Supplemental Material

Hyson *et al.*

Supplemental Materials

Appendix 1: Full TPI Data

Year and Round	Course information Provided	Supporting Materials Provided	In-class features and activities	Assignments	Feedback and Testing	Other Forms of Evaluation	Training and Guidance of TAs	Collaboration or Sharing in Teaching	Mean Total ETP score (Standard Deviation)
Y1R1	4.3	2.9	6.0	3.9	8.9	2.0	3.0	2.3	**33.1 (4.1)**
Y1R2	4.4	3.3	7.6	4.4	8.0	3.6	3.0	3.6	**37.9 (4.0)**
Y1R3	4.3	3.5	7.8	3.2	7.5	2.8	3.0	3.7	**35.8 (3.8)**
Y2R1	4.0	3.6	5.6	3.2	8.6	2.2	2.6	4.0	**33.8 (3.9)**
Y2R2	2.4	3.2	7.8	4.0	9.2	3.2	3.0	3.4	**36.2 (4.3)**
Y2R3	5.4	3.6	7.4	3.2	9.2	2.2	3.0	2.6	**36.6 (1.9)**
Maximum Possible	6	7	15	6	13	10	4	6	**67**

Appendix 2: PIPS Descriptive Data

Descriptives

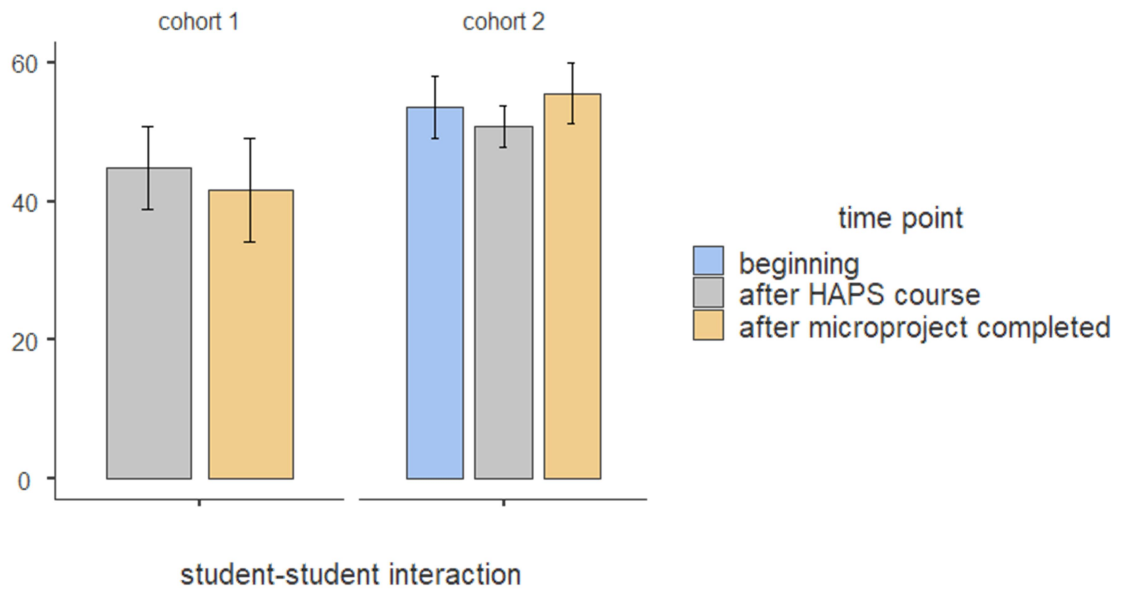|	time point	CAPER 1 cohort	student-student interaction	content delivery	formative assessment	student content engagement	summative assessment
N	beginning	cohort 1	0	0	0	0	0
		cohort 2	7	7	7	7	7
	after HAPS course	cohort 1	4	4	4	4	4
		cohort 2	5	5	5	5	5
	after microproject completed	cohort 1	5	5	5	5	5
		cohort 2	6	6	6	6	6
Missing	beginning	cohort 1	0	0	0	0	0
		cohort 2	0	0	0	0	0
	after HAPS course	cohort 1	0	0	0	0	0
		cohort 2	0	0	0	0	0
	after microproject completed	cohort 1	1	1	1	1	1
		cohort 2	0	0	0	0	0
Mean	beginning	cohort 1	NaN	NaN	NaN	NaN	NaN
		cohort 2	53.6	65.2	52.1	57.9	48.2
	after HAPS course	cohort 1	44.8	73.4	55.0	47.5	56.3
		cohort 2	50.8	63.8	58.0	48.0	57.5
	after microproject completed	cohort 1	41.7	65.0	50.0	43.0	48.8

Descriptives

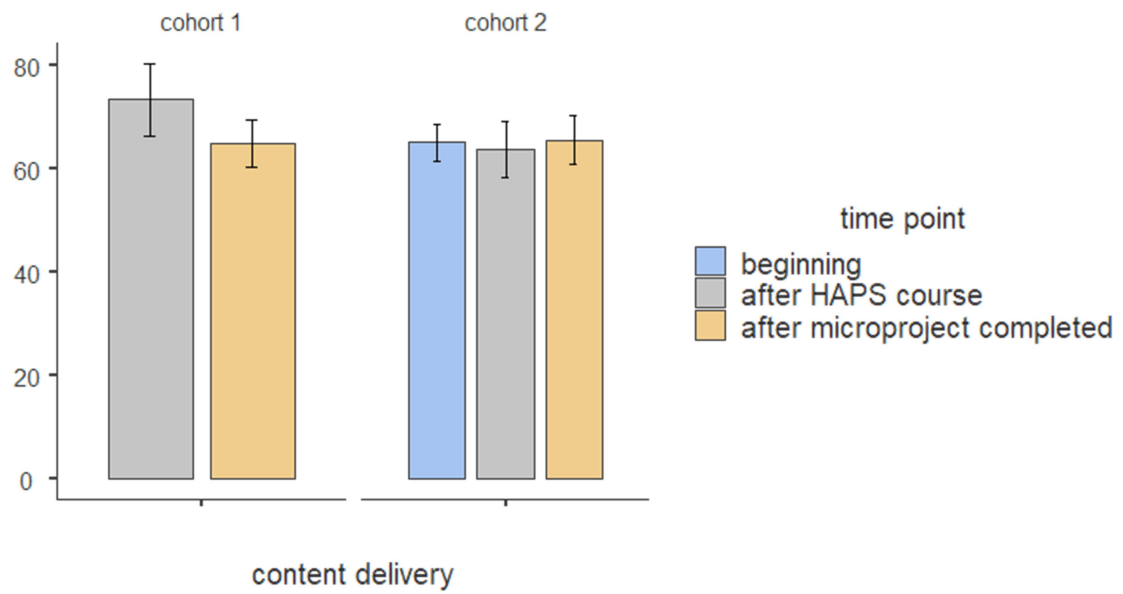|	time point	CAPER 1 cohort	student-student interaction	content delivery	formative assessment	student content engagement	summative assessment
Median	beginning	cohort 2	55.6	65.6	56.7	53.3	52.1
		cohort 1	NaN	NaN	NaN	NaN	NaN
		cohort 2	50.0	68.8	55.0	60.0	50.0
	after HAPS course	cohort 1	39.6	75.0	52.5	45.0	62.5
		cohort 2	54.2	68.8	60.0	45.0	56.3
	after microproject completed	cohort 1	33.3	62.5	40.0	40.0	43.8
		cohort 2	58.3	65.6	60.0	60.0	50.0
Minimum	beginning	cohort 1	NaN	NaN	NaN	NaN	NaN
		cohort 2	37.5	50.0	35.0	35.0	25.0
	after HAPS course	cohort 1	37.5	56.3	35.0	35.0	25.0
		cohort 2	41.7	43.8	50.0	40.0	37.5
	after microproject completed	cohort 1	25.0	56.3	35.0	25.0	25.0
		cohort 2	37.5	50.0	40.0	35.0	31.3
Maximum	beginning	cohort 1	NaN	NaN	NaN	NaN	NaN
		cohort 2	75.0	75.0	70.0	90.0	68.8
	after HAPS course	cohort 1	62.5	87.5	80.0	65.0	75.0
		cohort 2	58.3	75.0	70.0	55.0	75.0
	after microproject completed	cohort 1	66.7	81.3	90.0	80.0	68.8

Descriptives

	time point	CAPER 1 cohort	student-student interaction	content delivery	formative assessment	student content engagement	summative assessment
		cohort 2	66.7	81.3	65.0	65.0	75.0

Plots

student-student interaction

student-student interaction
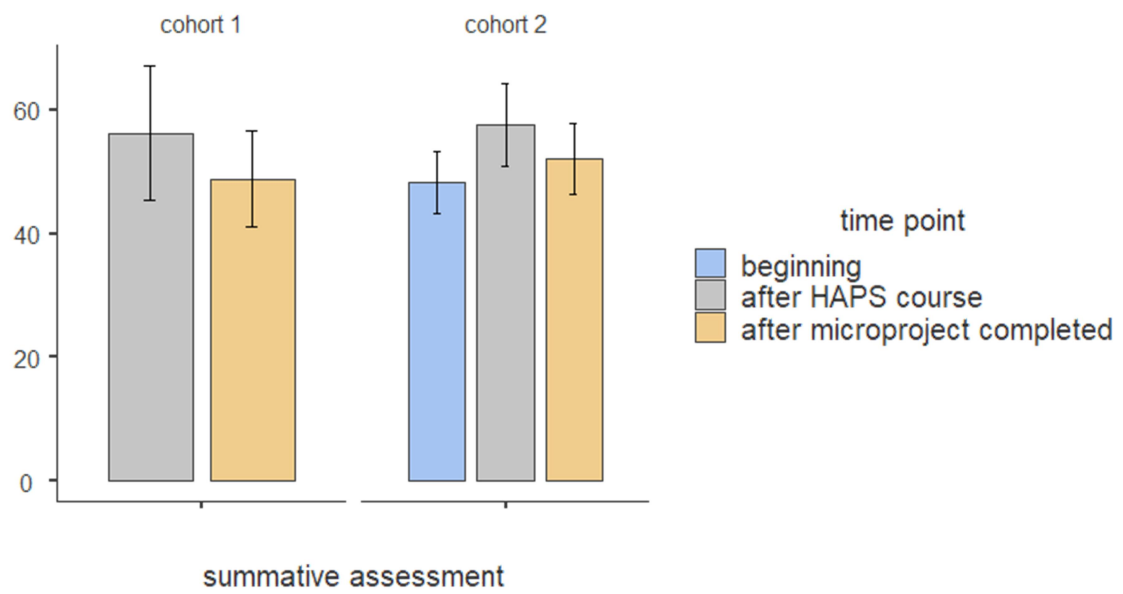
content delivery

formative assessment
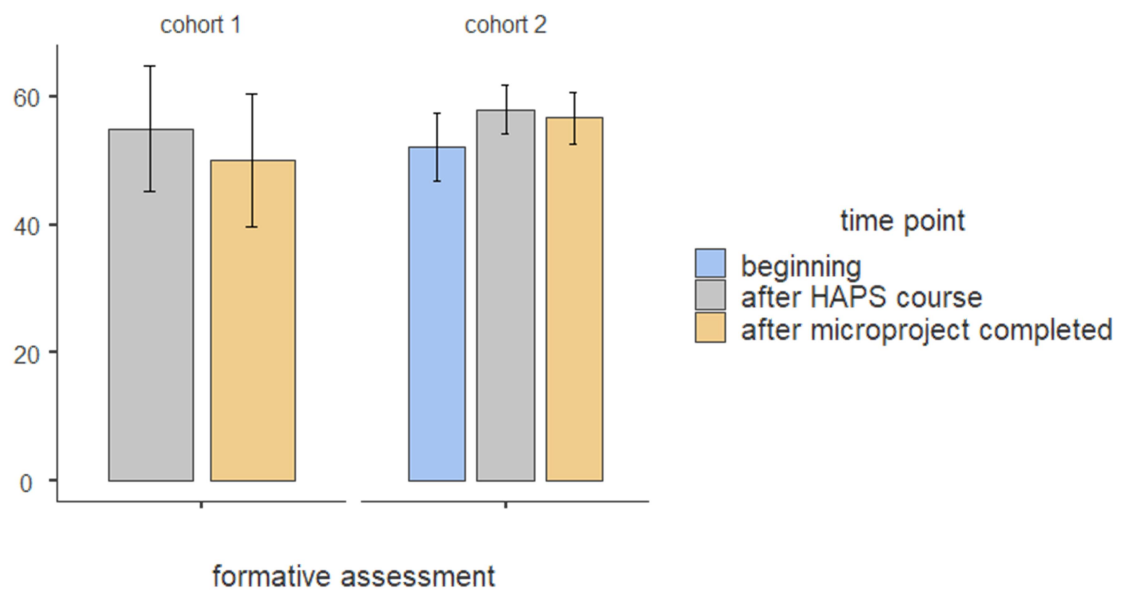
student content engagement
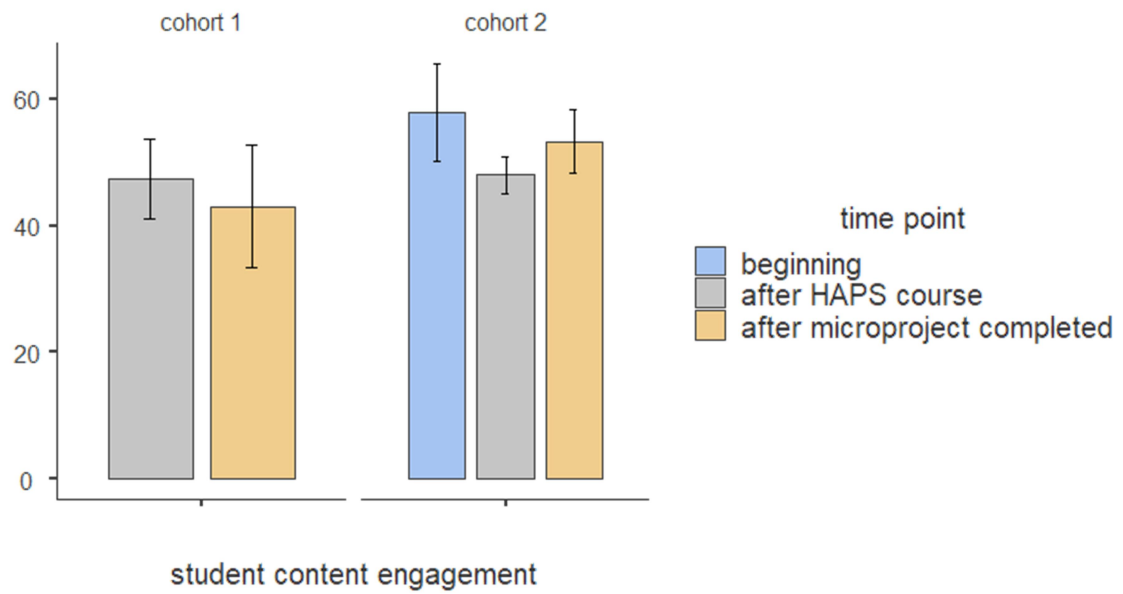
summative assessment

Descriptives

Descriptives

	time point	CAPER 1 cohort	student-centered	instructor centered
N	beginning	cohort 1	0	0

Descriptives

	time point	CAPER 1 cohort	student-centered	instructor centered
		cohort 2	7	7
	after HAPS course	cohort 1	4	4
		cohort 2	5	5
	after microproject completed	cohort 1	5	5
		cohort 2	6	6
Missing	beginning	cohort 1	0	0
		cohort 2	0	0
	after HAPS course	cohort 1	0	0
		cohort 2	0	0
	after microproject completed	cohort 1	1	1
		cohort 2	0	0
Mean	beginning	cohort 1	NaN	NaN
		cohort 2	51.2	54.0
	after HAPS course	cohort 1	45.8	58.3
		cohort 2	48.7	58.3
	after microproject completed	cohort 1	42.7	53.9
		cohort 2	50.6	54.6
Median	beginning	cohort 1	NaN	NaN
		cohort 2	53.3	55.6
	after HAPS course	cohort 1	41.7	55.6
		cohort 2	48.3	61.1
	after microproject completed	cohort 1	36.7	55.6
		cohort 2	55.0	59.7
Minimum	beginning	cohort 1	NaN	NaN
		cohort 2	35.0	41.7
	after HAPS course	cohort 1	31.7	50.0
		cohort 2	43.3	41.7
	after microproject completed	cohort 1	30.0	41.7
		cohort 2	38.3	36.1
Maximum	beginning	cohort 1	NaN	NaN
		cohort 2	78.3	69.4
	after HAPS course	cohort 1	68.3	72.2
		cohort 2	55.0	72.2
	after microproject completed	cohort 1	76.7	69.4

Descriptives

	time point	CAPER 1 cohort	student-centered	instructor centered
		cohort 2	58.3	63.9

Plots

student-centered
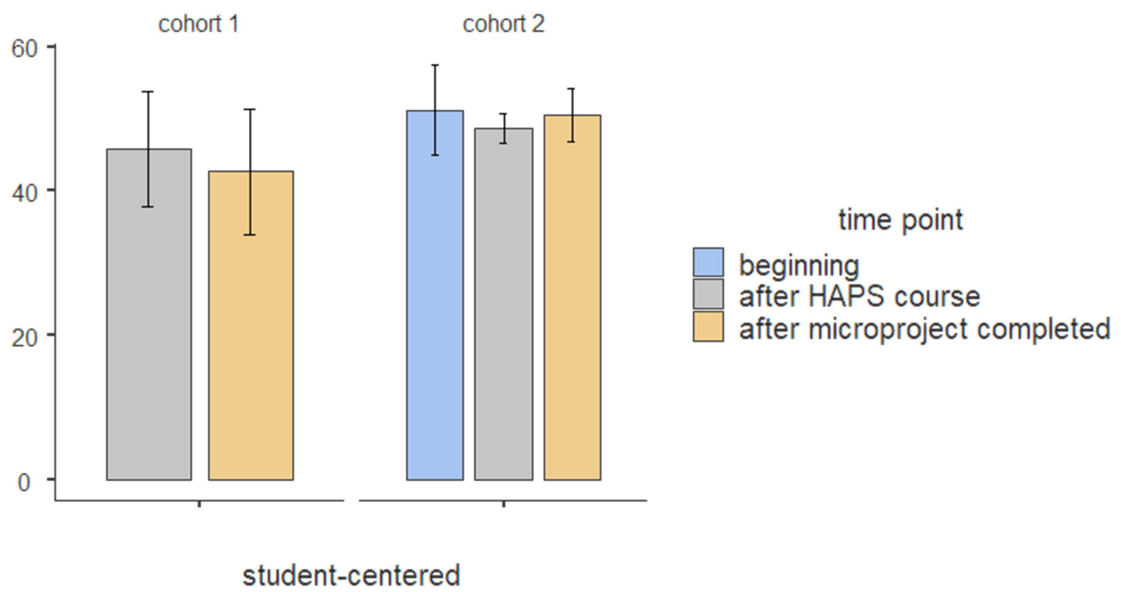
instructor centered
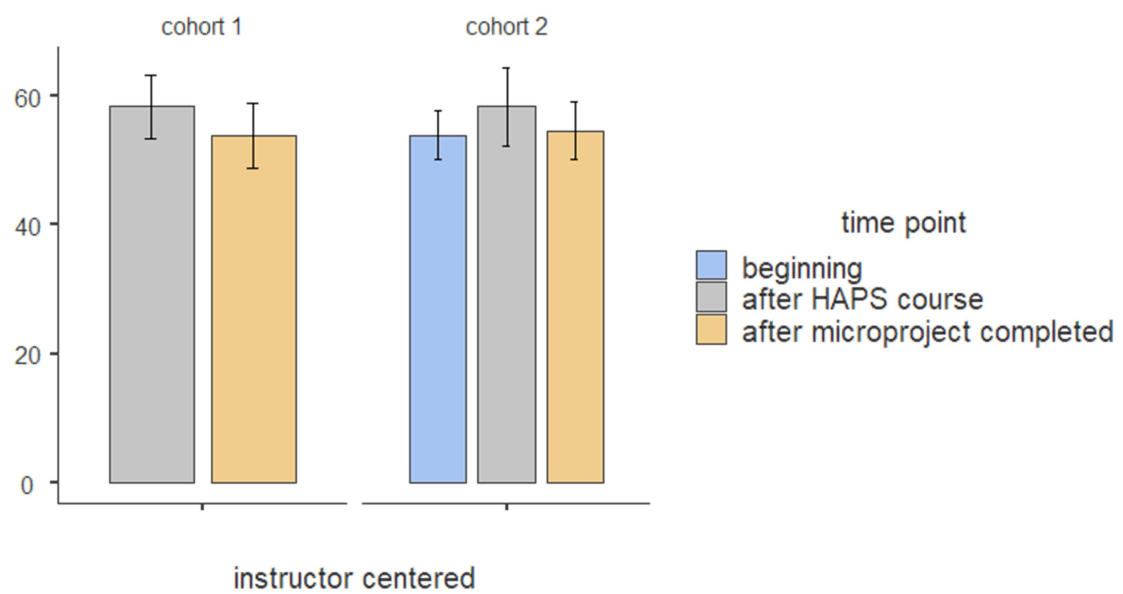
Appendix 3: Teacher Belief Interview Questions

Round 1:
Opening Q: Describe your current position and your experiences as a CC instructor
1. How do you maximize student learning in your classroom?
2. How do you describe your role as a teacher?
3. How do you know when your students understand?
4. How do you decide what topics to concentrate on in your A & P classes?
5. How do you decide when to move on to a new topic in your classroom?
6. How do your students learn best about anatomy and physiology concepts?
7. How do you know when learning is occurring in your classroom?
(Laura's added question in Round 1:)
8. How has your understanding of teaching and learning changed over the course of your career?

Round 2:
1. How do you maximize student learning in your classroom?
2. How do you describe your role as a teacher?
3. How do you know when your students understand?
4. How do you decide what topics to concentrate on in your A & P classes?
5. How do you decide when to move on to a new topic in your classroom?
6. How do your students learn best about anatomy and physiology concepts?
7. How do you know when learning is occurring in your classroom?
8. (Added-- Round 2) What did you take away from the Introduction to Education Research Methods course?

Round 3
1. How do you maximize student learning in your classroom?
2. How do you describe your role as a teacher?
3. How do you know when your students understand?
4. How do you decide what topics to concentrate on in your A & P classes?
5. How do you decide when to move on to a new topic in your classroom?
6. How do your students learn best about anatomy and physiology concepts?
7. How do you know when learning is occurring in your classroom?
8. (Added- Round 3) What events or activities from the CAPER project have been most meaningful for you?
9. (Added- Round 3) How have you evolved as a researcher through the CAPER project?
10. (Added- Round 3) What have you learned from being involved in the CAPER project?
11. (Added- Round 3) Do you intend to continue your research? Why or why not?
12. (Added- Round 3) Reflecting on your experience, what are the benefits of having community college educators engaged in educational research?

Round 4
1. How would you describe your teaching philosophy today?
2. How, if at all, has the CAPER project influenced your teaching philosophy?
3. If the CAPER project has influenced your teaching, please describe the ways you have applied learning from the CAPER experience to your classroom practice?

4. *Here is a visual representation of the results from your first, second, and third PIPS survey. How do you think the PIPS data compares with your own understanding about your beliefs and how they have shifted? Were these the results you would have expected?*
5. Please describe any challenges you have faced while trying to apply what you have learned from the CAPER experience in your institution.
6. How do you envision the CAPER experience influencing your work in the future, if at all?
7. What suggestions do you have for future iterations of the CAPER project?
8. How, if at all, has your participation in the CAPER project influenced your status at your institution? (Betsy's question)

Appendix 4: Codebook

Theme	Sub-theme	Explanation	Representative Quote
Systems-as-context	Learning from each other	CAPER is a community of practice and instructors talk about learning from each other.	"Well, I mean, first and foremost that what what I, what comes to my mind about the CAPER project is that it has put a group of Community College faculty together and it is in close proximity. So, we have been able to see what other people are doing and what... and and find out that the the challenges are pretty much the same between all of us."
	Conferences and broader community membership	CC instructors talk about participating in conferences and other knowledge-sharing opportunities as a way to stay engaged now that they have re-engaged with A&P communities of practice	"So I hope to be able to keep in contact with everyone and still, you know, keep our learning and working together. So it actually opened up my I got a chance to go to Okay, so McGraw Hill, those book publishers, they had invited me and I don't know if it was because I had been to some of those conferences or whatever through caper. I mean, that could have been part of it. They invited me to come down for a weekend to do this like ANP teacher symposium to talk about their product, and then to get ideas of what kind of things we would want them to do in that stuff. And I think before caper, I would have never went to something like that, like, I don't have any, you know, but I totally went to it. It was a blast. It was, it was it was good. I learned a lot about their stuff. And I learned I got another, you know, 10 or 15 instructors across the US that now I'm available, you know, that now that I can contact and know that they'll, they'll talk about stuff with me too. And so I think it just really, it got me back into the game."
Pedagogical discontentment and shifting perspectives towards active learning	Acknowledgment of limitations	Expression of pedagogical discontentment	"that's exactly why I was involved in this because I understand the significance of active learning, and it's just- it- it- it's just been very hard for me"
	Shifts in perceptions of active learning	Moving from feelings of pedagogical discontent to	"So it's really opened my eyes to different ways of doing active learning. And that I can just do a little bit at a time any little bit is going to help my students to learn a

		thinking about active learning	little better. Anytime I can get them to engage and do some thinking on their own some critical thinking, they're going to do better. So it's, it's changed the way I teach. And it's molded the way I would want to teach in the future when this craziness is over."
	Reflecting upon or noticing shifts in teaching	Beginning to shift teaching toward active learning as a result of pedagogical discontentment	"You, you're more introspective. You see what you're doing yourself. That's... I think that's one of the things that maybe changed *me*. Is, looking more at exactly how I'm doing this. Where for a long time, I was kind of focusing on content and not process. And now I think I'm looking a little bit more about process and they're... all the other possible alternatives that are out there."
Pedagogical changes from pedagogical discontentment		Changes in teaching behavior as a result of pedagogical discontentment	"I can record all the lectures and post them But then in class when I actually am with them, then we just do active engagement, for the most part, maybe a little bit of lecturing because sometimes they do. Like they're tired. And they want to know, let me take notes for a few minutes. Next to that, but that's the kind of classroom I wanted to try. Anyway, eventually was flip it more. And I just didn't have time to record lectures. Now I'm like, Well, now I have no choice."
Changing perceptions of educational research	Giving credibility to active learning strategies	Participants find through their educational research that they are able to verify the effectiveness of active learning techniques.	"Well, I always, I've always experimented with my classes, but just sort of informally, never really recording data. And so I think that primarily, what really has changed is just me seeing that the process could and maybe even should be formalized, so that I actually get the output that allows me to know whether what I'm doing is working or helpful to my students."
	Informs teaching choices	Reading published educational research articles and conducting	"I wasn't aware of how much peer reviewed information there was out there about the efficacy of different teaching practices. I also was unaware about how different teaching practices impact different groups of students. And because

| | | their own research about active learning techniques informs instructors' pedagogical choices. | I'm now aware that that exists, I try to check out the peer reviewed literature, when I'm thinking about making changes in my class" |