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Azzam, Amin

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**Title**

As technology and generations in medical education change, what remains is the intersection between educator, learners, assessment and context.

**Author**

Amin Azzam, MD, MA

**Institutional Affiliations**

University of California, San Francisco

University of California, Berkeley

**Contact Info**

UCSF Department of Psychiatry

Box 0984-MSE

401 Parnassus Ave.

San Francisco, CA 94143-0984

1-415-476-7836 office

1-415-476-7163 fax

[Amin.Azzam@ucsf.edu](mailto:Amin.Azzam@ucsf.edu)

**Abstract**

The information era has begun to create major shifts in educational systems, including those in undergraduate medical and graduate psychiatric training programs. Despite these changes, teaching and learning in formal educational settings remains predominately the product of the intersection between educator, learners, assessment and context. This article reviews intrinsic and external forces influencing each of these elements, such as intergenerational differences in teaching and learning styles, education technologies as they relate to delivery and maintenance of curricula, competency frameworks of assessment, and individual learning and teaching development plans. Maintaining a focus on the relationship between these factors and re-conceptualizing psychiatric education as a mutual two-way learning exchange between participants will promote careers of life-long learning.

## Introduction

*“Two universities have been founded in this country, amply endowed and furnished with professors in the different sciences; and I should be sorry that those who have been educated at either of them should undervalue the benefits of such an education.”*

-- Lloyd Lord Kenyon, Chief Justice, in *“The King against The College of Physicians”* (1797)

In the layout of English-predominant universities (and perhaps worldwide), the library has held a prominent position near the center of most campuses. Prior to the 19<sup>th</sup> and most of the 20<sup>th</sup> centuries, this made sense, as everything about scholarship in any field (reading, writing, and peer review) required access to that most central of scholarly products—books and journals. But in the modern digital era, one only need an internet-connected device to have access to much of the world’s scholarly output. What does this mean for the future of education? Some have suggested that we are in the beginning of a “radical transformation” in educational systems (Lewin, 2012). The Khan Academy has popularized the concept of the “flipped classroom” as a more individualized strategy for using classroom face-to-face time with learners (Khan Academy, 2013; S. Khan, 2011). Additionally, with the birth of Massive Online Open Courses (MOOC’s), there have never been greater opportunities for students around the world to have access to educators anywhere else in the world (Koller, 2012). By the end of 2012, 33 universities had joined with Coursera to offer 211 courses to over 2 million “courserian” students (Coursera, 2012), 6 universities had partnered with EdX’s founding universities Massachusetts Institute of Technology and Harvard University to offer courses on that open-source platform (EdX, 2012), and in the UK, the Open University announced a new company FutureLearnLTD would provide access to coursework at 12 leading UK universities (FutureLearn, 2012). Even more radically, some have wondered what would happen if one gave children access to the internet and removed teachers from the equation altogether—could they teach themselves (Mitra, 2010)? It seems as though in the year 2013, anyone with access to an internet connection can theoretically learn anything about just about anything.

There is an emerging literature on “blended learning” (e.g. both face-to-face and online) (Ginns & Ellis, 2007; S. D. Johnson, Aragon, & Shaik, 2000), how to motivate online learners (Gormley,

Colella, & Shell, 2012), and even entire journals dedicated to these questions (such as “The Internet and Higher Education”). However, there are others who have begun questioning whether the hype associated with online access to all this information necessarily translates into more learning (Watters, 2012). For example, in an early MOOC of 2012 offered by MITx (a predecessor to the EdX platform), of the 154,763 students who initially registered for the “Circuits & Electronics” course, only 69,221 managed to look at the first problem set, 13,569 looked at the midterm, and only 10,262 looked at the final exam. When the course was over, only 7,157 students actually passed and earned the course certificate of completion—a mere 5% pass rate (Gee, 2012).

Yet even while this “seismic shift” in education is occurring for students from birth through their undergraduate training, it is not yet as clear how that might translate to the world of medical students, let alone graduate medical education. Will these forces change a field often cited as one of life-long learning? To attempt to answer this question, I have turned to scholarly medical education journals. Additionally, I have also looked to the “grey literature” (e.g. non-peer-reviewed web-based sources). This includes education-related blogs, TED talks, education technology company websites, etc. By no means do I intend to suggest these latter sources are superior. Rigorous peer-review by fellow scholars remains the foundation of any scientific endeavor. But in the modern information era, even things as fundamentally stable as scholarship must reassess assumptions and norms of behavior if they are to remain relevant into the future.

I am a 40-something-year-old psychiatrist faculty member who has been engaged in a predominately teaching role for the past 8 years at two campuses of the University of California. As I look back at changes during my lifetime and attempt to predict changes for the 20-something-year-olds who will be tomorrow’s mental health professionals, in this article I argue that the future of formal education is actually the same as it has always been—the intersection between teacher, learner, assessment and context. Consequently, I will sequentially discuss each of these key attributes of education, attempting to offer reflections

that may be applicable across a broad spectrum of educational settings in psychiatry. My goal is to elucidate necessary and essential factors that influence the overall efficacy of any given teaching-learning encounter in medical education.

## Teacher

*“Teaching is undertaking certain tasks or activities the intention of which is to induce learning.”*  
-- B.O. Smith, in *“A Concept of Teaching”* (1960)

Fundamental to all lines of human inquiry, the teacher is so historically central to all of education that it feels appropriate to begin there. Though every reader will have an instant personal sense of what a teacher is, the definition of a teacher is surprisingly hard to pin down. The verb “teach”—to show, or instruct—comes from Middle English and was first used before the 12<sup>th</sup> century (Merriam-Webster Dictionary, 2013). Interestingly, the English word “doctor,” first used approximately 200 years *later*, stems from the Latin term *docere*—which means “to teach” (Merriam-Webster Dictionary, 2013).

Given the societally sanctioned permission to engage in matters of life and death, it is not accidental that training to become a physician requires a minimum of 8 years of post-secondary training anywhere in the world (Gonzales, 2012; UK General Medical Council, 2013). With longer human lifespans extending the productive years in the workforce, one consequence of this protracted training process is the presence of four generations of physicians and physicians-in-training in academic medicine today (Howell, Servis, & Bonham, 2005). The generations can be classified as 1) Traditionals/Silent Generation (born approximately 1922 – 1943), 2) Baby Boomers (born approximately 1943 – 1960), 3) Generation X (born approximately 1960 – 1980), and 4) Millennials (born approximately 1980 – 2000). Additionally, some have coined the term “Facebook Generation” for those born after 2000 who will soon enter medical school (Rouse, 2012). Each generation has imprinted its own ways to learn, teach, and engage with other generations. For example, Boomers prefer to learn via direct contact with faculty lecturers and detailed handouts that they can amend with their own notes.

In contrast, Millennials prefer working in small team-based experiential groups using technology whenever possible (S. A. Johnson & Romanello, 2005).

The concept of inter-generational difference is nothing new or unique to teaching, and certainly occurs in other fields (such as business, government, and the arts). However, one attribute of education that is somewhat unique is the annual turnover of students and trainees.

Consequently, for any educator engaged in a stable teaching role, each year s/he gets older, yet his/her students stay the same age. The youngest teaching faculty in psychiatry are somewhere in their early 30's, with ideally a minimum of 30 additional years of teaching ahead of them. Therefore, even today's best educators are at risk of becoming outdated if they do not continuously tend to and update their teaching practices/skill set.

The term teacher has been supplanted in some circles with the broader term "educator." This is an attempt to acknowledge the many additional role responsibilities of teachers beyond that of direct face-to-face teaching. While good teachers should be excellent in formal classroom or didactic environments, excellent educators must additionally address how their students are performing, how their classroom teaching fits into the overall course, and how their course fits into the overall curriculum for the students. One tool that has emerged to acknowledge these additional educator roles/functions is the Educator's Portfolio. A supplement to a traditional academic CV, the Educator's Portfolio generally contains the following sections: 1) Direct Teaching, 2) Curriculum Development, 3) Educational Administration/Leadership, 4) Advising & Mentoring, and 5) Educational Research/Scholarship (Lewis & Baker, 2007). These educator tasks can also be categorized into a competency-based framework. Srinivasan et al defined six core competencies in faculty teaching, as well as four additional competencies for educators with additional programmatic roles, labeled as 1) program design/implementation, 2) leadership, 3) mentorship, and 4) evaluation/scholarship (Srinivasan et al., 2011).

Additionally, many US medical schools have created "Academies of Medical Educators" to acknowledge those amongst their faculty who have demonstrated consistent commitment to

excellence in education (Dewey, Friedland, Richards, Lamki, & Kirkland, 2005). These communities of medical educators provide camaraderie amongst passionate educators across various departments (and in some cases across health professional schools entirely), while simultaneously creating opportunities for professional development and an exchange of best practices that traverse the domains of an Educator's Portfolio. As Educator Portfolios become more prevalent, there have been suggestions that they supplant traditional CV's in determining clinician-educator faculty members' eligibility and appropriateness for academic promotion (Levinson & Rubenstein, 2000; Simpson, Hafler, Brown, & Wilkerson, 2004). Whole academic medical centers have similarly turned to "Educational Value Units" as a strategy for systematically measuring the valuable teaching efforts of faculty across departments, in order to actualize mission based budget allocation (Stites, Vansaghi, Pingleton, Cox, & Paolo, 2005).

In addition to generally applicable strategies to improve one's direct teaching abilities, there are more specific targeted resources to help ensure the continuing professional development of teaching faculty at academic medical centers. Non-specialist examples include the "Twelve Tips" series of articles in *Medical Teacher*, the "Teaching & Learning Moments" series of articles in *Academic Medicine*, the annual medical education theme issue of the *Journal of the American Medical Association (JAMA)*, as well as the entire journals *Medical Education* and *The Clinical Teacher*. The Association for Medical Education in Europe (AMEE) is an international medical education organization that produces a series of education guides, occasional papers, and Best Evidence Medical Education guides. Additionally, MedEdPORTAL is a free repository of effective and efficient educational tools provided by the Association of American Medical Colleges (AAMC). Specialty specific organizations dedicated to teaching excellence include the Society of Teachers of Family Medicine (Society of Teachers of Family Medicine, 2013), the Alliance for Academic Internal Medicine (Alliance for Academic Internal Medicine, 2013), and the Association for Academic Surgery (Association for Academic Surgery, 2013).

Resources more specifically targeted to teachers in psychiatry include the professional organization Association for Academic Psychiatry (AAP), the Division of Education of the

American Psychiatric Association (APA), as well as the journal *Academic Psychiatry*. The Association for Academic Psychiatry (AAP) offers a series of courses at their annual meeting that culminate in a “Master Educator” certificate, while the Association of Directors of Medical Student Education in Psychiatry (ADMSEP) has a publicly available section on “Educational Resources” on its website. One useful resource is entitled “Handbook of Career Development in Academic Psychiatry and Behavioral Sciences” (Roberts & Hilty, 2005).

What is the current perception of teaching & learning amongst educator faculty in psychiatry today? While it is safe to surmise that no two psychiatric educators are identical, more senior educators may initially look to journal articles and professional conferences for professional development, whereas younger colleagues are much more likely to turn to the Internet for sources. On line resources to improve one’s teaching skills include several repositories of teaching tips (Honolulu Community College, 2013; University of the Sciences, 2012; University of Virginia, 2007). Some of the technology-stimulated enhancements (e.g. audience response systems) that are more widely in use in programs with younger learners have begun “trickling up” into undergraduate medical education (Boscardin & Penuel, 2012). The American Association of Directors of Psychiatric Residency Training (AADPRT) has a section on its website dedicated to “Teaching with Technology.” The 2012 Annual Meeting of the Association of American Medical Colleges (AAMC) included an “Innovation Arc” series of plenary speakers, including the founder of the Khan Academy, who reflected on whether the “flipped classroom” model could be applied to North American medical schools. Clearly there are a plethora of resources available to help today’s psychiatric educators continuously refine their craft. But notably, there are also calls for “the Death of the Lecture” as a historical remnant and a horribly ineffective mechanism for stimulating student learning (Segesten, 2012).

## **Learner**

*"The most important thing any teacher has to learn, not to be learned in any school of education I ever heard of, can be expressed in seven words: Learning is not the product of teaching. Learning is the product of the activity of learners."*

John Holt, in “*Growing Without Schooling*” magazine #40 (1984)



Of course no teacher is worth his/her definitional role without any students/learners. So what do we know about today's learners in psychiatry? Today's youngest first year medical students were born in the middle of the Millennial generation. They and their more senior medical student colleagues are optimistic multi-taskers who prefer group, experiential, and teamwork learning activities, and are techno-savvy (as opposed to techno-literate) (S. A. Johnson & Romanello, 2005). In contrast, most graduate trainees are the younger members of Generation X. Consequently, they are techno-literate, independent and un-intimidated by authority, and like flexible learning schedules where they can focus on the topics that will benefit them directly (Howell, Servis, & Bonham, 2005). One study comparing these two generations of medical students at one US medical school found Millennial students scored significantly higher than Generation X students on factors including Rule-Consciousness, Emotional Stability, and Perfectionism. In contrast, Generation X students scored higher than Millennials on Self-Reliance (Borges, Manuel, Elam, & Jones, 2006).

What then, do these trainees use to optimize their learning? Within universities and schools, a learning management system (LMS) has become an essential platform for facilitating the exchange of materials between teachers and students, as well as calendaring functions, discussion forums, and other supplemental course resources. Example LMS's include Blackboard, moodle, and Desire2Learn (Wikipedia, 2012). When deliberating what LMS to use, it has been suggested that there are 5 critical success factors for increasing student satisfaction with the system: 1) Content Completeness, 2) Content Currency, 3) Ease of Navigation, 3) Ease of Access, and 5) Responsiveness of Course Staff (Naveh, Tubin, & Pliskin, 2012). In contrast, the term Curriculum Management System/Platform refers to a tool to guide teachers and site administrators in mapping, planning and monitoring the instructional program, so as to articulate between learner levels and adhere to accreditation standards (California Learning Resource Network, 2008). Examples of Curriculum Management Platforms (some of which have embedded LMS's) that have included medical schools as target users include Ilios,

Knowledge Map, TUSK, E\*Value, Entrada, LCMS+, New Innovations, OASIS, one45, and OpalQM (Association of American Medical Colleges, 2012).

Of course, complementing these institutionally-endorsed platforms, students utilize external resources to supplement whatever their host universities provide. This includes web-based search engines (e.g. Google, Wikipedia, etc.), video repositories (YouTube, Vimeo, etc.), social-networking platforms (e.g. Facebook, Twitter, etc.), and blogs. With the explosion of access to these resources, it may now be necessary to educate learners of the importance of ensuring quality when they seek and cite sources in their work. Though this may be a challenge for the undergraduate and younger learners, I speculate that medical student and certainly more advanced professional learners generally understand the importance of high-quality, scientifically rigorous web-based sources to support their learning. Within the clinical practice domain, Up-to-Date has had a prominent role for the past decade. According to their website, more than 600,000 clinicians in 149 countries, including 90% of academic medical centers in the United States, rely on UpToDate “every day to inform diagnostic and treatment decisions at the point of care” (UpToDate, 2012). Interestingly, perhaps responding to the “subscription only” nature of UpToDate, the more recent Wikipedia-based “WikiProject Medicine” intends “to produce reliable and neutral information on medical conditions, diagnosis and treatment in a readable and standardized format” (Wikipedia, 2013). One platform predominately targeting the undergraduate medical education level of learner is StudentDoctor.net. Within the more narrow scope of the organization’s psychiatry subdomain (incidentally co-hosted by the Association for Academic Psychiatry), the discussion forum cited 6,900 discussion threads with more than 82,000 posts as of the beginning of 2013 (The Student Doctor Network, 2013). Given the presence of university-based subscriptions to many higher-quality digital resources, some bloggers have actually gone as far as suggesting that institutionally-created materials (e.g. course syllabi) are themselves a relic of past educational design and should be eliminated entirely (Singham, 2007).

A more recent addition to these web-based information sources is the emerging market of medical and educational apps. A January 2, 2013 search for apps using the “education”

category retrieved 1,942 apps, while a search with the “medical” category cited 238 apps. Notably, a more focused filtering of those results with the search term “psychiatry” surprisingly retrieved only 1 app (an Electronic Medical Record app designed specifically for psychiatrists). These resources will surely expand over the next several years with the growth of the smartphone and tablet market.

It bears explicitly stating that most learning (especially at the UME and early GME levels) occurs amongst groups of learners. Consequently, there are educational strategies that attempt to foster either peer or near-peer education. Amongst others, these include the use of small group discussion groups (Steinert, 2004), as well as more formally structured approaches such as Problem-Based Learning (PBL) (Clouston, Westcott, Whitcombe, Riley, & Matheson, 2010), and Team-Based Learning (TBL) (Thompson et al., 2007). In one example relevant to graduate level learning in psychiatry, the Association for Academic Psychiatry awarded its 2011 Educator/Education award to a curriculum design in which the trainees themselves rotate responsibility for the creation and delivery of formal didactic instruction to their peers (White & Muzyk, 2012).

It is important to acknowledge that much of what I’ve described above about the tools learners use is likely transient. Since learners are by most definitions generally younger than educators, it is testimony to the human capacity to innovate that this “learner” section will be most rapidly outdated. However, while the actual devices learners use are sure to change, I find it difficult to envision an information-sharing platform that will supplant the current supremacy of web and cloud-based information seeking, storing, and sharing strategies.

## **Assessment**

*“Assessment drives learning.”*

-- Original source unknown, but widely quoted amongst educators

As most teachers well know, it is remarkable how powerful the “fuel” of assessment is in driving actual learning. Yet not all assessment activities are equally effective in this capacity.

The frequency, type, and distribution of assessment events across an educational program are essential to optimize a learning climate (Kern, Thomas, & Hughes, 2009).

In discussing assessment activities, one useful categorization scheme is to divide the assessment events into formative vs. summative types. Formative Assessment can be defined as the diagnostic use of assessment to provide feedback to teachers and students over the course of instruction, whereas summative assessment generally takes place after a period of instruction and requires making a judgment about the learning that has (or has not) occurred (Boston, 2002). Formative assessment appears to be desired by psychiatric trainees more than they actually receive it (Chur-Hansen & McLean, 2006). Clearly indicating the formative vs. summative nature of any assessment event will help foster learner engagement with the intended curricular objectives.

Another axis of assessment is how high “stakes” an evaluation event is. Though not 100% concordant with the formative vs. summative axis, high-stakes assessment activities are very frequently summative. Certification and licensing examinations are the quintessential high-stakes assessment event. But low stakes events can also be summative. Weekly quizzes for four months might seem very low stakes unless passing each and every one individually were a requirement to pass the entire course.

There are multiple assessment strategies in medical and psychiatric education in use today. This list includes written evaluations, rating forms, self-assessment forms, checklists, 360-degree evaluations, oral exams, direct observations, interviews, and performance audits (Kern, Thomas, & Hughes, 2009). With the increasingly ubiquitous access to technologies, many of these approaches can be further sub-divided based on how high or low fidelity they are compared to actual clinical practice. Generally, when selecting which assessment strategies to use, they should align with session/course/curriculum/program objectives. As different assessment techniques are more or less appropriate for different objectives, one useful framework is the Knowledge – Skills – Attitudes (KSA) axis. For example, while multiple choice

questions (e.g. written exams) are ideally suited for assessing learner's knowledge about various topics, simulation activities (e.g. Objective Structured Clinical Examinations) are better for determining clinical skills, and oral exams or interviews are more appropriate assessment strategies for determining attitudes (for example about treating HIV positive patients with antidepressant medication). Important factors to consider when designing and selecting overall assessment strategies include validity, reliability/overall generalizability, feasibility, fairness, educational impact, cost-effectiveness, acceptability, and defensibility (UK General Medical Council, 2011).

While the historical KSA system is succinct and convenient, the competency-based movement in medical education has been in full swing since at least 2000 (Long, 2000). Though each country has created its own set of physician competencies (for example the Scottish Doctor, Canada's CanMEDS, the United States' ACGME Core Competencies, and the UK's Tomorrow's Doctor, among others), generally the movement is directed away from an emphasis on process (where what matters is the teaching and learning methods) towards an emphasis on product (where the emphasis switches to the learning outcomes of the educational experience) (Harden, 2007).

One might say we are squarely in the "competency era," as there has been a tremendous proliferation of competency frameworks in the past decade. (Swick, Hall, & Beresin, 2006). For example, within psychiatry in the United States, in addition to the 6 Core Competencies common to all US physician specialties, there are now five specific Psychotherapy Competencies (Brief Therapy, Cognitive-Behavioral Therapy, Psychodynamic Psychotherapy, Psychotherapy Combined with Psychopharmacology, and Supportive Therapy) (Andrews & Burruss, 2004). Despite the proliferation of competency frameworks in medical education generally and in psychiatry specifically, defining how one assesses the competency of mental health trainees is less well-established (Frank et al., 2010). One emerging complement to the competency movement, known as "Entrustable Professional Activities" (EPA's), can help

educators in their determination of trainee competence by linking every day practical professional activities to the theoretical competency frameworks (ten Cate, 2005).

However, there are some who have provocatively challenged the supremacy of competencies and milestones as excessively reductionist and missing the “whole,” arguing that the next level in assessment requires attention to “the collective and subjective to be able to capture diversity, complexity, ambiguity and judgment” (Hodges, 2012). What assessment strategies might complement these competency-based approaches? Here are several suggestions:

1. Determine trainees’ adherence, degree of completion, and timeliness of self-directed learning plans.
2. Place a greater assessment emphasis on Practice-Based Learning and Improvement, thereby helping learners prioritize the “how” of learning more than the “what.”
3. Conduct qualitative analyses of learners logs/diaries, including assessing the quality of their reflections on their learning experiences.
4. Create exams in which learners define a gap in their individual knowledge, then demonstrate their information retrieval strategies and conclude by teaching others their newly learned content.
5. Utilize peer assessment that is at least partially responsible for summative assessment decisions.

## **Context**

*He did not, and could not, understand the meaning of words apart from their context. Every word and action of his was the manifestation of an activity unknown to him, which was his life.*  
from “*War and Peace*” by Leo Tolstoy (1828 – 1910)

Everything I’ve discussed thus far relates to the separate components of teacher, learner and assessment *in isolation* from each other. Yet of course this is an artificial deconstruction of what actually happens in real practice. So it is vital and equally important that all learning be put into the context in which learner and educator find themselves together.

As mentioned earlier, today's health professional learners have years of formal training, so when teaching one must be cognizant of the learner's stage of both personal and professional identity formation. Teaching a first-year medical student about diagnosing mental illness should be deliberately entirely different than reviewing the diagnostic criterion of autism with a final-year child psychiatry resident/registrar. Additionally, it is worth remembering or querying what else might be going on in the learner's current "learning responsibilities." By this I am referring to the additional professional training activities occurring in close proximity to any specific teaching-learning encounter with an educator. Many a teaching faculty member can communicate stories of disinterested/distracted learners falling asleep during formal didactic presentations. But if the trainees have just experienced a lengthy on-call (house call) evening with multiple admissions and active patient care crises, then learners' lethargic behaviors might be justified and even forgiven! Finally, our professionals-in-training are of course human beings first, with "outside" relationships and competing responsibilities to their family members and friends. These non-professional duties frequently conflict with professional learning obligations, and while most trainees are excited about their future profession, few would disagree that most human beings are equally (if not more) passionate about their loved ones than their professional identities!

All of the above applies to the teacher as well. Even the best educators are allowed to have "bad days" due to external stressors outside the context of his/her teaching activities. A grant application deadline, an upcoming national conference presentation, or even an imminent meeting with one's department chair are all distractors from the teaching task at hand. Furthermore, though teaching faculty have generally completed most of their formal training, they are of course still growing as professionals, figuring out their optimal balances of duties across research, education, and clinical care domains. Early career faculty members may be starting families, while later career individuals may be struggling with issues associated with caring for elderly relatives, paying for expenses associated with higher education, or exploring retirement. Consequently, professional development – including that of any educator role(s) as part of professional responsibilities—should explicitly consider faculty members' search for

meaning, purpose, and professional fulfillment (Lieff, 2009). Current early career and future generations of psychiatric educators will expect academic medical center employers to offer their faculty employees flexibility in terms of schedules, part-time employment, and the like (Bickel & Brown, 2005).

With all these external non-trivial factors affecting the chances of a successful teaching-learning moment, one concept that can be useful is that of reflexivity—a tool that can be used to illuminate and question both the *what* and the *why* of one’s unique perception of the life-world (Whitcombe & Clouston, 2010). Reflexivity helps learners and educators alike bring to consciousness all the “external factors” that may contribute to one’s readiness to engage in education. Reflexivity can be promoted and practically applied in educational settings through a brief “check-in” at the beginning of any learning session. Used in Problem-Based Learning (PBL) tutorials as a way to begin group work, brief sequential check-ins from each team member can quickly serve to inform others of individual participants’ readiness to engage in collaborative learning. (Clouston, Westcott, Whitcombe, Riley, & Matheson, 2010). As an example, if one student’s pet dog died the night prior to class, electing to disclose that during check-in would prepare her classmates and faculty tutor, thus minimizing inadvertent misinterpretations of her reserved and atypically absent behavior during class. The check-in technique can easily be applied to other educational settings and workplace interactions (e.g. clinical environment team “rounds,” preceptorship / apprenticeship placements, or even departmental faculty-staff meetings). One fringe benefit of frequent and wide-spread check-ins is the “humanization” of the workplace climate/atmosphere. This, and other “learner-centered” strategies of education have been shown to increase student learning (Hanrahan, 1998; Spencer & Jordan, 1999). Additional strategies to optimize learning include real-time teacher and learner “time outs” (similar to primary care and/or surgical ones designed to ensure all team-members are on the same page) (The Joint Commission, 2013), as well as individual beginning or end-of-the-day reflections on today’s goals and the degree of achievement obtained. Though I am not personally convinced of the educational utility of



public self-disclosure, perhaps even blogging about one's educational experiences might actually increase one's learning(Farmer, Yue, & Brooks, 2008)!

An additional aspect of the context of learning is the evolution of knowledge or content aggregation. In the modern information-heavy environment, there has been a proliferation of systems designed to help individual practitioners “drink from the fire-hose” of information sources. Originally of course there were books, then periodicals and journals. Then came searchable gateways to articles (e.g. PubMed), systematic reviews of original research (e.g. Cochrane Reviews), and content databases (e.g. AccessMedicine). Whereas these older organizational schemas were “top-down” (e.g. imposed on the end-user by some governing body), more modern “democratization” of organizational systems empowers individual users to categorize, organize and tag their information repositories in ways they individually see as most functionally useful (e.g. Evernote). And one need only learn that Facebook surpassed 1 billion users in October 2012 to acknowledge how social networking has radically transformed the interconnectedness of teacher and learner communities (Ortutay, 2012).

One final aspect of context is the ever-increasing complexity of modern health care delivery. Similar to the fading notion of solo general practitioners singlehandedly providing high quality care to small populations of grateful communities, there are very few “lone teachers” in medical education today. Inter and trans-disciplinary courses co-directed by multiple faculty members must be the norm across all academic medical centers. As a logical extension of this, an interprofessional movement in health professions education advocates greater integration of educational programs across historical silos of professional schools (Reeves et al., 2008).

## **Discussion**

By highlighting the forces that contribute to individuals' readiness to teach and learn, I argue that any “educational event” is an intersection of the teacher, learner, assessment and context. Regardless of the number and type of “screens” that are concurrently in use in the session, when an educator and learner(s) physically come together in a face-to-face encounter, there

has been an implicit mutual commitment to each other. Elsewise—why bother showing up at all? I propose that we make this implicit commitment more explicit through the use and sharing of individual learner development/learning plans, which have already penetrated medical education to varying degrees across the undergraduate-graduate-continuing education continuum (Challis, 2000). Could we further explicitly engage in “contracts” between educator and learner(s) such that all parties come to an encounter “pre-prepared” to work together?

As learning teams become less hierarchical, I’d propose reciprocal “educator development plans” that are bravely shared with learners as well. This would acknowledge that the teacher doesn’t have all the answers and is also growing as a professional, while simultaneously highlighting the mutual commitment to increasing knowledge and understanding of both educator and learners alike. After all, learners in the developed world now already have access to more information at all times at their fingertips than exists in all their faculty-members’ collective brains! Therefore, the role of medical school faculty is no longer medical knowledge transfer, but soon to be (already?) other key functions, such as assisting with their learners’ professional identity formations, role-modeling life-long learning, and sharing how a professional sifts through the mountain of information to determine what is appropriately high quality and sufficiently reliable to use in the care of one’s patients.

What might this mutual teaching and learning plan sharing actually look like on a day-to-day basis? Here’s a hypothetical example:

*Scenario:*

Kevin (a first-year medical student), June (a third-year psychiatry resident), and Naoki (an attending psychiatrist in his second year on faculty) are all scheduled to work together in the outpatient mood disorders clinic tomorrow morning.

*Asynchronous Preparation for Learning:*

The night before their collaborative work encounter, Kevin and June define and create individual learning goals for their time together. Kevin would like to understand the differences between Major Depressive Disorder and Dysthymic Disorder. June wants to better understand when to increase the dose of an antidepressant medication vs. augment with a second pharmaceutical class. After sending their individual learning goals/plans to their mutual attending (and

each other), each learner proceeds with some initial self-directed learning on his/her specific questions of interest.

*Preparation for Teaching:*

Empowered with this advance information, Naoki begins to do some literature searching at home before his febrile child interrupts the effort. Later that night, Naoki emails his “teaching goals” to his trainees explaining that because of his nocturnal family obligations, tomorrow he will deliberately be working on improving his ability to teach “on the fly” without formal handouts.

*Actual Teaching/Learning Encounter:*

Reading this series of events early the next morning before clinic has begun, June downloads and prints a summary article to help Kevin answer his targeted learning goal. Meanwhile, Kevin reads the email from Naoki on his smartphone, picks up an extra coffee as an appreciation for what might have been a rough night for his supervisor, discovers a useful mobile app of clinical algorithms for psychiatry, and texts the link to June. During the teaching components of the clinic, the trainees (aware of both the generational differences between them and Naoki) attend to both Naoki’s content *and* process of teaching.

*Asynchronous Reflection on Encounter:*

That night after clinic, both trainees provide their feedback to their educator via a secure network on what was most successful as well as areas for growth in the teaching-learning encounter, additionally identifying their subsequent learning goals for tomorrow’s experiences. As a final piece of professional development for the night, Naoki reads their comments with interest, taking time to reflect and document in his individual teacher development plan his next priorities in his growth as a psychiatric educator.

In the hypothetical example above, note the explicit commitment on the part of the learners and faculty teacher alike to the relationship, as well as the individual goals for the time spent together face to face to face. Of course both assessment and context are equally relevant, but not made explicit in this theoretical example. The actual content of a teaching & learning encounter would vary depending on the actual amount of time spent together (both immediately and longitudinally), level of advance preparation by all parties, and the developmental and professional level(s) of the learners and educator(s) alike.

Even despite the proliferation of information and mechanisms to seek and retrieve it, as mammals we are fundamentally social creatures. We all covet (at least all of us drawn to the

health professions) human connectivity. In this sense, formal educational systems are likely to continue to exist, if only for the members' psychological reassurance that they are indeed part of a community. At least in the short-to-medium term, these systems remain the predominant (but not only) mechanism in health professions education to ensure adequate competence has been achieved to confer a nationally or internationally endorsed diploma.

## Conclusion

When you set out on your journey to Ithaca,  
pray that the road is long,  
full of adventure, full of knowledge....  
Always keep Ithaca on your mind.  
To arrive there is your ultimate goal.  
But do not hurry the voyage at all.  
It is better to let it last for many years;  
and to anchor at the island when you are old,  
rich with all you have gained on the way...  
Ithaca has given you the beautiful voyage.  
Without her you would have never set out on the road.

-- From "*Ithaca*" by C.P. Cavafy (1863 - 1933)

Our modern digital revolution means that every individual who has access to information and wishes to learn can. Despite this availability of learning resources, actual learning will only be optimized if put into the framework of a meeting between teacher, learner, assessment & context. Since psychiatry claims to be the branch of the healing profession most attuned to the interpersonal relationship between healer and patient, it stands to reason that we should also be the branch of the health professional educators most attuned to the relationship between educator and learner. A reconceptualization of psychiatric education—and formal medical educational systems in general—as a mutual two-way learning exchange between participants will promote careers of life-long learning, full of adventure and knowledge, worthy once again of the original 14<sup>th</sup> century meaning of the word “doctor.”

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