?
907 And so these are the same
908 right
909 and so the two has to be equal to x
910 yeah.
911 and when you're flipping it over,
912 right
913 uh huh
914 you're doing, the way that you're doing it
915 is *((4s while manipulating tiles))*
916 you're like
917 taking it away too, right?
918 making zero pairs. (3s)
919 Well let's see
920 let me write down algebraically
921 cause that's a good question,
922 so if we had like,
923 ok,
924 so go back to the beginning

924 cause I wasn't keeping up with you.
 925 *((moves some tiles))* you had negative x equals four,
 926 right?
 927 mhm
 928 *((turning notebook back to Kamilah))* that's what you
 had.
 929 mhm
 930 So then what did you do?
 931 You added
 932 four and four
 933 But it's that you wanna switch,
 934 right?
 935 oh, right.
 936 sorry
 937 the x
 938 no, it's ok.
 939 so you're adding x to both sides,
 940 which I would do like that *((writing in notebook))*,
 right?
 941 mhm
 942 And so we are at the zero,
 943 oops, I have them-
 944 will you just flip those over so we match?
 945 *((moving tiles and laughing))* Is that ok?
 946 yeah
 947 so we have zero equals x plus 4
 948 mhm
 949 ok, keep going
 950 and then *((adds four red unit tiles to each side))*
 951 so,
 952 and would your kids write that as adding a negative
 four
 953 or subtracting four?
 954 they would add a negative four, right?
 955 u::m,
 956 well,
 957 I don't know.
 958 I haven't really been explicit about that
 959 because
 960 I showed them flipping,
 961 so flipping for them was negative,
 962 or minus four.
 963 so for this move,
 964 I would suggest that they do it as adding negative
 four,
 965 adding negative four
 966 because that's what it looks like
 967 yeah
 968 you're putting things in and they are negative things

969 yeah
 970 right
 971 no, yeah
 972 So that it's matching,
 973 which they might later reason is the same thing as just
 removing four
 974 yeah
 975 right?
 976 Um,
 977 cool, so then we have ((*writing*))
 978 negative four equals x
 979 mhm
 980 right
 981 cause that makes zero
 982 mhm
 983 yeah, ok,
 984 cool, so I was just needing to make sure
 985 yeah
 986 we knew how the algebra was gonna look on that. (.)
 987 OK, so is that the same-
 988 you were seeing this as the same as this? (6s)
 989 I mean the fact that he's taking this away, right?
 990 ((*showing taking away with her hands on the*
notebook)) like taking these away?
 991 these three?
 992 yeah,
 993 and I don't know if in his mind he was actually
 removing them,
 994 or if he was just recognizing they're the same,
 995 so we don't have to even
 996 o:::h
 997 worry about them
 998 Oh, OK
 999 That why I was imagining he was thinking,
 1000 because this three x is the same as that three x
 1001 right
 1002 it doesn't count /for anything/ when you try to figure
 out x
 1003 /right right/
 1004 right?
 1005 yeah
 1006 so that's /what's gonna be/ different.
 1007 /yeah,
 1008 you have a good point/
 1009 which,
 1010 in practicality
 1011 would be the same as subtracting,
 1012 but I think it might have felt different in his brain
 1013 You would get the same thing if you subtract it.

1014 mhm
1015 Um (3s)
1016 Awesome.
1017 Yeah, so then maybe,
1018 if we-
1019 so we might have room to think more another day
1020 or whatever
1021 about um
1022 how to get more,
1023 well you're doing the sticks,
1024 how to get more voices in
1025 mhm
1026 except for David and Jamar
1027 and people who are- like even on the helping
1028 mhm
1029 yeah, so that we're not reinforcing status
1030 yeah
1031 by the smart kids are the ones
1032 yeah
1033 who are doing the explaining
1034 or like jumping in to help
1035 yeah
1036 right?
1037 um,
1038 or that
1039 kids up there are not like
1040 going to them because they are assuming they are the
1041 only ones who have something to help
1042 yeah ((yawns))
1043 Um, cool.
1044 Anything else you wanna talk about or want help
1045 thinking about?
1046 mmmm,
1047 I think that's it.
1048 I'm just gonna work on that tomorrow
1049 and when we get back from break too,
1050 oh yeah, tomorrow's only one more day.
1051 Holy mackerel.
1052 Do you have a lot of kids out always the day before
1053 break?
1054 no, I was just out dude ((laughs))
1055 this is,
1056 I only taught-
1057 like I was out Monday
1058 and then I was out yesterday
1059 so my kids only saw me one day this week.
1060 and Monday you weren't even prepared for, right?
1061 so there was like some random stuff that happened.
1062 yeah,

1060 I had emergency plans in my closet, so
 1061 which means it's not at all in sequence with what they
 are doing
 1062 no, it's like,
 1063 it was integer work actually, so,
 1064 it's just like
 1065 reasonable.
 1066 yeah yeah.
 1067 cool.
 1068 What happened with your flight?
 1069 So I fly standby.
 1070 So my mom is retired from the airline,
 1071 so I get flying privileges so
 1072 does that mean you can fly standby for free?
 1073 yeah
 1074 uh huh
 and so then, if there's a seat open, right? so then I
 have to like wait until the very end and if there's a
 seat open, then I get to get a seat, but if not, then I
 1075 don't. So, I like was on my- so there was like three
 different airports in LA, so I was at the one in orange
 county and I didn't get that one and the last flight was
 leaving at 6 pm. ((tells a story about her trying to get a
 flight back and answers the phone.))

Heather Cycle 1 Planning Conversation

	Heather	Mia
1		So um
2		it looks like- could I film here, can I do that?
3		um it looks like
4		I was just looking at a couple of issues.
5		How are your lunch times?
6		(laughs)
7		Are they crazy and are you inundated with kids like all the time
8	No, I don't have kids at that time	
9		Because there is another-
10	I am just like stuffing food down my mouth quickly	
11		OK, because there is another challenge with my schedule for tomorrow,
12		which is I just had a talk with Kamilah at lunch today and like for her,
13		it was really challenging for us to get 20 minutes to talk.
14		
15	it is hard at lunch	
16		Because she had kids like all over her
17		and like needing tests and needing all sorts of stuff
18	oh yeah cuz we just gave the tests	

19 I actually might have kids coming in tomorrow too
20 so, okay.
21 because one thing, I could maybe-
22 I mean these are two sort of separate questions,
23 so I do have 4th period free tomorrow,
24 so I could come to your 4th instead of 3rd if you
prefer.
25 Um
26 I was thinking that maybe what would be nice would
be to do 4th with you
27 and then just debrief right after
28 at lunch, together if you could-
29 yeah
30 if that space is protectable
31 And then I could debrief with Kamilah during 7th.
32 The only issue is
33 I am doing retakes
34 and I promised the kids I would have it ready for
tomorrow
35 and I know they are going to want to stay at lunch.
36 uh huh
37 I have like a whole table
38 that's like ready to do a retake.
39 Uh huh
40 So would it be
41 a problem if we're talking and they are doing a test?
42 That's totally up to you.
43 I think that if we uh-
44
45 if they are doing a test, they're going to be really quiet
which means they could hear everything we say.
46 (laughs)
47 So it does sometimes sort of impinge on our ability
48 um
49 to really talk about status and stuff
50 yeah
51 and talk about particular kids
52
53 Because we are going to want to talk about particular
kids
54 right.
55 Lynn: Is it a group test?
56 What?
57 Lynn: Is it a group test or an individual test?
58 No, it's an individual
59 but I wonder if-
60 I wonder if you can put them with Kamilah-
61 I was just thinking that-
62 that I could put them in another room or-

63 because if she-
64 I mean, it could be kind of a trade off she does
65 because the reason would be to free up.
66 So she and I can have a real conversation-
67 ri::ght
68 So if she facilitates you doing that at lunch,
69 by taking your kids,
70 right.
71 then also her trade off is that she gets a more focused
72 debrief conversation
73 right
74 Because I could see her in 7th
75 Or I can just tell kids not to do the retake tomorrow
76 too (laughing)
77 Lynn: and do it on Friday.
78 and do it on Friday.
79 We could do that-
80 they're going to kill me
81 because I had told them for the last two days but
82 I think Kamilah will be fine with it.
83 I mean she was in there the whole time with her kids
84 today-.
85 yeah
86 she didn't walk out once
87 yeah
88 and she had many kids and she had space.
89 I can ask Aya too because Aya's got kinda quiet in
90 there too.
91 Kamilah has crazy town in there so-
92 Lynn: it is
93 I can't do that at lunch.
94 I cannot do that.
95 I need 20 minutes
96 to like shovel food in my mouth,
97 get my room together
98 yeah
99 and like have a deep breath.
100 And like a little bit of silence. (laughs)
101 OK, so let me just.
102 (laughing) A little bit of serenity (laughing)
103 Okay, so I am going to propose
104 uh, that we go ahead and do at least a debrief shift
105 (gestures with two fingers switching places).
106 So I will be with you at lunch (points at Heather)
107 Okay.
108 And with her 7th period.
109 And then I can do 3rd or 4th-
110 I was just going to have the other period sitting
111 downstairs recharging my stuff

149 I'm sorry it took me so long to get back to you
150 Okay no,
151 it's been crazy, it's fine
152 (laughing) it's just been so crazy.
153 I know
154 No worries.
155 I'm so,
156 I was just telling
157 As long as I am allowed to assume that it's all okay-
158 yeah (laughs)
159 that's what I was just like I haven't heard from
Heather
160 but I'm just going to show up and assume it is fine
and she would have told me if it wasn't
161 I know and I emailed you like this morning or
something
162 that's okay, that's fine.
163 As long as I am allowed to make those assumptions
164 yeah
165 okay (starts laughing)
166 and I am totally fine with you video tapping my class
but
167 I will say
168 I'm really bad about like
169 making copies or having all that done.
170 Me too
171 Like If you have like stuff to hand me that's cool
172 but I'm so beyond overwhelmed right now
173 yeah
174 uh yeah
175 I'm going to give you stuff right now
176 I feel a little maxed out
177 yeah I'm with ya.
178 Okay
179 uh so what I would like to do if it is okay with you-
180 and this is what I am doing with Aya too cuz she
didn't get this either.
181 okay
182 Is um
183 just ask the kids at the beginning
184 okay
185 and if they say yes,
186 then they sign their own individual one
187 Okay
188 Um and then I videotape
189 okay
190 and we send home a parent thing
191 and I say I won't use it
192 if the parents say no.

193 Or I won't use any section that their kid is in or-
 194 okay
 195 if that is okay with you. If you are comfortable with
 that
 196 yeah
 197 Um
 198 I'm wondering if we should do third or fourth?
 199 I mean they're both-
 200 have their issues (laughs).
 201 They are both equally rich in that way (laughs)
 202 Yeah
 203 I think, okay,
 204 so what I heard was that you have one particularly
 challenging student in 4th
 205 Well, I've got a few
 206 and they are all kinda-
 207 I think two of them
 208 are into each other and that's causing a big ten-
 209 there is a lot going on in 4th.
 210 3rd I have like,
 211 one particular kid that's a ton of work
 212 and that one I'm working with.
 213 mhm
 214 (to Lynn) You know which one
 215 Lynn: No I don't
 216 JPS?
 217 Lynn: oh yeah
 218 So my um-
 219 But I'm doing a lot of work with him (and we're)
 growing
 220 cool.
 221 Today was kind of crazy but-
 222 So my question is-
 223 so sometimes when there is like kid drama that is
 really intense-
 224 sometimes it can kinda get in the way of our ability to
 learn together about what you really want to be
 learning about,
 225 yeah
 226 which isn't about that-
 227 you know, cuz you're- you have more tools than I do
 228 to deal with particular kid drama
 229 because you know the kids
 230 and you know the community
 231 and you know the resources
 232 yeah yeah
 233 I don't know any of that-
 234 I know, that's why I was wondering if that class
 would be like (shrugs)

235 If we're going to be distracted from being able to
think about like kids' learning
236 yeah
237 and thinking about status around the room
238 and thinking about assigning competence and all of
that together,
239 then maybe I should just stick with 3rd for now
240 yeah.
241 let's do that.
242 yeah?
243 should we do that?
244 I'll just deal with the circus in 4th.
245 We have to like go over the rules and stuff
246 I made 35. Is that enough for your 3rd?
247 uhh yeah
248 I think we are like 32
249 okay
250 yeah.
251 So this is the student one
252 okay
253 They don't even have to read it.
254 If I am there
255 we can just
256 you can introduce me and I can just take 2 minutes to
explain
257 okay
258 what we are doing in more kid friendly language.
259 Okay
260 There's like official language that I have to use
261 mhm
262 that is a little bit not totally kid friendly.
263 And then they can do um-
264 they can fill this out right then
265 if you are okay with that and then you can be done
with it
266 oh!
267 okay.
268 cool.
269 I think that would be easiest
270 cuz they lose stuff so (laughs)
271 yeah
272 And then this has to go-
273 when they are done with that part,
274 this I do need eventually from their parents.
275 okay
276 Or really what-
277 yeah I need it
278 because parents need an opportunity to say no
279 "you can't use the video of my child"

280 okay
 281 so it is okay for us to videotape
 282 but then we have to get like the permission to like use
 it
 283 yeah yeah
 284 okay.
 285 Um
 286 So that they have to take home and bring back?
 287 yeah
 288 and it's okay because I will be working with you for a
 while
 289 oh yeah
 290 so we get to follow up with your kids every time,
 291 everyday-
 292 It's not the end of the world
 293 okay
 294 I can handle that too.
 295 We'll work it out
 296 yeah
 297 yeah.
 298 um sometimes a couple of kids say no
 299 um and I have had different situations with kids
 300 um- sometimes they are fine if
 301 um like
 302 they'll let me set the camera up behind where they sit
 303 oh, okay
 304 and you can only see the back of them
 305 mhm
 306 and sometimes kids are more comfortable with that
 307 okay
 308 if they are pretty sure that mostly their face isn't going
 to be on camera.
 309 Or if you like turned it at a certain angle so they are
 not in the shot
 310 yeah, if it was- um,
 311 the problem with that is if one kid here,
 312 one kid there and one kid there say no that's hard
 313 (laughs) that's a problem. "only person on one table"
 314 My back up is if it's just too crazy,
 315 I really would like the video for this time for what I
 am doing
 316 but if it ends up just too crazy then I think what I
 would do is just audio record.
 317 okay
 318 which most kids won't
 319 have a problem
 320 yeah
 321 it would be a lot less useful for my purposes.

322 it's really hard to know what is going on in the lesson
when you can't see it but (laughs)

323 I know

324 but it would be something and

325 it /definitely needs to not/ disrupt what you are doing.

326 /so much more valuable/

327 okay

328 Okay so let's stick with 3rd.

329 Okay

330 (whispers to Lynn) she is going to have to meet JPS

331 I like JPS's initials

332 already-

333 I like this kid.

334 We are having some breakthroughs

335 Break downs or breakthroughs?

336 Breakthroughs, actually-

337 oh, cool!

338 well today he was all hopped up on sugar

339 but other than that,

340 he's- we've had some breakthroughs.

341 He said math was his favorite class yesterday

342 to Ms. Polis and I was like oh my god

343 Melting my little heart

344 I know

345 and he came in and did community service

346 and we kinda bonded so

347 it's good.

348 good

349 yeah

350 it takes time

351 oh god!

352 to navigate these little human beings huh

353 Lynn: This one takes a long time

354 (laughs) yeah this one is like 10.

355 it's like we are looking at exponentials here

356 with this one-

357 in math terms (laughs)

358 anyways

359 so

360 I would love to hear-

361 first of all tell me, so I can be respectful of your time,

362 how much time right now you have for this
conversation

363 oh well the-

364 because it could be-

365 the period ends at 3:30 and then I actually have to be
at an IEP

366 and I'm not even sure where it is but I do need to do
that-

367 which I just remembered,
368 but I-
369 I can't go past 3:30.
370 Your IEP is after 3:30?
371 yeah, it is at 3:30
372 oh wait can I?
373 Is that right?
374 No actually have some flexibility today.
375 it's tomorrow that I have to leave right at 3:30.
376 So maybe we will say like 3:25,
377 cuz I have to get the paperwork and get down there
and figure out where it is (laughs)
378 cool
379 Lynn: I have to be at [district office] at 4
380 Okay
381 Lynn: because I have a meeting
382 cool
383 okay so um,
384
385 so the- um
386 what I would like to know from you is what
387 what you're thinking you'd like my help with?
388 How things are going?
389 I think I know a little bit about the lesson-
390 or I know a little about
391 the curriculum,
392 mhm
393 but I don't know what you are planning to do with it
394 or what your structure-
395 mmm
396 or what your lesson structure is. Or which problems
397 you are doing or anything like that
398 so we can uh
399 talk about that.
400 But I'd love to hear first sort of-
401 what you're wanting some help thinking about
402 which can then tell me
403 where to direct my focus when I'm here
403 umm,
404 "what do I need help on?"
405 I think-(6s)
406 well,
407 okay a couple things that are coming up.
408 one is,
409 well this is moving very slow,
410 which I assumed was gonna to happen,
411 mhm
412 but we get to a point where I'm like,
413 do we move on with this lesson? Like,

414 for example,
415 mhm
416 I mean I can pull one of the lessons that we have been
working on and like-
417 when I go to do check-
418 tell me if I am talking too fast too-
419 no, I gotcha
420 When we go to do checkpoints like-
421 this actually came up more in 4th period than 3rd.
422 3rd went quite smoothly today but
423 I had one kid after class that told me
424 he felt like he wasn't being challenged enough
425 mhm
426 um-
427 and I think part of it,
428 especially with that class,
429 is that there is so much going on
430 that there's so many behavioral things
431 that some of the groups that ARE good are like
432 wanting to move on
433 while I'm like dealing with behavioral things,
434 I'm trying to do checkpoints
435 mhm
436 and it's kind of getting crazy town in here.
437 mhm
438 and I think it's like
439 taking away a little bit from some of the like,
440 getting them challenged and moving on-
441 mhm
442 so I guess what my question is-
443 is like when is it a checkpoint worthy
444 mhm mhm
445 to like do a checkpoint or
446 do I have them do a bunch of work?
447 like I don't know how far to trust
448 cuz some-
449 this group over here (points at a table)
450 barely got through the first problem
451 and then his group was like almost all the way almost
through the page,
452 uh huh
453 you know?
454 mhm
455 So I'm like (.)
456 yeah I'm just-
457 I'm just struggling a bit with that.
458 okay, that seems,
459 that feels very clear to me,
460 I get that

461 and then we kind of like leave off and it's like
 462 class has to end.
 463 I've got like 5 minutes,
 464 we are into cleanup
 465 but like not everybody's done with the page.
 466 Like do I go on to the next lesson?
 467 mhm
 468 Do we revisit that? Like,
 469 mhm
 470 and I can show you on the lesson for example. (gets
 up and walks away from the table)
 471 Cuz the way CPM you know, is set up it's like-
 472 (sitting back down) some of them are really worthy
 questions.
 473 mhm
 474 Umm
 475 so we started here today (pointing at a page)
 476 and I had some groups that barely even check-pointed
 this.
 477 Like one group in particular that was goofing around
 so much.
 478 mhm
 479 Um,
 480 but we had hearty discussions about it,
 481 so I mean it was all really good stuff.
 482 mhm
 483 Um, [part] A was really great
 484 because they were looking at patterns of exponents
 485 mhm
 486 and they had to like discover that
 487 with this table that they did.
 488 mhm
 489 Lynn: that's the same handout that you had in 1st and
 2nd.
 490 uh this
 491 I'm a day behind so
 492 we'll start this tomorrow with first
 493 Lynn: okay okay
 494 and they're-
 495 we did the entry task today.
 496 it was like-
 497 we got some struggles going on with exponents,
 498 but that is a whole another ball game.
 499 okay
 500 I have so many ball games going on.
 501 (laughs) Such an athlete!
 502 right.
 503 Um
 504 I felt like overall though,

505 like the idea here was to try to get
 506 the fact that like
 507 when we have like bases,
 508 we are adding exponents,
 509 is pretty much a lot of what was happening here,
 510 uh huh
 511 which I think most groups pretty much got on that
 page.
 512 and to get that we do that
 513 and we do that because it makes sense
 514 because of what the exponents mean
 515 right
 516 which I was bringing them back,
 517 what does that 5 even mean
 518 yeah yeah
 519 and making them explain that
 520 mhm mhm
 521 beyond why these two aren't equal.
 522 uh huh
 523 I got a lot of really good explanations
 524 awesome.
 525 um
 526 when we got here,
 527 it got a little bit confusing
 528 yeah
 529 because a lot of them
 530 said that the x 's were x to the fifth
 531 because they were using that square on the y ,
 532 uh huh
 533 so we had some good talks.
 534 uh huh
 535 But again,
 536 and maybe this is another question.
 537 uh huh
 538 Like I didn't get to every group on that
 539 uh huh
 540 and I know that that was probably an issue for most of
 them
 541 uh huh, uh huh
 542 so:: like
 543 do I do a group discussion?
 544 Do we go over the table?
 545 like tomorrow?
 546 mhm (writing)
 547 okay
 548 and then maybe like that could be like our start
 tomorrow,
 549 I don't know.
 550 Lynn: I was thinking that.

551 Yeah?
552 Lynn: Yeah.
553 because the back
554 is also pretty group worthy and good stuff-
555 I am not as concerned, we decided, about this stuff.
556 It is more like commutative property,
557 which is
558 important but I don't think it was like
559 necessary necessary
560 mhm
561 for this unit, but the
562 scientific notation is really big
563 mhm
564 in this unit
565 and that is like the start of it
566 so I think this is really important to touch
567 So umm
568 so you did this already today (moves hand over the
569 paper)
570 yeah
571 and you got to here-ish (pointing to paper)
572 ish.
573 Most teachers maybe got through [part] b.
574 okay,
575 so to go back to your question about moving on or not
576 moving on-
577 I think what I heard you articulate was
578 that the big idea of this lesson,
579 or this part,
580 was that they understand,
581 they could make sense of these um-
582 multiplying these exponential expressions.
583 They know what they mean
584 so that they understand that you are adding exponents
585 and the bases are the same
586 because it just means you are counting how many of
587 them you have
588 and you have that many more,
589 mhm
590 right? And then you pretty much think that happened
591 yeah
592 mostly
593 except when we get to some of these hard ones
594 yeah.
595 well here what you described to me was not a
596 breakdown in math.
597 It was a breakdown in understanding notation.
598 right,
599 right?

595 so maybe we-.
 596 which is different so like
 597 that-
 598 so that still,
 599 they could very well have that like big idea very
 600 firmly and have this one wrong
 601 right
 602 right, just because they don't understand what that 2 is
 603 applying to
 604 right
 605 So it's like in order of operations and notation issue,
 606 and not
 607 the-
 608 conceptual
 609 the idea of exponents and what they are doing here,
 610 right?
 611 mhm
 612 So that doesn't worry me too much.
 613 it's like a thing
 614 that they will need to understand at some point
 615 I could do that as a do-now problem too. one like that,
 616 I can do that tomorrow
 617 Okay, uh huh
 618 or yeah you could do a thing where you show it two
 619 different ways
 620 and ask them to make sense of
 621 mmm
 622 you know, which one is it?
 623 it could be, "Some students think it is this,"
 624 you know,
 625 mhm
 626 you can make up some names.
 627 Student A thinks it is this.
 628 Student B thinks it is this.
 629 Clearly it matters because they are not the same,
 630 mhm
 631 so they will need to figure out what that is.
 632 okay
 633 because that's just notation,
 634 that's all it is.
 635 it's not like an understanding thing
 636 okay
 637 um,
 638 or how would you write it-
 639 you know, like if you wanted student B's solution to
 640 be the right one,
 641 if that is what you meant,
 642 how would you have to write this expression
 643 right

639 to get them to see that
640 "oh if there were parentheses there,
641 okay
642 then that two would be applying
643 mhm
644 to both of those numbers, but it is not
645 hmm
646 so" right?
647 yeah maybe I could put two of those
648 up on the board (and like) contrast and compare
649 okay,
650 so before we talk about this stuff (gesturing with hand
to the paper)
651 so that's where you were,
652 mhm
653 this is where you are going.
654 Um I want to hear more about what is going on in the
classes,
655 because I think that your issues are questions about
your class,
656 especially your 3rd period class
657 will inform our thinking about choices we might make
about-
658 mmm,
659 like where they're at?
660 or like the dynamics.
661 Like how is group work happening?
662 And how are kids talking and thinking together about
math and-
663 Um, I feel like 3rd period are pretty strong,
664 like they're well behaved
665 so like we can get through a lot more.
666 Umm,
667 I think they have pretty good communication too.
668 Let me double check on my (gets up and walks away
from the table)
669 I wanna check my seating charts right now
670 yeah
671 Umm (sits down)
672 for that group,
673 let's see. (looking through papers)
674 3rd period
675 umm--
676 I wouldn't say they are like my smartest
677 skilled class.
678 uh huh
679 Like we just took a test and their scores were like
lower than
680 my 4th period

681 okay

682 but I think they work a little bit better as teams.

683 This (points to her seating chart and laughs)

684 this group gets crazy, the one with Omari,

685 uh huh

686 but they have amazing conver-

687 They fight over problems

688 like tooth-and-nail, but they get really loud,

689 mhm

690 but it is great conversation.

691 mhm, do you have numbers?

692 yes, this is table 8 and that is this table (points to the
table)

693 so you go 1,2,3?

694 mhm 1,2,3 (pointing),

695 and the table numbers are right here on the-

696 oh okay

697 4, 5, 6, 7, 8, 9

698 So this one goes that way, and this one goes this way?

699 yeah it is like a snake,

700 right?

701 it's not like a snake?

702 I don't think so

703 So 1,2,3-

704

705 if that is 9, then yes.

706 yeah

707 Yeah you just said it the other way, yeah.

708 yeah okay sorry.

709 cool

710 um

711 hey! Um

712 yeah-

713 and let's see.

714 This table,

715 table 9,

716 I've struggled with them communicating.

717 mhm

718 They are kind of a quiet table

719 Lynn: These two are EL (points at a paper)

720 But you know what?

721 I had a big talk with them

722 because Jaime is really strong

723 and these two are EL and they're slower.

724 Umm

725 Chelsea is medium but like

726 Jaime was just like all sitting there doing their work,

727 so I had a talk about how she was team captain

728 and they had to pull together and then like

729 they communicated and they all like had this like
really great moment where they all got the work
730 nice
731 Yeah and then they did checkpoints,
732 so that was really cool
733 and do you think they um
734 but that has been a problem throughout,
735 of like
736 Do you think they understood that that moment was
cool.
737 Like did they get that they learned more because they
came together do you think?
738 I think so.
739 It seemed like they did
740 because they were all totally lost,
741 all 3 of them,
742 except for Jaime who had the whole thing written on
her paper.
743 mhm
744 And I'm like
745 "how is that helping the group.
746 mhm
747 Like, I'm seeing you writing like this
748 and you have got three totally lost people in your table
749 mhm mhm
750 and you're team captain."
751 mhm mhm
752 "like how is that building your team up,"
753 mhm
754 you know, and so like we talked about that and like-
755 uh huh
756 but it was cool because I think-
757 then I had Martin explain the problem
758 and he's-
759 (to Lynn) is he EL you said?
760 Lynn: mmhmm
761 and he really explained it in such a cool way,
762 and I was like "wo::w,"
763 so that was really cool
764 cool
765 Aiken is like a computer,
766 he's like (in a robot voice) "Hello Mr. (unclear).
Erererer."
767 But he is with Omari who is like loud and obnoxious,
768 so they are really interesting.
769 This group is cool.
770 you'll like that group
771 uh huh

772 They drive me crazy because they are loud,
 773 but they are really good.
 774 Umm
 775 this (points at the seating chart) is, this student is the
 times 10.
 776 JPS, uh huh
 777 that's JPS.
 778 Um and
 779 this girl-
 780 I moved her on this table
 781 okay
 782 because he's been gone.
 783 She just waltzed into my classroom for the Day 1 two
 days ago,
 784 uh huh
 785 so just FYI
 786 Lynn: She was here for 6th and 7th grade and then
 787 Lynn: didn't come back and just showed up this week
 788 okay, okay
 789 So she's still kind of learning
 790 how group dynamics go and she is on a tough group,
 791 yeah
 792 but she is really good.
 793 mhm
 794 Like she's smart.
 795 cool
 796 um these two have to be together.
 797 okay
 798 He will not work without this one.
 799 okay
 800 so I made a deal that if they behave well
 801 that he can always be in a group together,
 802 uh huh
 803 but the minute I see not that- them not behaving well
 804 How does that kid feel about it?
 805 cool, they're like really good friends
 806 okay
 807 and I thought that he was a total screwball
 808 uh huh
 809 when I met him
 810 uh huh
 811 because he seemed to be screwing around a lot
 812 and then l- when we did the test,
 813 I was like "Oh my god,
 814 he made so many connections"
 815 uh huh
 816 and I talked to this one about him
 817 and he was like "yeah I don't know why you felt that
 way."

864 is he doing it?
865 He is.
866 but he gets very frustrated when I call on,
867 because I do random card picks-
868 uh huh uh huh
869 and then, I though-,
870 they are not totally like-
871 you know it takes them a while to explain
872 cuz he's really smart.
873 Yeah
874 He's like- today he was like "ahhhh" (screams)
875 you know, and he was just like going crazy
876 like trying to, you know,
877 because they were struggling with explaining
878 and he wanted to tell me
879 "I want to tell,
880 I want to tell."
881 You know, and then it's like, he-
882 mhm
883 I had to like
884 calm him down
885 uh huh, okay
886 so, yeah
887 okay
888 but he's getting better.
889 He's getting better.
890 I think today was a better day-
891 so yeah.
892 And Sarah,
893 so we kind of have this odd ball because
894 they don't all fit in groups of 4.
895 uh huh
896 So poor Sarah
897 has sort of had to like
898 jump around to different groups,
899 which has not been the coolest thing ever
900 uh huh
901 Sarah worked in this group today and
902 yesterday she worked with that group
903 and I kind of feel horrible
904 because I feel she is not able to cohesively be with a
group
905 mhm, okay
906 So there's another issue
907 that comes up with this class
908 okay
909 because I don't have full tables of 4.
910 yeah. uh huh
911 She is great

912 and super willing to like accommodate
 913 but I don't think it's fair. (.)
 914 Cool.
 915 so here is what I hear
 916 as something we could think about together.
 917 Um
 918 I hear that there are multiple groups that could benefit
 919 from
 920 assigning competence to particular students
 921 mhm
 922 in different kinds of ways.
 923 So I'm hearing
 924 uh, that this group
 925 there are students that might be perceived as less
 926 competent
 927 mhm
 928 who we could figure out ways to
 929 counter that perception
 930 and that might support this group,
 931 mhm
 932 right?
 933 Umm I hear u:h
 934 that here (pointing to seating chart)-
 935 uhh-
 936 if we could find ways
 937 to make it really clear to all of them
 938 that this is not the only smart student in the group
 939 mmm, mhm
 940 right?
 941 Um I think that that could support all directions.
 942 mhm
 943 It could support kids to be more willing to speak up,
 944 it could also support him to be more willing to be
 945 patient
 946 if he like gets opportunities to see other kids doing
 947 things he didn't do
 948 like or
 949 mhm
 950 offering things that he didn't think of yet
 951 umm
 952 (inaudible)
 953 Lynn: /Quiet.
 954 /Um they are kind of quiet.
 955 They are good though
 956 Yeah, so we could just watch and listen.
 yeah
 I think that maybe um
 that might be a thing that we could do together
 would be to listen,

957 depending on the lesson
 958 and now I'm a little worried about the lesson for this
 reason.
 959 But depending on the affordances of the lesson,
 960 we could listen for kids,
 961 listen and watch for kids to do smart stuff together.
 962 that's one role I could play would be to do that with
 you
 963 and then just sort of poke you
 964 when I see something and let you
 965 mmhm
 966 Pick it up and address it with the group
 967 or the class, depending on
 968 what's appropriate at the moment.
 969 Um
 970 that said,
 971 I don't know how much you are going to have doing
 that (points to task paper and laughs)
 972 I know
 973 So I think that-
 974 I don't even want to teach scientific notation.
 975 I'm not a huge fan of it myself so it's-
 976 yeah
 977 but it's like a big part of this unit.
 978 Big how?
 979 like if you look at the Milestone task,
 980 they need to know scientific notation.
 981 uh huh
 982 it's like about like bacteria or e coli-
 983 it's about e coli
 984 Lynn: oh yeah
 985 and they are like multiplying
 986 and it's like a really crazy problem.
 987 Like, I didn't even understand it when I first looked at
 it, so-
 988 Lynn: We'll blame Mike.
 989 (starts laughing) Blame Mike!
 990 What did you say?
 991 I said we'll blame Mike. Downey.
 992 Lynn: I think he wrote this unit or part of it
 993 umm
 994 I mean here's the other thing.
 995 The other thing that is addressed in this unit
 996 are all the other um
 997 ways to look at exponents and different properties of
 them,
 998 uh huh
 999 which is also a key part of this.
 1000 Um, I don't know if like-

1001 well-
1002 I don't know if having to do scientific notation exactly
tomorrow
1003 would have to be-.
1004 yeah,
1005 I think it's okay.
1006 So uh Kamilah is also doing scientific notation
1007 mhm
1008 tomorrow,
1009 mhm
1010 I think she might be on her next lesson,
1011 mmhmm
like maybe her kids didn't quite get to here and she is
1012 picking up scientific notation on the next lesson or
something.
1013 I think-
1014 I don't remember the numbers- but anyway,
1015 so we u::h,
1016 in our conversation
1017 reached the decision that this isn't group worthy
1018 (starts laughing)
1019 And therefore
1020 it might be nice to not pretend it is
1021 and to like not try to like-
1022 if there is nothing to talk about, if there's no-
1023 so sometimes when things are um,
1024 well what am I trying to say.
1025 I guess what I want to say is
1026 there are ways that we are still a community who
learns by talking
1027 mhm
1028 and listening to other people,
1029 who takes care of each other.
1030 Who is like, "it's not all about me"
1031 right
when, even when there is not rich deep things to think
1032 about,
1033 so in her class I think what they-
1034 at least what we talked about,
1035 and I don't know if she will stay with it
1036 is that they were going to work in pairs.
1037 And that she was going to establish at the beginning
this is a new way, a new structure
1038 for working that we will do sometimes
1039 and that during pair work um
1040 the expec-, she was going to take some time to
establish the expectations,
1041 so we are not using roles because there are only two,
1042 mhm

1043 right? But um
1044 we expect that you stay on the same problem at the
1045 same time,
1046 both
1047 uhh both members of your pair should be um
1048 like understanding the reasons behind what is getting
1049 written down.
1050 mhm
1051 What I am holding you accountable is to-
1052 like I should be able to walk around and at any
1053 moment,
1054 come and talk to you two
1055 and both people here should be able to say-
1056 I could randomly pick one person
1057 and you should be able to tell me,
1058 not necessarily an answer, if you haven't gotten there
1059 yet,
1060 mmm
1061 but you should be able to tell me what you are
1062 thinking about
1063 or what you are stuck on
1064 or what your process is
1065 or where you are
1066 mmhmm
1067 right? That that is two people working together,
1068 but there's not a ton to talk about here umm
1069 Is she at this place too?
1070 yeah she is in the-
1071 Lynn: yeah she is eight forty one to eight forty four is
1072 what I looked at
1073 so is that part not group worthy either? (gets up and
1074 walks out of the frame)
1075 Lynn: no
1076 no it's still scientific notation
1077 uhhh really?
1078 so you might,
1079 this might be the non-core problems
1080 and you might just skip to that, Heather.
1081 I don't know if you need these ones and those ones
1082 (sits back down) oh good golly.
1083 yeah,
1084 so she's doing-
1085 what did she decide?
1086 yeah
1087 Oh my god,
1088 why are you coming in this day? (laughs)
1089 I'm just like randomly choosing groups, I'm randomly
1090 choosing days.
1091 So this is what's happening

1084 I'm just kidding
1085 No it's good to think about it together right?
1086 There are some particular challenges like (.
1087 yeah
1088 in a community where we learn together
1089 and where we value everyone being smart,
1090 there's different kinds of math content we need to be
able to take up and do together
1091 mhm
1092 and some of it is like
1093 the cool apprentice task where there really is a lot of
stuff to think about.
1094 There are multiple ways to represent things,
1095 there are different ways to explain it,
1096 different solution strategies
1097 and sometimes this is just-
1098 I mean and sometimes you have to be clear with kids
like
1099 it's just a freaking convention
1100 yeah
1101
1102 it's kind of useful because
1103 you are going to see it,
1104 you are going to need to be able to deal with it and
you want to-
1105 this one is kind of nice, here,
1106 because it shows why it's useful because
1107 like
1108 when you write that down one time,
1109 you are going to say
1110 "i don't ever want to write that again." (laughs)
1111 (laughs)
1112 And this convention allows you to not have to write
that again, right?
1113 mhm
1114 And that's why it was invented
1115 but that's all it is
1116 and you know-
1117 there is some connections to our base-10 number
system-
1118 it works because, in this way,
1119 because it is a base-10 number system, you know?
1120 Alright that is not particularly deep.
1121 mhm
1122 Um
1123 but it's good to get some practice,
1124 so today is not about big deep ideas,
1125 you might just have to say that, right?

1126 Today is about like learning this convention that is
gonna be useful.

1127 It is going to make other things more accessible.

1128 You are going to see it in science classes.

1129 Lynn: right, you see it in science.

1130 And we are going to make sense of it together,

1131 so the goal today is that

1132 you understand this convention.

1133 You can read and understand numbers when they are
written that way

1134 so you know what people- you know, numbers are
suppose to mean something, right?

1135 mhm

1136 So you know kind of what they mean and have a
sense for,

1137 when I look at this number, is it huge?

1138 Is it tiny?

1139 Is it somewhere in the middle?

1140 mhm

1141 You know?

1142 And um

1143 and then you would be able to use this strategy for
writing really big numbers

1144 so you don't have to sit there and write

1145 twenty eight zeroes, right?

1146 mhm

1147 um

1148 that's all it is.

1149 So we don't have to pretend it's something big.

1150 And that way it is also like if there is like-
because one of the challenges with non-groupworthy
stuff

1151 is that you can exacerbate status.

1152 Because the same kids who are used to being seen as
being smart

1153 are the ones who are most likely

1154 to figure that out first

1155 because they are use to this kind of thing.

1156

1157 mhm

1158 They are used to parsing text.

1159 they are use to symbolic notation.

1160 mhm

1161 They are use to being able to read those directions and
follow them really clearly.

1162 So it is their skills that get kind of highlighted again

1163 which is sort of challenging,

1164 mmm

1165 so one way

1166 to sort of make that less of a problem maybe,

1167 is to make it clear it's not a big fuckin deal.
1168 I am not that impressed that you can use scientific
notation (laughs)
1169 (laughs)
1170 I didn't mean to say it like that,
1171 but like it is useful-
1172 cool figure it out you know-
1173 Lynn: so yeah if your calculator spit's out 3.2 and -6,
you know what that means, right?
1174 mhm
1175 Lynn: because that is where it always comes up is kids
say, "i don't know what this means"
1176 right right right
1177 and this part says no calculators but this doesn't,
1178 yeah
1179 so I'm thinking
1180 that they are going to be able to use calculators on
this?
1181 Which might be kind of a cool tool for them to have
Lynn: I think it is for scientific notation because that's
1182 when you see it most often, when you put something
in your calculator and it is too big
1183 right.
1184 So maybe if we started here
1185 no calculators and then once groups got to here,
1186 then I would allow calculators.
1187 (9s, looking at paper) Do you think you have students
who already know scientific notation?
1188 I'm sure they have been exposed to it.
1189 They were supposed to be exposed to it in seventh
grade.
1190 I specifically talked to Kamilah and she was like
1191 "I didn't teach that last year" (laughs)
1192 so my seventh graders
1193 so I know any of her kids didn't get it
1194 Cuz you know it was like a timing thing or whatever
last year
1195 yeah yeah yeah yeah.
1196 I used to think they all (inaudible)
1197 right, it gets-
1198 Lynn: I always had that video. I always showed that
video
1199 yeah, the old expanding-
1200 Lynn: yeah that one
1201 the guy laying down on the
1202 (multiple people talking)
1203 I think she is showing it
1204 oh is she going to show that tomorrow?
1205 uh huh

1206 I think that would be cool,
1207 showing the video
1208 yeah
1209 I almost kind of want to push to see if we could make
this group worthy (laughs)
1210 Well what would there be to talk about?
1211 well I feel like
1212 even the high kids that can figure this out,
1213 they need to be able to explain to the other kids
1214 what the heck is happening.
1215 yeah.
1216 I do think that's a really tough concept to explain
1217 and maybe-
1218 Right so I think that-
1219 groupworthy and hard are not the same thing.
1220 mmm
1221 because like,
1222 in my way of making sense of this anyway
1223 mmhmm
1224 Um
1225 If something is hard,
1226 but there is really just one way to do it
1227 yeah
1228 so that's why I think because there is something really
to explain
1229 that's why I would say,
1230 maybe,
1231 pairs make sense
1232 and what the pairs can be held accountable to is,
1233 you both should leave this,
1234 being able to explain
1235 scientific notation
1236 Whatever the end of that sentence is,
1237 but I don't know what I need to explain in scientific
notation,
1238 but maybe you need to be able to explain why-
1239 why a number is written in a particular way and what
it means or-
1240 i don't know.
1241 Something like that
1242 okay
1243 And then they could do that as a
1244 end of class, uhh-
1245 I don't think this is 'check-pointy' really,
1246 right?
1247 ehh
1248 but they could like
1249 write it as an exit ticket
1250 or um

1251 you could do some spot sort of checking
1252 mmhmm
1253 you know,
1254 around the room. umm-
1255 ummm
1256 I was just wondering about-
1257 I was just thinking about this uhh.
1258 I worry about this being like fake (laughs) a little bit
1259 (reading) (use) (inaudible)
1260 like fake there's something to talk about
1261 (reading) to find the product for each expression.
1262 So here, they are just supposed to do this,
1263 which I feel like maybe could be a good do now kind
of problem, right?
1264 mmhmm
1265 So they would have to be like
1266 "oh that's 100,
1267 so what is 9.23 times 100"
1268 mmm
1269 and then they might just start to see some patterns.
1270 This is trying to get them to
1271 see the patterns and then extrapolate them.
1272 So what would happen if it was 57, right?
1273 But I feel like it sort of-
1274 it's sort of like pretending
1275 there's something to talk about,
1276 but really what's going to happen
1277 is one kid is going to be like
1278 "see, it is like this. do-do-do-do.
1279 You count this this many times.
1280 yeah
1281 There is a 7 there, you count 7 times and done."
1282 Lynn: yeah
1283 and the other kid didn't make any more sense out of it
than they had before,
1284 Lynn: mhm
1285 you know what I mean?
1286 Lynn: right because there are a bunch of zeroes.
1287 mhm
1288 yeah.
1289 but there might be
1290 some idea from here that you can pull out
1291 for that exit ticket or something.
1292 mhm
1293 Once they get all through this stuff,
1294 they should be able to explain,
1295 you know, by the end of class-
1296 and you can like.

1297 You know maybe this is a closure thing too that will
help you-

1298 a:h-

1299 what if they had to like-

1300 10 minutes before the end of class,

1301 they all have to stop where they are

1302 and try to like write down or show a picture or

1303 somehow,

1304 maybe explain orally-

1305 or however you want to do it.

1306 Like now is when you, we're seeing that this is

1307 making sense to you.

1308 can you explain- try to explain why

1309 this number is written like this.

1310 I don't know.

1311 Maybe why-

1312 like they have to write on paper?

1313 Maybe, I was just wondering about that.

1314 Um but

1315 this might be an opportunity for you to do that

1316 so then you could be sort of assessing

1317 how many of them seem to be really

1318 mmm

1319 getting this thing right now

1320 because it gives you an opportunity to see that.

1321 mhm

1322 It might give you an opportunity to publicly assign

1323 competence

1324 because kids are going to be individually producing

1325 something

1326 so you can watch particular kids.

1327 You can watch like are these three kids (pointing to

1328 the seating chart) producing anything?

1329 uh huh

1330 are the kids who don't ever talk out loud producing

1331 anything?

1332 That you can then in a closure-

1333 like whole class closure moment

1334 say okay, so this wasn't really a big deep thing,

1335 but let's just see if we are getting it.

1336 I heard a couple of really useful ways to explain this.

1337 you know, I heard,

1338 Martin-

1339 or Martin, I don't know who that is.

1340 Umm.

1341 (laughs)

1342 I heard him say it,

1343 if it is oral, I heard-

1344 you would just be listening for it.

1339 I heard him say this phrase, which was super useful,
 1340 I didn't hear that anywhere else.
 1341 And that seemed like a really nice way of explaining
 it.
 1342 Or I saw- or I heard- or I saw
 1343 somebody write down this particular thing,
 1344 "do you mind if I share this with the class?"
 1345 See this thing that she-
 1346 you know what I mean?
 1347 So this gives you a chance to give some attention to
 the status issues
 1348 that I'm hearing are present.
 1349 Right?
 1350 Um, and also
 1351 check in on the content
 1352 and leave knowing-
 1353 so you know
 1354 sort of how many kids in the room are
 1355 getting this not very deep, rich thing that we want
 them to get (laughs)
 1356 I'm- my biggest worry about that
 1357 yeah
 1358 is I feel like it's still gonna be the really high kids that
 are going to be able to explain this,
 1359 if I do 10 minutes of that.
 1360 I mean I think this is a really tough concept.
 1361 so you do 5 minutes of that,
 1362 I listen with you
 1363 okay
 1364 We try to prove you wrong
 1365 okay
 1366 because we have two sets of ears, right?
 1367 right
 1368 So we listen really closely
 and we listen in particular for the kids we want to
 1369 listen for
 1370 Okay
 1371 So we've decided ahead of time who we are listening
 to
 1372 okay
 1373 We try really hard
 1374 and if nothing happens for any of those kids,
 1375 which it might not
 1376 okay
 1377 then you don't-
 1378 you don't do it that way.
 1379 So you don't assign competence to high status
 students
 1380 okay

1381 I mean at this point, probably,
1382 not that you never do but for now I think,
1383 No, I agree.
1384 you wouldn't want to like
1385 share this kid's (pointing to seating chart) thinking out
loud,
1386 mhm
1387 right?
1388 Because that is just going to exacerbate
1389 mhm
1390 that.
1391 So then um,
1392 so then you do something more general.
1393 If you really don't hear anything that you can attach to
kids and be authentic about,
1394 then you say like
1395 "I heard lots of great things.
1396 I've heard these different ideas"
1397 and you just don't attach names to it.
1398 Or "I saw some different ways to explain it.
1399 This idea about figuring out how to explain what
we're thinking is something we really need to be
working on,
1400 blah blah blah."
1401 You just find a way to like
1402 salvage the mathematical closure and not let it be a
problem for the-
1403 okay
1404 Does that make any sense?
1405 Yeah,
1406 I do think we're stretching a little bit though to
explain scientific notation.
1407 okay okay
1408 I just feel I don't know,
1409 this concept is uh (mumbles)
1410 Yeah so maybe we don't have to explain it.
1411 Okay, I totally hear that
1412 and don't stretch if it feels like a stretch.
1413 So then maybe do something like,
1414 I mean, I don't know
1415 make up-
1416 Like how would you explain scientific notation?
1417 Like I feel like it's so
1418 So that's why I needed a prompt that wasn't "explain
scientific notation,"
1419 okay
1420 but it was "explain why these two numbers are the
same"
1421 okay.

1422 Okay,
1423 so not like “explain scientific notation” but like
1424 Explain why this number- written like that (points at
1425 the paper) is the same as
1426 one million whatever number that is
1427 Okay
1428 explain why-
1429 or explain how we tell these are the same or-
1430 okay
1431 we’d have to figure out exactly how to word that.
1432 Or maybe instead of doing an explain,
1433 maybe it’s like everyone has to make up their own
1434 number,
1435 that’s easier to write in scientific notation,
1436 and explain something that helps us understand how
1437 big that number is.
1438 Lynn: or how small
1439 or how small. Right?
1440 So then maybe it is more that you are trying to get
1441 them to wrap their head around
1442 the meaning of that exponent and how much it
1443 matters,
1444 mhm
1445 so maybe they would be saying-
1446 they’d put an exponent of 150 and they would say
1447 “this is like going to be all the way to the moon” or,
1448 you know what I mean? Just-
1449 I don’t know exactly what it is.
1450 so it has to be authentic to you, right?
1451 right.
1452 Whatever you ask them to do.
1453 yeah
1454 has to be something worth doing-
1455 umm
1456 But maybe it’s just around-
1457 it’s just a check like,
1458 we’re doing this for a reason.
1459 right
1460 So I think it might just be like,
1461 what is our actual reason,
1462 other than that it is in the book.
1463 Like what is it you want them to know about scientific
1464 notation?
1465 and what do I have to ask them
1466 right
1467 to see if they know it
1468 and that’s what frames what that question is
1469 (bell rings)
1470 sorry

1465 Oh shoot.
1466 Okay
1467 sorry (rubs Heather's back)
1468 it's alright
1469 i didn't do a good job of watching the clock.
1470 I'm so tired (puts head on desk)
1471 um so what I'm gonna to do is,
1472 I am going to show up.
1473 I am going to keep my ears out for those kids.
1474 Feel free to email me or tell me something different
when I walk in,
1475 if you are thinking about lesson changes or you want
me to do something different.
1476 okay
1477 And then I will like poke you and tell you what I see-
we can whisper to each other about those kids during
1478 class,
if you have the opportunity
1479 okay
1480 And then when we debrief,
1481 we get to talk about
1482 what happened with those kids and
1483 whether maybe whatever I observed
1484 helps us learn something about those kids that we
1485 didn't know
that might have a bearing on where you go next or
1486 okay
1487 yeah?
1488 Alright.
1489 I am going to have to really look at this
1490 to figure that out tonight.
1491 yeah maybe
1492 I am just not super jazzed about this lesson.
1493 yeah I totally feel you.
1494 I have been there so many times.
1495 Lynn: It is just notation.
1496 Lynn: You can tell them that.
1497 It gives us an opportunity.
1498 It gives us an opportunity to not be like-
1499 we are already breaking down that
1500 "the day Mia comes is supposed to be really fancy
1501 group task day",
1502 right?
1503 right
1504 we are already breaking that down.
1505 So that's good (because we have to usually get
through that) (laughing)
1506 I know, right?

1507 Lynn: It is also- it is kind of a good opportunity for
you to look at status when you don't have to worry
too much about a huge concept that you need
everybody (inaudible)
1508 right
1509 Lynn: because it is just notation.

Heather Cycle 1 Debrief Conversation

	Heather	Mia
1	can I grab a piece of gum real quick?	
2		Yeah
3		I wish I could offer you one, but I just ran out.
4	I have some	
5	It's OK.	
6		okay awesome
7	I always have gum (<i>laughs</i>)	
8		Do you have an extra?
9	yeah, you want one?	
10		Yeah, (<i>inaudible</i>)
11		OK, so something like this (.)
12		Oh, there's a big cloud in the middle.
13	(6s, laughs)	
14	(<i>inaudible</i>) typo right here (<i>laughs</i>) (<i>inaudible</i>)	
15		Right? (.)
16		I think there's like a um (8s)
17		I think there's some layers.
18		There's like don't know.
19		There's like things that I know
20	(<i>inaudible</i>)	
21		I've gotta find it.
22		There's like some line somewhere.
23		Someone created it in our early, like (<i>inaudible</i>) teacher created this cool graphic that they people took up and like laminated and put on their wall.
24		It just makes very clear that
25		if that's not happening, you're not actually learning.
26		You're just doing something you already know how to do.
27	Mmmm	
28		That's not actually learning.
29		That's just doing shit.
30		Right? (<i>laughing</i>)
31	Right.	
32		This is what we're trying to get to.
33		And it's gonna be really
34		Maybe uncomfortable and maybe you'll start to enjoy this.

80 I know it's hard to like
81 explain that feeling
82 yeah
83 and then there was like a homework assignment last
84 night
85 and then we got like part way through it and she
86 crying
87 aww
88 and was like " i don't want to do this right now. It is
89 too hard."
90 I know.
91 And then you have to figure out like,
92 okay
93 i know and there is always that like point like
94 do I push them at this point.,
95 or do I kind of let that go and let em sit with that for a
96 minute and then
97 yeah
98 So that's kind of what happened here.
99 I don't want this girl or boy to be defeated.
100 yeah
101 We don't want Sol to feel defeated.
102 yeah
103 um
104 so yeah I think maybe I will try to come with a poster
105 and have a little conversation about that tomorrow
106 and maybe that could be like our exit ticket like
107 o::h, cool
108 "why do you think we did this?" problem.
109 Yeah.
110 Because I wanted to make you insane?
111 O::r
112 (laughs) right right right
113 (laughs) anyways but it was so cool to see all the
114 thinking like
115 that went into this
116 like it was very impressive.
117 Look at this like color coding.
118 We had color coding
119 but going backwards or going forwards.
120 like this is like the second times forwards.
121 that's so cool so they were like differentiating,
122 like you start out going forward
123 uhuh
124 then you go back, so we switch colors.
125 Then we go back again so we switch colors
126 to a new color.
127 That's so cool
128 I know.

124 Neat, huh?

125 All the layers.

126 Uh huh

127 i could show that too actually.

128 When they like laid out like what they were doing in
steps

129 Oh number lines with segments?

130 mhm

131 look at that.

132 this one they did a really nice paragraph,

133 I love that.

134 This one showed like..

135 look at that 10 times 1.2 feet

136 It's 12 feet.

137 I know right

138 (inaudible)

139 that's cool huh

140 fancy people

141 I know right?

142 and this one.

143 they just went like crazy town on there.

144 (.) Showing all the calculations

145 mhm

146 and what happens on each step.

147 They did the 1.2- look! They did the 1.2 (7s).

148 What are they doing?

149 (laughs)

150 oh they got 1.2 times 10 is 12,

151 but they did it by adding.

152 They got this.

153 So they added up a bunch of one /point twos

154 oh they just, o::h

155 to figure out that you could get to 12.

156

157 And that was this- that's the calculation for that arrow.

158 Yeah because I told them that-

159 first they showed me this whole process

160 right

161 and then i said well you need to explain what 12 is
here

162 because that is not one of our moves

163 yeah yeah

164 So i told them that they had to show that on their
poster

165 uh huh

166 so that's what they are doing there

167 cool

168 so you have-
you have here

169 multiplication as repeated addition foundation because
 like
 170 look, they figured out that if you-
 171 if you add 1.2 together
 172 mhm
 173 10 times you get 12.
 174 It took a lot of work,
 175 yeah
 176 Right (laughs).
 177 Awesome.
 178 And they-
 179 this group was just getting to that place too
 180 because they kept trying to /add things
 181 Hi Lynn
 182 and they were like unsure (Lynn walks in)..
 183 Hi.
 184 Lynn: Sorry I..
 185 oh that's okay.
 186 Anyway (.)
 187 (to Lynn) sorry I was having a little melt down
 (laughs).
 188 But they got that repeated addition thing too, which
 was really cool
 189 cool.
 190 Either way, it was really neat
 191 and we did the silent gallery walk,
 192 uh huh
 193 per Aya's idea,
 194 which I thought was awesome.
 195 They couldn't talk.
 196 And they just had to like answer questions on their
 notebook
 197 cool!
 198 Like how was their group solution different,
 199 like from what they saw and
 200 how did they represent their ideas.
 201 So they got to see lots of different representations
 202 yeah
 203 Awesome.
 204 I had to like really rush it in the end though,
 205 with the posters,
 206 yeah
 207 and I felt bad but
 208 It happens.
 209 Cool,
 210 Anyway
 211 awesome work
 212 A lot of good work happened today.
 213 Yay

214 I know that this isn't what we were going to talk about
 (laughs).

215 Whatever.

216 we are talking about what we are talking about.

217 We are talking about teaching,

218 we are talking about math. It counts.

219 (to Lynn) I had a melt down first.

220 Lynn: sorry.

221 it's okay

222 Lynn: Everything alright?

223 yeah.

224 Lynn: I just had an incredible moment.

225 Lynn: One of my former students came in and (she's
 at City, taking Algebra). And another one of my
 former students, who's now a para

226 Lynn: came in

227 Lynn: and the two of them sat there and apologized to
 me.

228 For being little shits in your class? (laughs)

229 Wo::w

230 oh my god.

231 There's a moment

232 Lynn: It was

233 wow (laughs)

234 Okay.

235 You were like-

236 Yay

237 let me calculate your fee for pain and suffering

238 Lynn: Can I just-

239 (laughs) With interest.

240 Lynn: a 10 second thing.

241 Lynn: Why are they teaching long division and
 decimals without a calculator

242 Lynn: at city college.

243 Lynn: Why are they making students do long division
 and decimals in city college?

244 yeah,

245 that seems kind of ridiculous in city college.

246 At first it sounded like you were talking about our
 school

247 Lynn: no i am talking about students who are taking
 (inaudible)

248 I know

249 it's pretty ridiculous.

250 It's like really, we are not worried about that at this
 point if you are in algebra.

251 We are worried about your algebraic process (laughs).

252 Anyway

253 Do you have a notebook?
254 Do you have your (inaudible)?
255 yeah (gets up to get it)
256 cool.
257 So what I am going to recommend to us for a starting
place
258 or second starting place
259 is umm..
260 that we take some time.
261 it's quiet thinking writing time.
262 okay
263 I like to organize it in this little
264 t-chart kind of way
265 but it's not necessary, but um
266 I want us to think about uh
267 your strengths
268 okay
269 um that we saw play out in class today
270 mkay
271 and I'd like you to think about your questions.
272 Okay, so one side is my strengths and one is my
questions?
273 yeah,
274 what are you feeling curious about or sort of..
275 Oh you're really trying to push into the feelings aren't
you?
276 (laughs) I wasn't intending to.
277 We could go there
278 (in an exaggerated voice) I've already been so
emotional today
279 (laughs)
280 (sighs) Okay, here we go.
281 Here we go.
282 Lets see
283 (3 minutes of silence while they all write)
284 how many questions should we (put)?
285 whatever you want.
286 Probably won't have time to take em all up, but
287 we could air them and we could decide together
(inaudible) from there
288 okay. I can't think of how to spell the word patient,
for some reason. □
289 Lynn: P A T I E N T
290 P A T mmm
291 i won't take off points for spelling (laughs)
292 Lynn: (inaudible)
293 oh really?
294 Lynn: (talking)
295 mmm

296 Lynn: (inaudible)
 297 interesting.
 298 Did I spell it right?
 299 It doesn't look-
 300 you know when you look at a word and it..
 301 Lynn: (talks)
 302 It doesn't right?
 303 It looks weird.
 304 Okay I think I am ready whenever you are.
 305 (5s, Mia keeps writing and looking at her notes.)
 306 (to Lynn) Did you see what happened to Dejon?
 307 I'm just sad about that.
 308 it's really (mumbling)
 309 (lots of mumbling)
 310 and Soul..
 311 you know Soul?
 312 On her posters today
 313 she..
 314 that's when I kind of like had a breakdown because
 she
 315 got..
 316 she did all of this really hard work
 317 and she just like couldn't get the answer
 318 and she got in that like "i want to give up" phase.
 319 And she was like about to cry
 320 and I was like trying to encourage her and just tak to
 her about it.
 321 It just like all of a sudden made me really emotional,
 322 so I realized like
 323 that is the struggle I have been in all week.
 324 Like..
 325 that I totally wanted to give up
 326 today
 327 and then like i (inaudible).
 328 Right?
 329 it's just like all of this emotion just flooded through
 me. (5s)
 330 Like I was totally having one of those mornings today
 331 Like I wanted to quit.
 332 It's so weird because I never feel that way but I just
 like
 333 I feel like I've been pushed to the brink this week. (3s)
 334 Lynn: It's been a (inaudible)
 335 Can I say that to Malaysia?
 336 I had a huge break through too today.
 337 She,
 338 you know the struggles with her
 339 Lynn: mhm

427 I know
428 that's what we are here for (in a high pitch voice)
429 uhh (reading from notes) positive encouragement,
430 patience,
431 which I have had a lot of today.
432 uh huh
433 Structure,
434 which you can't always see in my classroom but
today.
435 Looked like I had amazing structure but
436 doesn't always look that way
437 What do you mean by structure?
438 like,
439 the kids know what to do when they come in.
440 uh huh
441 like they would know what to do to get quiet.
442 uh huh
443 like they know how to like get organized.
444 uh huh
445 They know that they have to ask a team question or-
446 uh huh
447 They know to use the words checkpoint and
448 mhm
449 not interrupt each other.
450 mhm
451 like the CI structures coming together.
452 mhm got it.
453 okay
454 I wish you could have seen more of that today with
the roles
455 because we had the
456 yeah yeah yeah
457 but i love..
458 Well, I'll be back more.
459 It is not the last time I come.
460 umm and not giving up on my students. (3s)
461 (laughs) Cuz it can be very easy at times.
462 alright. (shuffles papers)
463 So I think that there are umm..
464 I don't know- Some of the things I am talking about
465 and I think some of the things that you meant by-
that you are using kind of big buckets.
466 I can't quite know how they are attached to the lesson.
467 So I am going to attach them.
468 okay
469 umm so I saw a very clear launch
470 um well first,
471 before the launch,

472 they came in,
473 they clearly knew what was expected.
474 They got started right away.
475 They were quiet,
476 they were like..
477 (snapping) this is like-
478 every minute of class we're in class.
479 There is not a bunch of like "blah blah blah."
480 That might have been part of what you meant by
structure.
481 But..
482 mhm
483 But umm
484 I saw also after that, when you were launching the..
485 after the do-now or whatever, and you were launching
into the group work?
486 Or the pair work.
487 Um,
488 just amazing clarity.
489 Like
490 quick and clear.
491 Like this is how
492 we are going to work-
493 this structure we're using today.
494 This is what I am expecting of from you.
495 You had language that was like (consulting notes)
496 umm
497 I want you to have your notebooks out.
498 Um i want you to do each problem with your partner.
499 Be prepared to share because I am going to check in.
500 I am not doing checkpoints,
501 I'm doing a check in.
502 This is what it is,
503 "Blahh."
504 Just very like
505 clear, quick,
506 communicated high expectations.
507 Made it clear how it should sound.
508 You know how it should look.
509 You are in partners.
510 This is together work.
511 Awesome.
512 umm
513 I thought,
514 oh you're expecting a lot from them.
515 You aimed for 5 problems.
516 And given, like what has been expressed about it
being kind of hard.
517 (Looks at door, someone says something) It's okay.

518 that like things are slow.
519 I am hearing that some of your team in general.
520 mhm
521 I was like “whoa cool,
522 5 problems.”
523 And some of them like made it through a lot of that
right?
524 yeah
525 so because you were aiming high,
526 there was a lot-
527 There was not-
528 here was a sense that there was stuff to do right?
529 (nods head)
530 Umm (.)
531 I think that one of the things that I noticed was that
532 umm
533 the ways in which you interacted with groups
534 wa::s different in different moments
535 and always effective.
536 They did what you asked them to do.
537 You redirected-
538 you know like every time you walked away from a
group of kids,
539 they were different than when you had arrived.
540 mhm
541 which means-
542 and I don’t think that that is always just connected to
exactly what you said to them.
543 For me, what that means is
544 you spent the last 4 weeks building relationships with
them.
545 One of the things that I have been reminded about
today,
546 is that-
547 how powerful relationships are
548 mhm
549 because I have had a couple of interactions with kids
today
550 (laughs)
551 where the kids are like super nice to me-
552 they’ve all been really nice
553 and really welcoming
554 mmm
555 But like I have a little-
556 I haven’t been interacting a lot with kids, but a little
bit
557 and I’ll have like a little interaction and I will make
some kind of suggestion and they will be like “yeah”.
558 You know, they will be so nice and like

559 totally hear me and don't do it.
560 (laughs)
561 like, without fail.
562 Every single group I have talked to, I have been
563 totally ineffective with.
564 And I am like "oh right
565 because they don't know me" from adam"
566 hmm
567 right?
568 right.
569 So those 4 weeks
570 of building have built you to where you are.
571 where you are effective,
572 they believe you,
573 they buy it.
574 they're like doing it.
575 Umm (.)
576 I think that you-re also-
577 and this is probably related
578 to that, is that the ways you are interact- you're
579 intervening with teams,
580 are um
581 you're pushing them further than they were.
582 So you're like listening to where they are,
583 you're asking- like i quoted one thing, which was
584 "I'd love to see two ways."
585 So you said the way they did it,
586 you validated it
587 and you said "I'd love to see two ways."
588 Like, "Do a better one."
589 Go further."
590 You asked other kids to justify,
591 you were pushing for justification:
592 "how do you know that?"
593 And also your energy was like never punitive.
594 If you were trying to get kids back on task who were
595 off task,
596 you weren't like "you are doing the wrong thing."
597 mhm
598 Your energy with them was like to direct them into:
599 like,
600 you didn't ever-
601 I don't-
602 I mean i wouldn't imagine-
603 I don't know how the kids feel,
but I wouldn't imagine that any kid ever felt bad as a
result of anything you said to them,
even when they were being kinda like "wahh" right?
(nods and chuckles)

604 umm,
605 so i think all of that goes into that 4 weeks of
606 relationship building work
607 that gets you to where they are responsive
608 and where, you know,
609 gets you where you are.
610 Um
611 kids were staying engaged when you were busy
612 elsewhere,
613 when your back was to them.
614 When you were clearly not about to turn around,
615 totally engrossed in one place.
616 Kids all around the room were working,
617 continuing on as if you were standing and watching
618 them,
619 which also attests to the work you've done for the past
620 month.
621 U::m
622 I wasn't sure if you directed them to or not-
623 the kids were reading aloud.
624 Well
625 Did you tell them to?
626 Well, we are use to facilitators are always the readers
627 yeah
628 so I think they were like falling into those roles.
629 that's perfect,
630 that's great
631 yeah it was cool
632 so this means they are taking up that norm, right?
633 Because without you explicitly saying "make sure one
634 partner reads aloud,"
635 they know
636 yeah
637 and that reading aloud is like breaking open that space
638 that makes talking possible.
639 Right?
640 it like gets things moving, it gets-
641 yeah okay.
642 U::m
643 I saw you in one case,
644 and I quoted one case, and I think that there were
645 maybe more.
646 You ask- so you went to a pair
647 and you wanted to push them a little bit.
648 They were saying they were done or something.
649 I don't remember what they said to you,
650 but you wanted to push them a little bit.
651 And you asked them permission.
652 You said,

646 you looked at both papers, and you said
647 “can I ask you about this?”
648 And it was clear like-
649 it wasn’t like-
650 It wasn’t wishy washy weird like you could imagine
651 that being.
652 It didn’t feel that way at all to me,
653 it felt super respectful.
654 You were saying like,
655 “are you ready?”
656 I mean it felt to me like it meant “are you ready?”
657 And if they had said no, then you would have said
okay well I am going to come back and push on you
in a minute
658 yeah
659 so get ready. You are allowing them space to like
660 determine for themselves
661 whether they were up for that, ready for it at the
662 moment
663 and holding them accountable at the same time,
664 which i thought was masterful.
665 (laughs)
666 Um,
667 I think that your students um
668 just walking around and looking at them
669 were producing good work,
670 they were like doing good math for like 40 48?
671 How long are your periods? I don’t know
672 51 minutes
673 51 point five and 12 seconds, minutes (laughs)
674 I was amaged.. amaged.. amazedddd
675 how engaged they were today on that material
676 because it was not the most engaging stuff.
677 so why do you think they were?
678 I don’t know...
679 it was clearly not because it was fascinating
680 mathematics.
681 (laughs:)
682 You can be pretty sure that is not why.
683 (laughs) I don’t know but they were-
684 I don’t know if it was the video camera
685 or like what..
686 no
687 but they were like,
688 they impressed me today.
689 yeah..
690 no I think because you structured it smartly.
mhm
Because you knew-

691 like I think it would have looked really differently if
you had them talk in a group of 4.

692 yeah there a lot of reading and
693 and there was like just not a lot to talk about
694 yeah
695 like in a group of 4, right?
696 So they were able to just like
697 share,
698 keep moving forward,
699 not be trying to generate conversations that aren't
there to be generated,
700 which is really uncomfortable.

701 (laughing) yeah
702 well you have been there, right?

703 Yeah (laughs) not trying to (pull) when there is
nothing really to (pull)

704 yeah
705 ahh and uhh
706 this one actually Lynn shared with me when we were
talking later,
707 so Lynn maybe you can speak to this, um
708 I wrote down the kids who we were talking about, so
we could understand it.
709 But Lynn was saying that she heard kids
710 being willing
711 to say that they didn't know
712 and to try things that they weren't sure about.
713 So you talked about Charmaine and Mylean?
714 Lynn: Sharmain and Mylean

715 Oh over here? (points at a part of the room)
716 And Ostry or Astry?
717 How do you say their name? Ostry?

718 Astri
719 Astri and Abigail.
720 and Abigail.
721 That was in the quiet table.

722 Lynn: Also those pairs of girls were..
723 Lynn: one was at the problem of the error recognition
724 Lynn: or that is not in scientific notation can you
(inaudible) 10 to the fourth?

725 mhm
726 Lynn: The other one was in the problem where they
had to write the pairs of (inaudible).

727 (laughs)
728 Lynn: and in both cases, the pair wasn't sure that
either of those pairs were (inaudible) I know.

729 mmm
730 Lynn: And they were willing to let me push them a
little bit

731 Lynn: and then they were able to do it.
732 Lynn: They didn't say "oh we don't know."
733 yeah
734 Lynn: they were willing to take the risk in trying to
figure it out and risk being wrong in (inaudible) a
thing.
735 mhm
736 Lynn: You know, I mean clearly there was an
apprehension,
737 Lynn: even if they don't know me, that they didn't
want to be wrong,
738 right
739 Lynn: but they were willing to try.
740 mmhmm
741 Lynn: and that's umm a huge culture shift for kids.
742 yayyy
743 And that's the thing that we've been talking about-
744 across classrooms..
745 is how do we support-
746 I think that is a conversation you guys can have
together too
747 because I think all of you are thinking about that.
748 yeah
749 How do we support kids to be tenative,
750 to take risks,
751 say they don't know,
752 share before they are finished.
753 You know that kind of stuff.
754 i think we had another big break through with
Jonathan over here (points)
755 in our class when i was there?
756 Lynn: Sitting next to Terriany.
757 sitting next to Terriany.
758 okay yeah uhuh. (.)
759 Oh yeah yeah
760 yeah!
761 He wow,
762 I was so impressed with him.
763 He-
764 did you see the smile just
765 yeah
766 come on his face when he got it?
767 and you gave him the opportunity to be the speaker
and explain it
768 even though it would have been really easy to let
Terriany do it
769 Right,
770 because she wanted to show it.
771 She wanted to show it

772 But you talked to me right in that moment
773 and you kind of took me aside for a second,
774 so i was like okay, I am going to like try to get him-
775 I think you said to me (.)
776 Have them like a team question or whatever, mhm
777 and have the person who is maybe of lower status
explain it.
778 Or the person who is not calling you over.
779 or
780 what I- see I, I.- that's funny because I think you did
something awesome that I totally didn't
781 support you on.
782 Because what I said was,
783 (to Lynn) she had- Terriany had called Heather over
and wanted to explain-
784 had a question and
785 you- Heather- and Terriany asked you the question.
786 right
787 So what I said to Heather was,
788 a little bit aside,
789 what if when you came over you asked her partner
what the question was
790 (inaudible)
791 because you asked her sort of-
792 yeah
793
794 you asked-
795 she finished explaining it and then you asked did you
talk to your partner or something?
796 right
797 and he doesn't get-
798 she told you something he doesn't get.
799 right
800 like he doesn't get da da da da.
801 yeah
802 and you very smartly redirected her back to like,
803 "well talk to your partner.
804 Make sure that you're both understanding."
805 So my input had been what if next time,
806 it was him who had to explain the question,
807 which then would force them to engage with each
other
808 and maybe he would surprise her
809 and he would have some ideas
810 that she thinks-
811 like she is saying
812 "you don't have any ideas so I'm gonna ask the
teacher because I know you don't get this." Right?
813 mmm

814 But maybe
815 if it were his questions asked-
816 So my suggestion was more of like a next time thing
817 but then you found a way,
818 after that moment,
819 mmm
820 that I totally wouldn't have thought of
821 to give it to him. To give him the floor right?
822 yeah
823 and i don't know how you did that,
824 how did you do that?
825 i don't know, it just kinda-
826 I told him that I was going to recheck,
827 well I do it a lot like okay, if
828 I want to see what your thinking is here,
829 yeah yeah
830 but if they don't seem ready,
831 I'll say "okay I am going to come back, but I'd like
Jonathan to explain."
832 yeah
833 And I think I asked him, i was like, is that okay?
834 yeah yeah
835 Are you willing to do that? Or something
836 and he said "okay."
837 yeah
838 And then when I came back,
839 he totally explained- a smile on his face.
840 It was like a huge moment for him
841 yeah
842 yeah that was really cool
843 And I am sure for her too.
844 Right?
845 yeah
846 Because she had thought he couldn't,
847 which is why she had asked you
848 right
849 So you created the opportunity for him,
850 not only to get to shine,
851 yeah. right.
852 but to teach her,
853 "ohh sometimes people can offer me something when
I don't even know to ask."
854 yeah
855 And she is really cool too
856 yeah they seem like really cool kids.
857 yeah yeah yeah
858 Super sweet kids
859 Good class
860 Well yeah

861 those two up here too, Omari and Elias
 862 yeah
 863 were cracking me up.
 864 They were-
 865 They were on a role today.
 866 Like really pushing to like
 867 do the two differently.
 868 uhuh uhuh uhuh
 869 Lynn: (mumbles)
 870 Anyway,
 871 yeah it was good.
 872 For some like pretty like dry stuff,
 873 it was like pretty good.
 874 i know!
 875 Who would have thought, right?
 876 Who woulda thunk it?
 877 I expected crazy town in here today, with that material
 878 (laughs)
 879 i did
 880 yeah!
 881 because it's like pretty-
 882 it was wordy and
 883 Lynn: dry
 884 Dry.
 885 Dry is a good word
 886 dry and sort of narrow. Right?
 887 yeah
 888 There is not a lot of room for like creative thinking
 889 going on here right?
 890 Okay what are your questions my dear?
 891 uh
 892 thank you
 893 for all that,
 894 by the way.
 895 yeah.
 896 God, after the week I've had,
 897 that was really nice to hear. (laughs)
 898 Like it reminds me of why I am doing this.
 899 Um,
 900 I guess I put like how could I have made my lesson
 901 better?
 902 Like there were times where I felt like,
 903 um,
 904 like are we getting to the outcome that I wanted them
 905 to get to.
 906 Like are they getting it
 907 and like where do I go from here,
 908 kind of thing.

906 Which kind of happens a lot with these tasks I feel
like..
907 yeah
908 like I-
909 sometimes I'm like,
910 do we need like a closure?
911 Do we need to like..
912 uh huh
913 i don't know. You know?
914 uhuh. uhuh.
915 uh
916 So can I restate
917 yeah
918 and tell me if this is kind of what you mean.
919 So I hear in that a question that, maybe
920 I am connecting (laughs),
921 so tell me if I am.
922 it's alright
923 um like,
924 how can I know,
925 before they all leave the room,
926 yeah
927 what happened?
928 for them.
929 Or like
930 yeah
931 What they're thinking,
932 what they learned,
933 what their questions are.
934 Is it that kind of a thing?
935 yeah
936 Like how can you get grounded in what is going on
937 since it's all over the place
938 right.
939 okay
940 yeah that is definitely a chunk of it.
941 okay. (3s, writing)
942 Okay
943 umm
944 how can I make partner work more efficient?
945 And that-
946 it kind of applies more to my like
947 4th period.
948 okay
949 umm
950 I felt like all the partnerships in 3rd period were
actually pretty good today,
951 uh huh
952 surpris- uhh no okay, then there was like the Aiken

953 yeah
 954 the one over here,
 955 yeah
 956 that they weren't working with Martin.
 957 yeah (3s)
 958 U:m (.)
 959 yeah because the partner work is a little bit new this
 year.
 960 yeah
 961 this was the first time I was doing it, so..
 962 yeah yeah
 963 And then how can I get groups that seem disjointed to
 work together.
 964 Or do I just like change their grouping all together?
 965 Like,
 966 this kind of happened more in 4th period.
 967 I wish you could have seen it.
 968 But it was Imani and Alvaro
 969 Lynn: and Alvaro?
 970 They're both two tiny ones
 971 Lynn: Oh uh huh, so Imani is the kid from last year
 who was selling candy
 972 okay
 973 Yeah he was like our huge candy dealer
 974 Lynn: he made 60 bucks a day.
 975 i can't help it but love it when kids do that.
 976 You go and
 977 he was awesome. He had people working below him
 978 Lynn: yeah. It was a whole
 979 He had a whole like (gesture) shin dig
 980 Lynn: and then he wanted to send his kid to get an
 MBA right?
 981 he had like a king pin of like candy
 982 and he had people like working for him
 983 Lynn: 60 bucks a day
 984 yeah the reason he got busted
 985 is cuz all of the people
 986 that were working under him
 987 were saying that they weren't getting their cut
 988 of the profit,
 989 that he wasn't paying out
 990 it's a good business lesson,
 991 you got to treat your workers right?
 992 Or they are going to like
 993 He got busted.
 994 because someone told on him or something?
 995 yeah (laughs)
 996 because they weren't getting paid.
 997 (all laugh)

1045 that's what a teacher should do,
1046 you removed barriers.
1047 right,
1048 but then Imani was like
1049 "oh we can use calculators in here?
1050 Blah blah blah blah." You know,
1051 and then he got all mad
1052 "then i want to use a calculator" uh huh
1053 and I was like
1054 and then I was just like getting irritated,
1055 I didn't know what to do.
1056 So then I was like,
1057 "alright Imani,
1058 you can use a calculator.
1059 I was hoping
1060 you'd see the patterns, but I'm like
1061 fine if you want to use a calculator."
1062 He's like "no,
1063 then fine. Take the calculator."
1064 (both laugh)
1065 Anyway, I just-
1066 i didn't know4
1067 like with that group, like
1068 do you break them up cuz it's being unproductive?
1069 Like what do you do? (.)
1070 Because I mean like I can encourage them forever
1071 but it's like..
1072 well what's unproductive about it? (3s)
1073 like Imani was doing all the work and Alvaro wasn't
getting anywhere.
1074 so if you broke them up,
1075 what would happen?
1076 In a different grouping.
1077 Nothing
1078 I think that Alvaro
1079 needed some barriers removed
1080 yeah
1081 right?
1082 And I think that there's a way
1083 to work towards group work that does that for him,
1084 right?
1085 But his group wasn't there yet.
1086 It doesn't mean any other group would have been
either.
1087 right?
1088 If he sat with kids with all the same barriers that he
had,
1089 he also wouldn't have had those barriers removed,
1090 right?

1091 right
1092 So you intervened and removed some barriers for him
1093 so he was able to learn something,
1094 right? So that's-
1095 that's good teaching
1096 (small laugh)
1097 Um Alvaro..
1098 I mean, who's the other one?
1099 Imani
1100 Imani,
1101 so it sounds like Imani could use
1102 u::h a little bit of um
1103 compassion
1104 yeah
1105 maybe? (laughs)
1106 And then maybe like-
1107 maybe there's room-
1108 and i don't know how the rest of your class is feeling,
1109 but maybe there's room to think a little bit as a class
1110 about what does it mean to take care of each other.
1111 mmmm
1112 And what does it mean for everybody's learning to
1113 matter,
1114 um,
1115 which I think again is something that,
1116 like Kamilah talked today in her class explicitly
1117 about taking care of each other,
1118 but I don't totally know that her kids got
1119 that that means that I'm suppose to care about other
1120 people's learning
1121 mmhmm
1122 So there's- there's an element that's about being kind
1123 and being compassionate,
1124 giving people space,
1125 letting them be who they are.
1126 That kind of stuff.
1127 There's also an element of caring about other peoples
1128 learning,
1129 so it is not just your own.
1130 Um
1131 and that when we do that,
1132 when we create a community in which we care about
1133 each others learning,
1134 it pays off for you too.
1135 Right?
1136 So like if today, someone else-
1137 you really need to attend to someone else and support
1138 them,
1139 like you are going to get supported too,

1134 when you need to be supported, right?
1135 yeah
1136 Because it is part of the community.
1137 mhm
1138 um (.)
1139 yeah
1140 yeah
1141 and I think yeah and then there is..
1142 It's a delicate one, too.
1143 yeah
1144 you know.
1145 And it makes me wonder like,
1146 what if -
1147 it makes me mad again at this content
1148 because this content does not give you opportunities,
that you might hope for,
1149 (laugh)
1150 in that situation
1151 when you were-
1152 ike I want to figure out, how is Alvaro smart?
1153 right
1154 and since we all know kids are smart, we know he is.
1155 yeah
1156 We just want to know how
1157 and this content clearly
1158 Is full of all his barriers,
1159 mhm
1160 so it wasn't the place, right?
1161 right
1162 but there will be
1163 a place
1164 where we get to see,
1165 you know when we switch to do different kinds of
things
1166 that, maybe he has like
1167 really awesome-
1168 like maybe he could create awesome representations
that other people haven't thought of.
1169 maybe he is really
1170 good at like,
1171 understanding what is working and what isn't
1172 and picking that thing out and asking a question about
it. Or
1173 I mean, who knows.
1174 I don't know
1175 yeah, I struggle with him.
1176 yeah
1177 I think he's really
1178 I think his self esteem is like really really low

1226 short list.
1227 yeah
1228 of like-
1229 I mean you can't have more than a couple
1230 or 3 or something in one class,
1231 but that you just really-
1232 and then I try to remember, as I'm planning lessons
for those,
1233 to bring those kids into my head when I'm planning
like
1234 do I think that there might be an opportunity for this
kid
1235 to do something today
1236 and what,
1237 and is there a way that I can ask this differently that
might make that kid,
1238 mhm
1239 that might provide them
1240 a way in.
1241 right
1242 Or that might let them shine or
1243 if I start to know something-
1244 if I know how the kid is smart, can I put it in my
lesson
1245 so that they have a chance to do it?
1246 If I don't yet know,
1247 what have I not tried yet?
1248 (both laugh)
1249 right?
1250 yeah (laughs)
1251 There has to be something that I haven't done yet
1252 because I haven't seen it yet,
1253 mhm
1254 so what is that new thing and lets just throw it in here
and lets see
1255 what he does with it, you know?
1256 Or sort of-
1257 anyway,
1258 so that might be
1259 yeah,
1260 some food for thought, for sure.
1261 I got to like find that little way in
1262 Lynn: (mumbles)
1263 I don't think so
1264 but I wonder why he doesn't
1265 Lynn: No, i just figured that he (mumbles)
1266 yeah
1267 i don't think he does.
1268 I don't think he has an IEP.

1269 I can double check
1270 but I'm pretty sure he's not.
1271 But I think he just (.)
1272 struggles from low self esteem,
1273 you know.
1274 I mean he said it right there,
1275 like it was so weird when I came over.
1276 I mean he was just so blatant about it.
1277 So angry,
1278 I was like "Oh my god."
1279 Yeah,
1280 yeah, he gave you all that information (right there)
1281 Yeah, he like
1282 really belted it out. 8yeah
1283 I mean it was pretty loud and clear
1284 yeah yeah. (.)
1285 Yeahh and I think
1286 yeah kids with that too
1287 can offer you really exciting opportunities.
1288 I mean sometimes for-
1289 like these are the kids I remember
1290 yeah
1291 for years.
1292 yeah
1293 And that I can like find a way in.
1294 and sometimes I remember some of them and I'm
1295 like,
1296 i never figured it out.
1297 yeah
1298 And it feels a little sad
1299 aww
1300 but some of them like,
1301 some of them I remember how extreme it was
1302 and I'm like "look what I did
1303 yayy" and I know it made a difference
1304 and I know my kids life is better
1305 (both laughs)
1306 So he might be one of your,
1307 yeah
1308 you might make his life better
1309 yeah
1310 Um
1311 I'm thinking and we're going to be out of time soon.
1312 But I'm thinking that the question you just-
1313 the question of like,
1314 do you need closure
1315 or what are you walking out the door with,
1316 what are they walking out the door with?
Feels like a really useful question to me

1317 to take up
1318 and obviously we can't take it up and answer it now,
1319 but um,
1320 yeah I think it's a good,
1321 like if we,
1322 what would it mean to look at your lesson,
1323 whatever's tomorrow.
1324 I don't know what it is.
1325 We haven't talked about it.
1326 Me neither
1327 okay
1328 I haven't looked at it (laughs).
1329 okay
1330 I mean it is like continuation,
1331 yeah
1332 It's more scientific notation.
1333 So maybe we could ask that question of your lesson
tomorrow,
1334 like how am I going to know?
1335 mhm
1336 Or like what could I try
1337 that might give me a better sense, when they walk out
tomorrow
1338 so I feel more grounded in like what did or didn't
happen
1339 yeah
1340 for kids.
1341 Um
1342 and I think that there is like (.)
1343 yeah,
1344 I mean
1345 I saw exit tickets happening
1346 in sort of different kinds of ways
1347 mhm
1348 that CAN do that
1349 sometimes they cannot do that,
1350 mhm
1351 depending on how you use it and what you ask.
1352 It depends a lot on sort of like-
1353 what are your um (.)
1354 again like
1355 the more clear you are for yourself about what you
want them to learn tomorrow,
1356 mhm
1357 the easier it is to frame that question.
1358 right.
1359 How am I going to know if they learned it?
1360 So like we're really clear that like,
1361 I want them-

1362 what is tomorrow?
1363 Tomorrow is.
1364 Friday
1365 I know but what's the lesson?
1366 Oh (both laugh, 5s)
1367 "Friday"
1368 Lets see, we are in..
1369 (they are away from the camera and hard to hear until)
1370 Oh, this is the um
1371 the uh
1372 apprentice task.
1373 it's just these two problems.
1374 oh wait, not it's not.
1375 sorry.
1376 I could look at what we planned
1377 (bell rings and Heather comes back to the table)
1378 We have eight point two point two
1379 eight fifty nine
1380 yeah
1381 to eight sixty five and there is another half sheet
(inaudible).
1382 Oh so we are looking at a uhh
1383 power up to a power.
1384 tomorrow.
1385 oh
1386 (inaudible and far from camera until)
1387 oh... (inaudible) maybe, Alvaro shining (inaudible)
1388 (inaudible)
1389 so is eight fifty nine (inaudible)?
1390
1391 oh, ok.
1392 to, sorry, sixty five is the whole thing?
1393 sixty three? oh no, we're reallly (inaudible)
1394 (looks at her notebook)I have eight sixty five, but I
don't
1395
1396 It does.
1397 did we- I think we talked about splitting that into
another day
1398 cuz that's getting into like
1399 yeah
1400 division of fractions
1401 (inaudible)
1402 Lynn: yeah
1403 and it's a friday
1404 Lynn: yeah
1405 so I'm giving-
1406 Lynn: (inaudible)

1407 (inaudible) get from this to that
 1408 (inaudible) earlier,
 1409 okay so if they can do the beginning and get up to this
 that'd be good
 1410 at least
 1411 Lynn: (inaudible)
 1412 I like these because (inaudible) pattern
 1413 yeah
 1414 (inaudible)
 1415 yeah
 1416 and then maybe your
 1417 maybe you could do some kind of a
 1418 (inaudible) before they
 1419 like maybe-
 1420 (inaudible) what is the question
 1421 Maybe it could be this.
 1422 Like what is the (striped) number in this table like
 (inaudible)
 1423 I mean that's really the heart of what we want them to
 get out of this,
 1424 right?
 1425 Is to like see (inaudible)
 1426 Or at least know how to (inaudible)
 1427 So what's the pattern, like how (inaudible)
 1428 Well, they could say that they're multiplying here
 1429 uh huh, uh huh
 1430 to be able to (inaudible)
 1431 or they could say we count all the bases and that's
 giving us
 1432 uh huh
 1433 the number of (the exponent)
 1434 for the table.
 1435 What if you ask them to describe the pattern
 1436 uh huh
 1437 And explain why it makes sense.
 1438 describe the pattern and explain why it makes sense.
 1439 yeah
 1440 I think that could where we get through to tomorrow
 1441 (I don't know what the question's going to be)
 (inaudible) multiplied the exponents, I don't think you
 1442 would have information about how like did they make
 sense of it?
 (inaudible)
 1443 Cuz honestly
 1444 I don't even care if they don't understand the different
 (inaudible)
 1445 But I do understand that they know how to write this
 down
 1446 and they know there's four sets of this (inaudible)
 1447

1448 yeah yeah yeah
 1449 cool
 1450 But if they see that they (multitply them) one, oh.
 1451 (inaudible conversation)
 1452 right, yeah
 1453 (inaudible)
 1454 me too. (inaudible)
 1455 (inaudible) experiment. (.) Cool
 1456 (they come back to the table)
 1457 (to lynn) really?
 1458 yay!
 1459 and then we're on the apprentice task after that.
 1460 the apprentice task is cool.
 1461 it's basically only two problems and they're just
 looking at a:ll these like
 1462 like
 1463 what is wrong with this problem
 1464 like try to find the mistakes.
 1465 math hospital?
 1466 yeah, like math hospital.
 1467 Cool.
 1468 you know what I forgot about with CI that I totally
 need to incorporate?
 1469 what?
 1470 the huddle!
 1471 that was such a cool thing
 1472 oh, yeah
 1473 I've got to do a huddle
 1474 I have not done a huddle yet this year
 1475 But that's like a selective thing.
 1476 You do it when you need it.
 1477 So put it in your toolbox,
 1478 but it's not like a daily thing anyway.
 1479 yeah yeah yea I keep forgetting-
 1480 I just thought that was such a cool thing
 1481 when we did that in CI
 1482 especially when kids
 1483 Like they're off task or like the kid that's feeling left-
 1484 like Alvaro
 1485 the huddle! do the huddle!
 1486 (they are packing their things to leave)
 1487 Lynn: (some idea about pairs and resource
 managers...)

Heather Cycle 2 Planning Conversation

	Heather	Mia
1		well let's see
2		it's Wednesday at lunch time,

3 so you're about halfway through it.
4 (sharp sigh)
5 the next two days will like fly like lighting.
6 oh, they're gonna get worse!
7 yeah,
8 but they'll be fast.
9 Yishka, yishka
10 yishka
11 Anyway,
12 we did that whole triangle construction thing in the
13 last period.
14 I wish-
15 I wish you coulda seen it.
16 Oh, me too.
17 Oh, I didn't bring my fork.
18 It was actually pretty good.
19 There were a lot of pieces everywhere
20 but it was pretty cool.
21 Oh cool (adjusts camera)
22 of course, I don't have my stupid fork today
23 oh wait, fork?
24 yes!
25 Always keep a backup plan
26 (chuckles)
27 Alright,
28 oh god,
29 and I can't even believe we're meeting today
30 and I'm not even ready for advisory. (puts both hands
31 on her head.)
32 Do you need to- for us to something different?
33 What?
34 Do you need us to do something different?
35 I'm pretty flexible.
36 Do you wanna, um,
37 we can talk after school? If that's better?
38 I know, I just forgot that-
39 you know what,
40 there's just so much going on this week.
41 You always come
42 on like the most insane weeks.
43 (laughs)
44 I don't know why
45 but it's like-
46 Maybe it's meant to be
47 insane week.
48 And you show up.
49 Um (.)
50 It's fine,
51 I guess I'll just wing it.

50 I don't have my advisory curriculum plan ready, so
(sitting down)

51 Do you- We can talk after school?

52 It's all right,
53 we're super busy after school,
54 I'm look-
55 We have to do the planning,
56 I have to look at a car,
57 I'm like
58 Are you buying a car?

59 I'm trying,
60 if I can never frickin'
61 have time
62 get a life outside/this place/
63 /Oh my gosh/,
64 I'm so jealous of that bracelet right now.

65 Mmm/
66 /It's lovely/
67 /World Market,
68 super cheap.
69 Oh really?
70 Mhm.
71 I really like it.
72 I like that it's like a cuff-
73 a cuff kind of look,
74 but it has the softness of being soft-
75 er, you know what I mean, flexible.
76 I like it.
77 Thank you.
78 Okay, so let's figure out then-
79 and maybe we can keep this a short conversation,
80 if you want.
81 Um, if that's what you need, that's totally okay.
82 Um
83 That would be awesome
84 Okay, so let's do that.
85 we can do that.
86 It's fine
87 I'm just gonna wing advisory.
88 it's insane today.
89 (Lynn enters)
90 Hi darling.
91 LYNN: Hi, how are you?
92 Good.
93 LYNN: (inaudible)
94 laughs
95 Are you here for our meeting?
96 LYNN: Yeah, I'm here to just whatev-
97 Hang out

98 LYNN: I need to get away from trying to help
teachers give CLAs on iPads.

99 Okay

100 Oh God, this week?

101 Oh, those poor teachers.

102 (whispers) yeah!

103 The kids are like insane. (3s)

104 (whispers) yeah!

105 the evils of sugar.

106 Wow

107 This is when I feel really good about being THAT
parent.

108 Who's like "No, you can't have candy-
109 EVER"

110 Right?

111 Once a year!

112 One piece. (laughs)

113 I am that parent

114 That's awesome.

115 LYNN: I used to have to put my Halloween candy in
one of those metal cans

116 Uh huh

117 LYNN: And I had one piece a day.

118 Uh huh

119 LYNN: For however long it lasted.

120 I just read an article?

121 LYNN: it could be until April and that was okay.

122 I won't give my kid-

123 I won't even give my kid a piece a day.

124 I'll give my kid a piece a day on the weekends,
maybe.

125 But in the middle of the week, no::pe.

126 But I just read an article from some dentist
recommending um,

127 that you let your kid-

128 I would never do this,

129 I hate this idea-

130 but that you let your kids have as much candy as they
want

131 Mmm, mhm

132 For two full days or something like that

133 LYNN: Mhm

134 Or three days,

135 total sugar rush

136 and then it's gone.

137 Whatever's left gets tossed.

138 LYNN: It's like giving your teen two packs of
cigarettes and saying (inaudible)

139 Yeah, I can't,

140 I can't deal.
141 I can't do that to my child,
142 even if there's some long-term lesson about it,
143 I just can't,
144 I can't handle it.
145 LYNN: Mhm
146 It just means we'd have like the worst weekend
147
148 EVER.
149 Yeah (giggles)
150 Right?
151 Put your earmuffs on
152 Yeah, exactly (laughs). /Lock the room/
153 That's why (inaudible) I'm just, like
154 I'm just putting on my earmuffs today (it's like so)
155 Okay, so Heather is-
156
157 No you won't. (laughing)
158 No you won't.
159 So Heather and I just decided we're gonna try to keep
160 this brief.
161
162 Because it's a crazy time.
163 So in the- in the pre-observation kind of conversation
164 we could
165 sort of get into planning and thinking together about
166 the lesson
167 or we could totally not
168 mhm
169 and you could just sort of catch me up
170 and help me think about what you are hoping to get
171 out of the visit
172 and what you want to be able to talk about in the
173 debrief
174 mmm
175 and then we-
176 and that can help sort of structure
177 what I'm doing during class,
178 what I'm attending to and
179 how I set myself up to be able to be useful to you
180 mmmm
181 what period are you coming, third?
182 I am coming third period.
183 I have five different lesson plans today too, by the
184 way.
185 (laughs)
186 which all my kids are off
187 Cuz of the lock down.

184
185 first and second, third, fourth, and sixth, and advisory
186 they're all different.
187 Like oh my god
188 I'm gonna lose my mind.
189 So I think tomorrow for third
190 mhm
191 We're doing (.) the uh
192 angle conjecture of uh
193
194 mhm (gets up and walks away from the table)
195 (5s, comes back with papers, which she hands to Mia)
196 ooh, pretty.
197 mhm
198
199 mhm
200 what, my camera?
201
202 what do you need it for?
203
204 mhm
205 So a couple things about the camera,
206 just to let you know if you're actually considering
207 something like this
208 it's um,
209 it's awesome because it's small and it's so easy?
210 um, the batter life is not very long.
211
212 so you have to be able to charge it between.
213 I have an extra battery attached to it right now
214
215 but it's still not that long.
216 it's like a few hours.
217 mhm
218 and um, the sound is not that good.
219 so it works for a conversation like this
220 mmmm
221 but it's actually-
222 that's even borderline a tiny bit too far away
223 like if we get too quiet
224 I won't be able to hear it
225 so I do a backup audio-
226 so for whole class video it would be pretty hard.
227 okay
228 It has um, it has really nice wide angle
229 which makes it really good for whole class,
230 mhm
231 but it also distorts pictures a little bit.

232 mhm

233 Like in this conversation when I look at the video

234 If I'm looking you in the eye,

235 it will look like I'm looking over there (pointing
toward the front of the room)

236

237 It's really like,

238 but it twi- you know

239

240 anyway.

241 But it's also not that expensive and

242 like easy to use.

243 It's nice that I can just set it there and forget about it.

244 I know.

245 Ok triangle conjecture angle bla.

246 (picks up paper and looks at it) Ok, we're calculating
missing angles.

247 (.) cool.

248 What are you hoping they're learning?

249 (3s) mmmm (chewing) well,

250 sorry (gestures to mouth and finishes chewing)

251 (laughs) Let me ask you as soon as you put something
in your mouth.

252 I'm trying to shove my lunch down my throat.

253 Um, you know we're trying to get them to discover

254 that

255 mhm

256 the exterior angle is the same as the two (.)

257 uh huh

258 opposite interior.

259 But (.)

260 hmm

261 I'm also wondering how long this will take.

262 Like today they discovered-

263 What are they doing with it?

264 Like are they measuring? Are they-

265 mhm

266 do they already know that this is a hundred and eighty
/and they subtract from a hundred and eighty?/

267 (gets up)/let me get the actual-

268

269

270

271

272 (off screen shuffling papers) I could find the actual
lesson for it.

273 Um (.)

274 Well, here's the issue.

275 So because my periods were all off,

276 my fourth period I did today
 277 the discovering that a triangle is a hundred and eighty
 degrees.
 278 okay
 279 by construction,
 280 it was like proof by construction.
 281 okay
 282 they tore all the corners off
 283 and measured em all with a compass
 284 okay
 285 but i didn't do that with third period
 286 okay, okay
 287 cuz we're kinda like behind and trying to like get up
 288 uh huh
 289 to par in line with the CLA
 290 yea yeah, okay
 291 and we're probably just gonna have to tell the kids
 292 that triangles are a hundred and eighty.
 293 okay
 294 I don't- I don't know.
 295 What are the-
 296 what's the presupposition, so what is-
 297 the lesson design is assuming kids know that
 298 and assuming they know that
 299 these two angles add to a hundred and eighty?
 300 well, no, not according to this (gestures to binder).
 301 according to this, you would do the lesson that I did
 with my fourth period?
 302 mhm
 303 today, first.
 304 which is discovering that-
 305 but that would come before this (gesturing to the
 worksheet for today)
 306 right.
 307 uh huh, got it.
 308 But I'm-
 309 so then you would use that for this.
 310 the thought is,
 311 yeah
 312 that we use that conjecture,
 313 the triangle sum conjecture
 314 and use that.
 315
 316 /would it totally screw it up to do-/
 317 both?
 318 are these to scale? (pointing to the worksheet)
 319 (4s) I dunno.
 320 I just had a crazy idea if it would-
 321 (looking at Lynn) they're not

369 mhm
 370 as could the sum thing.
 371 I mean this was pretty cool today too.
 372 the actual sum-
 373 triangle sum conjecture.
 374 it was pretty fun actually.
 375
 376 You did this?
 377 I did it with fourth period.
 378 oh cool.
 379 but not the period you're observing.
 380 so the one I'm observing is two days behind?
 381 two lessons behind?
 382 mhm
 383 okay.
 384 cuz of that.
 385 and you don't feel like there's time to do that one
 386 tomorrow (pointing)
 387 you're trying to get 'em caught up.
 388 well
 389 I mean I'm kinda going insane
 390 with five lesson plans
 391 right yeah
 392 that's a good reason to get 'em caught up
 393 they need a not insane teacher (laughs).
 394 but, I mean
 395 I don't want to take away from their learning either
 396 I hate telling kids like,
 397 'oh all triangles are one eighty
 398 just believe me.'
 399 Oh, that's another idea
 400 would be to slow somebody down.
 401 mmm
 402 yeah
 403 I could.
 404
 405 hmmm
 406 You're not worried about time are you?
 407 You're in uh-
 408 What unit are you in?
 409 Unit 2?
 410
 411 (laughs)
 412 yeah it seems like you shouldn't be too worried about
 413 time, right? (looks at phone)
 414 well, the CLA is-
 415 we're trying to like-
 the CLA is (.)

416 really rapidly approaching.
417 okay, and what are you supposed to-
418 you're supposed to have these three units done?
419 uh huh
420
421 for eighth grade?
422
423 Oh.
424 (4s) was that just recently that email?
425
426 mmm, okay.
427 So we can change all that
428
429 yeah, (we're kinda like)
430 So you have a lesson already built around that
431 (pointing) right?
432 cuz you taught it already.
433 So you could just import that in
434 if you wanted to,
435 if you choose to,
436 mhm
437 or you could-
438 (pointing to binder) this lesson you would need to
439 modify to some extent,
440 right, because they don't have that (pointing to the
441 board)? (.)
442 (looks at Mia)
443 I'm sorry am I-
444 okay (laughs)
445 That (points to board) is this (points to binder)
446 That's the triangle sum?
447 yeah
448
449 Oh, sorry sorry
450 I was thinking that was this
451 I apologize
452 That's okay.
453 oh, so they're one day ahead.
454 I see.
455 yeah, Sorry, no
456 I think you said two and I agreed to that and I wasn't
457 paying attention
458 Oh, I apologize, no no no
459 I should have made that more (inaudible)
they're one day.
So one day ahead,
Oh, ok
So then the option is

460 you could either teach this lesson (points to board) to
461 third period
462 tomorrow instead of this (pointing to binder)
463 mhm
464 um,
465 which means you have the lesson already built,
466 you don't need to plan it.
467 you could just like go from what you've already done
468 mhm
469 or modify if you want to.
470 slow down (.)
471 fourth period by a day
472 give 'em something else,
473 which, i don't know how easy or useful that feels,
474 right
475 and that gets them all doing this (pointing to paper) on
476 Friday?
477 (3s) or, is that right?
478 mhm
479 wait, tomorrow's Thursday, yeah
480 yeah.
481 Friday's a wash.
482 We're doing like sponge bob /skill problems/
483 /yeah yeah yeah/ so this would be Monday.
484 when the kids come back, right?
485 mhm
486 hmmm
487 That might be giving yourself a little bit of a break too
488 which might be nice.
489 If you feel like you have space to do that.
490 Because you have that lesson already-
491 mhm
492 in- some experience with it, right?
493 here's my issue.
494 yeah.
495 we did that yeah
496 in a short day.
497 uh huh
498 I kinda-
499 I mean it's cool.
500 yeah
501 but it didn't take like the whole period.
502 right, but you're telling me your kids are crazy right
503 now.
504 and they're crazy.
505 and it's tons of materials so (laughs)
506 /(I mean it's cool, it's cool)/

505 /so I'm wondering if having /a short lesson would be
506 nice
507 cuz that gives you some room,
508 if they're not as on it
509 or if it's taking them longer right?
510 it gives you some leeway
511 and it also gives you an opportunity if you want
512 to be like, 'let's take a break for the last fifteen
513 minutes,
514 you guys are so awesome, you finished early.'
515 you know
516 okay
517 give yourselves a break
518 I know we all could use one,'
519 or something, you know.
520 I mean I can create a worksheet with like-
521 this type of stuff (pointing to binder)
522 like follow up
523 practice, mhm
524 to practice during the rest of class period.
525 uh huh
526 yeah, they're definitely like,
527 I think they're gonna need something else.
528 yeah.
529 okay.
530 I mean, and I don't want to get started on that
531 Cuz I think it might be too much
532 on this (pointing)
533 In one day
534 Yeah right
535 Stuffing it in to the same day, yeah
536 uh huh
537 entering a whole new idea.
538 so it seems like maybe if you do that,
539 then you have room- you have time,
540 to make sure
541 that like,
542 kids are clearly articulating what got figured out,
543 they can practice with it so it's really-
544 mhm
545 they have it for this (pointing)
546 before you step into this.
547 mhm
548 /cuz that seems like-/
549 Third period are a little bit
550 slower learning than fourth.
551 Fourth they're like really,
552 They're (snaps fingers repeatedly)
553 flying through this.

552 okay
553 Cool, so it might be nice to have that
554 sort of,
555 a lesson that's not like busting at the seams of your
556 period
557 right?
558 I'm just trying to figure out what to do with fourth
559 period though,
560 cuz they're, they're high.
561 and they need to be challenged.
562 yeah
563 and now I'm holding them back a day too?
564 mhm
565 So I don't-
566 I'm a little-
567 mmm
568 And it's right before lunch,
569 and they're crazy town.
570 Do they need anything like a make up day?
571 o:r an opportunity to redo anything?
572 Or would that be a logistical nightmare?
573 u::m
574 (4s)Do study teams like
575 for, for like content
576 like they could self-select into content-based groups
577 to work on practicing stuff in advance of CLAs
578 or whatever assessments you're doing,
579 like, 'if you feel like you need more work on bla bla
580 bla
581 go to that side of the room.'
582 you know that kind of thing?
583 mhm
584 if you think they can handle that um,
585 they can't really, but (laughs)
586 they can't?
587 they're so crazy (forehead in hand)
588 (whispers) yeah, they're a little crazy.
589 yeah
590 they're, I mean they're just
591 they're a rowdy bunch?
592 they're high level,
593 but they're a rowdy bunch.
594 they get off task /really easy/
595 yeah yeah yeah
596 um,
597 i mean it's fi-
598 maybe, i mean-
599 (head in hand again) u::m (.)

598 I know,
 599 in this unit we're kinda like-
 600 we're sort of skipping around too
 601 like we skipped dilations to come back to it
 602 mhm
 603 because of the CLA,
 604 we're trying to make the window,
 605 and all of the-
 606 mmm
 607 it's just kinda (hand gesture)
 608 we're at that point right now.
 609 mhm
 610
 611 I know,
 612 and I've used up the pumpkin,
 613 a cat and (I'm trying to think of what I'm gonna do.)
 614
 615 You could have them design 'em.
 616
 617 It's like graphing practice stuff, right?
 618
 619 you could have them design-
 620 uh-
 621 I could have them work on their creative design,
 622 (4s) I could do that. (sigh)
 623 they've probably lost it all by now. (.)
 624 Um,
 625 hmm
 626 alright, I'll
 627 yeah, I'm kinda torn.
 628 I dunno
 629 yeah.
 630 (looking at binder) hmmm (.)
 631
 632
 633 I know.
 634 the hundred and eighty degrees, okay.
 635 Patty's group knew it of course,
 636 but they were actually quite-
 637
 638 I'm wiping my hands on my bag, I know.
 639 No judgment, it's cool. (laughs)
 640 better than your shirt.
 641 that's probably what I would've done.
 642 (laughs)
 643 (laughs)
 644 Um,
 645 yeah,
 646

647 We're doing the angle measure stuff so it's kinda like-
 648 (4s) I don't know what else to do with it right now. (.)
 649 Hmmm
 650 Ok so then maybe what you're saying (gestures to
 Lynn) would lead-
 651 would lend credence to going ahead into this
 652
 653 /and find a warm up-/
 654 maybe there's a warm up way t
 655 to surface that (pointing to the board) from kids.
 656 to see if there are kids who know that
 657 mhm
 658 like maybe pull it out of them
 659 I don't know quite what that would look like, but
 660 um
 661 and just get it out there in a way that feels a little less
 icky than,
 662 'I'm just gonna tell you this.'
 663 you can say,
 664 'I'm gonna let your classmates tell you this.' (laughs)
 665 (laughs)
 666 or we could do like a-
 667 maybe we could do like a-
 668 measuring angles lesson.
 669 mmm
 670 Like with compasses
 671 oooh
 672 (inaudible) see that.
 673 Cuz a lot of them don't know how to use compasses.
 674
 675 or protractors I mean
 676
 677
 678
 679
 680 And I think there's lots of, at least-
 681 and I don't know how this is with your kids
 682 but I've heard, um (.)
 683 this idea that kids often at this age are
 684 don't know what angle means
 685 Oh!
 686 that they don't know-
 687 it's like- they think it's the two lines.
 688 or they think it's the point at the end-
 689 you know what I mean
 690 they don't know what angle actually-
 691 mmm
 692 that it's an opening,
 693 mhm

694 that it's a- that idea
695 is less concrete.
696
697 than looking at like a side or something.
698 hmmm (nodding)
699
700
701
702 yeah yeah
703
704 But- and what is it you're naming I think.
705
706 Like what is the 'it'
707
708 Where is it?
709 Cause you can't really point to where the angle is,
710 right?
710 Hmmm (inaudible)
711 You're right!
712 okay, all right (laughing)
713 You had an epiphany.
714 I like it.
715 Now I'm going back to your original thought but
716 If these are accurate (pointing to the binder)
717 Instead of holding back fourth period
718 maybe we could just like-
719
720 measure it
721 and then I can like
722 add a question on there like,
723 What, you know (.)
724 Just put another column here that's like,
725 Yeah like what's the total of the triangle.
726
727 Or,
728 If we don't do that
729 I can make up some cool pictures
730
731
732
733 yeah no, I think it's a really good thing.
734 it's a horrible protractor
735 Of course I have a whole-
736 (using the protractor) oh, wrong angle (laughing)
737 I was like, something's wrong
738 what am I doing?
739 (leaning forward and watching Mia use the protractor)
740 OK, so that's supposed to be 36 degrees,

741 It looks like it is...
742
743 mhm
744 yeah, that's okay
745 thirty three.
746 (5s) wait, did I do that math right?
747 (moving paper toward Heather) Is that supposed to be
thirty six?
748 help me.
749 (chewing and looking)
750 so that's one eighty, right?
751
752 mhm
753 (to Lynn) which is what we are trying to discover
(laughs)
754 right, so-
755 So I measured it and I got-
756 (laughs) That was so (cute).
757 And we just all like came full circle (circle gesture
with fingers).
758 So I measured it and I got thirty three instead of thirty
six.
759 so that's not super far off,
760 but it definitely-
761 (measuring again)so this one looks like,
762 this one's supposed to be thirty three
763 and it is
764 thirty six!
765 dammit!
766 whaaa!
767 Bastards!
768 I could change the numbers on there.
769 Yeah!
770 You could make it what they really are.
771 Except I printed them all already.
772
773 I know.
774 Oh.
775 You could have them do it at the beginning.
776 you could say there's mistakes on this worksheet.
777 It takes like-
778 Instead of a warm up,
779
780 have them take two minutes to cross out and /recopy/
781 /correct/ mistakes.
782 yeah.
783 yeah.
784 they'd like that.
785 (they love to find) my mistakes

786 That's a brilliant idea.
787 I love it.
788 Ms. Benito, what the heck were you thinking!
789 (laughing) these aren't correct!
790 (laughing) Today we had lines straight through the
paper.
791 Fifty six (inaudible)
792 They're not that far off.
793 Um, yeah
794 Actually I love your idea of just fixing 'em
795 yeah?
796 Just take a minute and measure 'em
797 and then give them at the beginning.
798 then they're discovering two things.
799 yeah /and you (combine) two lessons with the/
800
801 And then if kids already know the one eighty
802 it's not in a way their whole lesson right?
803 that's only a piece of this
804 mhm
805 there's still this other thing available to them.
806 so it's not like,
807 we just spent a day learning something we already
knew.
808 mhm
809 you know what I mean?
810 and then for fourth period,
811 they already know the triangle.
812
813 Yeah, I'm gonna give 'em compasses
814 and I'm not gonna say anything.
815 yeah
816 I'm just gonna say, 'ok-
817 cuz they have vocabulary worksheets as well.
818 okay
819 (bell rings and H throws up her hands, sighs, shakes
her head and gathers her things)
820 (smiling) so much for our best intentions.
821 story of my life.
822 and these kids are eager, too.
823
824 what?
825
826 I think that'd be good.
827 Maybe I'll drop in (inaudible)
828 Or maybe I'll swing by
829 Can I swing by for like a three minute check in at
three thirty
830 (nodding) yeah, yeah!

831 I just- I just want to hear from you what you want me
thinking about
832 so that I can make my time useful for you
833 yeah.
834 and so we know what we're debriefing around
835 I'm sorry we didn't get there.
836 no no no
837 it's not your fault at all
838 I should've been (looks at watch)
839 I even bought myself a watch that works.
840 (laughs loudly)
841 and I didn't use it.
842 It's totally my fault.
843
844 (laughs)
845 (Heather and Mia resume their conversation later in
the day.)
(This is the second planning conversation, when Mia
846 came by after school, because they hadn't had time to
finish during their lunch time meeting.)
847 right, like I'd have to go with somebody and have
them technically drive it back, right?
848 to be legal I guess
849 probably
850 yeah
851 I mean I could illegally drive it back.
852 but my parents /would freak0
853 /I'm way too irreverent to be the person who you ask
that question to. (laughs)
854 What does irreverent mean?
855 Like too by the book?
856 No, the other way.
857 Like I'm just too-
858 I /just miss the, /I'm like whatever
859 /you'd just take it./
860 I'm gonna do what I want.
861 and I'm gonna be careful.
862 right.
863 well that's what I would do too,
864 yeah
865 but I have kind of bad car karma
866 in the past so
867 I wonder if it could be-
868 I wonder if-
869 cuz like if you,
870 so if you don't have insurance but you borrow my car
871 my insurance covers you.
872 right,

873 so he probably has insurance that would cover me if I
drove it.

874 right.

875 So if you, um

876 If you like, uh

877 yeah, if anything happened you could claim, right

878 that you're borrowing it,

879 right

880 you're borrowing his car

881 and the official sale is, like happens

882 right

883 after you get it home or you get your insurance or
something like that.

884 I wonder if you could do something like that too,

885 where you postdate the sale

886 on the pink slip.

887 yeah, I'm sure there's gotta be a way to /do
something/
/to give yourself/ time to get insurance

888

889 yeah I gotta get it registered and all that stuff.

890 yeah.

891 there might be a grace period.

892 I mean you could call whoever's gonna be your
insurance company and just ask 'em.

893 okay /(inaudible)/

894 /because there might be/-

895 I'm sure there's like-

896 there's like ways people generally handle these things.

897 i know.

898 cuz people buy cars.

899 Right?

900 They do.

901 There's gotta be a way.

902 There's gotta be a way.

903 Last time I bought a car

904 (5s) aah, I dunno. I don't know.

905 (laughs) Can I just tell you, I had this noise going off
and it was like (makes chime noise)

906 and I'm like-

907 you know when you hear a noise and you're going
crazy?

908

909 yeah.

910 I'm like, OK.

911 (laughing) I know there's a noise,

912 I know I'm not going totally insane.

913 I finally, I had a student come in

914 and I'm like can you,

915 like Maggie, can you find where this noise is coming
from?

916 uh huh

917 It's my frickin' phone cuz I put an alarm on it.
(laughs)

918 Oh, (laughs)

919 to call my guy and I couldn't remember I did that,
920 (inaudible) save my day and I forgot that I put an
alarm to remind myself

921 and then you heard the alarm and were like,
922 'there's a crazy noise, it's stressing me out.' (laughs)

923 what's that weird noise?
924 oh, it's my reminder alarm.
925 yeah, anyway.

926 I can so relate, my darlin'.

927 OK, so.

928 I'm curious what happened talkign to Kamilah,
929 because Kamilah and I I believe are supposed to be
doing the same thing.
930 Cuz you told her about this?

931 She's a day behind, maybe-
932 oh she is
933 cuz the lesson she's doing is the triangle sum.
934 tomorrow.

935 So she's gonna do that tomorrow.
936 yeah.
937 She's doing triangle sum tomorrow.

938 I need to talk to her,
939 because it's not gonna take the whole period.

940 No, no, we built a lesson.
941 We have a whole period.
942 /she's gonna do-/
943 /Well, maybe that's what/ I should just do.
944 For third period.

945 OK, do you want me to tell you what we talked about?

946 Yeah, do you mind?
947 Not at all.

948 Cuz I mean we're gonna meet anyway and I'm
curious what you guys /(did)/

949 /Yeah yeah/ no not at all.
950 So we were talking about the idea
951 that came up-
952 She came at it a different way, um
953 she was interested in a0
954 she was talking about a particular kid
955 and what he was not understanding.
956 Um, in a previous lesson.

957 Lynn called back this idea that I think we talked
 about,
 958 about how kids often don't know what an angle is.
 959 Right!
 960 And that maybe this kid-
 961 it wasn't that he didn't understand congruence,
 962 uh huh
 963 He did.
 964 He just didn't know what, is congruent.
 965 (chuckles) Like, are the angles congruent?
 966 In order to say yes,
 967 even if you understand congruence means the same
 968 mhm
 969 Cuz Kamilah was like, what is he not getting?
 970 hmmm
 971 And we were like setting him up to get- and he wasn't
 getting it and I was confused.
 972 So Lynn was saying maybe he didn't know what the
 angle was,
 973 /what an angle is/
 974 /Like angle measure?/
 975 Well like, no like um
 976 Cuz we did a whole activity with patty paper where-
 977 They don't know what they're looking at, though.
 978 O:h.
 979 I think, so what I-
 980 This came to me from some other teachers
 and it like blew my brain open I had no idea this could
 981 even happen but I've seen it since then,
 982 Like, yeah (.) (drawing?)
 983 Where's the angle?
 984 (5s) So an angle is a curve?
 985 Is an arc?
 986 Mmmm
 987 Right?
 988 I see
 989 it's like the space.
 990 It's like not there!
 991 Oh, the space
 992 There's nothing to point at.
 993 yeah.
 994 But it's not area.
 995 Right.
 996 Like the other measure of space that kids have is area.
 997 Right.
 998 So like, doing some sense making around,
 999 What the fuck is an angle?
 1000 mhm

1001 I think- cuz what researchers have found is kids get to
like

1002 High school Geometry and they don't know what an
angle is.

1003 Right, okay.

1004 Because we forget that that's a hard idea cuz we're so
used to it.

1005 mhm

1006 Right?

1007 So what she is gonna do-

1008 She is gonna do a Do Now that was asking kids to
explain

1009 what an angle is.

1010 mmmm

1011 and draw it.

1012 mkay

1013 and then lead a discussion,

1014 where we get to assign a lot of competence for that
because we're actually calling that out as hard

1015 uh huh ok yeah ?

1016 it is

1017 yeah, it's hard!

1018 and like even maybe

1019 she was gonna do some stuff like maybe intentionally
misunderstanding a little bit

1020 mhm

1021 because like-

1022 so that-

1023 okay so it's an arc?

1024 no no it's not the arc it's this space.

1025 ok so then (.) (drawing?)

1026 this one

1027 is smaller than this one?

1028 Right.

1029 Cuz it has less space.

1030 No, it's not area.

1031 So what the fuck is it?

1032 And it's sort of hard-

1033 Sorry my language.

1034 No, oh my god.

1035 Learn to clean out my mouth.

1036 Please swear.

1037 ok

1038 The minute that door closes I have a mouth
(inaudible)

1039 OK, good (laughing)

1040 The way I like /(inaudible)

1041 I'm really comfortable doing that

1042 but then I realize sometimes that like

1043 not all people in my professional life are necessarily
gonna /really (appreciate) (laughs)

1044 /Oh, god,/ I'm the worst

1045 okay

1046 like potty mouth ever.

1047 My mom's like, "you won't (inaudible) ever!"

1048 And I'm like, if you had the day that I do every day,
1049 you'd be swearing all day after school too.

1050 (laughs)

1051 So then getting-

1052 So for me, in order to make sense of what an angle is I
have to move
1053 or see something moving.

1054 okay

1055 like because when it's static, there's nothing to point
at.

1056 mhm

1057 so we were talking ab-

1058

1059 I don't quite know how she's gonna take it up, but like
you could make /sense of it like-/

1060 (go through the line)

1061 It's a measure of

1062 So when I do this
1063 and when I do this
1064 what's bigger?

1065 mhm

1066 My arms are not bigger.

1067 mhm

1068 My body did not change,
1069 but something is bigger.
1070 and get them to make sense of what is that thing that
is getting bigger?
1071 that's the angle,
1072 it's like an openness of rotation or-
1073 when you open a door,
1074 kids can often

1075 Oh, that's a good idea

1076 have a visceral experience with doors or-
1077 if you even take, you know
1078 two, anythings.
1079 and like, something's getting bigger.
1080 when I do this.

1081 mhm

1082 what is the thing that's getting bigger right?

1083 mhm

1084 and it's- it's
1085 it's easy to conflate with area because the area is
getting bigger if you imagine a triangle.

1086 right.
1087 here.
1088 it is getting bigger.
1089 but that's not what we're talking about?
1090 mhm
1091 getting that distinction out there?
1092 So she's gonna do a warm up that's around that.
1093 I like that.
1094 okay.
1095 She's actually cutting out step one and step two from
1096 the triangle sum thing,
1097 which is the measuring with protractors.
1098 okay.
1099 Because the way it's set up is you measure with
1100 protractors,
1101 you add up the numbers (.)
1102 then you do the line it up- you know like tear it off
1103 oh, I did something different.
1104 I should give it to her.
1105 I found something better in this workbook.
1106 Oh, show me.
1107 that I used instead.
1108 And I for- see this is why I need to meet with her cuz
1109 (laughing)-
1110 we always meet over this stuff and I- (.)
1111 (inaudible) right now.
1112 oh really?
1113 or something-
1114 I might be using the wrong acronym.
1115 She's in some meeting about a kid.
1116 (sound of turning pages)
1117 shit, where did I put that?
1118 (5s, flipping pages) ooooh, I'm going crazy.
1119 OK, it's in my, anyway-
1120 I have a- I made a copy of it.
1121 But I-
1122 the one that,
1123 in the lesson plan
1124 yeah
1125 that's in the unit thing?
1126 yeah
1127 I didn't like as much as this one that I found.
1128 I liked this one better.
1129 (3s) So they like,
1130 I just literally handed them the stuff
/and they figured it out/
/that's basically what she was gonna do/ by cutting
out steps one and step two
this stuff up here.

1131 mhm
 1132 (4s) OK yeah.
 1133 So she, she's basically doing that
 1134 and it might support her to have it in this version.
 1135 um
 1136 yeah, cuz I just like handed them that
 1137 yeah
 1138 and with tools,
 1139 and I was like, go at it
 1140 yeah
 1141 like I didn't really tell them anything.
 1142 So then what she was gonna do
 1143 ok
 1144 cuz we figured out that um
 1145 really the goal of that activity is an answer.
 1146 (laughs) right.
 1147 so we were thinking about, like
 1148 well, what do we want kids learning?
 1149 like do we want them to have an answer
 1150 to a question?
 1151 uh huh
 1152 Or is there something else?
 1153 And we were trying to make sense of that a little bit,
 1154 so we came to,
 1155 after they get the answer,
 1156 uh huh
 1157 um,
 1158 she was gonna pose a question, oh-
 1159 so the question I think we-
 1160 we had some trouble figuring out what exactly the
 question was.
 1161 But I think we came to something like,
 1162 the question she's gonna pose to groups,
 1163 for group conversation,
 1164 is
 1165 So this works by-
 1166 'this' meaning all the four triangles that you tried,
 1167 that they made themselves,
 1168 all when they tore off the angles they line up
 1169 they get a straight angle and they get a hundred and
 eighty degrees
 1170 um,
 1171 will this work for every triangle?
 1172 /why or why not?/
 1173 /That's the/ only thing I think that would have made
 my lesson a little bit longer,
 1174 yeah
 1175 Is I gave them one triangle
 1176 oh

1223 on there.
 1224 Like they pick.
 1225 uh huh
 1226 and then I gave them this cut out thing
 1227 uh huh
 1228 that I already had
 1229 uh huh
 1230 so it was like
 1231 yeah yeah
 1232 But I think that would be better,
 1233 if it totally works.
 1234 I just got nervous that they were gonna be like-
 1235 If they're straight.
 1236 shitty triangles.
 1237 that's what the triangle sum theorem tells us
 1238 is that it always works,
 1239 right.
 1240 if it's really a triangle.
 1241 and all it needs to be to be a triangle
 1242 is that the sides are straight,
 1243 and that they meet,
 1244 okay
 1245 right?
 1246 then I think if we do it that way,
 1247 yeah
 1248 it should take longer,
 1249 okay, uh huh
 1250 and, cuz we'd have more triangles.
 1251 uh huh
 1252 and they got measured all out,
 1253 uh huh
 1254 and it's gonna be a little bit more
 1255 uh huh
 1256 so maybe I will do that then.
 1257 ok
 1258 and I can just do this,
 1259 with the fourth period.
 1260 okay
 1261 it's fine.
 1262 it's already printed,
 1263 ok
 1264 they fuckin- (sigh)
 1265 ok
 1266 yeah, cuz I kinda don't wanna like
 1267 change this whole lesson
 1268 yeah yeah
 1269 anyway
 1270 no
 1271 I'm like so exhausted.

1272 Yeah yeah yeah totally.
 1273 I'm all-
 1274 I'm down for that.
 1275 okay.
 1276 So then um,
 1277 so then she was gonna ask them,
 1278 would this work for all triangles and give them
 spaggetti.
 1279 (5s)(laughs) wow
 1280 to play with so they can play with different triangles,
 1281 and would it work for all triangles,
 1282 why or why not.
 1283 to get them /making sense of why does that work/
 1284 /it's gonna be a lot(.) of stuff,
 1285 on the tables.
 1286 I'm just saying,
 1287 yeah
 1288 like it's a ton of materials already
 1289 yeah
 1290 and they're- she want to bring out spaggetti?
 1291 Only for that end conversation.
 1292 only when they're done,
 1293 so when they've figured out that there0
 1294 that all their four are a hundred and eighty?
 1295 next step is this next question.
 1296 and that's what that manipulative is for.
 1297 okay.
 1298 I'm just sayin'.
 1299 after doing it today?
 1300 she's a brave gal.
 1301 Holy pieces
 1302 uh huh
 1303 of lots
 1304 uh huh
 1305 of everything.
 1306 she also has- at least where I'll be in with her is a very
 small class.
 1307 O::h, she's talking about the first period
 1308 first period 8th
 1309 okay
 1310 yeah
 1311 so, it feels a little less hard in that way.
 1312 Usually there's three groups I think.
 1313 Or four.
 1314 I mean, I'd be down with the whole spag-
 1315 wait, what exactly are they doing with the spaghetti,
 1316 they're just gonna make new triangles?
 1317 they get to play with,
 1318 yeah, they get to play with so,

1319 what we wanted them making sense of, is why
1320 would it make sense that in a triangle when you
change the angles,
1321 uh huh
1322 the sum of the angles stays the same.
1323 uh huh
1324 why?
1325 so- and every time we were thinking about that,
1326 we kept like grabbing pencils and like,
1327 (inaudible) (laughing)
1328 ri::ght.
1329 so, you know like, you can look at
1330 which you can actually do.
1331 you could look at like,
1332 oh, when I made this angle by my left hand,
1333 uh huh
1334 bigger,
1335 as I make it bigger, these other two angles are getting
smaller, /right?/
1336 ok, so you want them to kinda think deeper about that
question.
1337 yeah
1338 ooh, I like that.
1339 okay.
1340 to try to give them something to reason around,
1341 so we're not just walking out with an answer to a
question that we could have handed them.
1342 ri:ght
1343 right?
1344 OH MY GOD!
1345 Hi Juan Ramirez!
1346 Hi Juan Rameriz.
1347 How are you?
1348 Student: good
1349 It's good to see you,
1350 hang on I've gotta say hi.
1351 yeah!
1352 favorite student!
1353 yay!
1354 it's good to see you.
1355 I see Karla all the time.
1356 Are you guys friends again or what?
1357 STUDENT: That's my cousin.
1358 Karla?
1359 STUDENT: Carlo or who?
1360 Karla?
1361 STUDENT: oh, I just (walk around) sometimes.
1362 STUDENT: I thought you mean Carlo.
1363 No KarLA.

1364 STUDENT: oh no, I haven't talked to her in a while.
1365 Are you guys not speaking still?
1366 STUDENT: I don't know, I just stopped talking to
her.
1367 Okay.
1368 STUDENT: I'm actually asking for some help.
1369 STUDENT: I got a math test back,
1370 STUDENT: and I couldn't finish it,
1371 STUDENT: maybe you can help me.
1372 STUDENT: It's hard, too.
1373
1374 STUDENT: I got a D in that class cuz of this one test
1375 o::h,
1376 Aw
1377 oh, it's on angles.
1378 Interesting.
1379 Interesting we were just talking about angles.
1380 Okay, hang on one second, Juan.
1381 I just need to finish this conversation and then I can,
ok.
1382 So the last question,
1383 the one thing I wanted to know before I come in,
1384 tomorrow
1385 okay
1386 Is what do you want us,
1387 you and I,
1388 to be able to talk about?
1389 okay
1390 In the debrief?
1391 And therefore, like
1392 what am I attending to in class?
1393 what do you want my help thinking about,
1394 learning about,
1395 making sense of,
1396 are there CI structures that you're trying or that you
think you're gonna try that you want my help thinking
about?
1397 Is there status or participation stuff you want my eyes
on?
1398 We brought up participation quiz in the last meeting,
1399 In talking about that
1400 yeah
1401 and it's something that I've been really lacking, this
time
1402 I'm doing one with Aya tomorrow.
1403 Are you?
1404 Yeah, we're gonna do one together
1405 to support her (.)
1406 she had-

1407 a conversation she wants kids to have so we thought
about,

1408 like well what do we need that conversation to look
and sound like?

1409 mhm

1410 okay, so then let's articulate that.

1411 okay

1412 she's gonna launch the activity with that set of-
We're doing a participation quiz looking for those
1413 things,

1414 and then she and I are gonna-
1415 cuz she has so many groups,
1416 she has like nine groups or something,
1417 so we get to practice together.
1418 We're gonna do it on posters around the room.

1419 okay.

1420 You're going to do a participation quiz on posters?

1421 (.) She has the wall space, and
1422 the nature of the activity,
1423 like there's not a bunch of complicating things going
on.

1424 O::H, okay

1425 and so-

1426 I was gonna say,
1427 I mean I don't know if this would be the right activity

1428 yeah

1429 to do (.)

1430 The only place I could see a participation quiz in this
1431 that we just talked through,
1432 is in the ending discussion?
1433 If there's time for it.

1434 mhm

1435 there could be time for like a little mini one
1436 where we could reinforce, like,
1437 what good,

1438 mhm

1439 group work looks like in discussions,
1440 like we could-
1441 we could even just do a quick like,
1442 you know, 'I'm asking-
1443 'I really want to hear people'
1444 Saying, giving reasons.
1445 So I'm gonna be listening for because and for people
asking why.

1446 mhm

1447 Um, and sorta point that out,
1448 publicly,
1449 as sort of like a mini-

1450 mhm

1451 participation quiz?
1452 I feel like that could work, but I don't know if that
even makes sense.
1453 Um,
1454 We could do one of those on the board,
1455 okay
1456 just for that part.
1457 okay
1458 That's just like a ten or fifteen minute conversation,
1459 we could just be listening for stuff and
1460 like when we hear it go write it on the board.
1461 public-
1462 yeah
1463 participation quiz at the end.
1464 I mean, we could.
1465 I'm not suggesting that we should.
1466 so,
1467 I'm pretty open,
1468 It's a thing we could play with,
1469 I mean honestly,
1470 I'm so:::
1471 exhausted this week,
1472 it's hard for me to even think right now.
1473 And there's just a lot going on, so I- (.)
1474 I just got (stack of my)-
1475 IEP students?
1476 uh huh
1477 It's like a book.
1478 yeah.
1479 I mean this is like my life this year.
1480 yeah.
1481 I just-
1482 I don't even know what to look for right now.
1483 Cuz I'm so overwhelmed and it's kind of-
1484 So here's an idea then,
1485 I can volunteer, and tell me if this sounds like it would
be useful or just annoying,
1486 (laughs)
1487 and either answer is totally okay with me,
1488 okay.
1489 Uh, we could-
1490 I could do that part at the end of class,
1491 if you want,
1492 I mean if you introduce me in such a way that kids
recognize that I'm-
1493 have reason to be there (laughs)
1494 mhm
1495 and that you want me to be there,
1496 then they'll probably let me

1497 (laughs)
1498 Um, so I could do a quick launch of that ending
conversation,
1499 mhm
1500 and just tell them,
1501 what we're looking and listening for in order for that
conversation to be useful,
1502 so I could do that little launch.
1503 you and I together could,
1504 just sort of write participation quiz notes
1505 and then we could,
1506 Like I could even debrief it if we have time,
1507 or we could talk together after
1508 about how you might take it up the next day,
1509 mhm
1510 to process it with them or whatever.
1511 just as a sort of way-
1512 if you're wanting to learn about- think about
participation quizzes,
1513 It could just get us into that space together,
1514 so we have something to learn about together.
1515 that'd be cool.
1516 Does that feel useful?
1517 yeah.
1518 okay.
1519 I'll do that.
1520 that'll be fun.
1521 I'm gonna be in a (inaudible)
1522 I could use a little uh,
1523 You're gonna be what did you say?
1524 An observer (laughs)
1525 Cool,
1526 and not by way of modeling,
1527 like I don't want us to think that I'm modeling how
it's done,
1528 but just like let's get one into our space,
1529 yeah
1530 and I'm happy to try it
1531 yeah
1532 It might totally flop, right?
1533 uh huh
1534 but let's just get one into our shared,
1535 space so we can learn about it together.
1536 okay
1537 and then that sort of cracks it open,
1538 so that then you have somewhere to build from,
1539 next time you try one.
1540 right.
1541 you know what I mean?

1587 Yeah, and then we'll at least have something cool to
talk about.
1588 I think that'll be fun.
1589 That'll be fun.
1590 Okay.
1591 Sounds awesome!
1592 Awesome, awesome.
1593 I'm super excited.
1594 Me too, good.
1595 Round two of that lesson
1596 so we'll do even better.
1597 Hi Juan,
1598 Okay, I can go over this really quick with you,
1599 but I actually have to meet with my planning group,
so,
1600 Um, you wanna take a look at this?
1601 STUDENT: yeah, I need like help
1602 STUDENT: (inaudible) my test
1603 Okay
1604 (sounds of mia packing up and recording ends)

Heather Cycle 2 Debrief Conversation

	Heather	Mia
1		Hi
2		Hi
3	(eating) How are you?	
4		I am (.)
5		Good,
6		thankful to be here, I'm good (setting up)
7		I'm trying to enjoy Halloween and not get (stressed out by it)
8	I know, right?	
9		My kid is the cutest (inaudible)
10	Aw, is she all dressed up?	
11		Yes.
12		She is Medusa.
13		Cute.
14		Yeah, she's Medusa and um,
15		you know, I'm just not,
16		like okay, so I won't do the store bought costume thing.
17		And I'm also not the like-
18		super crafty, have lots of time, make something
19		right
20		So I'm always sort of needing her to sort of go with it, and like let it be, not, perfect, you know?
21		
22		uh huh

23 And she's super good about it,
24 so she's in a toga.
25 We learned last night from a YouTube video how to
26 tie a toga.
27 We did that together.
28 See? Educational.
29 YouTube, so she's in a toga and her hair is uh (.)
30 Have you met her yet?
31 mm mm
32 No.
33 so she, she's biracial and she has really beautiful curly
34 big hair,
35 mmm
36 which we've been twisting lately?
37 So this is her trying to look mad and mean as Medusa.
38 Cool!
39 So we twisted green ribbons into her hair.
40 and then we like twisted the green ribbons around the
41 ends to make a little head
42 and put this shiny read stuff for a tongue.
43 mmm
44 So she has little snakes on her head.
45 Total homemade- that's her toga
46 She looks very cute.
47 (laughing) it's homemade, like they're snakes if you
48 blur your eyes (laughing)
49 and kind of go with it.
50 All good.
51 I've done so many makeshift costumes when I was a
52 kid.
53 yeah, which for me is like the fun,
54 right
55 but then just because I'm always so busy at this time
56 of year that it turns into fun but-
57 right
58 like fun that we can throw together in one evening
59 without much preparation
60 (laughing) you know.
61 right.
62 So, but she's going with it and I'm thankful for that.
63 When in doubt you can always go as a ghost with a
64 sheet.
65 yeah, we've done it.
66 She was a witch for like three years in a row because
67 we-
68 I found this amazing witch hat that's like the
69 awesomest thing ever.

60 But this year she was like, 'no I really just don't want
61 to be a witch again.'
62 (laughing) and I was like, okay.
63 We'll work on something else.
64 moving on.
65 (laughing and flipping through notebook) yeah.
66 And also, I just get so, you know-
67 the hypersexualization of girls on Halloween,
68 just like curdles my blood.
69 mhm
70 and it's so seductive to little girls,
71 so,
72 it's always this sort of like play with-
73 so I feel thankful every year she's willing to be
74 something that's actually scary or bad
75 right?
76 and not sexy, I'm thankful.
77 mhm
78 (laughing)
79 That's why I'm a banana.
80 Yes, I love it!
81 You're not like a little kitty cat.
82 (Lynn comes in.)
83 yeah
84 Which I've seen a bunch of already.
85 yeah.
86 Hey Lynn.
87 Well I have the other part and I just put this piece on
88 cuz I didn't want to walk to school as a banana.
89 you didn't?
90 I want the hat on.
91 Can we have a conversation with your banana hat on
92 please.
93 Yep. (puts it on)
94 you wanna experience the full thing.
95 Oh my god, you're the cutest person ever.
96 Where did you get it?
97 (inaudible) the full monty here.
98 Where did you get it?
99 Um, I was with my friend at the like-
100 Halloween store at [local intersection]
101 mhm
102 It's like in the old,
103 um, uh,
104 Blockbuster building.
105 yeah they did it as a Halloween store.
106 That's so awesome.

105 I actually paid for it.
106 This is like the first costume I've ever paid as like-
107 probably ever.
108 See, for store bought costumes I'm down with that.
109 What I'm not down with is the store bought costume
that's like, Elsa.
110 mhm
111 you know or like the commercialized Disney
characters
112
113 and the- yeah
114 that, I won't do.
115
116 /A giant banana,/ I'm down with that.
117 Well I mean I felt like it was an investment,
118 yeah
119 cuz I can re-wear it.
120 Yeah totally.
121 you can be a banana for years.
122
123 every three years.
124 No every year, the kids can handle it.
125 If I get three costumes and I'm dressed once a year in
a costume, I can just rotate 'em.
126
127
128
129
130 Awww
131
132 oh my god
133
134 yeah
135
136 Do you really want to do this with the banana costume
on?
137 (laughing)(We can do whatever you want.)
138 (takes banana hat off)
139
140 (clapping) oh yay!
141 Cool.
142 (takes the paper, laughing) CI every day.
143 That's the-
144 CI every day.
145
146 That's the- it goes with this. (Holding up white paper.)
147 mmm
148 That's like the-
(reading) mmm

149 What I was thinking for you guys and I talked to
150 Kamilah and Aya about it,
151 is you can have a pile of these
152 like tucked in your binder.
153 mhm
154 And one copy of that
155 mhm
156 in your binder or whatever.
157 to grab these and use 'em as you're planning.
158 That's great.
159 (to Lynn) I love /(inaudible) too/
160 /Thank you Lynn./
161 I love it, you laminated it.
162 You really are.
163 (laughs) right?
164 (laughing) leave it for about two days.
165 is there a lamination machine?
166 /It's like the slowest thing ever/
167
168
169
170
171
172
173 /right and hope you don't burn down the building/
174
175
176 Oh that thing, and it will stink up the area
177 okay
178 if it-
179
180 /Well you (clearly) had/ lamination success.
181
182 congratulations.
183 she's got it down.
184 awesome
185
186 I've only used it twice.
187 and I think it broke when I (laughing)
188
189
190 mhm
191 And she'll hunt you down.
192
193 I like that it's not white too, so it'll be easy to-
194 'where's that yellow thing?' you know grab it.
195 mhm
196 cool

197
198 Love it.
199
200 /mkay./ So,
201 I'm gonna get us on task, because we're gonna have a
short-
202 lunch is short, I learned when I was talking to
Kamilah yesterday.
203 Well yeah, it is very short.
204
205 mmm, there's gonna be kids all over the place.
206 Um, so what time are we done,
207 I can't remember lunch is (inaudible)
208 1:15
209 Oh my gosh, okay.
210 I know.
211 (writing) okay, so.
212 which is why I throw my food down quick.
213 Here's what I would like to do.
214 mhm
215
216 (laughing) do I really?
217 How did that get there?
218
219
220 (laughing) it's the foam, sorry.
221 It's okay.
222 Um,
223 So I wanna ask you first, if you have,
224 or what your ideas are at this point about what you
hope to get out of this conversation.
225 What do you want to walk away with?
226 It's a little bit of a hard question,
227 so if you don't have a clear answer,
228 mmm
229 what do I want to walk away with?
230 Uh, maybe like how I could have done that lesson
better.
231 How about that?
232 (laughs) since it was like,
233 But you're not gonna do that lesson again,
234 what
235 right? but you're not gonna do that lesson again.
236 I will next year.
237 Oh, okay. (nodding)
238 okay
239
240 yeah
241 okay.

242 Or there's always reteaching.
 243 Cuz let me tell ya',
 244 I did the lesson after that with the other class,
 245 yesterday,
 246 Nightmare.
 247 oh
 248 like just worst day ever.
 249 oh, oh
 250 Like it- they were totally lost,
 251 yeah
 252 They didn't know
 253 like everything you were talking about with like
 angles and
 254 uh huh
 255 their, you know what you and Kamilah had talked
 about
 256 mhm
 257 their,
 258 mhm
 259 misinterpretations of what an angle is,
 260 what it even looks like,
 261 where it's found,
 262 mhm
 263 like,
 264 and then if it's not inside a shape,
 265 they're just like, 'what?'
 266 mhm mhm
 267 Like they're totally like-
 268 mhm mhm
 269 Like they could understand inside the triangle
 270 when we did the one eighty
 271 mhm
 272 But the minute we had the thing /with the exterior/
 273 /that's not in a polygon/ mhm mhm
 274 oh my god.
 275 they were like 'what?'
 276 yeah
 277 they couldn't even see that as an angle.
 278 yeah.
 279 So.
 280 mkay, so
 281 so then, on that note,
 282 let's think about what,
 283 let's think about what we think might've been,
 284 (.) barriers.
 285 So I don't think the barriers in that lesson,
 286 were pedagogical, like
 287 I don't think it was because you didn't teach right
 288 (nodding)

289 or do anything at the front right.
290 I think that maybe there were some,
291 like stuff like that,
292 mmm
293 like kids just knew less
294 mhm
295 than we thought that would have let that lesson work
the way we planned
296 mhm
297 you know what I mean?
298 (nods)
299 so like um,
300 I think there was that,
301 and I think,
302 although- yeah maybe there was that.
303 But what I saw evidence of was,
304 they didn't know how to use protractors.
305 and they didn't know how to use protractors.
306 and I wasn't totally sure why they needed to use
protractors.
307 right.
308 I mean the directions said they needed to, so they
needed to,
309 but I wasn't sure the relationship between,
that task that they were trying to grapple with how to
310 do,
311 and what we were trying to get them to learn.
312 right
313 right?
314 Um,
315 So I think (.)
316 yeah, so I think there's no-
317 so I don't think there's like, it was a bad lesson.
I think we just had some missteps with what they were
318 walking in ready to be doing.
319 right.
320 you know what I mean?
321 My goals weren't great on that lesson.
322 As well as,
323 Can you say more about what you mean by that,
324 your goals weren't great.
325 Well like it just wasn't execut-
326 I think it wasn't executed great,
327 because I don't think I-
328 had, exactly what you said,
329 like I didn't have the right goal in mind of what I
wanted them to accomplish.
330 So like they did some good stuff.
331 I don't know if it like

332 mhm
 333 got to a,
 334 specific learning point.
 335 and that is where I think it fell apart.
 336 Awesome.
 337 So that,
 338 is super super useful.
 339 I think that little nugget right there,
 340 super useful.
 341 So I think that,
 342 and I can so relate to it,
 343 I think-
 344
 345 It's like, 'oh they're doing great stuff,' but
 346 right they're doing stuff and there's also I get a sense
 and I don't know if you have this but they walk out
 the door and I'm like,
 347 'what just happened?'
 348 (laughs) right.
 349 Like I don't know what just happened.
 350 I didn't have closure on it.
 351 yeah
 352 I didn't feel like there was like a good set goal
 353 yeah
 354 for me, like in my mind
 355 yeah
 356 Like when I taught it,
 357 I didn't feel like there was a good set goal.
 358 yeah.
 359 and I think when you do have that,
 360 tell me if this is your experience,
 361 but my sense is when you do have that,
 362 mhm
 363 you feel much calmer in the lesson right?
 364 right!
 365 and you know,
 366 how to watch them in the lesson.
 367 Cuz you know what you're listening for,
 368 mhm
 369 and looking for,
 370 and even if there are imperfections in the lesson set
 up,
 371 or you're like, 'ooh, I wish I asked that differently' or
 whatever,
 372 it's all based around a sense of like,
 373 there's this baseline that we can look at everything
 around
 374 (nodding)
 375 and without that baseline,

376 I just feel sort of scattered and like aahhh
377 mhm
378 I don't even know how to think about what's
happening.
379 other than like are they on task or not,
380 which is not really, right?
381 Um, which your kids are good at doing.
382 right? they're good at that part.
383 That class actually was amazing
384 yeah
385 (laughing) considering how poorly executed I had.
386 I mean I didn't tell them anything.
387 mhm
388 I literally just handed them,
389 all that stuff.
390 mhm
391 and I just kinda like-
392
393 yeah.
394 Like maybe a video
395 or some sort of like,
396
397 yeah like an applet?
398
399 I feel like even just the warm up we did with Kamilah.
I feel like that was powerful.
400 mhm
401 we had like a ten minute conversation,
402 mhm, /I'm gonna do that/
403 /where we just/ ask 'em
404 and it was not heavily planned,
405 it wasn't fancy,
406 mhm
407 it was just we asked,
408 what is an angle?
409 I had her take out.
410 the way she had it written on her board was 'what is
the definition of an angle.'
411 and I had her take out the word definition because,
412 that's too scary.
413 right.
414 so just what is an angle.
415 how can we articulate
416 yeah
417 even for grown ups
418 how do you find the words?
419 what IS it?
420 and then we had them do like um,

421 they did some writing about- like drew a picture and
wrote,
422 and then shared with a partner,
423 and then we had them share
424 whole group,
425 and in her class she's having a hard time getting them
to speak,
426 mhm
427 their ideas out loud
428 uh huh
429 and so we did a structure where they were sharing
their partner's idea,
430 not their own
431 mm
432 So that they get to show off
433 hmmm
434 'well, she said'
435 and then when she did her sticks,
436 she was asking, you know she would pull Heather,
437 but Heather's job was to share Lynn's idea.
438 right.
439 So then we just got a bunch of stuff up on the board,
440 that was all useful and partial.
441 hmh
442 someone had the word 'around',
443 which is so useful
444 mmm
445 right?
446 a lot of people said 'it has degrees'
447 mhm
448 uh some people said stuff about a point or a vertex
449 mhm
450 some people said stuff about two lines that meet,
right?
451 and none of those are full.
452 right
453 But they all- we can piece it together from there,
right?
454 (laughs) yeah
455 And so then we had this conversation of lilke,
456 they were actually more ready than I thought they
would be,
457 and we were reflecting that maybe it was because you-
pun time!
458 that because you guys did um,
459 uh transformation?
460
461 mhm
462 before this?
463 mhm

464 they were actually more ready than I thought,
465 mmm
466 to get the sense that it's about this opening (gestures
with two hands opening away from each other)
467
468 (to Lynn) uh huh
469 and movement
470 and they for example they,
they were not thrown off by the question of this,
471 (draws two angles, one with sort rays, but a larger
measure, one with long rays, but a smaller measure)
which angle is bigger.
472
473 mmm, okay
474 They were totally down with that being bigger,
475 okay
476 by the time we go there,
477 which surprised me a little bit.
478 mhm
479
480 um, but we got to clarify and we had them do this
(opening hands to form angle)
481 yeah
482 you know like pin you-
483 here are the lines, make a small one, make a big one
484 we wished later, which we didn't
485 we wished we had gone all the way to one eighty
486 uh huh
487 because then that wouldn't helped,
(picks up pen and draws) I feel like sometimes it's
488 hard for kids to see a straight line as an angle.
489 mhm
490 like once they get this (pointing to line)
491 right.
492 then what- how- how is that an angle?
493 mhm
494 right?
495 Anyway.
496 So I think even just giving them a chance to make
some sense of it,
497 and like piling in some ideas,
498 and pointing out that it's a hard notion.
499 yeah
500 because you can't really point at it
501 yeah
502 and to give them permission to struggle with it,
503 I feel like is powerful too.
504 yeah.
505 So I don't think-

506 and I do think there is cool stuff (pointing to Lynn and
her computer) you can do to support it,
507 but I don't know that you necessarily have to start
there.

508 Well I'm already-
509 wanna start with a Do Now next week,
510 okay
511 of just 'what is an angle?'
512 Like that's my first step.
513 Is just like, let's do that conversation cuz I haven't
had it.
514 And I think that will really help,
515 some of the miscommunications.
516 mhm
517 and I think they need to see,
518 like you said,
519 different types of angles.
520 What they look like.
521 Where they could be located.
522 mhm
523 you know,
524 because like the minute my 4th period saw-
525 (picks up pen and Mia pushes her notebook to
Heather) a triangle.
526 (draws a triangle) They were pretty good at seeing
like,
527 'okay these all have like angles inside.'
528 uh huh
529 but if it was out here (drawing an angle exterior to the
triangle),
530 like was not an angle to them
531 mhm
532 that was-
533
534 yeah.
535 /totally, weird./
536 /For two reasons, I think./
537 I think there might be two reasons that's not an angle
for them.
538 One because it's obtuse.
539 mhm
540 and that's not the archetypical angle in our brain.
541 (nodding) right.
542 and the other because it's not inside of a polygon.
543 Right so maybe even on Monday,
544 mhm
545 not only could we do like the what's the angle talk,
546 mhm
547 and have that as a Do Now,

548 I think it would be really good to have a homework,
549 yeah
550 that's just like,
551 'point out all the different angles,
552 in these pictures.'
553 Like have some /different pictures/
554 /how many can you find/ and look, here. (drawing two
intersecting lines)
555 How many angles are there?
556 Right! exactly!
557 Can you (make) some more.
558 Yeah!
559 you know, like (nodding)
560 Cuz they might see,
561 okay there's four here, but there's way more than that
too,
562 like what about like this angle?
563 oh, yeah!
564 what about this one, you know
565 there's this one, there's that one
566 yeah that could be some really good do now
conversation as well
567
568 (laughs) You're way ahead of me, lady.
569 See she's got- so
570
571
572
573 (laughs) I know, she said she forgot her spaghetti.
574 /we didn't have time for it anyway./
575 /and I don't own spaghettis/ so was like oh,
576 I can go buy spaghetti this weekend,
577 so we could do that next week.
578
579 (laughs) cooked spaghetti.
580
581 Oh, yeah.
582 /Um/
583 /Um/ yeah
584 that could definitely be, next week.
585 sense making opportunities,
586 around angles,
587 mhm
588 if that would support you.
589 Yeah because this next lesson,
590 the one that I did with fourth period, not third
591
592 oh my god it was so bad,
593 It was like (.)

594 I handed them the sheets
595 mhm
596 and expected groupwork,
597 and they're normally a pretty,
598 I mean they're not the fastest starting group,
599 mhm
600 but they will get work done.
601 and only like the Judy's kind of group,
602
603 got work done.
604 you know, and they were just lost.
605
606 and then it became all this behavioral stuff,
607 yeah
608
609 yeah
610
611 So I got fed up,
612 and I just sat down on the chair.
613 And Trevor was like,
614 Ms Benito, I don't want to be offensive,
615 but you want me to teach the class.
616 (laughs)
617 and he like,
618 taught them,
619
620 what he learned with it,
621 yeah, up on the board.
622 It was kind of amazing actually.
623
624 That's so awesome.
625 They were so into it,
626 they were all quiet.
627
628 yeah.
629 He was a great teacher.
630 What did /he teach them?/
631 /I was like hm, we have/ a future teacher.
632 He was teaching them what, why,
633 what this degree was
634 of this exterior angle.
635 and he was showing how he found it.
636 And I was like, wow.
637 okay,
638 that's awesome.
639 (laughing) awesome.
640 This is like a beautiful example of um,
641 the thing I always try to show my kid when we have opportunities,

642 where the thing you didn't think you wanted to have
happen,
643 yeah
644 or a misstep or a mistake
645 like leads you,
646 yeah
647 to awesome stuff that wouldn't have happened right.
(laughing)
648 yeah
649 But even with that-
650 with him doing that,
651 I mean they were still very (lost)
652 yeah
653 I can tell there's just,
654
655 (laughing) Trevor gets it, so that means we're good.
656 Trevor and Judy have it down.
657 But I feel like,
658 yeah we need to do some serious-
659 and I think that's where like,
660 I've fallen short on my teaching,
661 is like they're just really,
662 I mean even in the way our, our structure of the
lessons were,
663 there wasn't like a real specific,
664 section I felt,
665 that really like taught what an angle is,
666 yeah
667 even in our curriculum.
668
669 I think this is a, this is a like-
670 endemic problem,
671 yeah
672 to Geometry curriculum in middle and high schools
673 yeah
674 because um it's already assumed kids already know.
675 mhm
676 Curriculum writers just always assume that and
they're always wrong.
677 (laughing) So it just like never gets
678 yeah
679 dealt with, or it gets like,
680 in elementary school it comes up,
681 it's like (drawing) that's an angle.
682 mhm
683 yeah which part of it is the angle?
684 right
685 you know there's like
686 and it's always acute

687 a lot of people just don't recognize how much,
688 how much sort of complexity is there to deal with.
689 they think it's a simple thing and they just say that,
690 you know?
691 mmm
692 There's also a lot of notation that goes with this as
well.
693 yeah
694 and that was screwing them up too,
695 like,
696 yeah
697 you could say Angle A,
698 or you could say Angle A, C, B, or whate-
699 you know, if you're saying-
700 and they uh,
701 even when I was here, (writing) that
702 kids didn't know what that meant.
703 right.
704 right.
705 So I think we /need to do-/
706
707 (laughs)
708 they think- Oh,
709 I saw /kids who knew what/
710 /or M L A (laughing)/
711 who just didn't know what the m was
712 but they knew that was angle A, but they didn't know
what the m meant.
713 mhm,
714 the measure, right.
715 They weren't sure what they were supposed to do
with it.
716 Okay, so that's cool.
717 So you're gonna do some sense making around
angles,
718 and /I think/
719 Maybe that's what I'll do all day Monday.
720 Cuz I think /they're both gonna need it./
721 /It feels really worth it./
722 mhm
723 I think.
724 I haven't even tried that other lesson with 3rd period.
725
726 I think it would be good to just get this out of the way.
and see if they do any better.
727 Or maybe you could do a combined,
728 lesson on,
729 like this kind of sense making and also how to use the
tool teh protractor.

730 mhm
731 Cuz I was helping some kids in your class
732 mhm
733 figure out how to use it,
734 (laughs)
735 and I had one girl said um,
736 I haven't even seen this since 3rd grade.
737 mmm! mhm
738 And so like it's not that they're-
739 and kids who I helped use it like,
740 it didn't feel like it was a conceptual problem,
741 right
742 It's just they didn't know, right?
743 right.
744 Um,
745
746 yeah
747 mhm
748
749
750
751 yeah.
752 yeah.
753 yeah
754 so that might be-
755 and I feel like you could do that in like,
756 a small amount of time
757 mhm
758 you don't need a little bit of dedicated time.
759 It'll be like angle day is Monday.
760 yeah.
761 Monday is angle day.
762
763
764 I know, they were like ripping off these tiny pieces of
765 paper and I was like
766 oh my god what am I asking them to do.
767 They could practice measuring angles with a
768 protractor,
769 and they could also practice drawing angles with a
770 protractor.
771 where you start with one ray and a vertex.
772
773 (.) I don't.
774
775 Is it the same design of a protractor /as the ones the
776 kids use?/
777
778

775 /but it's like a half circle./
776 /but it has that shape./
777 yeah, but it's yay big.
778 Cuz I feel like there's other concepts that (inaudible)
cool.
779
780 okay.
781
782 That would be awesome.
783 and they would- I think they-
784 Cuz when I've taught seventh grade previous years,
785 I always did some lessons
786 on how to use a protractor.
787 and angles,
788 but you never know when kids are coming in, what
they're
789 like getting,
790 or you know if the teacher even taught it.
791 I mean I kinda find it beneficial,
792 I'm kinda old school that way, like I-
793
794 yeah.
795
796
797 I can actually you know (coughs)
798 I don't even have to have a big one,
799 cuz I could just throw it under the Elmo.
800
801 I can do a little demonstration.
802
803 I think that's what they need,
804 a little demonstration,
805 and just like really looking at like,
806 what it- like you're saying,
807 what an angle can look like.
808 What are the different ways it could look like?
809 Like you said, it could be (opening hands) like this.
810 It could be like this (holding palms together).
811 It could be acute (showing with hands),
812 It could be huge (showing with hands),
813 (coughs) excuse me.
814 Yeah, so
815 /They/
816 /okay so/
817 yeah
818 (writing) I was just playing with,
819 and some notation stuff.
820
821 Like what does the 'm' mean,

822 the measure of versus naming the angle
823
824 So I was just-
825 I was just taking a lesson from what you said earlier
826 when you said that you felt like you hadn't been clear
827 about what you wanted them to learn,
828 So I was just practicing,
829 right.
830 Like what do we want them to learn?
831 mhm
832 And I was just generating some practice language for
833 myself around,
834 so do we want them-
835 cuz I feel like, um,
836 yeah,
837 (coughing) sorry
838 Do we want them to-
839 Do we want them to make sense of or be able to
840 explain,
841 what an angle is?
842 and how we measure it?
843 Is that part of it too?
844 Yes.
845 Okay, so then,
846 (touching pinky finger) Make sense of what an angle
847 is,
848 (touching ring finger) how to measure it,
849 mhm
850 (touching middle finger) and I would say notation.
851 What kind of notation,
852 and be able to read,
853 is being used with that.
854 (writing) and interpret, okay
855 mhm
856 (writing) Okay, so then I was like thinking about-
857 then I realized as I was writing these aren't really
858 learning goals, these are like
859 maybe thing that we, things I might think are
860 important to give them opportunities /to make sense
861 of/
862 /this is like the practice/ I feel like
863 yeah well I was thinking too I wanted to be careful,
864 so if we're really dedicating time to making sense of
865 what an angle is,
866 I would want them to be able to generate their own,
867 like sense making to build from
868 hm

862 you know like they have prior understanding, even if
863 they don't totally get it yet,
864 like they have some pieces,
865 so how could that happen,
866 and then also I wanted to,
867 if we have time,
868 how do we deal with the fact that this is still the
869 archetypical angle,
870 right like we want them to,
871 recognize that they can be obtuse,
872 that they can even be larger than a hundred and eighty
873 degrees,
874 mhm
875 what does that mean?
876 or that like you know when you draw this (drawing an
877 acute angle),
878 there are two angles implied here,
879 a smaller one and a larger one
880 mhm
881 right?
882 mhm mhm
883 Um,
884 so I was thinking that if they could use the measuring
885 tool, the protractor,
886 we want them to have practice using that,
887 could they use it to generate,
888 lots of different kinds of angles that could then help,
889 sort of that sense,
890 you know a more flexible ability to see angle.
891 mhm
892
893
894
895
896
897
898
899 Oh, that was my clockwise,
900
901
902 oh yes, yes
903
904 mhm
905
906
907
908 right.
909 Yeah, maybe bring out the purple triangle
910
911 to show that.
912
913 (laughs)
914 cuz they all have the purple triangles.
915

949
950 (to Lynn) Yeah, what the heck? (laughs)
951 Okay, so we have five minutes.
952 Sorry
953 No, that's fine.
954 (to Lynn) Look up Archimedes puzzle. (turns back to
Mia)
955 So I think,
956 I feel like these questions (gesturing at notebook,
where she has written: 'What do we want them to
learn? How do they need to participate in order to
learn it?') are standing out for me,
957 as questions that um,
958 that can help,
959 like ground the decisions that you're making
960 mhm
961 about your lessons
962 okay
963 and about like sort of what to do about-
964 like I feel like um (.)
965 There can be especially when you're in a new
curriculum,
966 like this new binder
967 that like maybe has good logic behind it,
968 (laughs)
969 maybe sometimes does sometimes doesn't
970 right
971 like you never quite know until you try it right?
972 (laughs)
973 that there's a lot of decision making about what do we
want to do,
974 and there's lots of tension around it,
975 yeah
976 like it goes by fast,
977 and you don't know where it's all going
978 I know
979 right?
980 And I think that can feel really time consuming, but I
um,
981
982 Kamilah and Aya and I all talked about this yesterday,
that I think um,
983 actually what I was seeing was
984 when lesson planning is happening,
985 when we can get first to a spot of like,
986 well what do we want them to learn,
987 like Monday you want them making sense of angles,
988 then it actually it makes the process of the rest
989 of what you have to do to get ready for Monday,

990 (nodding) /easier/
 991 /easier/,
 992 mhm
 993 faster,
 994 more grounded, and more effective.
 995 /right./
 996 /right,/ like less crazy feeling
 997 mhm
 998 because you just have um,
 999 yeah, cuz you have like well,
 1000 should we do that part or that part or that part,
 1001 is it too much?
 1002 mhm
 1003 I don't know
 1004 I kinda like that but I kinda like that,
 1005 but then as soon as you're like ,
 1006 well, what do we want them to learn?
 1007 which parts of it are gonna support that?
 1008 Okay bam, there's the decision right there.
 1009 And I think the tough thing with the book
 1010 with some of the lessons it's great.
 1011 uh huh
 1012 but, this particular one,
 1013 mhm
 1014 We like got it out of like that random book,
 1015 and I don't think it got-
 1016 It just, it needs to be fine tuned.
 1017 yeah.
 1018 and it wasn't like-
 1019 like a lot of the CPM ones,
 1020 are great cuz we can read the like pre-notes from it
 1021 and be like, 'oh this is what this is-'
 1022
 1023 There are a lot of lesson yeah
 1024 where it's not clear what the objective were for the
 1025 people who wrote the lesson.
 1026 Right
 1027 that's true, we hope. (laughing)
 1028
 1029
 1030
 1031 Right.
 1032
 1033 Yeah.
 1034 (L turns the laptop so all can see the screen)
 1035 So they like measure these different pieces.
 1036 I remember doing this with the seventh graders.
 1037 This is how I had 'em use protractors.

1038 mhm
1039 Um,
1040 I don't think I did this part,
1041 But I did- I had them measure /these angles/
1042 /that's nice and big,/ which is good for the protractor.
1043
1044 mkay
1045 Yeah, so I made it into like a-
1046 I don't even know if that's what the lesson was,
1047 But I like,
1048 (laughing) (inaudible) but I like that picture.
1049 /I could do something good with that./
1050
1051 oh that's what-
1052
1053
1054 yeah
1055 yeah.
1056 So they're seeing it like you know this angle and this
angle make
1057 ninety
1058
1059 Yeah we could actually have them put all the angles
1060 and cut em out and move 'em around and see that.
1061 that'd be kinda cool.
1062 you're like whatever (laughing)
1063
1064
1065 (laughs)
1066
1067
1068 (laughs) I know.
1069
1070 so cute.
1071 Cool.
1072 I feel happy about this.
1073 yay!
1074 there's actually also,
1075 I was looking at (.
1076 What was I just looking at and they had a thing on
measuring angles?
1077 Oh, in one of these common core workbooks that I
bought,
1078 uh huh
1079 there was an actual whole lesson on how to use the
protractor,
1080 oh cool
1081 and like actually create /an angle from it./
1082

8 ok
 9 do you need-
 10 and what grade are we?
 11 do you need me to wait until you're-
 12 no, it's recording
 13 it's good
 14 you're awesome.
 15 okay, let me just grab my food.
 16 we're seventh grade?
 17 this is seventh, yeah
 18 ok
 19 (getting food)
 20 okay
 21 don't burn yourself
 22 I know.
 23 I don't like microwaving plastic either.
 24 oh my gosh, that looks so good
 25 (some talk about ramen vs Indian food with a kid)
 26 okay,
 27 so
 28 we did
 29 uh huh
 30 this
 31 rectangular prism
 32 uh huh
 33 and what they did is they measured
 34 with the rulers
 35 all the sides
 36 okay
 37 and then found the areas of each part
 38 okay
 39 and then check point with their group was when they
 40 found the
 41 total surface area
 42 okay
 43 um
 44 so
 45 they've probably forgotten some things over the
 46 weekend
 47 and they cut it
 48 and folded it
 49 and made it into a prism
 50 and they cut it out
 51 so they saw it.
 52 (something from a student to Heather.
 53 She answers and they talk for a bit about how to do a
 make up test)
 I'm sorry, Mia.
 No worries.

54 No, I'm fine.
55 Don't worry about me.
56 (more with the student)
57 can I have one of these, heather?
58 Can I take it.
59 sorry.
60 No.
61 This is what I expect planning at lunch.
62 I'm totally good with it, it's fine.
63 (laughing) okay.
64 um, alright so.
65 That was like Friday.
66 Uh huh
67 How'd it go?
68 good.
69 good, okay.
70 good.
71 (.) There's definitely- and Kassis and I have talked
72 about this
73 that like
74 there's a hu- big discrepancy that's starting of like
75 kids that like really get it
76 and then kids that are like
77 really struggling
78 With Geometry stuff in particular?
79 mhm
80 With this kind of 3D 2D stuff.
81 mhm
82 uh huh
83 There's kids that are like "boom boom boom boom
84 checkpoint!" you know.
85 yeah yeah right
86 And then other ones that are like
87 struggling a lot more
88 mhm
89 so
90 that's sorta happening.
91 Um
92 I have
93 three other
94 shapes
95 uh huh
96 this one is from CPM, the shell box.
97 mhm okay
98 This one already has all the measurements done
99 though
100 okay
101 but it's more difficult shapes cuz they have trapezoids
102 in there

99 okay
 100 but what I thought I'd wanna work on today
 101 and I kinda thought this may take
 102 a lot of the period
 103 mkay
 104 is the trapezoidal one.
 105 Cuz this is the one that's on the test
 106 mkay
 107 and it's the hardest
 108 because they'd have to-
 109 oh, no they can measure this.
 110 So they're gonna have to measure all the lengths.
 111 And they're gonna have to measure a height on these
 112 too,
 113 which is gonna be harder
 114 mmm
 115 so
 116 So what are you wanting them to learn?
 117 STUDENT: Ms Benito!
 118 uh, surface area of a trapezoidal prism at this point.
 119 what about it?
 120 what do you want them to learn about it?
 121 STUDENT: it says you have to activate the test.
 122 You know what, the window might be closed, Aiken.
 123 STUDENT: so it's too late to finish taking it?
 124 yeah, I think so.
 125 Let me talk to Ms. Anders, but I don't want you to
 126 miss out on your lunch.
 127 don't worry Aiken.
 128 I think there was only a teeny bit you didn't do.
 129 STUDENT: two questions
 130 yeah, you'll be okay
 131 STUDENT: there's just 8 questions, I'm gonna get a
 132 really bad grade if I only answered two, if I only
 133 answered six, and all of them could've been wrong.
 134 okay.
 135 you know what?
 136 Let me talk to Ms Anders and see what I can do.
 137 STUDENT: okay. How do I exit out of this.
 138 just close all these out.
 139 Log out.
 140 You're all good.
 141 Okay, aiken?
 142 STUDENT: ok.
 143 Go on and eat your lunch.
 144 Okay.
 145 So, um-
 146 STUDENT: thanks, Ms Benito
 147 mhm

144 STUDENT: bye
145 oh, thank you.
146 bye.
147 (4s) I mean honestly the goal is to get them to figure
out how to do a trapezoidal prism. That's the goal.
148 how to do what?
149 oh, how to find the surface area.
150 how to find it.
151 So do you want them-
152 So do you want them to find it successfully?
153 Or do you want them to generalize a process?
154 Or do you want them-
155 mmm
156 like what's the-
157 what's the thing we want them walking out with?
158 (.) mmm
159 (4s) I'd like them to be able to- like completely
calculate it.
160 I mean generalizing is great too.
161 mhm
162 So I definitely want them to be able to generalize too.
163 And what would they be generalizing?
164 So would they be generalizing ideas about surface
area versus
165 or like what surface area is or something?
166 Do you want them
167 Cuz it seems to me like one- for- uh
168 I haven't seen this development of what's happening
with it um
169 but one of the reasons for spending time cutting these
out and folding 'em up
170 and measuring area?
171 mhm
172 is to get this really visceral sense of the difference
between
173 volume and solidness
174 mhm
175 and
176 surface area as an idea, right?
177 ri::ght
178 um, the surface area
179 when we're doing surface area we're caring about this
flat thing that's not flat
180 cuz we're folding it up,
181 right
182 but it's just the flat parts we care about right.
183 Um
184 Do you feel like that is super clear for them already
185 or they're still-

186 mm mm

187 no

188 No:::

189 I mean we literally just introduced this Friday.

190 yeah.

191 So do you feel like in this activity they grappled with
that at all

192 or you can't tell or-

193 uh uh.

194 They didn't do vol-

195 Like they didn't figure out the volume of this.

196 so what are they- okay so-

197 okay, um

198 and I totally see what you're getting at

199 uh huh

200 and I think it is a huge concept

201 yeah yeah

202 what is the difference.

203 I don't know if my kids are there yet.

204 yeah, so it doesn't need to necessarily be difference
yet.

205 So I'm wondering about what it is we want them to
understand they're doing

206 when they're doing all these calculations?

207 Like what is surface area about.

208 Do you know what I mean?

209 mhm

210 U::m (.)

211 Cuz there's this flat not flat issue with it
that's so hard for kids.

212 It's like they're used to seeing area as flat
which it is

213

214

215 mhm

216 except that when it folds up it's not flat
any more, but you still have this flat measure
of a not flat thing.

217

218

219 ri::ght

220 you know what I mean?

221 So-

222 I'm just wondering whether there are opportunities
here for them to be like saying or

223 yeah

224 like what is the thing we're mea-

225 what is surface area? what is the

226 as we take all these calculations

227 and we find all these areas

228 you know that idea of, oh if we were to build
it's the actual amount of paper that it takes to create
this shape.

229

230 (whispers) minus the flaps but whatever
231 Yeah and we talked about that on Friday.
232 uh huh
233 that like,
234 we talked about,
235 Like I had a full shape,
236 uh huh
237 and then we talked about like,
238 like gift wrapping the shape
239 uh huh uh huh
240 and what that would take to gift wrap it.
241 uh huh
242 I mean I don't know,
243 like, do I think that they
244 like have all that take away?
245 No, but.
246 And are we-
247 so I guess my question is not
248 'do we feel like they already have that'- sorry
249 kicking you
250 it's okay
251 but is that a thing that we're listening for,
252 or that they're going to have opportunities to be
253 articulating or thinking about today,
254 or, something else.
254 mmm
255 you know what I mean?
256 (3S) I would love to have that.
257 I don't feel like I have that set up, though.
258 Yet, uh huh
259 okay
260 uh huh
261 (student comes in)
262 you only have one period of seventh grade?
263 yeah
264 that's right, that's your only period?
265 like what,
266 do you have any suggestions on like,
267 making this-
268 (to student) Hi.
269 Meatier, in that way?
270 (4s) Like I'm not really sure what,
271 I totally,
272 yeah yeah
273 I don't either know.
274 This is not meaty,
275 as far as like vocabulary wise
276 mhm
277 or getting at like,

278 really giant concepts.
279 mhm mhm
280 (4s) well, is the question like,
281 if we frame the whole lesson around the question-
282 this is experimenting, I don't know if this works at all
but
283 yeah yeah yeah
284 about what IS surface area?
285 so you can-
286 Is there a way to frame it like,
287 'today you're gonna be calculating the surface area.
288 it's gonna take a while,
289 but I want you to stay in touch with this question,
290 what IS surface area?
291 what is this thing you're figuring out.
292 mhm
293 and by the end of class,
294 I wanna make sure that everyone in your team
295 can (.)
296 explain what surface area means.
297 as well as how you calculate it or something.'
298 okay
299 and I don't know that that's
300 I don't know that the task is giving them a ton of
opportunities /to get/ in touch with that
301 /I know/
302 except that they're making it,
303 so they should have access to,
304 'oh it's the amount of paper.'
305 right?
306 mhm
307 they do have some access to it by doing it.
308 mhm
309 But it might just be a good-
310 rather than um,
311 like an assessment for them,
312 cuz we don't know if we can expect it,
313 mhm
314 give this.
315 It might be good information for us,
316 if you're asking that in the lesson,
317 for us to understand,
318 is there access for that in this or not?
319 you know, maybe they're tot-
320 maybe this-
321 maybe given the question?
322 this activity totally WILL support them,
323 to make good sense of that because it has this visceral
paper thing,

324 /you'r like/
 325 /maybe/
 326 it's the amount of paper in our shape.
 327 mhm
 328 that's what we figured out.
 329 and maybe not.
 330 but that might be good for,
 331 for you, to inform you going forward,
 332 to know what you have to deal with.
 333 mhm
 334 to get at the big ideas, you know what I mean?
 335 I know and I also like to add in like,
 336 what the volume is as well.
 337 I just, like with this particular shape,
 338 yeah this one maybe.
 339 this one at this point
 340 yeah
 341 is like ()
 342 I'm just feeling like,
 343 and we didn't really get to volume on Friday,
 344 and we already buildt this one,
 345 yeah
 346 and measured it
 347 so now I'm feeling like (.)
 348 But I think maybe that cereal box problem
 349 mhm
 350 I think is really gonna tie the two together
 351 uh huh uh huh
 352 because it's a little bit easier shape.
 353 yeah.
 354 this one's so hard.
 355 yeah.
 356 I mean they technically need to know surface area and
 volume of this.
 357 /by the end of this unit./
 358 /What do they need to know/ about it?
 359 Like what are they expected to do on the milestone?
 360 with it?
 361 How to find it on a shape like this.
 362 But if they knew (.)
 363 so if they totally got, by then
 364 mhm
 365 that surface area is the sum of the areas?
 366 mhm
 367 of all the sides
 368 mhm
 369 could they just do it?
 370 Some kids.

371 So what they would really need is they have to be able
to find the area of a trapezoid.

372 Right?

373 The rest of them are easy

374 yeah

375 and then they have to know that they need all these
areas /to make surface area./

376 /I don't know if they're easy/ for everybody in my
class.

377 The rectangles.

378 uh huh.

379 yeah.

380 They're struggling.

381 Yeah. yeah.

382 Um,

383 You'll see the real difference.

384 mhm

385 I have a lot of IEP kids in that class so like,
386 and also Ms. Perez isn't here either today,
387 which is a bummer cuz she's awesome,
388 and she works with them, so,
389 Um.

390 So maybe the generalization we want to support
instead

391 I'm wondering if the big idea here,
392 is around,
393 like if surface area is like all the paper it takes,
394 which you've already said,
395 It doesn't mean they are all really,
396 getting that yet? but if you did the gift wrap thing,
397 then there's been some exposure to that

398 mhm

399 for some of the kids, right?

400 So if that's what surface area is,
401 then what's a strategy for finding surface area that
would work for any 3D (.)

402 right

403 Object.

404 What do you call a 3D object made up of faces?

405 Are they all prisms?

406 No, yeah?

407 Or this is a prism anyway.

408 Is it?

409 Yeah

410 yeah

411 Okay.

412 Um,

413 So what's a strategy that could work for any prism?

414 So while they're doing it here,

415 mhm
416 they stay in touch with,
417 'oh we have to find the area of this,
418 find the area of this,
419 find the area of this,
420 find the area of each of these,
421 and then add 'em all together.
422 mhm
423 Cuz that's the generalized strategy, right?
424 mhm
425 and if they have that, then they can,
426 theoretically take it to any prism as long as they can
427 deal with the shapes of the sides,
428 of the faces
428 mhm
429 (whispers) I can't get the vocabulary right.
430 It's okay, I know. (laughs)
431 (laughs) I don't remember.
432 Okay
433 Yeah, so that might feel a little more authentically
434 connected to this task,
435 cuz this task-
436 might be something like,
436 (writing) How can we find, um
437 the surface area
438 of any prism.
439 So if at the end of class they get to take this up for just
440 five minutes or something
440 okay
441 then we can see-
442 are they getting,
443 oh you just find all the areas and put 'em together.
444 okay.
445 Or is that feeling still really far away.
446 mm mm
447 I think that's a good question.
448 (.) cuz this is sorta nice, right?
449 that they don't have to like
450 learn the big idea separately for every prism, right?
451 mhm
452 They're all the same in some ways,
453 they just have different-
454 the faces are different shapes, right?
455 right
456 but there's a thing that-
457 it's just one idea.
458 surface area is one idea, right?
459 (4s) I know it almost makes me want to do the cereal
box thing,

460 cuz then we could tie in surface area and volume, but
 461 I think I'm gonna do that-
 462 (.) /Aya just-/
 463 /I'm feeling torn/ cuz-
 464 Aya just did it.
 465 mhm
 466 and we-
 467 she and I planned the lesson together this weekend,
 468 and it totally-
 469 we learned big lessons about our lesson planning.
 470 It went very different than she expected.
 471 mhm
 472 And it didn't do yet
 473 what we wanted it to do.
 474 So it's gonna take some thinking.
 475 Well, I don't know if she is,
 476 the blocks, the lego blocks
 477 yeah
 478 But every time I've done the cereal box lesson
 479 yeah yeah
 480 I use the blocks?
 481 yeah
 482 And then they're able to count.
 483 Yeah, so she wanted to and then what ended up
 484 happening was it was just taking them so much time
 485 to build it?
 486 that like,
 487 Cuz they were playing around a lot?
 488 No, it was just they were using those little tiny cubes,
 489 and there are sixty four of them in this shape.
 490 Yeah, so we just didn't think it through/ cuz when we
 491 planned it/
 492 /what shape did you use?/ It's the CPM thing
 493 It is. It's 8 times 4 times 2.
 494 I just took-
 495 there's like a big thing and I just dumped a ton
 496 I'm like really?
 497 yeah
 498 It didn't take my kids that long (inaudible)
 499 Yeah so I think that um
 500 so then she did some shifting
 501 to the next time she taught it she shifted the lesson a
 502 little bit.
 okay
 um, because it ended up there just wasn't gonna be
 any time to talk about the real math
 yeah
 cuz they were just sitting there building forever.

503 also, they were using those little ones that are really
hard to build with.

504 Oh, I use the big ones, that are like this big.

505 yeah, she didn't have enough of 'em.

506 which is why she wasn't using those.

507 there should be tons of 'em

508 She has a big bin, but she said she didn't think it was
enough for sixty four for each of her groups.

509 Anyway, so

510 okay yeah

511 it had some challenges

512 regardless

513 so we'll learn from it.

514 Um (.)

515 Cuz I've done that lesson.

516 yeah yeah

517 I thought it was a really great lesson.

518 yeah.

519 But I-

520 yeah.

521 I think there's some really good-

522 and you can help her with um,

523 I think it's a really good way of introducing volume
versus surface area.

524 Yeah

525 Cuz they can just count

526 yeah

527 the pieces.

528 rather than looking at /flat surfaces/
529 /() formulas/
530 yeah
531 or
532 yeah
533 yeah

534 But and it's a rectangular prism, which is a little bit ea-
535 Here's where I'm torn.
536 Do I really want to teach them this?
537 Not really.

538 mhm

539 I don't.

540 mhm

541 But, this is on like our unit test.
542 and it's on the CLA.

543 How are they with finding area of a trapezoid?
544 Some are amazing.
545 yeah
546 and a lot of them are totally lost.
547 It's-
548 There's like a huge divide right now.

549 yeah yeah
550 You'll see it.
551 I mean they're super eager kids.
552 Cuz I feel like if we arm them with a really clear
553 understanding of surface area and what it is,
554 that's gonna be better,
555 than having constructed one
556 one time?
557 yeah
558 and calculated it once.
559 you know what I mean?
560 right
561 Um and then figuring out maybe we put trapezoids a
562 lot on homework,
563 to try to bolster
564 yeah
565 those kids who really need more,
566 I did put them /on homeworks last week/
567 /chance to think (on) trapezoids/ uh huh
568 but um.
569 yeah
570 They're hard.
571 (.) What is this-
572 help me understand the relationship between this and
573 the cereal box problem in the unit.
574 Cuz I haven't read this unit, I don't know it.
575 The cereal box problem /looks at/
576 /Like this comes/ before it?
577 No.
578 This isn't really part of the unit.
579 Oh okay. ok.
580 Kamilah-
581 This is.
582 Okay
583 But Kamilah pulled these out.
584 and had them measure it.
585 cuz she thought it was really-
586 and I kind of liked that.
587 yeah!
588 and we started it on Friday.
589 yeah yeah
590 This one gives you the measurements, but this is
591 really hard-
592 this one you have to find the volume and surface area.
593 It's like cereal box but way harder.
594 yeah
595 Cuz it ends up being like a home.
596 yeah and this comes after cereal box in the sequence?
597 In the unit?

594 I think so.
595 uh huh uh huh
596 But
597 I think it's okay for surface area,
598 but we felt it seemed really hard for volume.
599 yeah yeah yeah.
600 It's pretty tricky.
601 Yeah.
602 I think my advanced kids could do it.
603 yeah
604 and I'd love to push them to do the volume of it.
605 uh huh
606 Um (.)
607 So I guess kinda what I thought about doing is,
608 the advanced kids,
609 if they're pushing through this fast,
610 like they went through this-
611 actually pretty quickly.
612 Like faster than I thought they would.
613 mhm
614 then I thought I could-
615 after they do checkpoint on surface area
616 we could have them do volume.
617 for this.
618 I could have them try it on this too.
619 mhm
620 which is hard.
621 mkay
622 Like this is definitely a really challenging problem.
623 mhm
624 I think it's gonna be for them.
625 I mean they don't have to measure. (.)
626 I think,
627 surface area will be easier,
628 but the volume of this will be really hard.
629 yeah.
630 So you're thinking about doing that today?
631 If my advanced kids are ahead of the game,
632 if they get through this.
633 And if they can convince you they know what surface
634 area means?
635 yeah.
636 (4s) then I'd love to push them onto volume of this
637 and try this one.
638 It's kinda where I was at with it.
639 but I-
639 there are gonna be some kids that are probably gonna
not even get through surface area of this today.

640 Well it's a lot of calculations, right?
641 yeah
642 It takes a lot.
643 It's like six different shapes,
644 and each shape you have to do calculations,
645 and measurements,
646 and measurements take a while,
647 I know
648 and you have to round off,
649 and you have to- right?
650 (yawning) uh huh.
651 Um, yeah so that could take a while.
652 Okay.
653 So we wanna know,
654 is this what we wanna know?
655 We're listening for this?
656 That, yeah.
657 So can we pose it to them in some way toward the end
658 of class
659 so we can sort of gauge,
660 or listen? (.)
661 Like maybe that's what their group-
662 maybe 10 minutes before the end or something,
663 we stop wherever they are,
664 and
665 we pose this and ask their group to come up with
666 some kind of a summary statement,
667 or answer to this that everyone feels like they can
668 explain
669 and then we can just hear it?
670 hear those conversations,
671 so then we can at least know,
672 are they making sense?
673 and who is making sense?
674 and how are they making sense of-
675 Here's what I'm worried about though /with that/
676 yeah
677 One thing I noticed with this class there's like
678 (3s) If I call on students in front of the class,
679 it's gonna be like,
680 the super high kids that answer it,
681 and then it's like-
682 oh no, let's not do that.
683 Let's give it to them in a group.
684 Say their group is responsible for coming up with-
685 oh, okay.
686 I thought you mean like /as a-/
687 /and then/ we'll do like a shuffly kind of thing,
688 like 'we're gonna come around,

686 we should be able to ask anyone in your group to
explain to us/
687 /okay, I love that./
688 /how you guys are thinking/ about this.
689 yeah?
690 okay
691 yeah
692 that I love.
693 Cuz otherwise, yeah I don't-
694 I don't want to do a group discussion,
695 cuz there's just,
696 they're too divided.
697 yeah
698 with their skill levels.
699 yeah yeah
700 so I just feel like,
701 too many of the high kids will volunteer.
702 yeah yeah () that.
703 and it'll be-
704 Cool, so we'll just kee-
705 we'll keep that in groups,
706 we'll go around together.
707 So then at least we'll be able to debrief around this
question,
708 like how are they,
709 what do we think,
710 about where they are with this question.
711 So maybe,
712 okay so then if that's the case,
713 uh huh
714 then what I would say is,
715 they have to find surface area of this,
716 uh huh
717 which I still need to do it myself so I have the answer
(laughing).
718 and then um,
719 I would put them on this one.
720 (3s) If they finish this
721 /If they finish this/
722 /with more than/ ten minutes to spare
723 yeah
724 before we've shifted to this question.
725 yeah.
726 But,
727 okay
728 if they get through both of these,
729 then I might push some of the high kids on finding
volume
730 or thinking about /volume/

731 /okay/
732 but I would still pose this question.
733 Can we pose this at the beginning of class?
734 Like as a framing question for the whole lesson,
735 this is what you're gonna come back to at the end,
736 so /keep this/ in mind
737 that'll be their task today
738 cool.
739 So their task is to as a team generate some
740 yep
741 ideas about this.
742 (3s) (from farther away) So I don't forget.
743 Yeah.
744 (21s) Cool
745 So I don't forget.
746 Awesome.
747 No no I love it.
748 Cool, so I like that we have a big question to frame it
around.
749 so they can feel like it's not just a bunch of
calculations,
750 it's connected to a big idea.
751 yeah.
752 and then we can, we can-
753 It was feeling a little weak.
754 But I-
755 awesome
756 but I don't think it's been invaluable,
757 like I think it's been good for them to see that,
758 I just-
759 yeah.
760 Okay so 2:25 is ten minutes before the end of class?
761 mkay
762 should we plan to just keep that in our minds as like
763 we'll check in and see if we can stop them then
764 and shift focus to this question.
765 mhm.
766 And then um,
767 they'll talk about it in teams,
768 we'll go around together and listen to them talk about
it,
769 and um
770 maybe do some shuffly kind-
771 are they used to those?
772 Oh yeah.
773 Do they do shuffles?
774 Every day.
775 Oh cool, cool.

776 So then we can do a shuffle and get someone to
explain to us

777 I have them in my backpack.

778 Awesome.

779 I just put-

780 and if you want a set, you can have a set
781 and then we can both do shuffles.

782 They're really good about, like, checkpoints.

783 They /get/ really excited.

784 /they love 'em/.

785 That's awesome.

786 So they'll do checkpoints with you.

787 yay, awesome.

788 I'll just introduce you and

789 Or I might-

790 we might just stick together so we can process
together what-

791 oh okay,

792 then I will just hang onto the cards.

793 okay.

794 the only thing that's a little bit of a problem is that (.)

795 Prez isn't here today so,

796 it's gonna be-

797 they're gonna get a little excited,

798 some of the high kids, like

799 get a little amped.

800 they're like

801 (chuckles) jumping up and down for checkpoints so-

802 okay

803 just gotta like-

804 so() it's not even on the boards until this last section,
right?

805 right

806 so they won't get excited through the whole class.

807 So they're not doing checkpoint-

808 checkpoint is only on finding surface area.

809 But this is just a go around of the group.

810 oh I was thinking this would be a shuffle.

811 So they would randomly be called on to explain their
group's thinking about this.

812 okay

813 so does that sound good?

814 I usually do random calling for everything

815 okay

816 so I'm wondering do I want to random call and do
checkpoints

817 of finding the actual surface area though as well?

818 What do they say to you in a checkpoint for that?

819 for /finding the surface area./

19 Yeah
20 As the height.
21 Although, there was only one group that I saw not
figure that out
22 Everyone else, like I heard it come up in other
groups?
23 But other groups landed somehow, and I didn't
always see how they did it.
24 But landed on the height as the height.
25 Table One
26 Uh huh
27 Joa Lin's group
28 Uh huh
29 They had it only because she's on that table
30 Uh huh
31 And I know she knows that stuff
32 Uh huh, huh huh
33 So she told them. I think in a lot of groups it might
have been one person knew and just told them.
34 Yeah
35 Yeah
36 Umm/
37 /which is fine,
38 yeah
39 but it's, you know
40 Yeah
41 Okay, so misconceptions we're seeing, sooo, um
42 You were saying the/
43 /what is the height of a trapezoid
44 mhmm
45 Um, the other-
46 which might be a generalizable question to what is the
height of anything?
47 Mhmm
48 Right, because height in geometry is always
perpendicular to base
49 Mhm
50 In anything, like in a triangle, in /a trapezoid/
51 /right/
52 /in a prism, in a
53 If we're talking 2D or 3D, or anything, right?
54 Yeah
55 So that might be worth taking up in a general way,
right?
56 Yeah
57 Mhm.
58 Okay, cool.
59 Um, what else
60 Um,

108 Kind of
109 Kind of, yeahhhhh
110 She was like taking the perimeter of like every shape
111 and just adding it together
112 Maybe
113 Or maybe it was a case of,
114 “When I don’t know what to do with numbers,
115 I just add em all up”
116 Mmm
117 It might have been that?
118 Like I don’t know what her thinking was behind it,
119 cause we didn’t ask her
120 Um, but that was before Jovan explained the- her
121 rectangle strategy?
122 And wh- so I think Jovan explaining that strategy
123 shifted how they were thinking,
124 Mmm
125 Or maybe how Angel was thinking about surface area.
126 Mhmm
127 But I didn’t yet get where they walked out with
128 Like, what did they walk out thinking surface area
129 was?
130 Right.
131 Um
132 Some groups I got a sense of it,
133 and some groups I didn’t quite yet get a sense of it
134 Angel at this table
135 Yeah
136 Wasn’t there on Friday,
137 so I know he was totally clueless
138 Yeah, yeah, yeah.
139 And the person sitting across from him, uh
140 Diane
141 Diane didn’t even, like get
142 that they were supposed to take up this question
143 Like, when you guys were cleaning up I saw blank
144 papers, and I was like,
145 “(gasps) Did you guys get a chance to talk about
146 that?”
147 and she was like, “whaaa, talk about whaaaa?”
148 They-we, just ta- I- they told me when I walked over
149 there,
150 but they didn’t write it down apparently
151 Well maybe they, she just didn’t know what I was
152 asking then, okay
153 Ummm
154 Interesting,
155 okay

150 Um
151 What else are you thinking?
152 (.) Hmm, yeah (.)
153 There's an interesting question coming up for me
154 of what does it mean to do group work
155 With work that is not group-
156 Like, measuring and calculating just
157 isn't something you can share, right it's
158 mhm
159 I mean, you can get it, and tell someone what you got,
and check in
160 mhm
161 right
162 Um
163 So I wonder about setting up, or wh,
164 what they have yet figured out
165 is their relationship to each other,
166 or responsibility to each other
167 hm
168 Cause definitely some, for sure,
169 like they were willing to talk to each other about it,
170 there was no resistance, to push this in the middle,
171 when you ask them to compare... right?
172 Mhm
173 No resistance at all,
174 so clearly you've done a good job setting up norms
that like
175 we're not just worried about ourselves here.
176 mhm
177 Right, so they're getting that.
178 But groupwork is always harder to think about with
this kind of (5s)
179 with, like, when, when it's not clear to me, well what
would I do in a group around that?
180 Or like, what would, what is there, what's available to
be talked about
181 Mhmm
182 And some math is just like that!
183 And we do math like that!
184 Like, we have to, /right?/
185 /Right/
186 It's tricky with this stuff because it's like
187 Small, /and/
188 /yeah/
189 (sighs) I can't put it in a task card, cause they're
building, like
190 Oh yeah, no no, and I think that there's like
191 I mean I think that there's a really nice opportunities
in content like this for-

192 and I think that we see evidence of it for kids to come
together

193 we got a great opportunity in that group

194 Yeah

195 right, they thought they needed you

196 Oh

197 to see if their measurements were correct

198 Yeah

199 And I was like, "Did you not just check with everyone
in you-

200 (laughs)

201 did you guys all get the same thing,

202 okay so why do you need her?" (laughs)

203 You know what I mean?

204 Yeah, like they so want to be right

205 So that's a role they can play for each other, right,

206 mhm

207 which in content like this is available, cause it's just
like a checking role

208 Mhmm

209 It's like, "oh yeah, 10.2, 10.2, 10.2, 10.2"

210 Mhmm

211 We got it, we know, you know.

212 We don't need anything beyond that.

213 Um

214 Cool

215 I also-and I, I don't know,

216 I've talked to Kamilah a lot about this, but I definitely-

217 there comes a point in a lot of these lessons

218 where like there's just this huge divide/
/yeah/

219 /of like, the kids that totally understand it

220 and the kids that are like completely lost

221 Yeah

222 You know what I mean?

223 Yeah

224 And it becomes tricky because (4s)

225 Like, I would love to incorporate volume too,

226 but I don't know like

227 Yeah

228 I don't know

229 What is it that- okay, so let's get,

230 let's see if we can get some traction on that question a
little bit by getting, um

231 by thinking about this lesson in a specific way, so we
can

232 get into the questions.

233 okay

234

235 So what is it that some kids understand that others
don't?

236 Like if you think about, what is here name, the one
over there?

237 Joalin

238 Joalin.

239 What is it that she understands?

240 Do you think

241 Well, she's just so advanced.

242 yeah

243 I mean, she's- her, like, understanding of mathematics
is just like,
244 beyond a seventh grade level
245 so any group that she's in,
246 she tends to dominate

247 Yeah

248 And,

249 um,

250 it's hard,
251 like it's hard for her to pull back?

252 Yeah

253 And I think too it's hard for me to always challenge
her because
254 she has such great knowledge already.

255 So what (if) in this task,
256 what does she understand, do you think?

257 Oh, I think she completely understands surface area

258 Like what about it?

259 I mean she knows how to calculate it

260 Mhm, that was clear, yeah.

261 She knows how to calculate it

262 /she can independently do all this work,
263 and she was trying to

264 Yeah

265 You know?

266 Yeah (.)

267 She totally understood the height of the trapezoid

268 uh huh, uh huh

269 Like she'd already drawn it in

270 uh huh

271 and like, um

272 How is she with generalizing?

273 Like, could she answer that question?

274 Yeah

275 Okay

276 I didn't get to go over there,
277 but I don't like to ask her all the time, because

278 Yeah

279 it's like

280 then nobobdy else/
 281 /yeah/
 282 /at the table really
 283 yeah
 284 And I've put her with this girl Mandy that sits right
 here,
 285 cause Mandy's also really
 286 Ooh, that worried me, yeah
 287 When I saw Mandy over there talking to her for a
 minute and I was like (gasps)
 288 I've put them on the same table/
 289 /yeah/
 290 /before, because both of them/
 291 /yeah/
 292 /are the same caliber of like
 293 yeah
 294 what they're understanding of math is
 295 yeah
 296 they're both really really strong.
 297 So it's hard.
 298 Like, when we did
 299 Circumference of a circle, they like
 300 When we did the discovery of it, they completely
 knew how to find the circumference without-
 301 and like, they didn't want to DO the discovery
 302 Yeah, yeah, yeah
 303 Because they were like, "Oh, we already know."
 304 So here's a question- and I don't know your students
 at all, so I need you to uh, uh
 305 With some students, with a lot of,
 306 like who are like very advanced,
 307 like they've learned a lot of content
 308 mhm
 309 prior to the course somehow?
 310 mhm
 311 Um (4s)
 312 I guess, what am I thinking-
 313 I'm thinking about the difference between skill and
 understanding.
 314 Yeah
 315 And sometimes, for some students,
 316 they have a lot of like procedural knowledge, like they
 can
 317 mhm
 318 they know what the height is,
 319 they know how to measure it, t
 320 hey know how to calculate,
 321 they could do it all day long, t
 322 hey want to do it all day long,

323 they wanna do like/
324 /yeah/
325 /fifty iterations of it, cause they feel really good at it,
326 you know what I mean, they want to do it really fast.
327 Mhm
328 And sometimes
329 There's room for those kinds of skills to grow in terms
330 of
331 their connectedness, like
332 how much they see connections between what they're
333 doing and big ideas?
334 Right.
335 And sometimes- and not always- and it's sort of hard
336 to generate these situations,
337 but sometimes other students at their tables
338 who are less good so far
339 haven't yet built the calculation skill?
340 Can articulate reasons and connections.
341 Yeah.
342 But I don't think that's the case with those two.
343 I mean they have a really good connection too.
344 Uh huh.
345 I don't know. But I mean/
346 /uh huh/
347 /I'm sure there's something we can stump them on
348 Well and also different content will feel different for-
349 you know, like
350 maybe/
351 right, I kinda feel like this task,
352 even that big question
353 yeah
354 is like,
355 it's still procedural
356 yeah.
357 Like, I don't know if there's like a huge big picture
358 here,
359 yeah
360 other than can you find surface area.
361 Can you understand that it's made up of all these areas
362 areas
363 that you're adding up
364 It's a bunch of areas. Yeah.
365 So I don't know like how, like, deep, it is?
366 Totally
367 But/
368 /which is gonna- so,
369 content like that is gonna carry certain challenges?
370 Yeah

366 Right?
367 That we sort of just either-
368 you know, that we then try to address with like
369 Norms, with, you know-
370 when the content isn't asking for more equitable
participation

371 Mhm
372 It's a lot harder to get it.
373 mhm
374 And then we have to like,
375 go to all our other strategies, you know, that aren't-
376 that don't- that don't come with the content. Right?
377 So that's a challenging thing about- I've always
378 I've never taught geometry- is that true?
379 I taught middle school, so I must have
380 (laughs)
381 But I don't remember teaching geometry stuff.
382 You probably taught components of it within the
curriculum, just/
383 /I'm sure I did, I just-
384 it was a long time ago, and I'm old.
385 It falls out the other side of my head.
386 But um
387 if you taught middle school math, you've definitely
probably taught like,
388 pythagorean theorem, and like
389 I'm sure I did, yeah
390 But my- so I'm not having-
391 I'm not having memory resources
392 (laughs)
393 for thinking about how, how we um, (3s)
394 stuff that is so often related to formulas
395 /I know/
396 /and like remembering and using formulas,
397 like how do we create sense-making opportunities for
kids,
398 and I find that question really hard.
399 Um
400 yeah
401 and important, and hard,
402 um, around geometry.
403 And then I think- and some days we do, and some
days we don't,
404 or some things are just like
405 do it, practice, calculate it,
406 and maybe we need kids to have that kind of practice
407 Yeah
408 Yeah, um-
409 cause they're so cute, they were so nice to me too,

410 they were so like willing to include me
 411 They're like my best class of the day,
 412 they're so sweet
 413 They
 414 and they were actually kinda rambunctious today
 415 yeah
 416 they're normally like
 417 /they were a little- they had some energy for sure
 418 Yeah.
 419 And normally like they're very, very well behaved.
 420 They were definitely a bit- but they were like good
 421 natured.
 422 Yeah, I wasn't interpreting the energy as poorly-
 423 behaved at all,
 424 yeah
 425 just like having a good time, you know
 426 I'm glad you said to Christian, "slow down"
 427 cause Christian's also
 428 him, Joalin, and Mandy
 429 yeah
 430 are like,
 431 they'll just (makes whirring sound)
 432 Yeah
 433 Fly through
 434 yeah
 435 like they'll have a whole understanding of things, like
 436 yeah
 437 especially Christian,
 438 and he'll go so fast
 439 yeah
 440 but he can't explain it to anybody.
 441 yeah
 442 Which is like, that's where I, I'm glad you told him to
 443 slow down
 444 Yeah.
 445 Cause he tends to dominate,
 446 and he'll talk really fast
 447 yeah
 448 but doesn't really know what he's talking about.
 449 Yeah
 450 He knows in his head, but that's about it.
 451 So, what did you think of the interactions that we had
 452 with groups-
 453 so I took some licenses, I hope you're okay with that
 (laughs)
 454 Some what?
 455 Hanging out with you
 456 Um, in our interactions with groups?
 457 Uh huh

454 Um, and I wonder um,
 455 Like with this group?
 456 Like with that group and then with this group
 457 Yeah
 458 Yeah,
 459 I wonder what your thoughts are about what we did
 there, and
 460 Um, I thought it was really good,
 461 I think Mandy can dominate
 462 yeah
 463 And I know Juiliana
 464 yeah
 465 the girl over here's really quiet
 466 yeah
 467 as well as Vannessa and Marita
 468 Yeah
 469 Um, and yet they have a lot to contribute
 470 yeah
 471 but they get overshadowed at times
 472
 473 My sense with this girl over here- what was her name?
 474 /Juliana/
 475 /Juiliana/
 476 My sense with her is that- and I don't
 477 Juiliana's IEP as well.
 478 My sense was that she has a lot to contribute,
 she doesn't think she does?
 479 Yeah
 480 And I think she was surprised that I thought she did.
 481 Right?
 482 yeah
 483 And I thought she did by like
 484 She knew I thought she did because I wanted to hear
 from her,
 485 and then we left, instead of like letting someone else
 talk instead,
 486 "Oh that's fine if you need time, there's no time
 pressure, but like"
 487 "Yeah, you have something to say"
 488 And then when I came back,
 489 she had kept looking to Mandy?
 490 She kept looking at her and not saying anything, and I
 wasn't letting anyone else talk
 491 And then she-
 492 she had an answer
 493 to the question I asked them to talk about,
 494 she could articulate herself
 495 and then- and I asked her a question about

496 some kind of a “why” question or something a little
bit beyond just something that someone could have
just told her

497 yeah, which meant/
498 and she was able to take it up,
499 she totally was.

500 Nice!
501 It was totally fine, but like
502 She-
503 it was clear that she really thought if she sat there long
enough,
504 someone was gonna save her,
505 yeah
506 and that, and that
507 nobody really th- like, really me?
508 Like really I’m the one who’s gonna talk in this
group?

509 yeah
510 So, so I just/
511 /like the low-status
512 Yeah.
513 So I think that- and she totally did! It was great,
514 it was fine.
515 But I could tell there was a little bit of like-
516 what? and like Mandy was like “Excuse me? I don’t
get to- what?”
517 She wasn’t rude about it at all,
518 and I feel like in a lot of classes
519 with less strong culture,
520 mhm
with a teacher having built less trust than you’ve built
with them,
522 mhm
523 they would’ve- she would’ve been like
524 (Smacks table)
525 “Get the hell out- what?
526 How are you gonna tell me not to talk?” You know?
527 But she totally wasn’t.
528 She was like graceful about it.
529 But she was clearly surprised,
530 and like a little bit shocked.
531 Which I found really interesting
532 um, and similarly over here

533 Yeah, I’m really glad you incorporated Vanessa in
534 to the conversation over there

535 Yeah
536 Cause I think she has a lot to offer.
537 Imarita is also a very quiet one/
538 /yeah/

539 /who's really smart
540 yeah
541 But she doesn't always voice/
542 /does she think she is?
543 Um...
544 I don't know.
545 I don't think/
546 /yeah/
547 /I don't think so.
548 Yeah. That was my impression. But I mean, it's my
first meeting of these kids, so/
549 /yeah/
550 /I don't wanna read too much, but my sense was
551 she didn't yet know that she had much/
552 /I don't think she feels super confident
553 yeah
554 and I know she gets into high anxiety.
555 She's also- Imarita's also IEP
556 Uh huh
557 Vanessa isn't, but Vanessa's very painfully shy
558 Uh huh
559 Like really really shy
560 Uh huh
561 So,
562 it's so great that you had her talk.
563 Oh, cool.
564 And her group- it seemed like a really nice group for
it,
565 like um
566 Yeah
567 The girl who wanted to talk, what was her name?
568 Neeka.
569 Neeka was like not at all resistant, like she wanted to
do all the talking
570 yeah
571 she expected to, but she was kind about the
rearrangement
572 yeah
573 she was very sweet about it. Um, which was really
nice.
574 I'm really glad that all the IEP kids are in this class,
575 yeah
576 because they're very
577 like especially with Alexis,
578 yeah
579 Alexis the boy over here?
580 yeah
581 He's like super IEP
582 yeah

583 and they like really help him out,
584 a lot.
585 uh huh
586 Like they never like judge Alexis
587 Aww
588 like, "oh god!
589 uh huh
590 you take so- you can't measure that?"
591 uh huh
592 you know they're not like that this group.
593 uh huh
594 They're very like understanding
595 uh huh
596 of other needs but
597 uh huh
598 but it's good for me to see,
599 the voices that need to be heard.
600 Cuz I know that that
601 and normally I pick from a card too.
602 uh huh
603 and this task wasn't super like
604 no
605 card worthy even.
606 yeah no.
607 Which is tough, cuz that's what they're really used to,
608 so like,
609 Well that might mean they need it more.
610 Because there's- because the task itself isn't
supporting conversation,
611 yeah
612 so if you want them to be accountable to each other,
613 yeah
614 if you want it to not be okay
615 for Mandy to just know she's got it,
616 and not attend do whether anyone else has it,
617 then it might mean that all those structures you've
invested time in,
618 are gonna be MORE necessary, right?
619 yeah.
620 Um, yeah I forgot about the cards.
621 We could have done that.
622 I forgot about it too because normally I have
checkpoints set up,
623 But I- but this task wasn't very checkpointy.
624 You know what we could play with!
625 that makes me think that even not at a checkpoint-
626 So there's like the version of the checkpoint called a
shuffle quiz,
627 it doesn't matter what it's called but,

628 the only difference is
629 that a checkpoint is expected,
630 and you're like supposed to be able to explain a
certain kind of thing and then call me over.

631 uh huh
632 the shuffle is just,
633 you don't have to call it a quiz, whatever you want to
call it,
634 but a shuffle quiz is just,
635 any time I want, I can shuffle.
636 anyone I pick should be able to explain to me where
the group is,
637 and what questions you're grappling with.
638 You don't have to be done,

639 mhm
640 you don't have to have conclusions,
641 but you have to be able to explain the group's process,
642 thinking
643 yeah
644 and where you're at.
645 So I wonder for this class whether
646 every single time we go over,
647 even if it's a team question,
648 especially if it's a team question cuz resource
managers might think they just get to ask, right?

649 mhm
650 every time I come over,
651 the speaking is gonna happen by whoever I pull the
card out,
652 right like whether it's a question getting asked,
653 or /I wanna come/ check in,
654 /that's a good idea./ mhm
655 so that they really (.)
656 like /see an on/going
657 /get a voice/
658 yeah an ongoing responsibility to each other.
659 it's not that I'm gonna finish and then teach you,
660 right.
661 But like ongoing,
662 we are doing this at the same time,
663 everyone stays together on the same thing, right?

664 mhm
665 because I think, um,
666 Jao Lin was totally fine with sharing with the group
667 mhm
668 She was totally okay with that.
669 But she was also totally okay with finishing the entire
thing,

670 and then teaching it.
671 right.
672 right?
673 So that might be, that might be a fun, um (.)
674 and it sounds like you're already doing it in a lot of
675 places,
676 so it won't be a stretch for the kids,
677 like they already know it.
678 mhm
679 But if it's like,
680 if the expectation that they get is any time.
681 not just when you've gotten to the end.
682 mhm
683 any time,
684 what we're expecting is that you-
685 that the group's process is a process that everyone
686 knows.
687 I like that and I want to use that even with my 8th
688 graders,
689 mhm
690 because I find like, (.)
691 sometimes the kids are on different places,
692 and then one's like waiting for the other ones to catch
693 up or whatever and like,
694 that's a good time to just like get everybody on board
695 with what's going on and like,
696 mhm
697 hold people accountable. (yawn)
698 (yawning) I think that's awesome.
699 I wanna start doing that.
700 Cuz also I think for one this challenge I was seeing
701 with Jao Lin,
702 which I was totally feeling your pain
703 is it's really hard to tell a kid who wants to do math
704 not to do math.
705 (laughing) I know.
706 Right, it's really hard to say stop and wait.
707 I know
708 But if,
709 If her process had been,
710 'I'm putting this in the middle, let's measure.
I got ten point two, did you guys get ten point two?
I got three point, did you guys get three point four?'
If that had been how that went,
then her entire group would have gotten that part of it
done,
like they would have been there with her,
mhm
(.) so they would have been,

711 more would have happened,
712 like they would have gotten into more math,
713 and she wouldn't have had to wait.
714 mhm
715 She would have gone slower,
716 cuz it's slower to do that,
717 but she wouldn't have had to like do something and
718 then stop and wait,
719 for other people.
720 mhm
721 do you know what I mean?
722 So it can support the, the um (.)
723 and even when you- even when you have the dynamic
724 of somebody teaching other people what they don't
725 yet know,
726 which sometimes happens, especially in content like
727 this,
728 um,
729 at least it's an ongoing,
730 process we are doing together,
731 which is less status problematic than I am totally
732 finished and I have it all figured out and beautiful.
733 right
734 you have nothing /and I'm gonna show you./
735 /Right cuz another really low/ status student
736 is Roxanna, the girl in front of her.
737 She's also IEP.
738 mhm
739 and she really struggles,
740 mhm
741 and I've seen a few moments where people are like
742 frustrated with waiting for her.
743 yeah.
744 (.) Right and so if we were like,
745 'okay you guys, let's measure this one first.'
746 you know if that was just a thing that happened out
747 loud,
748 mhm
749 then they would all sort of get carried along together,
750 mhm
751 doing it (.)
752 yeah.
753 cool.
754 which is why I in general like task cards and not
755 things on everybody's table.
756 yeah
757 cuz then it like,
758 it takes away the whole groupworthy-
759 yeah

797 on, you know, paper
 798 uh huh
 799 and not a net.
 800 uh huh
 801 and told them they have to find surface area.
 802 uh huh
 803 and like work with their team,
 804 uh huh.
 805 So it would be a diagram?
 806 yeah
 807 of a right rectangular prism.
 808 yeah
 809 and their job would be to find the surface area,
 810 of the prism, but it's not gonna be like,
 811 so they're going to have to visualize each of the faces
 812 yeah
 813 diagram, so they would need diagrams right?
 814 on their own paper we would want diagrams,
 815 but they could use,
 816 and calculations
 817 this (.)
 818 you know they could use this as a guide to help them
 819 like,
 820 visualize
 821 mmm
 822 what they're gonna need for this.
 823 uh huh
 824 I don't know, it's just thoughts.
 825 yeah yeah yeah
 826 that came into my head.
 827 because I think the hard thing that comes out of this is
 828 like,
 829 them having to see a 2 D picture of this,
 830 and calculate surface area.
 831 yeah
 832 When it looks like this.
 833 yeah.
 834 on paper.
 835 I don't know.
 836 So we could, we could start the lesson by taking up
 837 the big question that we ended with today, right?
 838 Like that could be the opening cuz they've had-
 839 mhm
 840 most teams have talked about it,
 841 some of them have notes about it.
 Some of them had really good conversations that they
 didn't take any notes about.
 So they may or may not be able to like,
 mhm

842 reach into their brains and0
843 (laughs)
844 recollect them.
845 Um,
846 mhm
847 Because if people realize that okay surface area is the
sum of all the areas of each flat part,
848 mhm
849 whatever they call the flat parts,
850 um,
851 then, when they look at a 2 D diagram,
852 they know they need to orient to what are the flat
parts.
853 Yeah, so maybe what I could do is I could say,
854 one of your checkpoints is to have every piece drawn
on your paper,
855 with the dimensions on it.
856 Or what if it's,
857 what if one of the things they have to do is figure out
a way to draw a diagram that sup- that helps them
calculate surface area.
858 mmmm
859 And so they have to figure that out.
860 and that could be one of the checkpoints.
861 yeah.
862 and then there's different ways,
863 like I could imagine kids doing that by drawing six
separate faces,
864 yeah
865 I could also imagine some kids drawing a net.
866 a net
867 right, but like figure out how you can make a diagram
on your paper that helps you figure out how to-
868 that helps you calculate that surface area.
869 mhm
870 and then there's something to talk about.
871 Right, then we've gone from just calculation,
872 a just calculation task to something we actually have
to talk about.
873 mhm (.)
874 yeah, because I'm curious,
875 Joiban for example,
876 who noticed that this is just one big rectangle,
877 uh huh
878 I'm wondering if she would actually see that this way.
879 o:h
880 uh huh. (.
881 That'd be cool. (3s)

882 That'd be cool, yeah.

883 Cuz I never thought of it that way.

884 yeah

885 Like I never thought about surface area of this shape,

886 is technically the length of these three multiplied.

887 I mean I wouldn't think that looking at a 2D picture.

888 right.

889 But I'm curious if now that /she's seen that/
 890 /and it/ it opens up all these flexible ways that might
 891 be fun.
 892 Like you could do this as,
 893 this is one rectangle that goes all the way around and
 894 covers all four of these faces,
 895 cuz they all have the same- right?
 896 right.
 897 So there's actually only two calculations you need.
 898 you need the rectangle,
 899 right
 900 the big long rectangle,
 901 and the trapezoid, which then gets multiplied by two.

902 Right, cuz this is the same as this.

903 This and this, yeah.

904 These aren't the same though.

905 Yeah they are.

906 They're not the same length.

907 No no, but they're the same,
 908 they're the same width, right?
 909 oh, yeah yeah yeah
 910 so you could think of this as one rectangle of 10 point
 911 3
 912 plus 4 point 8 plus () right

913 O:::H, I see what you're saying.

914 all multiplied by 3 point 4, so this is all one long,
 915 wow, yeah
 916 strip that goes all the way around, right? (3s)
 917 right and so when kids draw that-
 918 I'm so glad you said that,
 919 so if kids are drawing,
 920 trying to figure out a way to draw a 2 dimensional
 921 diagram to help them calculate surface area of a right
 922 rectangular prism
 923 they might draw six faces,
 924 mhm
 925 but they might do something else.
 926 Ooh, what if you had two on there.
 927 What if you had a right rectangular prism and a
 928 trapezoidal prism,
 929 because, (.)
 930 I feel like that thing that Joavan did,

925 Joavan, is that her name?
926 mhm
927 the thing that she did that then led us to see,
928 that there's all these different ways that you could
929 break it up and /have shapes,/
930 /this made me think about/ too cuz they could have
like
931 cut these pieces up and made this into a parallelogram
too.
932 hm (.)
933
934 They, so, but what she did is maybe more of available,
because it's not a right rectangular prism.
935 mhm
936 I wonder.
937 I wonder if the fact that it's a trapezoid makes this
shape,
938 feel special and different than the other ones, right
939 mhm
940 which is why she could see a rectangle here,
941 whereas if these had all been rectangles,
942 she might have just seen 1 2 3 4 5 6 rectangles,
943 mhm
944 you know what I mean?
945 So I wonder if having 2,
946 one of which is a right rectangular prism,
947 and one of which is maybe a triangle prism, or a,
948 something where two of the faces are not rectangles.
949 Um, (4s)
950 might get you diagrams that are different enough from
each other,
951 mhm
952 where people are really seeing these flexibly.
953 mhm
954 That would be super cool cuz then you'd have like,
955 actual real smart stuff to share and for sure,
956 you would have something that Joa Lin had not
thought of.
957 mhm
958 Right, cuz she's gonna,
959 what most kids will do, it's natural,
960 is think of it how you think of it and go from there.
961 mhm
962 and it's really hard to see someone else's,
963 so if she thinks of it as six pieces,
964 and someone else sees it as three pieces,
965 because they see it as (.)
966 one- or four pieces, one two three four,

967 then that's gonna be a thing that she can actually think
 about,
 968 like why would that be,
 969 the same or different,
 970 or more efficient maybe.
 971 Could you think of it as a different number of pieces?
 972 Then there's something there to be investigated or
 thought about.
 973 which is another thought,
 974 we could make the task be find more than one way to
 solve this.
 975 Find more than one way-
 976 Yeah!
 977 So find- and what would that mean?
 978 So find more than one way,
 979 to find surface area.
 980 Like other than just,
 981 adding all the areas together
 982 all the six areas
 983 see if you can figure something else out.
 984 Like what would- so,
 985 so would it be a different way,
 986 to add all six would be one way
 987 and then another way would be to add these three and
 then this one?
 988 yeah maybe.
 989 uh huh
 990 or maybe combining them into other shapes,
 991 like you were saying making these two together
 992 uh huh
 993 into one rectangle
 994 uh huh uh huh
 995 and these two into a parallelogram
 996 uh huh uh huh
 997 or-
 998 uh huh
 999 um
 1000 O:h
 1001 I don't know.
 1002 They're just thoughts.
 1003 No that's super cool.
 1004 and I'm wondering if you can- does Jovan,
 1005 does Jovan need some status in this class? or no.
 1006
 1007 she's super high.
 1008 No she's actually really smart.
 1009 Oh, okay.
 1010 And everyone sees her that way?
 1011 Yeah, okay.

1012 I mean not that like she doesn't-
 1013 doesn't love,
 1014 like sometimes I think she holds herself back too in
 the same way as Joa Lin cuz she's (.)
 1015 but she's a little bit more willing to explain things,
 1016 I think.
 1017 Than Jao Lin.
 1018 Mhm mhm
 1019 But she's super smart.
 1020 Cuz if she were to explain,
 1021 or you were to explain her way,
 1022 of um envisioning this as one rectangle instead of
 three?
 1023 mhm
 1024 that might open up the space so people know what
 you mean
 1025 mhm
 1026 by multiple ways.
 1027 mm
 1028 So then you can be like- okay so how many ways can
 you
 1029 turn this surface area into,
 1030 it's basically you're combining areas, right?
 1031 so how many ways can you combine areas.
 1032 mhm
 1033 to calculate surface area
 1034 yeah
 1035 and is there a most efficient way
 1036 yeah
 1037 or is there a favorite way or, you know.
 1038 that'd be cool.
 1039 the only think I'm worried about- ok here's what I get
 worried about,
 1040 yeah
 1041 I totally love that idea.
 1042 This is what I worry about. (4s)
 1043 They're not really seeing nets that often.
 1044 Like after this?
 1045 What do you mean?
 1046 Like whenever like I see tasks or anything like that of
 finding surface area,
 1047 it's always in the three D
 1048 uh huh uh huh uh huh
 1049 view
 1050 yeah.
 1051 and then I'm like worried am I not getting at what
 they're gonna really need.
 1052 Well but you're gonna give it to them in a 3D view,
 right?

1053 So their job is gonna be to create diagrams from, like
/to interpret that 3D yeah?/
1054 /that's right that's right/
1055 We're gonna do the 3D view in a task card
1056 and they're gonna draw the diagrams.
1057 yeah.
1058 They're not making more nets.
1059 okay
1060 yeah, they're drawing diagrams on their paper that can
help them calculate surface area
1061 which means they might draw nets,
1062 they might.
1063 and they might draw separate shapes,
1064 okay
1065 but they're gonna be considering the 2 dimensional
1066 implications of that three dimensional thing
1067 okay and checkpoint can be
1068 come up with two different ways that you can find the
surface area.
1069 yeah.
1070 mokay
1071 I think so.
1072 I don't know yet how I would interpret-
1073 just with those words I don't know how I would
interpret what that means,
1074 like what would another way be?
1075 you know what I mean?
1076 mhm
1077 Um (.)
1078 Or they have to at least be able to prove to me how to
find surface area using diagrams,
1079 what about two different kinds of diagrams?
1080 that's what I was, Okay yeah,
1081 /that's what ()/
1082 /that might be more clear/ what you mean
1083 two different kinds of diagrams,
1084 uh huh
1085 that will show us,
1086 how to find surface area.
1087 yeah.
1088 and use them to do it right?
1089 so they're using their diagrams to calculate surface
area
1090 and they're doing that with two different kinds of
diagrams,
1091 so they're being pushed to think about, how can we
draw this in more than one way?
1092 so,
1093 some teams will go first to the six faces.

1094 mhm
 1095 right?
 1096 and then what do you mean, a different kind of
 diagram,
 1097 they'd have to think about that.
 1098 Some teams might do-
 1099 Could I give them a hint of,
 1100 like,
 1101 hint if you're struggling could be like,
 1102 I don't know,
 1103 Can you combine shapes to make something?
 1104 Is that too much of a hint? (.)
 1105 U::::m (8s)
 1106 I think maybe what we-
 1107 so, so,
 1108 I'm going back to why we're asking them to do it.
 1109 (laughs)
 1110 right?
 1111 So if we're asking them-
 1112 we don't really care if they can find two ways just to
 calculate two ways.
 1113 yeah
 1114 That's not what we care about.
 1115 So the reason we're asking for two ways I think (.)
 1116 Why are we asking for two ways?
 1117 Well actually I think it might be good for them to see
 that no matter which way you slice it,
 1118 you're still getting the same area.
 1119 uh huh uh huh uh huh
 1120 which might be big for some kids.
 1121 uh huh uh huh uh huh
 1122 thinking about it.
 1123 okay
 1124 But I think the biggest reason why we did it was
 around status
 1125 and trying to incorporate other kids' creative ideas
 other than just the really high kids that are like,
 1126 yeah
 1127 di di di di
 1128 And give them something to talk about, right?
 1129 yeah
 1130 So for that reason I'm feeling like we don't want to
 hint it.
 1131 mkay
 1132 cuz that- cuz then if we give a hint,
 1133 and they do it,
 1134 they no longer get to feel smart about it,
 1135 mhm
 1136 cuz it's a thing that they got told, right?

1137 mhm
 1138 I'm wondering if,
 1139 um I was just thinking about what if they interpret this
 as another kind of a diagram,
 1140 so what if they do one diagram that's a bunch of
 rectangles
 1141 mhm
 1142 each of the faces, and then what if they use this as a
 diagram,
 1143 That'd be fine, right?
 1144 mhm
 1145 As long as they're talking about it.
 1146 then they could say well cuz this helps us see all six
 faces,
 1147 mhm
 1148 so it's still a helpful diagram.
 1149 Yeah, cuz some of them,
 1150 (laughs) they're like really obsessed with the word
 rhombus.
 1151 I don't know why,
 1152 (laughs)
 1153 have you noticed?
 1154 I think some of them might see,
 1155 oh
 1156 and I think they've asked me this,
 1157 like is this really a rectangle, like
 1158 o::h
 1159 like you know,
 1160 oh that's interesting
 1161 cuz it kinda looks like a rhombus /or a parallelogram/
 1162 /it does look like a rhombus, it is a rhombus/ if you're
 thinking of it as a 2D shape right,
 1163 yeah
 1164 I mean if you're thinking of this whole diagram as a
 2D picture. (3s)
 1165 Oh that's interesting, cool.
 1166 Could I put actual three 3 objects on the table
 1167 Ye:::::s, so cool, that'd be so cool
 1168 Like a cube or something, like here in case for
 reference for this one,
 1169 like here's a little shape
 1170 Tha:::t is awesome,
 1171 Yes, thank you
 1172 like how can we draw that net.
 1173 Brilliant.
 1174 how could we figure out /()/
 1175 /or create/ any kind of diagram
 1176 or create any kind of
 1177 yeah (.)

1178 That'd be awesome.
 1179 I think that's super /smart/
 1180 /so sort of/ the next step getting them from like,
 1181 just being given a net,
 1182 to like,
 1183 okay, we need to be able to visualize this.
 1184 yeah.
 1185 And you're gonna give it to them without these
 supporting line, right?
 1186 So you give it to them like this?
 1187 Yeah.
 1188 Like we have all these shapes. (4s)
 1189 yeah.
 1190 We have all these little shapes in a box,
 1191 I could put them on the tables.
 1192 yeah.
 1193 awesome.
 1194 or even just like,
 1195 I feel like with these,
 1196 just putting anything like,
 1197 a shoe box, the box the calculators come in, the- /you
 know like this thing/
 1198 /yeah, that's true/
 1199 I mean anything that approximates a right rectangular
 prism can support them.
 1200 And you know what, this is a trapezoidal prism.
 1201 yeah.
 1202 cuz this is like-
 1203 yeah, exactly. (5s)
 1204 If they have something to pick up and turn around and
 like point to,
 1205 yeah
 1206 you know I think it really does support it.
 1207 yeah
 1208 yeah
 1209 or if you have like little boxes at home, like even little-
 1210 Aya used some little box that she had, um
 1211 a small calendar had come in,
 1212 or a box that playing cards come in, or-
 1213 you know,
 1214 mhm
 1215 just like something that like people can like,
 1216 touch all the faces
 1217 and point to when they're talking
 1218 so there's a way to say "this one"
 1219 (laughing) you know,
 1220 Yeah, I think that'd be awesome.
 1221 Okay.
 1222 That sound good.

1223 Fun
 1224 yay
 1225 cool.
 1226 Anything else you want my help thinking about?
 1227 Or stuff you're worried about with this clas, or
 1228 mmm (4s)
 1229 No,
 1230 I mean,
 1231 (quietly) worried about this class
 1232 Or any cla- Anything.
 1233 I didn't mean to frame it lika a- in that particular way.
 1234 Any,
 1235 No, I think I'm okay.
 1236 Cool
 1237 yeah.
 1238 I like working with this class.
 1239 They're very workable.
 1240 mhm
 1241 They're like the most open class I have with being
 1242 able to like,
 1243 or work with them, like they don't get
 1244 intimidated with challenge.
 1245 uh huh
 1246 this class.
 1247 uh huh
 1248 and I like that.
 1249 Awesome, yeah.
 1250 Like /they don't take it/ as a like
 1251 /it's very special/
 1252 threat,
 1253 uh huh
 1254 huh!
 1255 Which I like.
 1256 Yeah.
 1257 Gosh it just make me think like,
 1258 What have people done to these children before they
 1259 came to us,
 1260 that they're so like-
 1261 I know they're a really /magical class/
 1262 /scared to be/ wrong.
 1263 yeah
 1264 yeah.
 1265 My 8th graders are not this way.
 1266 I don't know.
 1267 And I thought maybe it's because they are 7th grade,
 but like,
 I've talked to Aya and Kamilah and

1268 (laughing) they do not have the same experience in all
their classes

1269 yeah

1270 so like,

1271 I only have one seventh grade to go by this year,

1272 yeah

1273 And they just happen to be a really great class,

1274 yeah

1275 That's super cohesive, but like

1276 I dunno.

1277 They just really bought in to CI.

1278 mhm mhm

1279 Like they really dig it.

1280 Yeah, they seem like they really-

1281 having fun with each other,

1282 yeah

1283 they're enjoying the environment,

1284 they're happy to be here,

1285 you know

1286 mhm

1287 They're very much themselves.

1288 mhm

1289 it's very sweet

1290 We also have a whole lotta like gender things going
on,

1291 yeah

1292 which could have been a disaster and like,

1293 they're really like,

1294 welcoming about all their-

1295 Like Soul, the -

1296 yeah

1297 girl over here,

1298 yeah

1299 Is I think transitioning to being a boy.

1300 okay

1301 Like I think she wants to be a boy.

1302 uh huh

1303 um, which is, cuz that's not her real name.

1304 Her real name is Angelina.

1305

1306 Okay I was looking at the seating chart and I was like,
Is this a new student?

1307 yeah

1308 Okay I see.

1309 And she was actually going to [another local middle
school] and getting picked on,

1310 I think Lynn might have told me about her

1311 Like really bad

1312 She used to walk here every day and just show up at
Adams,
1313 cuz she just liked our school.
1314 Awww, so sweet.
1315 and would like run away from there,
1316 and now she's like one of our students and like
1317 that's so sweet
1318 so sweet, like everybody loves here.
1319 and angel-
1320 and she's clearly very comfortable, right?
1321 yeah
1322 like she's clearly-
1323 she's not in math,
1324 she's like struggl- like she's got a-
1325 she came in here with massive fears about math,
1326 oh my god.
1327 So you've done a lot
1328 Like she's been in tears the first couple weeks,
1329 Cuz she was like so ready to share work at the board,
1330 I know, /she's grown a lot./
1331 /to like let me come over-/
1332 she would let me come over and talk to her,
1333 yeah
1334 so you've done,
1335 you've done really nice work, clearly.
1336 That's awesome.
1337 And Angel,
1338 yeah
1339 is a boy
1340 yeah
1341 but like super flamboyant and like,
1342 uh huh
1343 you know,
1344 shows up with makeup a lot
1345 yeah
1346 and like, I don't know what all's going on there, but
1347 not that it matters,
1348 yeah
1349 but like they're very welcoming
1350 yeah
1351 of like how Angel is,
1352 and his flamboyant self, and like-
1353 yeah
1354 they don't like
1355 diss him for that or anything.
1356 that's so sweet.
1357 yeah.
1358 it's good.
1359 Do you feel like that's school wide too?

1360 Or just really they have that in this group?
1361 I think it's more this group a little bit.
1362 uh huh
1363 But um, yeah I think the culture of the school's pretty
good.
1364 for the most part.
1365 Awesome.
1366 But that gr- this group in particular I think is very-
1367 But I've had other gender things going on and like,
1368 they're pretty good usually.
1369 yeah
1370 is that my phone?
1371 a::::h
1372 what?
1373 I must've left my ringer on. That's so horrible.
1374 Well it didn't ring.
1375 It's probably been on all day.
1376 so, it's not that horrible.
1377 could have been maybe. (laughs)
1378 Anyway,
1379 awesome
1380 Yeah, I guess that's about it.
1381 Well, it's fun to meet them, they're so sweet.
1382 I know, they're great.
1383 I like when you question them (laughs).
1384 Sol, the minute you came in here,
1385 'Ms Benito, who's that woman?'
1386 (laughs) Who's that stranger?
1387 They're so nice to me though, I really like it.
1388 That does not always happen to me when I'm visiting
classes.
1389 I know
1390 No, it does not always happen to me.
1391 Some of my other classes-
1392 and when I intervene with groups or like,
1393 it's not that rare that people are like (.)
1394 I get the cold stare.
1395 (laughs)
1396 from the students, they're like 'you're not my teacher'
1397 'I did not give you permission to talk to me.'
1398 (laughs) And they're really good with like Ms Perez,
1399 Cuz Ms Perez is way into the CI too, so like
1400 uh huh
1401 she carries a set of the cards too.
1402 uh huh uh huh
1403 and we both do checkpoints equally.
1404 uh huh, awesome.

1405 So it's not even like she only works with her IEP kids,
1406 like she's really a huge part of this class, and they yeah
1407 really like
1408 like she's equal to me in this class,
1409 and that's great.
1410 awesome, yeah
1411 Cuz you don't always get that sometimes with the
1412 like,
1413 IEP teachers and like, yeah
1414 yeah yeah
1415 They really like buy into that.
1416 yeah.
1417 yeah
1418 yeah
1419 So.
1420 How's your second period going?
1421 Better! Actually
1422 Oh good
1423 It's finally getting better.
1424 Today they were really good.
1425 Um, I'm getting more of a schedule with 'em on like
1426 what we do each day,
1427 we started doing a study hall,
1428 which they were like totally against in the beginning,
1429 and I'm like, okay
1430 They're like-
1431 Yeah they were like, 'why would we do study hall? It's like the cushiest school thing ever, like (laugh)
1432 what is that?'
1433 (laughs)
1434 and I'm like,
1435 that's so cute,
1436 it's like a place where you can do your homework.
1437 and they were like,
1438 'well why would we need to do that?'
1439 I'm like, 'how many of you are doing your
homework?'
1440 and they're like, 'oh, none of us.'
1441 (laughs)
1442 No but it's great and they're actually
1443 like starting I think to feel a sense of um,
1444 like excitement.
1445 Cuz they'll like get a homework assignment done.
1446 Like some of 'em are really actually doing- some of
them are not,

1447 but some of them are actually doing work and being
accountable,
1448 and they're like you know,
1449 excited cuz they're getting a good grade.
1450 mhm
1451 and it's the beginning of the semester,
1452 and they're used to like having Fs
1453 yeah
1454 or not having anything done and just like owning that
1455 yeah
1456 and just being whatever.
1457 yeah
1458 I mean I'm being kinda hard on them,
1459 I'm being super hard on them, but (.)
1460 It's cuz if I let go even like a second with those kids
1461 yeah
1462 they'll just like take full advantage.
1463 yeah
1464 like I called every single one of their parents last week
one day.
1465 mhm
1466 cuz a kid like yelled out super bad swear words across
the room,
1467 mhm
1468 so I- in front of the whole class,
1469 mhm
1470 and so- and they all just started laughing,
1471 like super loud
1472 mhm
1473 and I was like, that's- all of you are in trouble,
1474 that's no okay.
1475 mhm
1476 for the person that yelled it,
1477 or for you to all react that way.
1478 It's like they're kinda sick of me being hard on them,
1479 but they're finally getting better, I think.
1480 mhm
1481 Like I had- one of the kids even came up to me and
was like
1482 'you gotta be harder on them Ms Benito cuz they're
not listening'
1483 and I'm like, 'okay'
1484 And that's when I like-
1485 and I did all the phone calls right here in the room,
1486 mhm
1487 and had 'em all come over,
1488 and was like, 'okay.'
1489 'if this is what we have to do every day, that's what
we'll do.'

1490 mhm
1491 But they're,
1492 they were good today.
1493 mhm
1494 there were moments (laughs).
1495 Kamilah was saying that you guys were hoping to,
1496 do all heterogeneous classes next year,
1497 and not do a support class,
1498 yeah!
1499 and try to figure out how to get the principal on board
with that.
1500 we talked about that some, and we um-
1501 Diane James was there with us,
1502 um, just happened to be in the room,
1503 so I pulled her over and had her,
1504 talk a little bit with Kamilah about-
1505 I was trying to see if she could be a resource for us
too,
1506 for interacting with-
1507 Cuz I know that you principal- or-
1508 I don't know her but I hear and believe that your
principals's totally caring a lot about the kids and like
coming from a really good place.
1509 and maybe just doesn't yet know that,
1510 groupwork in heterogeneous classes can actually
support,
1511 students to learn who are struggling.
1512 Yeah, I feel like my sixth period
1513 uh huh
1514 this class that you just saw
1515 uh huh
1516 is a perfect example,
1517 uh huh
1518 like we have a huge amount of IEP kids,
1519 yeah
1520 like they're pretty much all in here.
1521 yeah.
1522 and this is a great example of like,
1523 even though we have all different levels,
1524 yeah
1525 like they're all, getting access
1526 yeah
1527 you know in some way
1528 yeah
1529 it's not like,
1530 I mean there is some status stuff
1531 yeah yeah
1532 but I mean, I feel like that's gonna happen in any
class,

1533 yeah
 1534 and,
 1535 and is it preventing people from learning,
 1536 or, I'm sure sometimes it's a barrier to learning
 1537 and sometimes not, right?
 1538 I mean that's true in any group, any group of people.
 1539 the grown ups I do math with (laughs)
 1540 (yawning) So I don't think it's that they can't learn
 1541 if they're not in a support class.
 1542 No, it's definitely not like,
 1543 forget it, they're out of the loop and just sitting there,
 1544 The only thing I see the support clas being good for at
 this point,
 1545 uh huh
 1546 is like, them getting their homework done.
 1547 uh huh
 1548 Cuz it's like, okay,
 1549 they're getting a chance to like,
 1550 do work they will never do if we're not here like
 showing them how to do it,
 1551 yeah
 1552 but I don't know, like how worthy that is or not.
 1553 uh huh
 1554 Cuz then they're gonna go to high school and they're
 not gonna have that support anyway, so
 1555 yeah
 1556 I mean, I don't know. (.)
 1557 It's gonna be a rude awakening for some of 'em.
 1558 yeah
 1559 Cuz they're not gonna have that.
 1560 yeah
 1561 (.)yeah
 1562 But in, you know, yeah.
 1563 you guys with your like (.)
 1564 kids are gonna get opportunities to figure out for
 themselves,
 1565 and to show other kids that they are smart.
 1566 even kids who:: have failed or are failing,
 1567 even kids who have IEPs.
 1568 even kids, you know,
 1569 fill in that sentence
 1570 right
 1571 with anything, right?
 1572 that's the joy of heterogeneous grouping, right?
 1573 is that kids can surprise each other and themselves,
 1574 and then figure out like, 'oh,'
 1575 'I'm the one who walks in knowing how to do all
 these calculations, and yet

1576 somebody who I thought couldn't do anything
 1577 just showed me a new way to visualize this that I
 1578 never thought of before.'
 1579 Like, "oh,"
 1580 'hm, there might be more to this story' (laughing)
 1581 right than this binary sense of who's good and who's
 1582 not good, you know.
 1583 That's exciting.
 1584 go you guys.
 1585 yay!
 1586 Awesome!
 1587 Awesome.
 1588 Cool
 1589 yeah so likewise,
 1590 also in first period
 1591 I've totally seen huge growth,
 1592 and the kids that were in my old first [regular] and
 1593 second [support]
 1594 uh huh
 1595 to now being in just my first period,
 1596 uh huh
 1597 Like some of them are doing SO much better,
 1598 in a heterogeneous class.
 1599 uh huh.
 1600 just for the sheer fact of like,
 1601 they don't have all their buddies,
 1602 it's like, they have more (competition) now,
 1603 before it was like,
 1604 you know they could, it was like-
 1605 they were all at the same level
 1606 yeah
 1607 so they just kinda fed off each other.
 1608 yeah
 1609 and now it's like,
 1610 okay there are all kinds of smartnesses going on here,
 1611 and they had to step it up
 1612 "I better keep up" right (laughs)
 1613 yes
 1614 Yeah a lot of them were just getting super lax
 1615 yeah
 1616 super lax
 1617 yeah
 1618 cuz I had no classroom management in that class
 1619 (laughs)
 1620 Well, it's really hard, right?
 1621 I know, it's so crazy.
 1622 and like classroom management
 1623 through content in heterogeneous groupings is so
 1624 powerful, right?

1620 like I'm gonna keep you busy doing math with your
group

1621 I don't have to worry about how I'm dealing with
your behavior issues,

1622 cuz you'll be too busy doing math (laughs)

1623 I know

1624 right?

1625 So great.

1626 yeah

1627 (laughs)

1628 I know. I'm with ya'

1629 How did the 8th grade lesson go?

1630 Did you observe that today?

1631 Which one was that?

1632 The um, with Kamilah

1633 this one.

1634 Yeah, um it was good.

1635 It was- it was really good, um

1636 I taught it with my kids today.

1637 Okay.

1638 Her- the one that I saw in her class,

1639 I was there only first period,

1640 and they,

1641 what was really cool about it was the task got them to
really clearly articulate some misconceptions.

1642 mhm

1643 that now she can take up.

1644 And they were the same ones she was predicting.

1645 Like one group (laughs)

1646 it was so awesome,

1647 They had the- they had the lines crossing,

1648 mhm

1649 they had the point of intersection circled,

1650 mhm

1651 and then they said there is no point of intersection.

1652 MMM

1653 these lines don't intersect.

1654 they told me they don't intersect.

1655 wo::w

1656 and I was like okay well how do you know they don't
intersect?

1657 because there's no point that's the same. (.)

1658 and the::n,

1659 somebody thought well it's just because the table
doesn't have everything in it yet.

1660 mmmm

1661 and so they extended the table out this way looking
for a point of intersection

1662 instead of looking in between,

1663 mhm
1664 right, so there was just like-
1665 she totally knew that was gonna happen,
1666 like she knew that they don't see 'em as points.
1667 Somebody in the class was then able to tell me,
1668 the lines cross,
1669
1670 but there's no point of intersection cuz it's not a point.
1671 yeah, cuz it wasn't like on like a crossing right
1672 So what they think a point is,
1673 is only something that's on a cross.
1674 yeah.
1675 Which she kind of was anticipating that,
1676 so it was really cool cuz they were able to clearly
1677 articulate that.
1678 uh huh
1679 and now, we're about to go debrief now,
1680 we're gonna talk about,
1681 okay, so now we know that.
1682 yeah
1683 How can we take that and move forward you know
1684 those ideas
1685 right right
1686 It was pretty cool,
1687 So like /the discussion gave them the opportunity to
1688 articulate it./
1689 /yeah, I had stuff like that coming up/ as well too.
1690 yeah
1691 like a lot of 'em okay they did the graph,
1692 they got it really good and then it was like,
1693 I don't (.)
1694 Like I really had to identify with them,
1695 like cuz a lot of them didn't even know how to say
1696 that point either.
1697 yeah
1698 like I had to identify then okay like,
1699 a point,
1700 is an x and a y.
1701 Like this is what I'm looking for.
1702 yeah
1703 Like when you say you're ready for checkpoint,
1704 it has to have these two components in it.
1705 yeah
1706 but a lot of them were like saying,
1707 like the point was one and a half comma zero,
1708 and a lot of them were saying zero comma one and a
1709 half
1710 uh huh uh huh
1711 like they didn't know how to read it even.

1706 uh huh uh huh,
 1707 yeah
 1708 They kinda whipped through this though,
 1709 I still have some groups on this problem
 1710 mmm, we did not get here.
 1711 A lot of students, at least in that first period class of
 1712 hers,
 1713 sort of didn't get-
 1714 they were like yeah we have a table and the rules and
 1715 the graph,
 1716 we're done.
 1717 mmm
 1718 It's like, well now you have-
 1719 Okay good, you got the graph now (laughing)
 1720 now is when you do the work, right?
 1721 now is when the meaty part-
 1722 and they sort of weren't locking it yet to what they
 1723 were-
 1724 yeah one of the things I said to them was I was like,
 1725 cuz facilitators read the task,
 1726 uh huh
 1727 and like facilitators have to read all the way through
 1728 your task,
 1729 uh huh
 1730 cuz a lot of 'em were just doing this,
 1731 o:::h
 1732 and they weren't reading what the actually task was,
 1733 oh
 1734 I went around and I checkpointed, I'm like hey,
 1735 what is the task we're doing.
 1736 uh huh
 1737 Cuz a lot of 'em didn't know.
 1738 uh huh uh huh
 1739 So I point- so I said, "oh, you need to"
 1740 smart
 1741 reread your task,
 1742 right
 1743 before you even start.
 1744 yeah yeah.
 1745 yeah, so I was-
 1746 they were, so I was directing them to coming back
 1747 here after they had the graph.
 1748 mhm
 1749 Um, she figured out that,
 1750 well the graph also was taking a super long time,
 1751 which is very predictable.
 1752 and they were doing beautiful graphs that were taking
 1753 forever.
 1754 oh yeah

1749 so,
1750 super elaborate
1751 she ended up figuring out partway through first
1752 period,
1753 oh, she could give them the paper she has
1754 where there are axes already set up,
1755 mhm
1756 where it goes by ones,
1757 she already has some graph paper like that copied,
1758 mhm
1759 she's like, 'oh,
1760 you know they spent all this time like,
1761 drawing and writing in all their little numbers,
1762 But I do think there's a skill to doing all that too,
1763 which was good for them to have to do.
1764 uh huh
1765 cuz I still have kids that are struggling with graphing
1766 points.
1767 Yeah.
1768 Her kids in that class, they weren't.
1769 they were just taking forever to do it.
1770 but it wasn't a struggle,
1771 it was just like they were being so precise,
1772 like their graphs were all perfect.
1773 yeah.
1774 They were all perfect graphs.
1775 So um,
1776 so the she, I think in the next period she ended up
1777 giving them that paper so that it wouldn't take so long
1778 to get to the meat of the,
1779 mhm
1780 of the task, so.
1781 Well I'm torn cuz,
1782 most of them all got to this point.
1783 uh huh
1784 but not everybody got here but a lot of them did.
1785 some of them finished
1786 So did they figure out here
1787 that the point is in between here and here,
1788 it would be here in the table?
1789 Um, here's,
1790 see and this is where like I wasn't there on Saturday,
1791 so I don't know
1792 yeah
1793 like she literally handed me this today,
1794 yeah
1795 So I didn't know what you guys had talked about,
1796 uh huh
1797 what you were looking for.

1793 uh huh
 1794 but when I read this,
 1795 and even the kids did,
 1796 they were like,
 1797 checkpointing after they found the point of
 intersection because,
 1798 when it says using all representations like,
 1799 this is already done.
 1800 Ri::ght,
 1801 so that's what they weren't getting either.
 1802 So we can think about how we would modify the task
 card,
 1803 what we were intending by this "demonstrate your
 thinking" was
 1804 the thinking about the point of intersection.
 1805 so you should be able to tell me,
 1806 where is the point of intersection
 1807 oh, see /that would have been
 1808 /in the graph, in the table/ and in the rule.
 1809 That's what we were going for.
 1810 That should have been more explicit.
 1811 yeah. yeah.
 1812 Cuz I was like,
 1813 even reading it and I was like, 'wow this is really
 redundant' like
 1814 demonstrate it with the table, the graph and the
 equation.
 1815 the equation's here.
 1816 So we shouldn't have said /demonstrate your thinking/
 1817 /the graph's here/
 1818 we should have said,
 1819 show how you can find the point of intersec-
 1820 or show how the point of intersection,
 1821 can be seen in the table, the graph, and the equations.
 1822 That was the meat of it.
 1823 So maybe what I will do tomorrow,
 1824 yeah
 1825 for the kids that finished this.
 1826 yeah yeah
 1827 I'm gonna bring them back,
 1828 yeah
 1829 and I'm gonna say, okay,
 1830 I'm gonna re-give you these and you're gonna have to
 re-checkpoint,
 1831 of being able to prove to me,
 1832 in the table,
 1833 and the equation,
 1834 not- you showed me with the graph,

1835 yeah
 1836 where it is in the graph,
 1837 in those two points before you move on.
 1838 that'd be great.
 1839 that's what we were trying to get them to do.
 1840 O::h okay,
 1841 cuz that /makes tons of sense/
 1842 /sorry/
 1843 I felt like is there more depth that's supposed to be
 here?
 1844 yes.

Heather Cycle 4 Planning Conversation

	Heather	Mia
1		yeah
2	as good as it can be at this point in the year.	
3	(laughs) just trying to /barrel through./	
4		/tired, yeah/
5	the last week before spring break	
6		yeah
7	counting /every minute/	
8		/yeah, it feels like a little bit of a/ marathon, yeah
9		well,
10		it's more-
11	for me it's more about survival right now,	
12	but I, /than a marathon/ but	
13		/yeah/
14	I wish it was a marathon,	
15	I'm just trying to survive right now.	
16		yeah
17		yeah
18		OK,
19		so then what I want to know is, um (.)
20		how can I support your survival at the happiest level it could be?
21		u::m (.)
22	I don't know (laughs)	
23		yeah
24		u::h (8s)
25	I mean, I'll be like super frank with you	
26		do it
27	I'm just checked out as well	
28	and trying to get through this	
29	so, you know (deep breath)	
30	I don't know (small laugh) (.)	
31	and I feel like um-	
32		yeah,
33		whatever,

34 I don't know.
35 So::
36 No I do want to know what you feel like
37 if you want to tell me.
38 U::m,
39 (inhale) I guess I just like,
40 I didn't know that doing CI meant I had to do all this.
41 like it just feels like a lot all the time,
42 and a lot of times I feel like I'm not really even asked.
43 like it's sort of like,
44 uh huh
45 just expected
46 that like we have to do all this stuff and perform and
47 like,
48 I don't know,
49 it's frustrating
50 can you say more about all this?
51 well,
52 I don't know, when I signed up for CI,
53 mhm
54 like I didn't know that I was gonna have to be
55 coached (^),
56 that I was gonna be observed(^) all the time,
57 mhm
58 that I was gonna have to have meetings(^),
59 that we were gonna have to do t-facs(^),
60 and all these other (^) things,
61 and I (inhale)
62 it's just-
63 mhm
64 yeah.
65 it's a little frustrating at times.
66 mhm
67 I feel like I'm in BTSA again,
68 mmmm
69 kinda all over.
70 mmm
71 and you know,
72 I was really happy to walk away from BTSA
73 mmm
74 like (laughs)
75 I don't know.
76 So I don't know. (.)
77 yeah,
78 it's just,
79 sometimes I just want to teach (laughs)
80 mhm
81 I don't know.
82 that's just kind of where I'm at right now.

81 so::, yeah,
82 well especially at this point in the year,
83 you don't have to be coached.
84 that is not a have to.
85 yeah
86 um
87 (4s) my sense is, um,
88 yeah, if it's feeling like that right now
89 and there's not,
90 for whatever million reasons,
91 million very valid reasons I could think of,
92 it's not feeling like, um,
93 this is what you want (^)
94 in order to support you (^)
95 mhm
96 then let's not do it.
97 (laughs) I mean, is that a requirement
98 of being, doing CI.
99 I mean I love CI,
100 but I don't want to get to this point where like I hate
CI.
101 yeah
102 Does that make sense?
103 yeah
104 um
105 no, it's not a requirement.
106 I mean I think that,
107 I think that what the intention is,
108 and if the intention isn't playing out in the way
109 that it is intended, circular,
110 um,
111 then something is not quite aligned correctly
112 or not working well for you,
113 so the intention I think,
114 doing complex instruction is really fuckin hard.
115 yeah it is.
116 and it's more that just like doing participation quizzes
117 yeah
118 or like doing multiple abilities launches, right?
119 it's like, it's deeper than that
120 and it's really hard
121 and so,
122 and
123 I think,
124 and maybe other people who are planning this
professional development effort,
125 think that it's also really powerful
126 um and can really support
127 teachers and kids in awesome ways.

128 Um,
129 but that it's really hard,
130 so the-
131 like all of the layers are-
132 the intention is to make them supportive,
133 of you,
134 you plural,
135 not you Heather,
136 but you anyone,
137 mhm
138 who's choosing to take on that work,
139 um,
140 to make it (.)
141 to to make it work for you,
142 mhm
143 or to support you in whatever it takes to figure out
144 like,
145 what's the Heather version of this,
146 right like
147 mhm
148 um (.)
149 uh and to bring it from like abstract ideas sitting in a
150 classroom with a bunch of adults (^),
151 into like the reality of
152 right
153 work, right,
154 and so the purpose of coaching is to support that.
155 If it's not right now
156 feeling like that's what you need or want, um,
157 there's absolutely no requirement for that.
158 well, I'll just,
159 like I'll just be honest.
160 yeah
161 like, for example,
162 like the last time you were here, you were like
163 yeah, I wanna come see all your classrooms,
164 so I'm gonna come like bla bla bla.'
165 but it wasn't like,
166 hey I know you guys are really busy,
167 uh huh
168 would it be ok if I come visit your classrooms and
169 help you?
170 uh huh
171 like do you know,
172 like do you see the difference?
173 u huh (^)
174 it's like
175 sometimes I just feel like things are being put upon us
176 uh huh

220 and you gotta do this
 221 you gotta jump through this hoop,
 222 you gotta do this. /
 223 mmm
 224 If you want to do this,
 225 then you gotta do this.
 226 uh huh
 227 and, um, (4s)
 228 yeah,
 229 I just,
 230 I don't know.
 231 that's all I'm gonna say (small laugh)
 232 about that.
 233 mhm
 234 but it's just kinda,
 235 i'm sort of feeling it all around.
 236 so.
 237 yep
 238 (sigh) um (.)
 239 I don't know
 240 yeah. (.)
 241 thank you.
 242 laughs
 243 no I appreciate it.
 244 I appreciate the (.)
 245 working with what's real for you,
 246 is helpful.
 247 uum
 248 (4s) it's an interesting-
 249 it's an interesting question that I think I'll
 250 (3s) it's a complicated question,
 251 yeah
 252 like what does it mean-
 253 cause I don't think that what what-
 254 I have thought-
 255 that what
 256 I was bringing
 257 was anything thing that I was putting on you.
 258 right
 259 although I can totally, totally get (^) how-
 260 what you are saying,
 261 it makes a lot of sense to me. um.
 262 /like I said, I don't think everybody feels that way/
 263 /like you said, teachers don't/ get a lot of support,
 264 mhm
 265 and so the way it's been showing up in my brain
 266 is like that's what I'm doing.
 267 right

268 Like I'm showing up to offer a thing that doesn't get
offered very often,
269 which is like support that's real and based in your
classroom
270 and in who you are as a person,
271 sort of trying to be tailored to you,
272 right
273 um and not dropped on top of you,
274 you know?
275 um,
276 but I totally understand how it can feel like
277 another thing that needs attending to,
278 that you're-
279 you know, you have to STOP the other things you are
doing,
280 which you don't have time to STOP
281 in order to do THIS,
282 right? um,
283 yeah,
284 so thank you.
285 that's useful and interesting to think about. um (.)
286 mhm
287 what that might imply for different ways to-
288 to show up for people,
289 you know.

290 and like I said, I don't necessarily think everybody
feels the same way as me.
291 that's ok
292 but I just
293 cuz I'm finding myself being really resentful lately,
294 yeah
295 and I just, don't-
296 I don't want to be resentful,
297 like I want to appreciate this too
298 mhm
299 but um,
300 (5s) I don't know,
301 I guess I just needed to say it.
302 yeah
303 cause I guess I've just been (.)
304 not saying anything
305 and like going along,
306 mhm
307 which is, I think a lot of
308 (5s) what a lot of us do,
309 mhm
310 like and just.
311 yeah,
312 I don't know.
313

314 it's been a hard year though.
315 yeah
316 so, I, you know (.)
317 I just think there was a lot
318 on our plates this year to take on-
319 There was, a ton,
320 especially with new curriculum(^),
321 and a lot of change.
322 yeah.
323 totally.
324 So
325 I don't know,
326 I don't know, like (small laugh)
327 it kind of like feels like I'm throwing a bomb out there
but I
328 no, you're throwing reality out there, which is what I
want,
329 I mean that's (.)
330 that's where everything begins, right?
331 from what's real. so I appreciate that.
332 (inhale) um (.)
333 OK,
334 so
335 (4s) I- I-
336 there's absolutely no reason
337 (laughs)
338 I have to come to our classroom
339 and watch you teach
340 tomorrow,
341 there's absolutely no reason.
342 if you were to ask me to
343 because you wanted me to
344 because you felt like there was something I could do
with you
345 mhm
346 here(^)
347 that might support something you are trying to do
right now,
348 then I could come.
349 OR
350 if, or, if you were to ask me at some point in the
future,
351 because something in the future shows up for you that
you think you could use
352 some support thinking about
353 or trying out
354 or whatever
355 then I could come,
356 but there's absolutely no reason I need to be here.

357 at all.
 358 (3s) it's not that I don't mind you being here-
 359 I know,
 360 I'm not hearing that you mind it.
 361 yeah (.)
 362 I just don't want to have to like
 363 create more work (laughs)
 364 yeah
 365 I dunno.
 366 I'm feeling lazy, and like I don't know- just
 everything-
 367 you're not being lazy,
 368 shut up (laughs)
 369 you work so hard,
 370 you're not allowed to call yourself lazy.
 371 and like I, I mean, I don't know
 372 (3s) OK, I feel like I got what I needed to say
 373 and I'm fine with you coming in here
 374 I just needed to say that for the record.
 375 (3s) well I, ok so then I-
 376 lemme be honest in return.
 377 OK
 378 Um,
 379 I have-
 380 so what I've been experiencing is matching and
 making a lot of sense
 381 with what you are saying
 382 because what I've been experiencing is
 383 I don't know why I'm here,
 384 mhm
 385 I don't know what Heather wants to learn with me or
 from me,
 386 mhm
 387 I don't know what Heather wants,
 388 and I know like,
 389 you're always kind,
 390 (laughs)
 391 you're always welcoming,
 392 we have a good time,
 393 we usually laugh,
 394 you know, like I don't-
 395 there's nothing unpleasant(^) about what we've been
 doing,
 396 but I don't know why we are doing it yet.
 397 mhm
 398 I don't know what it is.
 399 Um,
 400 which is fine,
 401 and sometimes we- that's-

402 there are different ways to forge a useful path
together.
403 there isn't only one way,
404 and so it hasn't really been bothering me,
405
406 or I've definitely never felt like I've wasted time here,
407 um,
408 BUT I haven't felt very clear,
409 um, about how you're hoping I plug in
410 or what it means to support you.
411 mhm
412 like what I should show up with to support you.
413 Um that hasn't yet been clear to me.
414 so, um (.)
415 so then I haven't felt honestly totally sure how much
416 what we've been doing has been supporting you,
417 in any way.
418 I mean I feel like maybe in small pieces or I don't
419 know.
420 mhm
421 um,
422 and again, that's-
423 it doesn't particularly bother me, that's just-
424 the way that this work unfolds
425 is different with different human beings,
426 different personalities,
427 different classrooms,
428 different, you know.
429 it unfolds differently.
430 yeah
431 um,
432 so maybe what's happening is that
433 there isn't yet a way (laugh)
434 that you feel like you want,
435 (laugh)
436 that you want my help,
437 and that's why I'm not sure what it is (laugh)
438 cause there isn't one (laugh),
439 which is totally fine.
440 and then we can from there, if that's real,
441 and that's what it is,
442 then we can from there decide,
443 do we want to try to create one?
444 is there a way you would like me to plug in and
445 support you,
we could create one,
or we could just not(^).
we could come back to it next year
and create one next year,

446 if we want to.
447 or not, if we don't.
448 you know, um,
449 (.) I definitely do not
450 feel like it's constructive
451 for either you or for me to, um,
452 forge ahead if it is feeling like another thing that has
to be dealt with,
453 mhm
454 um because then (.)
455 yeah cause then there's room for that resentment,
456 there's not a lot of space for learning in there for (.)
457 or for like (.)
458 it feels like a very limited space within which to
work(^),
459 you know, together,
460 to create something, so um (.)
461 and if that's how it's showing up at this point, then
let's-
462 let's hold off(^) and like either generate something
new or different for next time,
463 next time being next year,
464 or next month,
465 or- um
466 I think it looks like I'm going to have the opportunity
to work with Adams more next year I was telling
Lynn,
467 which I'm really excited-
468 that was not clear to me until recently,
469 so I'm excited about that,
470 that there will be hopefully some continuity
471 and I can come back.
472 Um (.)
473 yeah
474 well, um, I mean do you normally do this with every
school that takes CI on?
475 I guess I've just been really unclear about like
476 what you ARE doing here,
477 like nobody's ever told me why you're here.
478 hm
479 Like no one.
480 Like all of a sudden you showed up
481 and were coaching us
482 and I didn't have an idea of why you were here.
483 oh, yeah.
484 and maybe it was sent to me in an email and I didn't
read it, or you know
485 mhm
486 maybe it was told to me and I forgot,

487 but like,
488 you know I don't really-
489 I do feel like it hasn't really been clear to me, like-
490 yeah,
491 so the reason that I'm here is very very general.
492 and it's that um,
493 in our designing of the professional development that
494 we are calling CI in San Francisco,
495 supporting teachers here,
496 um, we've sort of build different pieces of support
497 that we think help teachers learn to do CI(^),
498 or learn to integrate CI into their practice,
499 and to make the most of it.
500 and so one portion of that is official professional
501 development ,
502 like our summer week and the follow up days,
503 right
504 like that stuff, right?
505 and then one portion of that is coaching,
506 mhm
507 which is just trying to connect those ideas with
508 classrooms.
509 so that is the very broad-
510 that is my very broad mission.
511 And then within that, um,
512 I sort of forge that with different teachers.
513 mhm
514 So,
515 um,
516 yeah, sometimes there's some team teaching(^),
517 sometimes I do some teaching(^)
518 and sometimes I just watch(^)
519 and sometimes we do-
520 with some teachers we focus a lot more on
521 planning(^),
522 we spend a lot of time planning (^) together and less
523 in class time,
524 there's a lot of flexibility
525 around how we want to make it work
526 mhm
527 depending on what supports teachers.
528 there is no one I report to about how I spend my time
529 in a way that I have to do it any particular way.
530 mhm
531 Um
532 so yeah the mission is broad,
533 the mission is in what ways can I bring
534 my time,
535 and my brain and my expertise

531 or my experiences and my questions
532 or my eyes or my different perspective
533 to add them in to what you-
534 and so well I guess there's one other piece.
535 there's one, which is just helping people to integrate
536 complex instruction into their classrooms,
537 mhm
538 but also help
539 to create departments,
540 or- not to create, they're already there, t
541 o help support /department / cohesion
542 /right
543 and learning around CI because
544 it's hard, right?
545 yeah
546 and doing it together is the most powerful thing so
then,
547 I try to figure out what does it mean to lend myself to
the effort of
548 your guys coming together and learning from each
other
549 mhm
550 so sometimes I support peer reciprocal observation,
551 like I mean,
552
553 one way I might support you is come teach your class,
so you can go (.)
554 or come have Lynn teach your class so you and I can
go together t
555 o watch someone else teach
556 and then we can sit in the back and kibitz about what
we're seeing
557 and how it might or might not apply to you
558 mhm
559 and give you that learning experience.
560 or I might go the other way,
561 bring someone in to your class so that-
562 you know what I mean?
563 mhm
564 just sort of facilitate learning
565 in whatever ways we can
566 generate it.
567 um, and honestly,
568 my honest opinion about the Adams department
569 is that you guys have a ton of resources here already
and the most powerful learning you guys are gonna do
570 is from each other.
571 right
572 not from me.

573 and so,
574 I mean I feel like I've had a good time here and I
think I have-

575 (small laugh)
576 it's not that I think what I've done here is for nothing,
577 right
578 i've had really rich experiences here that have been
awesome,
579 um.
580 AND I just see all this awesome stuff going on, like
581 in different rooms and I just want to create cross-

582 /right (.) right
583 I want to create more of that to bleed across,
584 because there's powerful stuff going on all around us,
right,
585 and I want it to-
586 that's going to be more powerful than anything I
could do with any one person.
587 um (.)
588 /yeah

589 /ok (4s)
590 alright,
591 well (4s)
592 uuum....(3s)
593 so what I'm hearing from you is,
594 you're-
595 and you were honest about this at the very beginning
of the conversation,
596 that you're kind of in survival mode,
597 mhm
598 right?
599 um,
600 which means maybe you're not in the space right now
601 where you want to be,
602 um (.)
603 you know- cause one thing we could do
604 is think together for a little bit about like
605 well, what DO you care about?
606 and what do you want to have going on in your
classrooms
607 the same or different than is going on right now?
608 mhm
609 and
610 what would it mean to plug in
611 and for me to be a part of that
612 thing that you care about.
613 right?
614 right.
615 we could do that,

616 or we could do that next year,
 617 you know, if /
 618 /yeah
 619 that's not what you're- where you are right now.
 620 I think the hardest thing right now is like,
 621 like for example with 3rd period,
 622 the period you are gonna come and observe, like-
 623 I might come and observe
 624 (laugh) or were going to or whatever it is
 625 (laugh) it's on the schedule.
 626 it's not that I don't want you in here/ I definitely don't
 want it to sound that way
 627 /I know, honey, I'm not hearing it that way /
 628 I promise, I am not hearing it that way.
 629 I just like,
 630 I guess it's hard for me to even (.)
 631 there's like multiple prongs of things going on, /
 632 uhuh
 633 but like, poor Lynn, she's all sick
 634
 635 what-
 636 I think one of the rough things right now is
 637 we are a week before spring break(^),
 638 like everybody's checked out(^) like (.)
 639 the 8th graders are like insane right now.
 640 mhm
 641 like Lynn's been coming in in 3rd period.
 642 Like it's-
 643 it's-
 644 how do you describe it Lynn?
 645 I don't know (laugh)
 646 it's so much work
 647 every day
 648 for me to just keep my cool with those kids,
 649 uh huh
 650 cause there are so many needs
 651 uh huh
 652 that like looking at like
 653 going deep with CI right now
 654 uh huh
 655 has just been like, kinda
 656 uh huh
 657 tough.
 658 yeah.
 659 I got it.
 660 and then, like,
 661 I'm just trying to maintain
 662 yeah
 663 like them, like even staying in their seats right now

664 yeah
665 (exhale sound), so I'm just,
666 I don't know,
667 I'm struggling
668 yeah
669 like I'm really struggling,
670 yeah
671 I have a really tough crop of
672 kids this year
673 yeah, yeah
674
675 and I just...
676
677
678 it's kind of like been really
679 hard
680 and disheartening.
681 and then,
682 top it off with like (.)
683 I dunno, Pythagorean Theorem,
684 it's like you said in your email
685 yeah
686 it's not been
687 super group worthy,
688 yeah
689 they're checked out,
690 it's kind of tricky and complicated,
691 I mean feel like we are kinda getting some headway to
like-
692 I've been on, like,
693 these three problems for like three days
694 laugh
695 like I feel like I'm totally like
696 going crazy (laugh), like I just,
697 I mean we're finally getting
698 uh huh
699 to the end, but I'm just kind of like,
700 I don't know.
701 yeah,
702 it's not felt-
703
704
705 I know.
706 and to be totally frank,
707 I would say this next section,
708 I would completely redo
709 yeah
710 without all these words and junk,
711 yeah

712 but like
 713 I don't even have the energy to do it.
 714 yeah
 715 Like I'm tired of having to create our entire
 curriculum.
 716 yeah
 717 every lesson,
 718 like that's not what was supposed to happen (laugh)
 719 yeah
 720
 721 so, I don't know.
 722 I want you to be here
 723 and I-
 724 but honestly what I need is like more bodies in here,
 725 mhm
 726 like baby sitting children.
 727 That's kind of how- where I'm at right now,
 728 which is horrible
 729 mhm
 730 like I hate even saying that.
 731 But that's,
 732 like you're asking me what I need right now,
 733 mhm
 734 that's kind of how I'm feeling (laugh) like
 735 mhm
 736 I need somebody to stand over Joaquin
 737 and like keep him in his seat
 738 for this whole period or
 739
 740 yeah,
 741 and it's just rough,
 742 I don't know. (.)
 743 So this is where we are supposed to go next (gesturing
 to a page of problems from CPM in front of her).
 744 I'm still not completely finished /
 745 yeah
 746 with this with all the kids.
 747 Yeah
 748 This actually came up in our last meeting,
 749 we're like planning on, like doing revisions of the
 units
 750 yeah
 751 apparently a lot of teachers /
 752 /yeah
 753 are like way stuck back on some units
 754 yeah
 755 because like I think there's been,
 756 with CI I do find what's tricky is like

800 but I promise you I do not take it the tiniest bit
personally.

801 (laughs)

802 I do not have hurt feelings
803 and it is not your job to make any decisions
804 based around, like,
805 what you think I need.
806 I'm fine.
807 whatever we do, I'm fine.
808 Um (.)
809 another thing is
810 I could just teach your 3rd period class and you could
take a break.

811 (both laugh)

812 you could sit in the back and watch,
813 (laughs) and see what happens.
814 Um...

815 (sharp intake of breath)

816 Do you really want to do that?

817 there's a lesson that i-
818 there's a lesson that Lydia and I just did
819 uh huh
820 today,
821 a lesson
822 around (gestures to her papers)
823 that isn't this.
824 no.
825 but it would require kind of skipping this
826 or rearranging.
827 (laughs)
828 but if your kids can do this
829 yay!!!
830 no just kidding

831 it requires the pythagorean theorem
832 but it would be- (loud motorcycle sound)

833 oh my god, that scared me. I hate motorcycles and
834 loud cars.

835 um,
836 you would probalby need to give them calculators
837 and not do
838 the estimating side lengths piece,
839 or at least not yet,
840 but it was the, um
841 (3s) were you there on that Saturday?
842 did you do this lesson with us?
843 You were not there.
844
845

846 yeah, I wasn't there.
847 it was this (hands her the task card).
848 it was around that and we ran a participation quiz, um
849 mmmm
850 in which the kids,
851 like we told the kids we were not gonna talk to them
 for the whole class
852 mmmm
853 so there was like no-
854 um, and they just did math together
855 and we watched.
856
857 and they did.
858 the whole class.
859 the whole period.
860 and they- and we did-
861 we ran a participation quiz,
862 so we were watching very closely but we were not
 talking to them,
863 so anything we wanted to say to them went in a
 comment on the participation quiz, basically,
864 you know
865 cool!
866 um,
867 and, uh,
868 what we did in that class was,
869 I launched it
870 mhm
871 we did basically no do now
872 or the do now was just like,
873 write down everything you know about the
 Pythagorean Theorem,
874 like get it in your head
875 and we didn't debrief or process it at all.
876 Um, and I launched it
877 and then she and I ran the participation quiz where
878 I had four groups and she had three groups,
879 we did them on posters on the wall, /
880 /wow
881 so we had space,
882 mmm
883 and then, um,
884 we stopped the class like halfway through
885 um and just had them-
886 like we kibitized a little bit,
887 you (Lynn) were there,
888 and um we kibitized a little about what we were seeing
 and what we-
889 like they surprised us a little bit.

890 they did something different mathematically than we
were expecting

891

892 we kibitzed around it a little bit
893 and then we stopped them in the middle,
894 which we had planned to do,
895 and gave them, like,
896 um, two silent minutes to just read other groups'
posters
897 so they could see, be informed(^)/

898 /mhm

899 by other things that were happening around the room,
900 and then they went back in and um

901 (someone comes in here and some talk with them)

902 um, yeah and then we basically,
903 like we didn't even,
904 her only content objective,
905 like math content objective,
906 was around kids using the pythagorean theorem /
907 /mmm

908 in a situation that's not just like a naked triangle but
they have to-
909 and then there was a lot that we were trying to support
around participation
910 and like getting kids to talk who don't usually talk,
and that kind of stuff.

911 (yawning) I like that idea.
912 let's do it.
913 should we do it?

914 yeah, I can't,
915 i'm burnt.
916 yeah

917 like this- this... I ca-
918 yeah,
919 let's not do it, OK.
920 good.

921 this sounds refreshing,
922 like it sounds..
923

924 yeah,
925 so there were a number of things we did that made it
work.
926 So one thing we did that was like (high voice)
amazing,
927 it was like crazy good,
928 was um,
929 we took a piece of paper,
930 we taped it into the middle,
931 uh huh

932 it happened to be blue.
 933 we taped it to the middle of the table
 934 and one of the things that I- in the launch that I told
 them we were expecting from them
 935 was that this paper- that they all
 936 they had four of these (the task card with diagram)
 because I wanted them to be able to sketch and try
 937 things,
 938 okay
 939 but I didn't want them to be doing this (body hunched
 over the paper, hiding it from others), /right?
 940 /okay/ right.
 941 so that this paper had to be physically touching that
 blue paper at all times
 942 through the whole class
 943 and it was amazing.
 944 I love it.
 945 cause these big huge tables make it really hard, right?
 946 yeah
 947 but they were like
 948 in their space,
 949 they were like this the whole time.
 950
 951
 952
 953 uh huh
 954
 955
 956 I would love, thi-
 957 it was super fun, you wanna do it?
 958 this sounds great!
 959 oh
 960 Like I feel like I've just been like, taken a shower
 right now.
 961 yay!
 962 Like I just,
 963 I can't
 964 yeah
 965 do another day of this (gesturing to the worksheets on
 her table)
 966 like this-
 967 /awesome/ because I don't know what I would offer
 you around that. (laughs)
 968 right.
 969 thank you!
 970 okay so I think we are on the same page /then
 971 /yeah/ yeah
 972 about, like, what's happening
 973 yeah

974 cool.
975 intake of breath.
976 this sounds great!
977 yay!
978 yay!
979 and I had so much fun,
980 we- it was so fun,
981 and her kids are just like,
982 they were-
983 we have to ask them to be generous with me because
984 they don't know me,
985 so I have to say, like,
986 just with big smiles, like
987 Ms Benito is letting me play today.
988 um, I think they'll be really happy
989 to see somebody else
990 (laughs)
991 like I'm sure they /are pretty burnt with me.
992 there are.
993 there's a ton of sweet kids /
994 /yeah
995 that get really overshadowed by /
996 /yeah
997 like four rough kids
998 and like the rest of them are like really good.
999 yeah
1000 so-
1001 and my proposal might be, like, if-
1002 if Joaquin keeps gettting up,
1003 maybe he just gets up.
1004 Like let's prioritize the learning of the class /
1005
1006 as best we can,
1007 and just make sure for this day,
1008 just so that we can like
1009 have a good day and learn something
1010 and play, you know what I mean?
1011 yeah
1012 let's not let him-
1013 derail
1014 yeah, he kinda just- he walked out today
1015 yeah
1016 and I was like
1017
1018
1019
1020 okay
1021

1022
1023
1024
1025 oh god!
1026
1027 (laughs)
1028 So we-
1029 so Lydia-
1030 so I have all this stuff that Lydia and I generated
1031 that we could transition over here.
1032 yay!
1033 so we talked about like, um,
1034 I know.
1035 I haven't even done this problem but it looks really
interesting.
1036
1037
1038 oh really?
1039 yeah,
1040 and they won't know the answer by the end
1041 and that's totally fine, yeah.
1042 yeah,
1043 cause our content objective is /
1044 /okay
1045 they will apply the pythagorean theorem(^),
1046 okay
1047 which,
1048 like,
1049 they're gonna generate some pathways, right,
1050 mhm
1051 and they are gonna- these make right triangles
1052 and, in her class the thing that surprised us content
wise
1053 cause the grown ups that I did this with didn't do this,
1054 mhm
1055 was that they used, i
1056 t was actually super smart and I just didn't expect it,
1057 they used proportional reasoning
1058 to estimate this length with a ruler.
1059 oh wow
1060 because they were like,
1061 well this says it's 12 and on the ruler it's 7 inches,
1062 or centimeters, or whatever it was,
1063 then this is about, you know, whatever, 8 and a half
centimeters,
1064 so that's about- like that's what they were doing /
1065 /wow
1066 which is amazing,
1067 and awesome, but /not the content objective/

1068 /does that actually work/ on here?
1069 that doesn't work on here though, does it?
1070 because it's not drawn to scale.
1071 I don't know if it's drawn to scale.
1072 ok
1073 it might be.
1074
1075 so the whole-
1076
1077 OK,
1078 so-
1079 so we had to kibitz a little and decide,
1080 oh given that we are seeing that,
1081 how do we get them to the pythagorean theorem,
1082 which is what our content objective was,
1083 but there were ways
1084 right
1085
1086
1087 mmm
1088 some of the grown ups.
1089
1090 so what is the point of this?
1091 you start here at S,
1092 yeah
1093 and you are supposed ot find the shortest
1094 route to get to-
1095 back to S having touched all the walls
1096 oh, o:h,
1097 having touched all the walls in some way.
1098 yeah
1099
1100 so you could be following it
1101 or you could be, okay I see,
1102 just touching it.
1103 it's a race,
1104 so the kids are in a school yard, t
1105 he way it's set up,
1106 this is a bird's eye view,
1107 you have kids. (reading) children are playing a game
1108 in a rectangular school yard.
1109 this is it, right?
1110 mhm
1111 children start at point S, which is four yards bla bla
1112 bla,
1113 they have to run and touch each of the other three
1114 walls and then get back to S.
1115 The first person to return to S is the winner.

1113 So what's the shortest route for them to take is the
question.

1114 hm

1115 and so none of them,
1116 in her class they weren't actually-
1117 like they were making sense around shortest,
1118 none of them got anywhere near being able to prove
that their route was the shortest,
1119 which neither did any of the adults /

1120

1121 when we did this for an hour, right,
1122 like that's a hard thing to do.
1123 But, they did-

1124 so Lydia was suspecting that they were gonna get
stuck with the fact that there're so many decisions to
make.

1125 mmm

1126 like you have to decide, like,
1127 well where are you gonna go on this wall first?
1128 where are you gonna go on that,
1129 so then, in the launch-

1130 and did you have kids, like, following this line

1131 I don't think so

1132

1133 uh huh uh huh

1134 ok

1135

1136 uh huh

1137 which still they have to use Pythagorean Theorem,
right /

1138

1139 to find that length,
1140 so it's cool.

1141 right

1142 so then we thought about,
1143 okay, so what do we have to-
1144 how do we have to launch it-
1145 what's the participation we need to ask for to get them
past that

1146 mhm

1147 so we had, so I told them, like,
1148 you're gonna have to make decisions.
1149 I did a- I wrote some version of this under the doc
cam in the launch,
1150 it wasn't exactly a multiple abilities launch,
1151 but it was like that kind of thing?

1152 yeah

1153 setting them up for the kinds of things that are gonna
have to happen

1154 and I used it-
1155 it was really launching the participation quiz.
1156 ok
1157 so this is what we're going to be looking for.
1158 ok
1159 you're gonna have to be willing in this problem to try
stuff.
1160 there's no way to know that what you're trying is
right.
1161 there's absolutely no way to know.
1162 So you're going to have to be willing to just make
stuff up and try it to see what you learn from it.
1163 so /
1164 /cool
1165 we're going to be listening for things like...
1166 what does that sound like?
1167 we're going to listen for,
1168 "let's try bla bla bla" or "what do you think if we bla
bla bla" or
1169 that's what we're looking for.
1170 And, um (.)
1171 we talked about the middle space thing,
1172 the blue paper thing.
1173 mhm
1174 um..
1175 (laughing) I love that idea
1176 and we talked about a quick start
1177
1178 It was really cute with the participation quiz,
1179 we talked about this in our debrief,
1180 so we had made a big deal out of a quick start,
1181 that was the first thing we were looking for in the
participation quiz
1182 and we said, we're grading it.
1183 this is a quiz today.
1184 and they were like ooo. (laugh)
1185 Um (laugh)
1186 it was really cute.
1187
1188
1189 (laughs)
1190
1191 I gave grades at the end.
1192 did you?
1193 awesome.
1194 publicly (laughs)
1195 yeah,
1196 and I don't know that I would do that in every cl-
1197 we talked about it /during class like is that safe/

1198
1199
1200 (laughs) um, um
1201 OK, so....
1202 this is very refreshing, /by the way/
1203 /so one other thing/ that we saw that was so cool for
1204 Lydia I think and for me too was,
1205 the kids did the quick start,
1206 like the quick start means the facilitator gets someone
1207 to read,
1208 OK, so they got them to read and then
1209 all the groups were like this (blank face and quiet)
1210 (laughs) right.
1211 they just freeze frame
1212 any other structure, they would have been like (raises
1213 hand),
1214 we don't know what to do.
1215 yeah
1216 and they didn't.
1217 and we didn't talk to them and we-
1218 I was busy writing like quick start, facilitator reading,
1219 I was busy with my poster so I wasn't available, right?
1220 mhm
1221 and then, like,
1222 they started talking(^)
1223 and things started happening(^).
1224 um, which was super fun I think,
1225 because it gave them,
1226 so she's gonna come in now, tomorrow
1227 and say, OK, you guys just proved that you don't need
1228 me all the time,
1229 so she's gonna institute something like,
1230 I don't know quite how she's gonna choose to do it,
1231 but we talked about, like,
1232 Gina at City does the 10-minute rule,
1233 like every day.
1234 the first 10 minutes after I launch you into group
1235 work, mhm
1236 you don't get to talk to me.
1237 at all.
1238 no team questions
1239 yeah,
1240 i've done that
1241 as well.
1242 it's really powerful.
1243 yeah,
1244 so she has now the momentum to say why,
1245 because look you guys,

1240 look how hard that problem was
1241 mhm
1242 nobody asked anything.
1243 did you guys learn the math you were supposed to
learn.
1244 Yep.
1245 (laughs)
1246 Ok, then you have just proved you don't need me to
do that, right?
1247 (laughs)
1248 It was super fun.
1249 OK, so so we did a launch like around some of this
stuff and I can actually ask her for the notes.
1250 We were very rushed because we planned like right
before the lesson so
1251 mhm
1252 we didn't go into it like fully,
1253 like well thought out plan, um.
1254 well hey,
1255 welcome to my world.
1256 yeah, right?
1257 (laughs) it's alright.
1258 totally
1259 it happens all the time
1260
1261 I know right?
1262 well, this is what's real,
1263 you do what you think of and you don't do what you
don't think of.
1264 um (.)
1265 yeah, so we told them as much as we could about
what we wanted it to sound like
1266 and what we were listening for.
1267 we did- we did two colors,
1268 one color was, um,
1269 like the things that are really helping you move
forward
1270 okay
1271 and if we have a question or if there's something
going on that we think is not helping you or we're not
sure is helping you move forward, we're gonna use
the other color.
1272 so I would write things in the other color like
1273 um (.)
1274 is everyone's voice being heard,
1275 question mark.
1276 mmm
1277 so I said look for this color,
1278 that's gonna be feedback,

1279 that's what you need to look at
1280 and that's giving you some messages about what you
might need to adjust, /
1281 /mhm
1282 in your groupwork.
1283 um, I think (to Lynn)
1284 what else did we write in blue?
1285 we were using green- purple and blue.
1286 we wrote
1287
1288 yeah, is all work in the middle, like when they were
still not touching it yet
1289
1290 yeah
1291 mhm
1292 yeah, um
1293 I think it'll be good for them to see somebody else up
there, too
1294 okay
1295 like,
1296 I think it'll be good.
1297 cool!
1298 so /how many groups are there?
1299 /they might think/ that like something's going on,
1300 and it might make them more participatory.
1301 mmmm
1302 like, they'll probably think you're like some really
huge bigwig from the district
1303 (laughs)
1304 that's gonna like-
1305 (.) well this is another idea that I had, was that we
could um (.)
1306 I think,
1307 what if she (Lynn) and I do the participation quiz
together?
1308
1309 okay
1310 and you watch
1311 okay
1312 you don't have to do anything,
1313
1314 you don't have to write anything down
1315 and you, oh maybe,
1316 I think what I would love for you to listen for so that
we could debrief around it-
1317 is like give you guys- or-
1318 well, is,
1319 like if our content objective is they are using the
Pythagorean Theorem

1320 mhm
1321 um, correctly, or sensically, (laughs) mhm
1322 like in the, you know using it in a way it can be used
1323 to find missing lengths,
1324 mhm
1325 is that happening in all the groups?
1326 and how is that sounding
1327 and how is that happening?
1328
1329 oh
1330
1331 oh, not squaring?
1332
1333 oh, ok.
1334 ri::ght
1335
1336 ri::ght
1337
1338 but
1339 so I think if you listen but like,
1340 we can set it up for the kids like Ms Benito is not
talking to you today.
1341 mhm
1342 don't even ask.
1343 like don't even-
1344 and if Joaquin is wiggin' out or whatever, she can
handle it.
1345 Lynn, that's your job.
1346
1347 cause you know the kids.
1348 I don't have any relationship with those kids, so-
1349
1350 he hates you?
1351
1352 oh, he hates everybody.
1353
1354
1355 That's good.
1356 I feel like I do a little bit too actually.
1357 I mean I've been in that class before-
1358 last time /I was here I was in one of the afternoon
classes.
1359 /yeah you were here last time/ yeah
1360 but the first couple times I was here I was in third
period,
1361 oh yeah
1362 so it's not like they've never seen me before.
1363 No they, yeah, they have seen you
1364 I'll recognize some of them,

1365 like I recognize OmarI when I see him in the hallways
 1366 and stuff so um,
 1367 so anyway um,
 1368 and then you just like put your feet up(^).
 1369 (small laugh)
 1370 go around and listen(^), have a good time(^), enjoy
 1371 it(^), and like
 1372 then we can see what we get from that afterward.
 1373 we can talk about it.
 1374 I almost wonder if you should be here for first period.
 1375 (.)
 1376 Cause they're the ones that are so:: tough to get to do
 1377 groupwork.
 1378 but I think, yeah.
 1379 third period are actually better at groupwork,
 1380 uh huh
 1381 they're just cray cray.
 1382 yeah
 1383 but, like, first period, I can't get them to work together
 1384 often. (.)
 1385 (4s) I think cause it's been a newer group since
 1386 January.
 1387 yeah yeah
 1388 and it's small,
 1389 and it happened to be like all the quietest kids.
 1390 yeah
 1391 I went from like extreme crazy town first semester to
 1392 like the quietest kids ever second semester (laugh)
 1393 mhm mhm
 1394 ok, so I would
 1395 what do you think?
 1396 let's do third period this time
 1397 ok
 1398 because what won't be very useful for us
 1399 is if there's nothing to write on the papers.
 1400 ok
 1401 yet.
 1402 right?
 1403 yeah, do you think I should do this for all periods
 1404 tomorrow?
 1405 whatever portions of it you want- you feel
 1406 comfortable doing.
 1407 sure play with it, yeah.
 1408 have fun.
 1409 see what happens.
 1410 I have three 8th grade classes

1405 what?
1406
1407
1408 well I think the one thing is just gonna be,
1409 like how do you-
1410 they're gonna have to be willing to try things that they
don't know/
1411 /mhm
1412 and not freak out about it.
1413 mhm
1414 So that's gonna have to be supported,
1415 mhm
1416 but that can get supported in the launch, right?
1417 right
and you could do like a mini version of a participation
1418 quiz where you're not trying to write down for the
whole class what everybody's saying all the time? but
you can say like,
1419 I'm listening every time anyone is like willing to try
something
1420 I'm writing a point on the board.
or something like that where you're just really
1421 supporting that,
1422 mhm
1423 cause that's the only thing, is if they-
1424 like in Lydia's class(^)
1425 they had done that quick start launch(^)
1426 and then at that moment of silence when no one had
any idea what to do(^),
1427 if they had stopped there(^)
1428 and not been willing to sort of forge through it,
1429 that would have been sort of-
1430 then they would have needed the teacher again
1431 mhm
1432 and not been able to do it without
1433 mhm
1434 you know what I mean?
1435 mhm
1436 so I think if you, yeah, I mean I- that'd be great.
1437 I can come to first, /if you prefer.
1438 /do it all day?
1439 I can do whatever you want
1440 uuuh, what do you think, Lynn?
1441 when do you think she should come? (5s)
1442
1443 third? ok
1444 in my experience with hard-
1445
1446 oh god,

1447 I know I could use a day off (laughs)
1448 also, in my-
1449 yes, yes.
1450 and in my experience
1451 I'm so burnt with them
1452 with Kamilah's first period class,
1453 when they were really quiet at the beginning,
1454 the quieter the class,
1455 the longer it takes me as an outsider to get in.
1456
1457 mmm
1458 do you know what I mean? like
1459 when I did stuff with her, like my first couple times
1460 here,
1461 when I would intervene with groups, or talk with
1462 groups, like (.)
1463 mhm
1464 they were nice to me, you know nothing bad
1465 happened,
1466 but the did not take me up on anything I was offering
1467 them, /for a while/
1468 /I know,/
1469 it's tough
1470 so I that because I will be a total stranger to them,
1471 that first period class has never seen me before,
1472 I think it's unlikely,
1473 or it's less likely that I can make this work /
1474 mhm mhm
1475 with them.
1476 whereas often more boisterous classes, like-
1477 they're boisterous, right? they've got-right?
1478 and they are very- /
1479 /they've got energy
1480 it's easier for me to be friendly and they'll be friendly
1481 back, right /
1482 /mhm
1483 unless you're Joaquin.
1484 or they'll, or some of them will anyway.
1485 Maybe not Joaquin, but.
1486 unless you're Joaquin.
1487 /take everything with a grain of salt.
1488 Joshua David's been better.
1489
1490 Oh, Aiken.

1491 Who was actually really bad when you videotaped,
1492 but he's actually a great kid normally
1493
1494 oh yeah.
1495
1496 yeah,
1497 there's some autistic-
1498 cool!
1499 so for first period, do you think I should just boycott
this too (the blue worksheet) and do that.
1500 yeah, you might as well keep-
1501 if you feel comfortable doing it,
1502 you might as well keep your- make your life easier,
keep your kids in pace, right? /
1503
1504 keep em on the same stuff
1505 um
1506
1507 have you seen this?
1508 no.
1509 I'm sure I have, cause I read this whole curriculum
1510 I'm just wondering, do I ever need to do that? (laughs)
1511
1512 this is the- a really hard part of it.
1513 cause they are supposed to estimate the-
1514
1515 (laughs)
1516 how far are you guys going in the- in this-
1517 this is unit 6, right?
1518 how many are there, eight? (.)
1519 I think so
1520
1521
1522 oh that's the ninth.
1523
1524 modeling is the ninth
1525
1526 mm
1527 and what's seven?
1528 do you know?
1529
1530 isn't bivarian- bivarian (laughs)
1531 bivarian
1532 (comically) the new drug bivarian
1533 no, isn't that like-
1534
1535 (laughs)
1536 Bavarian

1579 um things like that,
1580 but I feel like you could give something like this,
1581 as warm up without asking them to estimate to the
nearest tenth
1582 right
1583 just give them some square roots and ask them, like,
1584 to /make sense of between which two whole numbers
is it
1585
1586 and they can be like ok, well seven squared is forty
nine,
1587 six squared is thirty six,
1588 it's between six and seven.
1589 That's really all grown ups ever do with this, right?
1590 and then they grab a calculator /if they need to. know
any more than that/, right?
1591
1592 I mean that might not be, i'm not saying that it's
useless to do this other work,
1593 but I'm saying for your time
1594 mmm
1595 and sort of the weight of what is useful,
1596 I feel like if that feels useful to you, which it may or
may not,
1597 you could stick it in warm ups,
1598 skip this /lesson and move on./
1599
1600 mhm
1601 yeah, and put it in the goddam calculator!
1602 hello!
1603 yeah, I know
1604
1605 /we have calculators in our pockets every day!/
1606
1607 yeah.
1608 OK, yeah
1609 and then all of your classes will be on the same
problem
and then also you'll have something more interesting
1610 to think about because you'll get to see how it went in
different classes with different stuff happening.
1611 mhm
1612 right?
1613 ok
1614 (whispering) I like it.
1615 (full voice) Um, do I need to make copies of this?
1616
1617 yeah
1618 we'll just do one on each table,

1619 or how are you
 1620 four
 1621 oh we are doing four on each table.
 1622 with the paper in the middle, yeah,
 1623 so they have- cause they /have to be able to rough
 draft draw
 1624 /Oh, yeah right/ so they each have it, but it has to
 touch that,
 1625 OK.
 1626 yeah yeah yeah
 1627 So four so everybody has a copy.
 1628 okay
 1629 So the set up that we would need to make this work I
 think would be,
 1630 if we're gonna do posters around the room, would be
 getting them up.
 1631 ok
 1632 um/
 1633 /just like any kind of-
 1634
 1635 yeah, just poster paper
 1636
 1637 which I can come in and do,
 1638 wait, where am I second period?
 1639 I'm with Aya second period.
 1640
 1641 and you want em for each table?
 1642 how many groups do we have in this class?
 1643
 1644 eight
 1645 eight.
 1646 uh yeah,
 1647 so I want one for each if we can,
 1648 so I could do one two three four five six (pointing to a
 spot on the wall for each number),
 1649 one in the front for this group, and then one on
 windows or something for this group.
 1650 OK
 1651 yeah
 1652 Oops, I just did, did I just do it? yeah, I just did it.
 1653 cause this table is empty, right? this is the supplies
 table?
 1654 yeah
 1655 yeah
 1656 (yawning while talking) for my first and my fourth
 period
 1657 uh huh
 1658 should I not do the poster things?
 1659 whatever /you wanna do,

1660 it's a lot to do/
1661 /it's gonna be hard with one person
1662 yeah, I mean it's doable with one person,
1663 what I often do with participation quizzes when it's
just me is just
1664 put em all on the board
1665 project it
1666 or project it although it's hard to get anything
projected that you can fit eight things on
1667 where kids can actually read em,
1668
1669 so maybe markers on the white board,
1670 you know, where you're just writing in one place
1671 and you just know, when it's just you,
1672
you catch less from each group, /but that's totally fine.
1673
1674
1675 it's just not public
1676
1677 it's just not public, yeah.
1678 so it's not serving /as feedback to everyone else,
right?
1679
1680 which is fine, right?
1681 we trade off, right?
1682 we don't do it all
1683
1684 it's feedback to the group
1685
1686 yeah, yeah
1687 so I for sure need eight posters for when you come in
1688 and then the other classes...
1689 (bell rings)
1690
1691 make decisions based on what's gonna feel fun and
easy,
1692 okay
1693 that's what you need right now,
1694 in my humble/ estimation (laughs)
1695 /Yeah, I don't really know how to run, like (.)
1696 seven or eight posters on my own.
1697 no no no no,
1698 that's cray cray,
1699 yeah yeah yeah,
1700 don't do it.
1701 don't do it.
1702 so what I would recommend is whatever

1703 if you're going to do any kind of public feedback,
 1704 make it on the board with a marker.
 1705 um don't even try to do the two color thing.
 1706 ()
 1707 I would just like say, I'm looking for
 1708 the papers need to be touching the middle, you are
 1709 going to get points when that's happening,
 1710 and I'm gonna give you points every time I see or
 1711 hear you being willing to try something,
 1712 okay
 1713 or something like that. you know?
 1714 and a quick start, maybe.
 1715 And just mark those down when you see em.
 1716 and don't worry if you miss em, just whatever you
 1717 catch.
 1718 OK
 1719 it gives you something to do, too, so that they know
 1720 that you're not gonna be in with them.
 1721
 1722 ok, also um
 1723 yeah, no grading
 1724 your like opening notes are pretty important for this
 1725 task, wouldn't you say?
 1726 yeah
 1727 I'm just wondering if I'm gonna be able to run it as
 1728 well as you,
 1729 like I don't know if I'm gonna have the same-
 1730 if I do it for all the classes, I- unless I-
 1731 like I feel like this one (pointing to something in the
 1732 coach's notes) is like really key to like setting it up
 1733 how you are explaining it.
 1734 well, I think there are a couple key aspects.
 1735 I think there's a lot of room to play-
 1736 ok
 1737 and it'll just unfold differently.
 1738 I think the key aspects are (.)
 1739 whatever you think you need to say to them to get
 1740 them to be willing to try things
 1741 that they don't already know
 1742 ok let me, can I write this down?
 1743 yeah, of course
 1744 (going to get a paper) cause I'm gonna forget all this.
 1745
 1746
 1747
 1748 yeah
 1749 (arriving back to the table) OK, so to open this and
 1750 launch it, (pause then laugh)
 1751 I was like this notebook's full!
 1752 OK. (5s)

1742 OK, so launch
1743 (3s) alright.
1744 So I think for the launch, you are gonna tell them how
you're giving them feedback,
1745 right
1746 so you're gonna, if you're gonna call it a participation
quiz, or whatever you're gonna call it,
1747 I'm gonna be taking notes on the board,
1748 whatever you want to say
1749 ok
1750 and tell them what you're looking for
1751 and those things that you're looking for in this case
need to be,
1752 you just need to make a little bit of a big deal at the
beginning about, you're gonna have to try stuff that
you don't know if it's gonna work.
1753 You're gonna HAVE to do that on this problem, so
I'm gonna give you points every time that's
happening.
1754 (someone comes in)
1755 hi
1756 oh, uuuuh
1757 Student: Can I take it right now?
1758 uh yeah, can you wait like five minutes? OK
1759 Is that a student?
1760 what?
1761 is that a student?
1762 yeah,
1763 I love her
1764 so grown up!
1765 oh my god
1766 yeah, she's samoan.
1767 They're just big.
1768
1769 not in my class
1770
1771 ok, so you're gonna /try stuff
1772 try things you don't know how to do
1773 yeah,
1774 or you don't know if they're gonna work, right?
1775 so you have to be willing to get started.
1776 ok
1777 um
1778
1779 /put it down
1780
1781 wow
1782
1783 /committing to anything

1784
1785 yeah, yeah
1786 Uuum, the middle space.
1787 The touching the blue paper thing.
1788 I think you could just put a blue paper in there in the
beginning before first period.
1789 We could do it right now if you want.
1790
1791 or any color (laughs)
1792 a paper that we can refer to easily,
1793 um, and then just leave it there for the whole day.
1794 I'll make sure it's colored.
1795 Color helps for referring to.
1796
1797
1798 Um (.)
1799 Quick start might support you, and then, (there's an
announcement coming over the loudspeaker into the
classroom).
1800 she's always drunk.
1801 sorry, (makes a sound immitating the voice),
1802 anyway, sorry.
1803 (laughs) um, and then since it's such a big deal to be
willing to try things, I think there's also something
around like
1804 ask people for their ideas,
1805 okay
1806 and like,
1807 I want to hear you say,
1808 like, maybe we should try this, or what should we try?
or, you know
1809
1810 mkay
1811 and that's it.
1812 I don't think you have to make a big deal out of it.
1813 That's all.
1814 OK
1815 and then just let them know you're not going to be
talking to them cause you know they can do it without
you.
1816 the whole period
1817 yeah
1818 you didn't talk to anybody the whole period?
1819 pretty much.
1820 I started a little bit, like the last ten minutes
1821
1822 um at about ten minutes toward the end I started
interacting a tiny bit with groups, just to push
participation really.

1823 okay
 1824 Um, there was a couple groups where they made some
 improvements in hearing from everybody, but there
 1825 was still one person who really thought it was her job
 1826 to teach everybody everything
 1827
 1828 mmm
 1829 and so I did a little bit of like-
 1830 a little more interacting to try to push on that,
 1831 mhm
 1832 but I waited until, yeah, the last ten or fifteen minutes,
 1833 do I- cause I usually have facilitators read the problem
 1834 to the group
 1835 /sure
 1836 /should/ I still do that?
 1837 yeah
 1838 okay.
 1839 and that's their first quick start points, yeah
 1840 and it'll be fun to see if they all do that, it was so cute,
 1841 read read read read read (long silence) (laugh)
 1842 what was that?
 1843 dead silence
 1844
 1845 after the reading
 1846
 1847 cause no one knows what the hell to do, right, they
 1848 read it out loud and they're like-
 1849 oh you should,
 1850 I guarantee i'll probably sit there for like fifteen to
 1851 thirty minutes first period with them not
 1852 without being able to do anything.
 1853 Or they might do something but they will not
 1854 communicate with each other.
 1855 but if they are touching the blue paper, even if they
 1856 don't talk,
 1857 someone's gonna see what that person did over there
 1858 and they're gonna be like (.),
 1859 and they might copy, which in this case might be
 1860 totally fine, right,
 1861 right
 1862 they might get an idea and write it down, they might
 1863 say like,
 1864 what did you write right there?
 1865 you know, we don't know
 1866 did you do checkpoints?
 1867 nope
 1868 so no checkpoint either.
 1869 mkay
 1870 didn't talk to them at all

1861 (3s) yeah, well we did,
1862 what I was looking for was looking for content wise,
1863 what I was looking for was,
1864 you know the content objective was pretty humble,
1865 it was just use the Pythagorean Theorem.
1866 It just happens /to be in a rich problem
1867 /so you did tell them to use Pythagorean Theorem
1868 no, no, but that's what Lydia wanted them to do so I
was looking for that?
1869 okay
1870 and when it wasn't totally happening, because some
groups were doing that estimating thing,
1871 then we kibitzed a little bit and we were like,
uh, there are groups, like not even doing that, because
1872 they're- they're doing this other thing which is super
smart,
1873 but we didn't think of it and it's not the objective,
right?
1874 (laughs)
1875 so then we figured out a way like,
1876 we put on the participation quiz poster for a couple of
groups,
1877 the one group I could find that was doing it, I put it on
the poster,
1878 using the pythagorean theorem. (.)
1879 Then when we called them together
1880 to read each other's posters, I knew that would be
available, because they're reading it,
1881 right, so there's the idea sitting there, and then I asked
them- I told-
1882 I publicly assigned competence to the idea of the
proportional reasoning
1883 and I was very honest and said it did not even occur to
me that anyone would do that and that's super
awesome and smart
1884 AND I wanna push you to go from estimating to
calculating,
1885 so that estimation is powerful, but I want to see if you
guys can actually calculate exactly what that distance
has to be,
1886 so I want you guys to talk about that,
1887 so doing that and then asking them to read the posters,
they all got to pythagorean theorem.
1888
1889 no, I didn't say anything about it. Yeah.
1890 We did have that do now, which was just like, we
made it super short,
1891 which was just like, write down everything you know
about the pythagorean theorem-

1929 Well, and a lot of kids weren't even initially for a long
time seeing triangles.
1930 they were seeing lines, right?
1931
1932 mmm
1933 They were seeing distances, but they weren't seeing
this (tracing the three sides of a triangle) as a
1934 meaningful thing, a triangle sitting there that was
useful.
1935 mhm
1936 And some kids like did a lot of work before they got
there, they did this,
1937 by that I am pointing at your thing of rulers,
1938 they did the like, well if this says twelve and it's seven
centimeters, then this, they were thinking distance,
1939 mhm
1940 for a long time, which is fine.
1941 did you give them calculators?
1942 yeah
1943
1944 yeah, yeah, yeah.
1945 So yeah, Lydia said that they had been working on
this estimating [square roots] thing and um,
1946 we decided, in order to get them into, like, actually
into rich problem solving, let's set that aside for a
minute,
1947 cause she feels like they can kinda do it, /for this
1948
1949 the roots
1950 and did you have any groups that said like,
1951 okay we got it, checkpoint. or we think we have it.
1952 (shakes head)
1953 no?
1954
1955 nope, there was one group that right toward the end I
heard them not talking to me but internally
1956 making a decision that one of their pathways was the
shortest one,
1957 so they seemed like they were maybe getting to the
place of thinking they were done,
1958 mmm
1959 and I did talke with that group, just to push them
cause that was also a group where two people had
been dominating
1960 mhm
1961 so I just like
1962 asked them to generate another one.

1963 I said I don't know if the one you have is a really
1964 short one or not, cause I haven't even been listening, I
1965 don't know. I don't know what your solutions is, but
1966 whatever it is, I want to challenge you.
1967 Come up with one more and I want it coming from
1968 this side of the table.
1969
1970 mhm
1971 And they kept working. I don't know what they did
1972 with it. cause I was talking to you guys, but
1973
1974
1975 Oh, did I just draw on the one that we could have used
1976 /as an original?
1977 /Oh/
1978 do you have another one?
1979 /I bet Lydia does, but
1980 /And we can erase it/
1981 Yeah, she's probably got one.
1982
1983 Oh,
1984 she recycled them?
1985
1986 What the hell.
1987 OCD, anyone?
1988 God, this is the problem with being too organized.
1989 Cause then you don't have a million things lying
1990 around to use when you need them.
1991 That's amazing.
1992 That's why her classroom is so clean, huh?
1993
1994 So not the thing that was my problem at all (laughs).
1995 My classroom was like (gesture)
1996
1997
1998
1999 But she could also email
2000 yeah
2001 I know she made it on her computer-
2002 I never throw mine away either, yeah,
2003 cause I have so many kids that ask for extra copies.
2004 Um,
2005 awesome, fun!

Cool.
Thanks, I'm excited.
Yay!
If nothing else,
we'll have a good time.
we'll learn something

30 uh huh
 31 Um, for the most part,
 32 even with all three classes
 33 I was really impressed
 34 that I had very little like,
 35 (raising hand) 'Ms Benito Ms Benito Ms Benito'
 36 mhm
 37 you know, I had very little of that.
 38 mhm
 39 So that was really good.
 40 mhm
 41 Like I thought it was good that they,
 42 took on the task
 43 without much,
 44 feeling like they needed me for something.
 45 mhm
 46 So that was a positive.
 47 mhm
 48 Um,
 49 and I thought most of them at least tried to attack the
 problem or do something.
 50 mhm
 51 Like we didn't have that like huge silence except a
 little bit-
 52 first period was probably the toughest with that
 53 mhm
 54 and I expected that.
 55 mhm
 56 Um,
 57 and I will say with the high needs of third period
 (laughing)
 58 yeah, uh huh
 59 which you took on really well (laughs)
 60 (laughs)
 61 they were pretty well behaved for the most part
 62 yeah!
 63 and good.
 64 yeah
 65 you know, with the exception of a couple-
 66 toughies.
 67
 68 Omari was not here.
 69 Oh yeah, right.
 70 That makes me sad.
 71 I know, /I need to do a whole thing/ with him too
 72 /I wish he was./
 73 But um
 74 I like him.
 75 I know.

76 I love that kid.
77 (gets up and takes photos of the participation quiz
78 posters)
79 Um,
80 yeah so I thought
81 I mean Jose presented what he did, right
82 (laughs)
83 which, I mean whatever.
84 As to be expected.
85 I mean I expected it to go like that with him. (.)
86 Um (.)
87 But I- So tell me what- did you feel like there were
88 other
89 ones that were challenging.
90 other things that were challenging?
91 yeah like behavior stuff that was a problem in that
92 class.
93 Well Marcos has been a problem,
94 the kid over in the corner.
95 u:::h
96 He's with a group of girls
97 We've had a lot of problems with him in that group.
98 okay
99 I've had a lot of problems with him in general (small
100 laugh)
101 okay, uh huh
102 He just kinda gets ve::ry,
103 like he thinks he knows it all kinda thing.
104 okay
105 but he can also be really sweet.
106 so-
107 I just, I haven't seen his sweet side come out.
108 I talked to him about it-
109 I'm like waiting for that to come back
110 uh huh
111 cuz I know it's there.
112 uh huh
113 Um,
114 I also- and this is-
115 this is kind of- I didn't get to explain-
116 you guys don't know the background on every little
117 dynamic
118 yah
119 but this table?
120 yeah
121 so there was a blow out with Abel and Billy
122 mhm

120 Billy is the kid on the other side
 121 mhm
 122 and Abel- apparently Billy tore his eraser.
 123 today
 124 No, this was like a week ago
 125 mhm
 126 and like Abel has never gotten over it.
 127 okay
 128 and it's become this huge cause of tension with them
 and like
 129 ever since then it's like
 130 a big problem
 131 mm
 132 and Abel is very particular of who he works with.
 133 I have a really hard time with him doing groupwork.
 134 uh huh
 135 in general.
 136 uh huh
 137 So, um,
 138 I noticed him and Andrew were like doing great work
 139 yeah
 140 and not involving Billy at all.
 141 uh huh.
 142 It was like this (gesturing between two seats at the
 table) and Billy was like where you're sitting (in a
 different seat)
 143 uh huh uh huh
 144 and it was really tough for them to-
 145 uh huh
 146 And then this table (pointing)
 147 uh huh
 148 Thomas!
 149 and Faith.
 150 U::m
 151 Faith sits across from him?
 152 Faith sits here (pointing)
 153 okay
 154 and Thomas's here (pointing)
 155 mhm
 156
 157 Thomas just got off of like meds for depression.
 158 mhm
 159 and I kind of,
 160 don't think that was the smartest move.
 161 Like he's always like that (shows head down on her
 arm on the table)
 162 He doesn't want to participate,
 163 like I have a hard time getting him involved.

164 So we had /maybe a little bit of a breakthrough/ at the
end with them.

165 /but you ()/
166 yeah,
167 and you pointed something out.
168 you know you were saying that Kalea and Jimmy
169 mhm
170 were kinda owning everything.
171 mhm
172 cuz they're both really high level
173 mhm
174 thinkers.
175 But you brought up an interesting point.
176 that these two were feeling like left out.
177 mhm
178 and like not a part of.
179 mhm
180 or maybe made to feel stupid,
181 or I don't know.
182 mhm
183 you know?
184 mhm
185 so it was kind of a good perspective you brought up.
186 on that one.
187 mhm.
188 I think-
189
190
191
192 Oh good!
193 Andrew's a good kid.
194 He-
195
196 (touching her chest)That's good to hear.
197
198 awesome.
199
200 I th- It's more Abel who really- and I've had many
talks with Abel.
201 mhm
202 he's also extremely hard on himself.
203 mhm
204 like he's one of those kids who has to be perfect,
205 and he's in track and if he doesn't have a perfect run
206 it's like- if I try to give him a high five, he's like
'nope.'
207 it wasn't perfect.
208 you know what I mean?
209 uh huh

210 He won't even high five me.
211 uh huh
212 like if it's not perfect.
213 and he's very-
214 he wants to do everything himself mhm
215 and he's very hard on himself.
216 (3s) mhm
217 so
218 yeah so I wanted to tell you a little bit about what
happened here (pointing to the table with Kalea and
Jimmy)
219 yeah let's talk about it.
220 yeah cuz what I was hearing there which I was
hearing-
221 we talked about this briefly,
(to Lynn) the two of us (gesturing to herself and
222 Heather) in class that you were not in that little huddle
we were having, um
223 that Kalea
224 was telling.
225 and not ever asking.
226 mhm
227 she was talking but she was telling.
228 and kind of- oh and she would tell Thomas?
229 mhm
230 to shut up,
231 every time he opened his mouth,
232 she told him to shut up.
233 Wow!
234 Now it's possible-
235 I heard her say shut up multiple times,
236 it's possible that what she was responding to was off
task talk,
237 I don't know.
238 He's generally off task but
239 but I wouldn't assume that that's necessarily what-
240 right
241 so that was the dynamic that was happening,
242 so that maybe makes it
243 harder for him to enter into a math conversation
(laughing)
244 right
245 if every time he's talking someone is like shut up.
246 and then keep telling you- talking at you.
247 yeah
248 shut up.
249 I'm talking, you know.
250 mhm
251 so that was goin on.

252 and then, um
253 and I felt like they were kind of um-
254 so I was trying to support them through the
participation quiz (pointing at a poster on the wall)
255 (looking at poster) yeah.
256 and they were just not really attending to it
257 mhm
258 or like I think maybe it was behind Kalea
259 o::h
260 and I don't think she was turning around and looking
at it
261 or at least not frequently.
262 I think that Thomas and Faith were reading it.
263 mhm
264 but it wasn't them who had the power to do anything
about it.
265 mmm
266 Because what was on there was,
267 'everyone's voice being heard?' um,
268 and I kept saying 'ask for ideas' right down there in
green with four exclamation points
269 it's like ASK FOR IDEAS.
270 yeah
271 and it was really for Kalea.
272 because she really needed to ask,
273 stop talking and start asking, right? um,
274 So then you- (to Lynn) she (heather) and I talked a
little bit and I thought that what I was-
275 I ended up doing something different than I thought
276 because what was going on there was different,
277 um but-
278 So I asked Heather her permission or maybe her ideas
about coming in,
279 and asking them to come up with one more path
280 yeah
281 and asking it to come from this side of the table.
282
283 So I was asking Heather if she thought that was safe,
284 and if that was something I could do, like-
285 when I don't know kids it's scary to do stuff like that
because-
286 you just don't know what you might be setting up
that'll be really bad.
287 right.
288 you know, um
289 I think it was okay, though.
290 I think it was kind of giving them permission.
291 Yeah, so what I ended up doing was um,
292 something different that I didn't-

293 it was happening in the moment and I honestly didn't
294 know how to feel about it,
295 but they had-
296 um
297 (5s) so the only-
298 I had thought there might be a different way to get
299 ideas out of them,
300 which was, what they had was the only numbers that
301 existed on their-
302 so they had all these pathways (drawing)
303 and this happened in a number of groups
304 where they had something like this drawn
305 mhm
306 right, um
307 and they were like 'that's the shortest path'
308 with no numbers anywhere.
309 mhm
310 and so I was like, 'well how long is that path?'
311 mhm
312 like part of this task is actually figuring out how long
313 that path is
314 mhm
315 so you can decide if- you know there might be another
316 one you could compare the lengths and see which is
317 shorter.
318 the only numbers they had there were on Kalea's
319 paper,
320 other kids might have written them down but they
321 clearly had originated from her,
322 mhm
323 and I-
324 so I asked her where they came from,
325 and she explained they were-
326 it was basically the proportional reasoning with the
327 ruler.
328 that thing we saw before and that we
329 had not seen before with this task
330 but where she like was figuring out-
331 and so I was- so I said,
332 I listened to her and I said, 'okay so,
333 what I'm hearing is that - what I call that is
334 proportional reasoning,
335 mhm
336 and that's really useful.'
337 She'd set herself up a little scale.
338 (small laugh)
339 I think she'd been like (writing) this much is four
340 whatever, right?

331 She like made a little map key or something.
332 So I was like, 'okay so that-
333 that to me is proportional reasoning,
334 that's super smart AND that involves estimating.'
335 mhm
336 and I think that there's a way here,
337 that we can know exactly how long that is,
338 a different strategy,
339 that involves calculating and not estimating.
340 so we will know really kind exactly,
341 mhm
342 how long those distances are.
343 which will help us really know for sure what's
344 shorter.'
345 um
346 'and so I want you guys to talk about that.'
347 and I said something- I don't remember- I wish I
348 knew
349 it's- I think I audio recorded myself so we can get it if
350 we want to, but um
351 (.) I said something that was asking for it to come
352 from this side. (pointing)
353 mhm
354 Maybe-
355 but then I said, I also told them,
356 'this group'- this is the only group I talked to about
357 grades.
358 and I said, 'this group does not yet have an A.'
359 mhm
360 'because there's one thing I'm not seeing.'
361 'and I'm willing to give you guys an A
362 if you are able to do this one thing and it's gonna be
363 really hard.'
364 'but I'm gonna ask you guys,
365 to really get everybody's ideas into the conversation.
366 and the reason I'm insisting on that is because I know
367 you're gonna learn more when that happens.
368 mmm
369 I know that you're gonna learn more and it's not
370 happening yet.
371 and I get that that's a really hard thing to do.
372 but if you guys can make that happen,
373 that's how you guys are gonna get an A for this.'
374 mhm
375 and I- and then I checked in with Thomas and Faith,
376 and said, 'is that okay?'
377 and then said something specifically about 'I want this
378 next thing to come from this side.'
379 a proposal or a question or a-

371 mhm
372 you know.
373 get this group moving, like you
374 get this group moving, is that okay?
375 and they accepted it, Faith did not look happy.
376 mhm
377 but they didn't say no.
378 Thomas looked a little happier and a little more
379 willing maybe.
380 Um and then um,
381 and then Thomas did,
382 propose something.
383 Yeah, I heard him say something.
384 And then Kalea's response was really interesting.
385 Um, I wish I had that on video.
386 Because I still don't know how /to interpret/
387 /we might be able/ to hear it.
388 Yeah.
389 She said-
390 I remember what she said but I just can't remember
391 what-
392 So she said and it almost sounded a little bit
393 confrontational,
394 but she was like- he said something and she was like,
395 'but how do you know?'
396 Oh he said this is shortest or something.
397 He said something about some path being the shortest.
398 That's what he said.
399 mhm
400 He made a claim.
401 And she said, 'well how do you know?'
402 and he said, 'cuz there isn't a shorter one.'
403 and she said, 'well how do you know?'
404 and he was like, 'because I can see it.'
405 and she was like, 'look.
406 this and this (marking on paper.)
407 I could say these are the same length cuz they look the
408 same length, but how do I really know?'
409 So she was doing a thing where she was asking
410 questions
411 that were really good useful questions,
412 and I think she may have been pissed. (laughs)
413 yeah they were really pissed
414 cuz at one point Jimmy yelled at them and was like,
415 'you guys need to talk!'
416 because you had told them that
417 o::h
418 they had to come up with the answer.

414 uh huh
415 and I heard her yell at them
416 oh
417 'you guys need to talk!'
418 well it's interesting.
419 cuz they weren't saying something.
420 and like I think,
421 Jimmy is very-
422 she's actually generally pretty like soft spoken,
423 uh huh
424 but she's super smart.
425 uh huh
426 but she is very I think grade-
427 yeah
428 getting
429 yeah.
430 which was my intention.
431 I was trying to use that grade to like make 'em take it
432 seriously.
433 cuz /so far they hadn't been/
434 /but it felt very threatening/
435 yeah
436 to have somebody be like 'you gotta talk!'
437 like that's not gonna make me want to talk.
438 totally! yeah.
439 and that's that fine line.
440 (laughing)
441 /but I was trying to-/
442 /()nicest way to go about/ getting your group to
443 communicate. (laughing)
444 So but I did-
445 so when Kalea-
446 'talk!'
447 (laughs) right.
448 So when Kalea said, 'how do you know?'
449 I just decided to interpret it really generously.'
450 okay
451 and to say, 'yes!'
452 'do that.
453 that thing you're asking,
454 you're asking your groupmate for ideas.
455 do more of that.'
456 (nodding and smiling)
457 So I wrote that (pointing to PQ poster) I wrote 'how
458 do you know?'
459 mhm
460 and then he (wrote) something else and she's like,
461 'yeah but what do you mean?'
462 and I think she was kinda pissed,

459 but like she was saying the right thing.
460 like that- yes do that.
461 mhm
462 I was trying to give her credit for that.
463 so I think what might be nice for them tomorrow
464 and I didn't get a chance to- you know-
465 me and the end of class,
466 always a challenge.
467 um,
468 (laughs)
469 but if you would be willing to tell them tomorrow
470 mhm
471 that they got their A,
472 that would be really great.
473 okay
474 (laughing) I will tell them they got their A.
475 Cuz they did.
476 I asked them to do something really hard,
477 and they did do it,
478 mhm
479 and I said- I mean I did say-
480 I don't remember if I said, 'you got your A'
481 but I did say,
482 'thank you.
483 that was exactly what I wanted you guys to do.
484 and I know it was really hard.
485 mhm
486 You did it.
487 and if we had more time you would have seen that go
further,
488 yeah
489 but I really appreciate that.'
490 so I did say something like that.
491 I think what's tough with Thomas and Faith,
492 uh huh
493 number one I should never have sat the two of them
together.
494 okay
495 cuz it's just been a bad combo,
496 mhm
497 like all week.
498 okay.
499 I think there's something possibly going on with those
two even, like it's just-
500 okay
501 and they've been off task all week,
502 so I think-
503 both of them are notoriously,
504 haven't been,

551 make that better.

552 yeah.

553 you know, I'm kind of at a loss.

554 Cuz I want to make it better too, but I don't know
how.

555 yeah

556 Like

557 I think you started getting there.

558 Yeah, it was just like a little-

559 a little moment that had we had more time we coulda
built on, I don't know, but um

560 I think um

561 Yeah, I mean one of the things we ask from our kids
which is really hard but I think worth asking from
562 them?

563 for me relates to like,

564 maybe the kind of people we hope they'll be.

565 mhm

566 which is being generous with each other.

567 and like being forgiving,

568 yeah.

569 and like being willing to like
570 let go of our perceptions of what someone is capable
of or is gonna offer

571 mhm

572 and like be open.

573 yeah.

574 because sometimes they surprise you
575 and sometimes they show up with something really
useful, right?

576 that's really hard to do and it's really hard to do in
March.

577 (nods)

578 right, like there's a lot of cemented stuff from habits
that are built across-

579 and Thomas's a new student here too.

580 oh okay.

581 He just started here like

582 I don't know

583 (to Lynn) what like two months ago?

584

585 okay okay

586

587 So he's been through like massive adjustments

588 uh huh

589 oh he's got parents.

590 that email us like every day.

591 super overbearing parents.

592 oh.

593 yeah.
 594 That's interesting.
 595 (.) So anyway, I think /like the reas-/
 596 /anyway/
 597 I definitely felt the, the um
 598 (.) /the challenge of trying to work with kids I don't
 know./
 599 /I'm worried about Faith too./
 600 yeah
 601 yeah
 602 I'm very worried about Faith.
 603 on a lot of levels.
 604 mmm
 605 I'm worried about her with boys.
 606 mhm
 607 I'm worried about her-
 608 a lot of times she::'s- like I've gotten
 609 I tried to get really serious with her at her conference
 about
 610 the fact that I feel like a lot of boys pick on her.
 611 uh huh
 612 she doesn't see it that way,
 613 or didn't want to admit it.
 614 but I feel like there's been bullying
 615 that has gone on.
 616 uh huh
 617 with Faith and the boys. (.)
 618 I don't know what's going on with her and Thomas,
 but her- she-
 619 I feel like she has very low self esteem.
 620 uh huh
 621 and like probably one of the lowest in my class.
 622 yeah
 623 Like if I was to pick out anybody in that class that I
 think is the least confident in themselves,
 624 uh huh
 625 I would say Faith.
 626 uh huh.
 627 of that entire class.
 628 uh huh
 629 And I don't know how to like,
 630 like I don't want her to be that way.
 631 yeah
 632 you know, and I want her to feel worthy
 633 yeah
 634 but i don't- like how do we-
 635 well all we can do is try, right?
 636 and all we can do is try little bits and stay open to the
 pot- the possibility that things could shift.

637 yeah
638 and they will or they won't, right?
639 like we only have what we have.
640 So maybe had I known that,
641 about that group, had I known that group,
642 I know
643 I might have tried to find a way that the poster wasn't
644 behind /Kalea/
645 /Kalea/ yeah
646 And Jimmy.
647 because the way we did it,
648 it sort of felt like,
649 the people- and because they weren't really attending
650 to it a lot,
651 yeah
652 which maybe I also could have set that up differently,
653 I could have set something up differently to ask them
654 to attend to it more,
655 um,
656 but because they weren't really attending to it
657 then the only people who were really being supported
658 to change things in that group were the two people
659 with the least power to change things in that group.
660 right
661 right?
662 Um,
663 wich is maybe just-
664 whatever, so then we try that differently next time.
665 you know,
666 I don't think that we did damage with it.
667 I don't think anything bad happened,
668 and I think maybe we had a little bit of progress at the
669 end there,
670 and I think Kalea got communicated to her
671 that her job was to ask other people.
672 yeah
673 I don't know if she liked it.
674 Do you think she got it though?
675 Like do you think she, heard that?
676 I kind of feel like she didn't hear it.
677 Yeah I don't know.
678 I trust you much more than me to interpret her cuz
679 you know her.
680 Um,
681 I think that um,
682 she's not normally that pushy,
683 but I don't know if like she was just pushed over the
684 edge today?
685 or like-

678 I love that (end) where she like,
679 'yeah but how do you know!'
680 I know,
681 I think from the way her and Jimmy were it was pretty
clear to me that they were like
682
683 really frustrated.
684 yeah yeah.
685 (shrug)
686 which is maybe okay.
687 I mean in some ways it's like
688
689 you're producing the behavior I asked you to produce,
690 you can be mad if you want,
691 eventually if you keep doing that
692 you're gonna see that that contributes to things.
693 mhm
694 things are gonna get better.
695 mhm
696 so keep asking people what they mean and how they
know.
697 yes!
698 thank you and I'm sorry that you're feeling frustrated,
but like
699 (shrug) okay
700 yeah
701 you can feel like that, right?
702 we all- we all have those moments and that's okay.
703 I don't think she-
704 maybe that would have been a good time to do like a-
group huddle with like her role.
705 o::h, uh huh
706 or with Thomas's role or Faith
707 yeah
708 so that we could have gotten them /a little bit more/
involved
709 /interesting/
710 I forget about the group huddle all the time.
711 uh, yeah.
712 I didn't think of it either.
713 It's like such a good,
714 yeah that might have been a good one.
715
716 yeah
717
718 yeah I feel like we could have huddled around that
with Faith or Thomas.
719
720 /yeah/

721 or we could've huddled with Kalea
722 around /like in a way that was really not/ pointing at
anyone
723 /() backing off (laughing)/
724 but cuz we had that one- we had a representative from
every group
725 right
726 but just to say to that huddle,
727 um, 'I'm seeing something that concerns me a little
bit.
728 which is just I really need to hear people asking for
other people's ideas.'
729 yeah.
730 'so I need you guys to go back to your groups and just
make sure that happens.'
731 yeah
732 can you do that?' /you know like in a really soft way/
that wasn't pointing her out.
733 /maybe that would've been good./
734
735 yeah yeah
736 Yeah you never know.
737 and very often I do a huddle around,
738 um one kid
739 like Kalea in this case,
740 and you just sort of don't-
741 it's not gonna hurt anybody else,
742 (laughing) yeah
743 and it may have some unintended awesome benefits
for some other group,
744 (laughing) yeah
745 you just sorta don't know.
746 It probably won't hurt, right? Um,
747 Yeah that's interesting.
748 thank you for that idea.
749 I forget about the group huddle!
750
751 I need to do group huddles.
752 I haven't done any.
753 But when we did the PD, I loved that.
754 (laughing) yeah
755 and I'm like, 'I'm SO gonna take this back!'
756 and I haven't done one huddle,
757 even though it was one of my favorite things.
758 (chuckles) awesome. ()
759
760 yeah, I think it's-
761 you're thinking of so many things at once and it's like-
762 I gotta just like /()

763
764 who did?
765
766 Did he?
767
768 Oh my god, Michael.
769 (to Mia) I love that guy.
770 He was a kid, by the way.
771 He was like fifteen years younger than me or
772 something, I don't kn-
773 or maybe ten. Um
774 probably ten.
775
776 I wanna- I wanna hear more about your experience
777 just being in that really different role
778 oh my God!
779 throughout the class,
780 and what did that feel like to have
781 It was so- well it was like super nice,
782 to not to have to have the pressure.
783 mhm
784 of like being on
785 mhm
786 and like, being an observer,
787 AND,
788 at the same time it was like super anxiety provoking
789 cuz like every time I'd see like Jose I'd be like,
790 'I wanna say something to him so bad.'
791 I'm like, I'm holding myself back.
792 And he'd try to talk- or like
793 uh, or like I'd see something and wanna like say
something
794 Like when I saw this group
795 like I felt like was leaving out Billy,
796 it like bothered me
797 mhm
798 and I wanted to say something but
799 I was like 'okay, I'm not saying anything'
800 It was like (high voice) so hard!
801 mhm
802 But it was GREAT! at the same time,
803 it was SO nice to have a break.
804 mhm
805 and it was so nice to do an activity that was just on a
task card,
806 like I just-
807 we've been doing all this like
808 CPM wordy,

809 yeah
 810 just U::H!
 811 yeah
 812 that's just been feeling really blah
 813 uh huh
 814 and this was so refreshing.
 815 yeah
 816 like it just felt refreshing.
 817 mhm
 818 mhm
 819 awesome.
 820 yeah.
 821 so it was great.
 822 and I loved the middle piece.
 823 /the blue paper?/
 824 /totally loved/ the blue paper.
 825 Oh my god that was so great!
 826 In all the classes it was great.
 827 Fourth period actually like
 828 got I think the furthest
 829 mhm
 830 They're like one of my-
 831 like I would say the like
 832 highest scoring (air quotes) kids
 833 mhm
 834 if we're gonna talk about like test scores,
 835 mhm
 836 Um,
 837 some of them were doing some cool-
 838 like some of them- one of them made a right triangle
 in the center
 839 oh
 840 and they were trying to like,
 841 make calculations with that.
 842 And then other ones were drawing a line across it,
 843 mhm
 844 to like divide it in half
 845 mhm
 846 and I think they were trying to come up with the
 length of that line,
 847 like there's more like-
 848 getting closer to Pythagorean Theorem
 849 mhm (laughs)
 850 (laughing) in that class.
 851 (.) I also realized,
 852 like as we were- as I was thinking last night,
 853 last night?
 854 today?
 855 that was today.

856 it feels like it's been five days in the last two.
857 I know, right?
858 As I was reflecting today,
859 between then and now,
860 I realized that in Lydia's classroom when we did it,
861 they had had more Pythagorean Theorem (lessons)
862 mmm
863 before doing this one,
864 and even then they almost didn't get it-
865 to the Pythagorean Theorem,
866 to applying it.
867 Right, but they all did.
868 And here the Pythagorean Theorem was newer.
869 mhm
870 you had done less with it.
871 yeah
872 I think at the time that this task landed,
873 and so it was sort of making sense for me,
874 that it was harder for them to connect that to this.
875 Right?
876 They were not connecting.
877 no
878 the Pythagorean Theorem with this at all.
879
880 Jenna Smith?
881
882
883
884
885 uh huh
886
887
888
889
890
891 uh huh
892
893
894 (laughs) you're like AHHHH (gesture with hands and
face raised)
895
896 Of course as the bell's ringing.
897
898 Awesome.
899 So did any of your classes use it?
900 I don't think so. (getting up)
901 I did save the work from fourth period-
902 (walking away) I haven't been able to look at it yet
903 yeah

904 but um, I saw like closer getting at,
 905 cuz I'm wondering if we wanted,
 906 if you,
 907 I mean I don't know what you want to do with this,
 908 but if you wanted to come back,
 909 and sort of give them opportunities to make that
 connection to the Pythagorean Theorem,
 910 maybe Jenna's comment-
 911 Jenna, is that her name?
 912
 913 Maybe Jenna's comment could seed it.
 914 mmmm
 915 Like you could build on that.
 916 mhm
 917 you could say, 'Jenna-
 918 like she, what's her status in the class?
 919 oh, Jenna's like,
 920 really smart.
 921 Like top of the class.
 922 But she's not like (.)
 923 you know, like super oblivious,
 924 I mean (hand gestures)
 925 she doesn't need attention.
 926 for it.
 927 yeah yeah
 928 like she's quiet.
 929 yeah
 930 a very quiet kid.
 931 (looking together at student work)
 932 uhhh /they were finding area/
 933 /a lot of them had numbers that I had no idea where
 they came from./
 934 yeah yeah
 935
 936 yeah
 937 (looking at more student work) mhm (4s)
 938
 939
 940
 941 mhm
 942
 943 (.) (pointing)/o::h/
 944 (pointing)/o::h/
 945 Mandy
 946 Mandy's- oh look, hypotenuse
 947 Who's in Mandy's group?
 948 (pointing) that was this table for fourth period.
 949 where are their papers?
 950 Mandy, Joelle, Kenneth, and Mario.

951 Oy vey.
952 (gesturing across the papers) We see a problem here.
953 (laughing)
954 I brought this up to them actually.
955 uh huh good
956 Cuz they had-
957 they were actually really great at
958 using the middle space,
959 and they had all their papers like this
960 mhm
961 and then I said, 'wow' I was like,
962 'I'm seeing like really different things
963 (laughing)
964 on all your papers.' (laughs)
965 (laughing) I love how you say that.
966 You're not like,
967 'I see a whole bunch of numbers over here,
968 and none of y'all have any numbers,
969 what the hell is going on?'
970 (laughs) It's like-
971 (pointing to a paper) here's a bunch,
972 (pointing to another paper) getting a little bit less,
973 (pointing to another paper) a little bit less,
974 (pointing to another paper) and a little bit less, no.
975 but it was like,
976 I was like, 'oh,
977 I was like, 'I see a lot here but I don't see it on
978 everybody's,' and I'm like,
979 'how are you guys all working together on this?'
980 cuz I was like, 'it doesn't seem like cohesive here.'
981 and they were like,
982 'oh, no no no!'
983 they were like, 'she,
984 is putting all the work and we're dictating everything,
985 and then we're discussing it,'
986 and they actually really were.
987 awesome!
988 it was kind of amazing.
989 cuz they took her paper
990 cuz they were all like pushed
991 and the turned it this way (gesturing)
992 and they were talking this way with it
993 like as a present-ation piece,
994 awesome.
995 I know,
996 cuz I totally /questioned the same-/
997 /shows me not to assume, right?/
998 I know
999 awesome

998 I was right there,
 999 I was like, 'oh,
 1000 'Mandy's doing all the work.'
 1001 which she might have.
 1002 I mean they could have been lying.
 1003 But-
 1004 That's a hard lie to come up with.
 1005 Yeah, I mean they actually like-
 1006 Joelle's the one that said that
 1007 and she's very reliable,
 1008 and she was like,
 1009 'no we're like dictating it.' and I was like, 'oh.'
 1010 so that was I think some of the most that I had seen.
 1011 (flipping through more papers)
 1012 this one...
 1013 so this they forgot to square root this, right?
 1014 yeah, something like that.
 1015 this one, Juan.
 1016 Juan was kinda gettin' on to something (handing
 1017 paper to Mia)
 1018 here
 1019 (flipping some more) I don't know what he was doing,
 1020 but
 1021 yeah he was, look-
 1022 12 plus 16 is 28, 12 plus 16 is 28.
 1023 (laughs)
 1024 but he was remembering that there was some
 1025 relationship of adding sides and hypotenuse.
 1026 oh, cuz their group when I questioned them,
 1027 one of the kids brought up the small square and the
 1028 medium square equals the large square.
 1029 o:::h
 1030 so I think he was trying to do that.
 1031 yeah.
 1032 awesome.
 1033 yeah, that's kinda cool.
 1034 (flipping through papers) Here's Judy's (looking at
 1035 Lynn and laughing)
 1036 (takes paper and looks at it)
 1037 Dude. (they look together)
 1038 Judy's like major smart.
 1039 although she didn't really-
 I mean,
 (4s) six point four eight one yards.
 where did that come from?
 I don't know.
 It's hard for me-
 I'm thinking that there's proportional reasoning
 happening with a ruler, although-

1040 maybe not because of this (pointing)
1041 that looks like some-
1042 squares
1043 she did the Pythagorean Theorem to find this
(pointing)
1044 mhm
1045 this is 20 yards.
1046 that's what this says.
1047 Ok that's gettin' something.
1048 yeah.
1049 she found that distance.
1050 Okay, so we have three papers,
1051 which means three different groups,
1052 mhm
1053 at least,
1054 yeah
1055
1056 hm?
1057 what?
1058
1059
1060
1061 okay
1062
1063 oh, right, cuz it would reduce down to that.
1064 yes.
1065
1066 that's okay, um
1067 (quietly) and she drew a pretty flower
1068 (laughs) she loves to draw.
1069 so this must be in that group, right?
1070 that was this group.
1071 yeah.
1072 and so is this one.
1073 this is David.
1074 He was in that group and he- (.)
1075 the same David we just saw walking down out there?
1076
1077 (.) No.
1078
1079 Not David B.
1080
1081 No, this is David Lee.
1082 okay
1083 very different (chuckles)
1084
1085 okay. (4s, looking at student work)
1086 (chuckles and points to paper). I guessed randomly.
1087 that's how he knew.

1088 (both laugh)
1089 um,
1090 But he was doing some things
1091 yeah
1092 here too.
1093 Is this in that group (pointing)?
1094 yeah
1095 this has the 20 yard diagonal.
1096 Okay, so it feels like if you wanted to come back to
1097 this, um,
1098 and give them an opportunity to connect Pythagorean
1099 Theorem to this problem,
1100 (nods)
1101 and work on it,
1102 mhm
1103 together some more,
1104 we could.
1105 you could and you could seed it with kids' ideas.
1106 mhm
1107 right?
1108 Cuz they have it.
1109 they have pieces of it.
1110 and it's kind of cool that no one has it perfectly yet.
1111 right?
1112 right.
1113 but they have-
1114 so you could get that to come out of kids,
1115 I don't know what you want to do or if,
1116 I mean I think the math objective here was pretty (.)
1117 mmm
1118 humble, but it has not yet been met.
1119 yeah
1120 which was that kids use the Pythagorean Theorem
1121 in this particular kind of a set up to do some thinking
1122 around distances that can be seen as hypotenuses?
1123 (chuckles)
1124 um,
1125 so they could still do that,
1126 and that might be more useful than other,
1127 like continuing with that might be a better way to get
1128 at that than-
1129 I mean I'm sure there are other problems in your (.)
1130 binder that do that same thing, right?
1131 so it's not that you have to, you know.
1132 um
1133 (4s) What I could do is say like, 'Okay'
1134 Here's a path
1135 yeah
1136 that somebody did,

1134 yeah

1135 Like how can you use Pythagorean Theorem to try to
go further with this. (.)

1136 I like it but I think I would want you to just harvest
some of this,

1137 like because some groups,

1138 didn't yet answer that question exactly,

1139 mhm

1140 but they're on the way.

1141 mhm

1142 Like there were groups-

1143 or maybe you would ask that after you've said,

1144 'look here are three different groups,
that came up with ways to connect the Pythagorean
Theorem we've been learning about

1146 mhm

1147 to this problem.

1148 let's look at it.

1149 None of them finished it yet.'

1150 mhm

1151 'but that's super smart, let's look at those for a
second.'

1152 you could just like cycle them under the doc cam.

1153 Yeah, I can do that.

1154 or something.

1155 we did- I did a gallery walk with them

1156 uh huh

1157 a quiet gallery walk with this class only,

1158 uh huh

1159 just because I saw all that good stuff

1160 uh huh

1161 and I wanted them all

1162 yeah

1163 to get exposure

1164 yeah

1165 so maybe I can like, yeah,

1166 say like, 'here's some highlights of a few that I saw,
were getting closer.'

1167

1168 maybe we could have a group discussion?

1169 hmm (.)

1170 yeah. (.)

1171 It still sounds to me-

1172 it doesn't sound yet,

1173 what I'm hearing from you yet doesn't sound like,
'these kids did something really mathematically
smart.'

1174

1175 okay

1176 do you know what I mean?

1177 so say that.

1178 I want it to sound like that.
1179 It doesn't have to be those words.
1180 okay
1181 so I don't mean say it the way- in my language.
1182 mhm
1183 it still has to be Heather language.
1184 but I feel like I want you to tell everyone,
1185 they made an awesome connection,
1186 mhm
1187 that you didn't give.
1188 you didn't ask them to use the Pythagorean Theorem
1189 mhm
1190 but they were able to see-
1191 so in order to use the Pythagorean Theorem here,
1192 you have to see these as triangles.
1193 mhm
1194
1195 which, I think a lot of kids what happens is they don't.
1196 they're just looking at straight lines.
1197 right.
1198 like they're looking at this and then this and then this
1199 (gesturing with pen to paper),
1200 they're not attending to,
1201 look, here's a triangle
1202 right.
1203 because this part of it doesn't really matter to them.
1204 mhm
1205 right.
1206 so they have to see the triangle.
1207 they have to recognize,
1208 that it's a right triangle which gives it this special
1209 relationship that they can use,
1210 mhm
1211 you know what I mean?
1212 mhm
1213 so they did that, which is awesome,
1214 so let's just (hand gesture)
1215 say, 'Yay! Look at that smart thinking that got
1216 generated.'
1217 Or however you do it,
1218 right
1219 Heather way, right.
1220 and then,
'okay, so can we use that awesome idea that they
generated,
with something like this to figure out,
how would we?'
okay.

1221 and then to do that here a number of things are going
to have to happen, right?

1222 like they're gonna have to decide what this length is.

1223 right.

1224 which I don't know if this person has yet decided.

1225 I mean if they went to the midpoint then they could
say what this was

1226 hmh yeah

1227 this was six, right

1228 and then, find that length.

1229 yeah.

1230 totally.

1231 yeah they could say,

1232 'well let's choose one that we know so we- or they
could say,

1233 'let's decide what happens if you make a triangle that
hits at 3.'

1234 mhm

1235 you know?

1236 mhm

1237 let's try that one and see what happens.

1238 or what if it's a five, or you know, um

1239 and that's what that- the launch was trying to support
that.

1240 let's just try.

1241 yeah.

1242 decide one.

1243 make it three, or five, or six, or-

1244 mhm

1245 you know make it whatever the hell you want,
just make it something and see what we can do with it,
you know.

1247 um,

1248 okay

1249 which is really hard,

1250 for kids, right?

1251 yeah

1252 cuz like-

1253 I mean it's hard for grown ups.

1254 I mean I have a lot of kids that are so scared to put
anything on their paper.

1255 mhm

1256 I finally had to do a challenge,

1257 of one group to put something on their-

1258 to draw some path.

1259 uh huh

1260 I was like, I'm gonna challenge you in the next five
minutes,

1261 and you're gonna have to take a risk right now.

1262 good! /did they do it?/
1263 draw something in there.
1264 yeah.
1265 yeah, they did.
1266 (nods)
1267 it was really hard for them,
1268 and they didn't want to draw anything in there,
1269 yep.
1270 they were totally scared.
1271 yep
1272 if it was like wrong or whatever.
1273 it's interesting.
1274 yeah.
1275 it's scary to be a kid.
1276
1277
1278 yeah.
1279
1280 (laughs)
1281 oh, /interesting./
1282
1283 (laughs) Fascinating, that's /so awesome though./
1284 that, /one of the groups were doing/ that?
1285
1286 we told them to come up with ideas and try 'em,
1287 right?
1288 so
1289 it's actually smart cuz then they /can see where
1290 they're gonna make their line go to/
1291
1292 (both laugh)
1293 three hundred.
1294 yeah
1295
1296 (both laugh)
1297
1298 Kids are so super interesting.
1299 I wish I could just watch them all day.
1300 I know.
1301 that was interesting.
1302 So how are you feeling about,
1303 whatever.
1304 Better.
1305 I'm definitely feeling better.
1306 Um,
1307 I kinda had a meltdown this morning.
1308 mhm

1309 but I got to vent a little bit with a teacher.
 1310 I know I had kind of a rough conversation yesterday
 (laughing) with you guys.
 1311 (shaking her head)
 1312 Um,
 1313 but I'm feeling better,
 1314 for sure.
 1315 uh huh
 1316 and that was like-
 1317 you teaching the class today-
 1318 when you came in you were like,
 1319 'what do you need? what should be our focus?'
 1320 and I was like-
 1321 you know I couldn't even like think,
 1322 uh huh
 1323 cuz I was so overwhelmed.
 1324 yeah.
 1325 and then your idea of teching the class was like, such
 a great solution to that.
 1326 mhm
 1327 like I just needed a day
 1328 yeah
 1329 to like- not be a teacher.
 1330
 1331 I know,
 1332 (laughs)
 1333 You were a teacher all frickin day, I just,
 1334 (laughs) 55 minutes.
 1335 But like for us,
 1336 that's so huge.
 1337 yeah
 1338
 1339
 1340 yeah
 1341
 1342 mhm
 1343
 1344
 1345
 1346 /You know where we're gonna be for a week in the
 summer/
 1347
 1348 she was here because of Jose.
 1349 her and Jose have a pretty good relationship.
 1350 yeah
 1351 so she comes in sometimes,
 1352 and like monitors him or like,
 1353 she's taken him,
 1354 too when he's out of control

1355 mhm
1356 she'd like let him go into her room, so
1357 mhm
1358 which is so helpful.
1359 like u::h.
1360 he's tough.
1361 like I, you know,
1362
1363 I feel like I don't have the resources.
1364 to like,
1365 yeah
1366 handle that kid.
1367 I know and for me,
1368 I don't have the responsibility cuz I'm not his teacher,
1369 so it's easier for me, right?
1370 yeah
1371 So all I- all I was doing was-
1372
1373 Yeah, so all I was doing was like,
1374 all I can do is be kind,
1375 right
1376 respond to you in a kind way,
1377 and like attend to the learning of the students in this
class.
1378 yeah
1379 so like what he was doing was like, just-
1380 I didn't feel like it was getting in the way really ever,
1381 there was that one time he was sitting with that group,
1382 when I did say something to him about it.
1383 'You know I just really want to make sure this group
1384 is getting to do the learning that they are trying to do
today, and,
1385 um, so let's just make sure that they have space to do
that.'
1386 Or something like that.
1387 and he was fine.
1388 He said- (.)
1389 He likes to mock me.
1390 I know, he's a real smart Alec with me.
1391 yeah.
1392 But I think it's easy for me to not be triggered by that
because
1393 right
1394 I don't see him every day, right (laughs)
1395 (laughs)
1396
1397 yeah he did.
1398 He drew a quadrilateral
1399 Yeah he did.

1400 That's awesome!

1401

1402 /didn't he also/ in the whole group discussion at the
beginning,

1403 he like offered some ideas

1404

1405 that were really helpful.

1406 He was kind of using a little bit of a smart ass voice,

1407 but I don't care.

1408

1409 yeah.

1410 He's so in fear of math.

1411 yeah

1412 I mean really high anxiety.

1413 clearly

1414 it's tough for him.

1415 (.) Um,

1416 (yawning) so,

1417 Well thank you.

1418 that was a fun experiment.

1419 Thank YOU.

1420 Yeah.

1421 Thanks for teaching.

1422 that was awesome.

1423 (laughs)

1424 (laughs) I wish you could be here every day.

1425 (laughs)

1426 from now until May.

1427 it's such a win win.

1428 because I so miss, you know.

1429 Do you?

1430 You can come teach any time you want.

1431 (laughs)

1432 Any time.

1433

1434 Well right now they're in math rap videos,

1435

1436 so I'm doing very little teaching

1437 and that's why we're having great days,

1438 cuz

1439 What's second period?

1440 It's my math support.

1441 oh, uh huh.

1442 They are doing math rap videos,

1443

1444 and they're-

1445 they're like really owning it.

1446 Like some of the groups.

1447 Like some groups are struggling a little bit but-

1448 to be- they always do every year when I do this, but,
1449 they're like really owning the math rap videos, so
1450 I'm super excited to see.
1451 They're like doing huddles,
1452 and like directing each other, and
1453 I just saw some little viral video,
1454 maybe today or yesterday or something.
1455 that was like a three minute little thing about a kid-
have you seen it?
1456 uh uh
1457 going around on facebook (.)
1458 maybe I'll try to send you a link.
1459 I don't know, three minute on a kid there's a lot.
1460 Oh yeah, sorry.
1461 (laughs)
1462 It's a kid who's like-
1463 you can't read my mind and know /what I'm talking
about?/
1464 /I'm like/ which one? (laughs)
1465 Um, the kid is maybe s:::, eight
1466 mhm
1467 or something and it's like,
1468 'how to make a rap song
1469 (sharp intake of breath)
1470 in thirty seconds
1471 /oh how cute/
1472 /or maybe (inaudible)/
1473 no I haven't seen this.
1474 'first you start with a beat.'
1475 and he has a little keyboard and he makes a little beat
on it.
1476 then he's like,
1477 'and then you add some keys'
1478 and he adds a little keys in.
1479 /that's cute!/
1480 /and then you/
1481 and then you do some strings,
1482 anyway, and then you add the base, and he does that.
1483 and then he's like,
1484 'and then you rap about your problems.'
1485 (hits Mia's arm, throws head back and laughs)
1486 and then it goes to him in this hoodie leaning against a
car
1487 (loud laughing)
1488 he's this little 8-year old white kid and he's like
(crosses arms and looks tough)
1489 and he raps- he makes this little rap that's totally cute
1490 (laughs)
1491 He has a little like kid lisp,

1492 about stealing a cookie
1493 and getting caught
1494 and getting grounded for a week
1495 and um (laughs)
1496 so cute
1497 'and that's the way it is' or something like that.
1498 'and then you rap about your problems.'
1499 'and then you rap about your problems.'
1500 (laughing) that's so cute.
1501 and then you write a rap about your problems.
1502
1503
1504
1505
1506 (laughs)
1507 yeah
1508
1509 (all laugh)
1510 Um,
1511 yeah, your kids might enjoy it.
1512 it's super short.
1513 oh, yeah /I could play it!/
1514 /they can rap about/ their math problems.
1515 Okay I could play it for them,
1516 They'd love that.
1517 Remind me when I get home later,
1518 if you send me an email to remind me cuz I won't
remember.
1519 I'm going to T-facs now.
1520 oh
1521 Then I could send you a link.
1522 I don't think I can do T-facs.
1523 Cuz I haven't done anything in my classroom
1524 yeah
1525 for tomorrow.
1526
1527 Kamilah's not going either.
1528
1529 Well, I can tell you what we're doing cuz I helped
plan it,
1530 and we can talk about whether there's a way, whether
there's-
1531 some way to support it elsewhere,
1532 otherwise.
1533 We're focusing on, uh,
1534 sort of,
1535 continuing from last-
1536 were you guys there last time?
1537 You (pointing to Lynn) were there.

1538
1539 Nobody was there last time, okay.
1540 So we did like a- it's a two-month thing,
1541 where we're working on strategic planning for next
1542 year
1543 around master schedule and hiring,
1544 mostly around master schedule around like-
1545 mmm
1546 supporting course teams and around like-
1547 what do we- what does it make sense to consider,
1548 as we make those decisions,
1549 or try to interact with the stakeholders who are
1550 making those decisions,
1551 I was gonna say, we never have-
1552 You did?
1553 How is she feeling about math support?
1554
1555
1556
1557 Cuz I really kinda want an answer,
1558 before the end of this year.
1559 yeah.
1560 Cuz I kinda have some pretty strong feelings about,
1561 if I get stuck teaching that next year,
1562
1563 and I don't want it to go the wrong way (laughs).
1564 (laughs)
1565 If you know what I mean.
1566 yeah
1567
1568 yes. (gets up and starts collecting her things)
1569 Like I want to stay at Adams is what I'm trying to say,
1570 yeah
1571
1572 (laughing) but there are a few non-negotiables at this
1573 point for me.
1574
1575 okay
1576
1577
1578 Well part of the conversation,
1579 the t-facs conversation is also around um,
1580 around stra- (video ends)

Appendix F: Kamilah-Mia Code Profiles

