



Is Your Teaching Learner-Centered? The Investigation of Practices and Beliefs at a Minority-Serving Institution

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Background

- **UC Merced** is a **Minority-Serving Institution** demonstrating importance and resource for strengthening STEM fields. A briefing for UC Merced undergraduate population during 2019~2020:
 - 74% first-generation.
 - 54% Hispanic.
 - 64% Pell-Grant eligible.
- Due to COVID-19 pandemic, UC Merced went through **two years of remote instructions**. During this period, various **pedagogical changes** were made by instructors to adapt the online environment and studied in previous works¹.
- **Learner-Centered Teaching (LCT)**² pedagogies provide students with multiple benefits and share more importance during remote instruction periods. It includes 5 keys:
 - Balance of power: power and decision making is shared by faculty and students.
 - Function of content: course content plays a dual function in the curricula: establishing a knowledge base and promoting learning.
 - Role of the teacher: faculty guide and facilitate learning by stepping aside from the center of the classroom and shifting the from themselves to the students.
 - Responsibility of learning: faculty create learning environments with fewer rules and requirements which are more conducive to student learning.
 - Purpose and processes of evaluation: faculty deploy a variety of assessment opportunities to enhance students' potential to promote learning and give them chances to develop self- and peer-assessment skills.
- **Classroom Observation Protocols for Undergraduate STEM (COPUS)**³ and its online variant, **O-COPUS**⁴, can help educators measure college STEM teaching practices and become powerful tool to examine Evidence Based Teaching Practices, including the active learning strategies, at different levels.
- **Classroom Discourse Observation Protocol (CDOP)**⁵ is a new protocol for measuring teacher discourse moves or the general conversational strategies used by the instructor to improve student understanding of content knowledge.

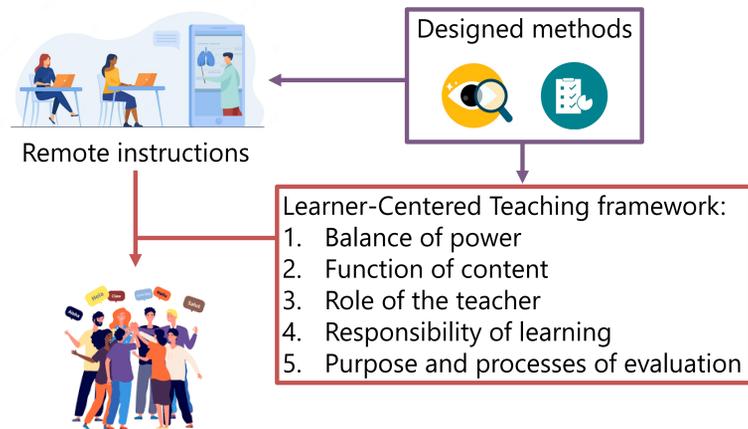


Figure 1. A schematic for implementing and examining the learner-centered teaching practice in remote instructions.

Research Questions

1. **To what extent** are faculty's teaching and discourse practices **characteristic** of learner-centered teaching?
2. **To what extent** do faculty **describe** their teaching practices as learner-centered teaching?

Methods

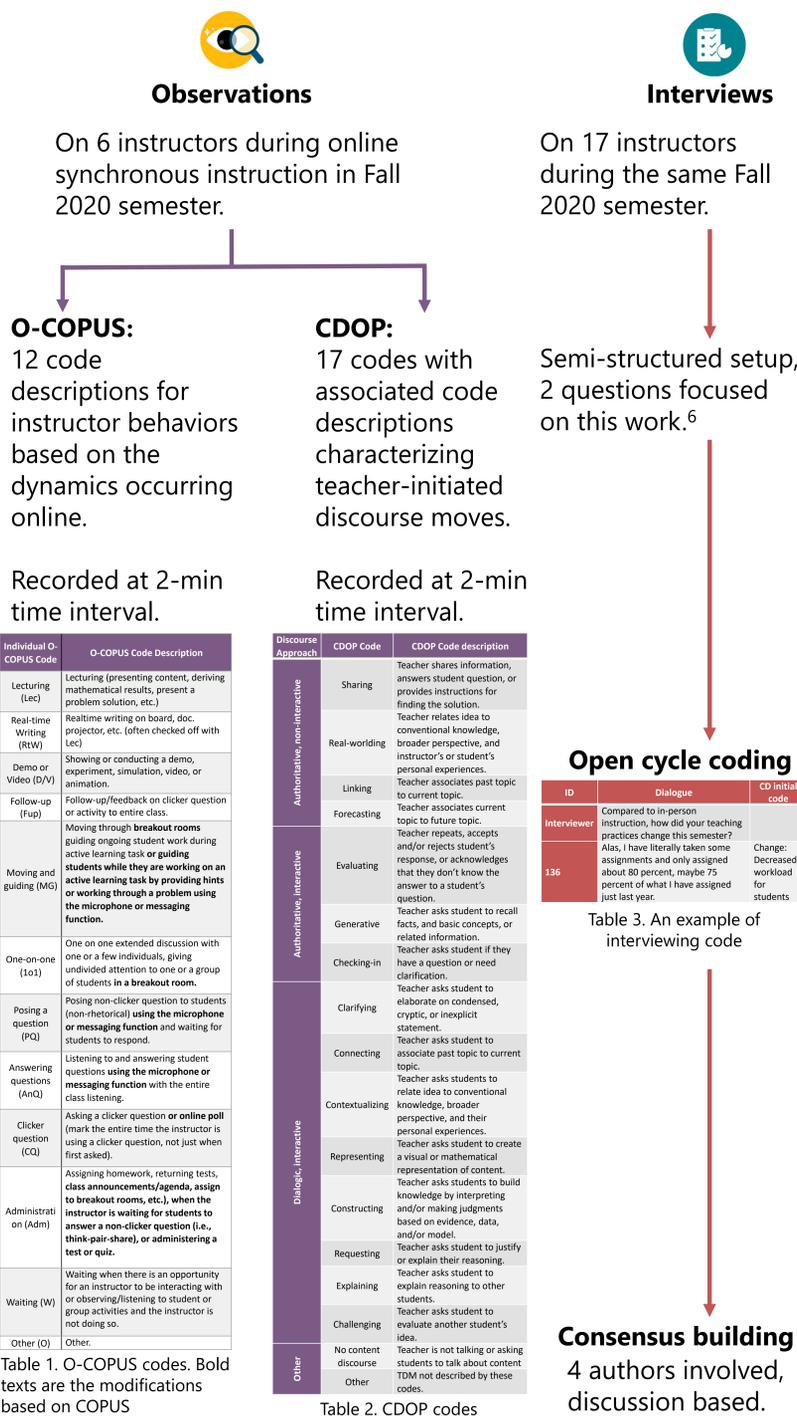


Table 1. O-COPUS codes. Bold texts are the modifications based on COPUS

Table 2. CDOP codes

Results

• **RQ1:**

LCT Framework	Balance of power	Function of content	Role of the teacher	Responsibility of learning	Purpose and processes of evaluation
O-COPUS result	0.0%	33.3%	50.0%	16.7%	41.7%
CDOP result	5.9%	23.5%	52.9%	35.3%	17.6%

Table 4. O-COPUS and CDOP data into construct

• **RQ2:**

Interview codes	Balance of power	Function of content	Role of the teacher	Responsibility for learning	Purpose and processes of evaluation
...
Being more selective with content	...	1
Trying new technology tools	1
Grades based on presentations	1	1	1
...

Table 5. Part of the results for RQ2

- Some examples of the qualitative analyses based on the results above:
 - A representative instructor quote, for *function of content*:

"Well, I did make some YouTube videos of things like autoclaving which I think is a good idea and something that I can reuse. Because they don't necessarily need to see that. So picking and choosing what you actually need to show them."

Such quote is coded as *be more selective with content*, which demonstrates how this particular instructor took some material and made it optional for student who might be interested.
 - A representative instructor quote, for *role of the teacher*:

"...so I tried lots of new things and tried to make the activities as much as I could things that they could do in breakout rooms or go to Google Docs or Jamboards and work together. And this seemed to work okay for about the first month or so, and then there was a time probably near the end of September into October when students—they kept coming to class. They would log on, but they just stopped interacting. They stopped unmuting themselves and actually speaking."

Such quote is coded as *trying new technology tools*. This quote and code were particularly interesting because the work described by the instructors wasn't successful, but it's clear that the goal of the change was to find ways to help students be more active in the remote setting.
 - A representative instructor quote, for *purpose and processes of evaluation*, and simultaneously, *balance of power*:

"So I'm trying to train—teach them a little bit about being a college student as well maneuvering through the material. So I've changed kind of the types of materials that I have. I've gotten away from—I'm not having any finals. And I've done a lot of quizzes, but I've also done—I'm doing more projects, and I'm thinking of next semester cutting my quizzes even further and adding more writing, research, project types of things to demonstrate learning, not so much rote quizzes and things like that. So yeah, I'm adapting a lot."

Such quote is coded as *broader set of assessment methods* and such pedagogy increases the variety of evaluations to students learning outcomes. Meanwhile, it also demonstrates a useful way for instructors to share power with student by providing more flexible ways for students to demonstrate knowledge, so it properly fall into both constructs.

Open cycle coding

ID	Dialogue	CD initial code
Interviewer	Compared to in-person instruction, how did your teaching practices change this semester?	
136	Alas, I have literally taken some assignments and only assigned about 80 percent, maybe 75 percent of what I have assigned just last year.	Change: Decreased workload for students

Table 3. An example of interviewing code

Consensus building

4 authors involved, discussion based.

Discussion

1. O-COPUS codes do not align with LCT framework.
2. CDOP codes are relatively aligned with LCT framework. They are developed with the authoritative dialogic in mind.
3. The success or failure to execute the pedagogical changes are not really impeding their contributions to improving LCT, as many failed executions still clearly demonstrate the instructors were finding ways to help students be more active and engaged.
4. The majority of the interviewed instructors put much more efforts on the activities and resource utilizations out of the classes, instead of in-class. A potential adjustment can be done by incorporating more synchronous activity in class so equal attentions will be put on both.

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