

WIT Online EduPod Episode 3: Active Learning Strategies for Online Math

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SPEAKER: You're listening to the WIT Online EduPod series. WIT Online partners with faculty, staff, and students to enhance the curriculum by developing and delivering flexible and innovative learning experiences. The WIT Online EduPod series includes conversations with the Wentworth community on topics in online teaching and learning.

KE'ANNA SKIPWITH: Hello, everyone. I'm Ke'Anna Skipwith from Wentworth Online, and I will be your host for today's podcast. We are so glad that you're tuning in from wherever you are.

Today, I'm delighted to have Mami Wentworth from Wentworth's Department of Applied Math, and Amber, a current student, join me today. This month we are speaking about active online strategies, focusing on a specific math class that Mami will share with us today about student engagement and collaboration. But before we get started, I would like to take a moment to welcome Mami and Amber to the show and have them take a moment to introduce themselves to our listeners.

MAMI WENTWORTH: Thank you, Ke'Anna. I'm Mami Wentworth. I am an assistant professor in applied mathematics, and I've been teaching at Wentworth since 2015.

AMBER ROADCAP: Thank you, Ke'Anna. I'm Amber Roadcap. I'm a rising junior in the mechanical engineering department at Wentworth.

KE'ANNA SKIPWITH: Thank you, and welcome to the show. So our first question that we have for you today is to Mami. Can you share the math courses you teach at Wentworth and the experience it was like transitioning these courses online during this pandemic?

MAMI WENTWORTH: Sure. So, I teach mostly calculus 1 and 2, as well as differential equations. And I use active learning style in classrooms. So, I'm lucky to use active classrooms on campus, when we were on campus. And for most classes, I lecture very minimally, and most of the class time is spent on group work.

I have students split up into groups, and they work at the white board. I'm lucky to have tutors in my class, so tutors and I will walk around the class and coach each other. Transition into online learning was difficult for most of us, but I think that it went pretty smoothly, considering everything. I was able to retain most of the active learning style in online setting. Break up students into groups, and students, again, work with peers during the breakout sessions.

KE'ANNA SKIPWITH: Great. Can you share with us what types of specifically online active learning strategies and activities that the students had to do to help foster that collaboration and engagement more in this new setting?

MAMI WENTWORTH: Yes. So, I use the breakout room feature in Zoom. And what that allows us to do is to split the participants into groups, and each group will get to coach each other. I did that because I think it's easier to talk to two other students, as opposed to 25 other students. And then it creates this sense of, little sense of community in each class.

Being able to open up and talk to each other about questions they're solving. If they have any questions, they have each other to talk. In the meantime, again, tutors and I will still walk around between groups and answer any questions. That seemed to work really well. Again, because students may hesitate to speak up in class of 26 students, but it's less of a barrier when they have two other students to talk to.

KE'ANNA SKIPWITH: Absolutely. I agree. Especially with that peer-to-peer learning, they had that opportunity to, had that comfort zone, but still that social connection to ask questions among themselves, but still interact with the content that's being presented at that time. So that's great. Did your interactions change with the student, Mami, from how you communicate with them online versus traditionally? And if so, how did that change?

MAMI WENTWORTH: Yeah, so I mean everything didn't change. But what I noticed is that before the transition, I have the opportunity to talk to everybody because I walk between groups and ask if they have any questions, or just ask how they're doing. And I was able to do that in online setting as well, with this breakout rooms.

When I join a group, I will ask how everybody is doing. And although the time I had to spend with each student is shorter, I was still able to check in with each student every class. So that part was good.

During office hours, I started having online office hours where students join my Zoom session. I split up my calculus students in one group, and differential equations students in another group. And again, I'll just move between groups and answering questions and talking to students that way. So that type of connection, although it wasn't in-person, I feel like didn't change much. I was still able to reach out to each student.

KE'ANNA SKIPWITH: Amber, can you share what were your initial thoughts and feelings when taking a math course online? More so, how was this adjustment for you and learning math online?

AMBER ROADCAP: I guess when I first found out that we were going to be doing school online, my main reaction was just to be anxious and concerned, especially with math. I've never attempted to learn math online, or more by myself. So I didn't really know what to expect, and I didn't really know what to expect with this whole experience.

And it's a completely new way of learning for me, and I know I wasn't the only one who experienced that. And I guess I was just concerned, mostly, with being able to continue learning math properly. For me, I'm a very visual learner. And math, as Professor Wentworth was saying, in her class is a very visual subject, and you're very hands-on and in a group. And I was worried that we wouldn't have that same experience online.

And I didn't want my classes to be all lecture-based. And that's one of the things I really appreciated about differential equations, was that it wasn't a traditional type of class. And so I wanted to be able to keep working with my classmates and working in groups, and having those relationships.

You have to teach yourself a lot of the work outside of class before you come to class every day, and so I wanted to make sure that I kept doing that. But you still have that fear that other classmates may not have that same capability to learn outside of class, or you might not all be understanding the same things, so mostly just concern and anxiety at the beginning.

KE'ANNA SKIPWITH: Totally understand. Now was this your first online learning experience at Wentworth?

AMBER ROADCAP: Yes. And in high school I never took online classes either, so first experience all around.

KE'ANNA SKIPWITH: So, let's go a little deeper, Amber. Can you describe your online experience during this time using three objectives? What would they be? And why?

AMBER ROADCAP: I guess the first thing that comes to mind is challenging. I think many students would have the same thought. I've never tried to learn, like I said, online really before and on my own. Especially math, being in the class and watching the professor work through your problems is much easier to understand than trying to write it down on a piece of paper or look at a laptop.

And it's harder to communicate. I mean, if you have like technical difficulties, or you're not as individualized with the professor, it's harder to ask questions because you have to wait for them to like go around and look at you on Zoom. So that was harder to get used to.

It's harder to stay focused sometimes. I mean, there's many distractions when you're in your house. You just don't have the classroom setting. And sometimes it's difficult to understand the material when you're trying to go through it as quickly as possible, or professors are just trying to teach the same amount of material, but we have the week shorter.

And, yeah, I guess challenging would be the first adjective I'd use to describe it. It's also unique. It's a completely different style of learning.

Like doing the breakout groups on Zoom was really helpful I thought, to me. Just because our class had been so group-oriented that we could still work with other students. And it's not as intimidating to talk to people or to ask questions. And math is a difficult subject, so it's nice to have people to just talk to you, bounce ideas back and forth with. And everyone can still work together, so that was really nice.

And I thought our differential equations class is unique still, because participation was still mandatory. In many classes I had, it wasn't mandatory. You just had to show up to the class and listen to the lecture. And for me that makes learning a little bit more challenging and harder to understand, just because you're not forced to pay attention or ask questions or really be involved.

So, I liked that we were kind of-- Professor Wentworth would just call on us randomly, so you had to be paying attention and things like that. But I thought that worked really well. And everyone was still engaged with the class.

And you can always have the continued help and conversations with the professor and the TAs. That was really helpful. So that was definitely unique. A lot of my other classes it was just, you just listen, and then email people if you have questions.

And Professor Wentworth was always looking for feedback and notes about the class, which was definitely helpful. So, if we ever had any problems or anything like that, it's just definitely easier to approach with that. So that was also really nice.

And then the last word I would use to describe it is definitely rewarding. Being able to teach yourself and learn the material under different circumstances, I thought was a really great feeling. I left every class feeling as though I'd been engaged, and I understood all of the material or most of it at least.

And I didn't have that experience, necessarily, with some other classes. I felt that they were more frustrating, or I would feel like I got less out of a class. And I would have to work harder outside of class to really understand what was going on, when it was much easier to come to class for math and know that I knew what was going on. Or I left each class feeling like I completely understood everything.

KE'ANNA SKIPWITH: That's great. So, you talked about challenging, uniqueness, as well as rewarding experience, which are all key components when you're trying to learn and absorb information online. So, you hit it right on the nail, Amber. So, thank you for sharing. Going back to Mami, what advice would you share with your faculty and colleagues who's trying to incorporate types of active learning strategies online?

MAMI WENTWORTH: So, I think that I like to encourage everybody to consider synchronous lectures. I know it's difficult and it's not for everybody, but I felt that by having everybody come to the same place at the same time, the interaction we got to have with each other-- I think I'm not probably the only one who's sometimes have a stressful backgrounds and family issues, and

all this. And I feel that from students too, it's a time where they get to be themselves and interact with students that they've been doing since January.

And for those of us who's doing the synchronous lectures, I would like to encourage breakout rooms. I felt that it was great in that we're able to break up into smaller groups. And again, it's easier to talk to a few students, as opposed to the entire class.

And then we get to keep the peer-to-peer interaction, peer-to-peer instruction. And then just kept the ability for the instructor to interact with students, but also students interact with each other. I think that was a really nice feature that we were lucky to have in online setting.

KE'ANNA SKIPWITH: Mami, I'm so glad you shared some important active learning strategies that faculty can actually incorporate in their online courses. One being having the students actually meet in a real time to interact with you, the instructor, to go over your lecture, to respond actively to questions to get clarification. And most importantly, to solve problems and being together to learn from each other, to learn from their peers, and to reflect on that experience I think it's great.

And one thing you did using the Zoom technology is that you make sure to set those clear expectations about how the breakout rooms will work, how often you will go around to each group, what type of questions you have them answer to make sure that they were participating and getting what they need. And then even having tutors make sure they guide them, they get the support, and monitor that engagement. And even having the students report back to you after the breakout sessions were over to share what they've learned.

And I'll ask the same question to you, Amber, from your perspective. What would you share with students or classmates considering this model as well? Any strategies, tips, or resources that you found helpful?

AMBER ROADCAP: I guess the first thing is just have an open mind. I mean it sounds kind of obvious, but you don't know what to expect. Things are going to be different but know that learning differently doesn't mean you can't learn things properly.

So that's why I just tried to go into this last semester with an open mind, just kind of seeing where things went. And I'm going to do that in the fall because you just have to adjust. And I asked questions when I had them. I e-mailed my professors, and the most helpful resources I had was my professors. I could just reach out and get an answer within the same day or within a couple hours.

So, they're always there to help you, and they like feedback. They want to know what they can do to make you more successful. So that was definitely helpful. And just like keeping in contact with other students, I think is a big thing because you're on your own, but you're not on your own. So, the more I talked to my classmates outside of class too, it made it feel like we weren't just going through this alone.

But definitely like Professor Wentworth was saying, if you keep to a schedule, that was definitely helpful. I mean, going to every class at the same time during the week the same as our semester had been, like that kept things much more organized, and it was much easier to get things done. And really you feel more motivated, I guess, to be a part of the class and do your work and things like that. And that made it easier to keep up with the workload definitely.

KE'ANNA SKIPWITH: Right. Especially with the course pace online, having that instructor present guiding you like Professor Wentworth was saying, that she was always involved, knowing how it is going, what kind of feedback that I can give my students to progress. Even though we're not meeting together physically, but I still want to motivate you and hold you accountable to getting the work done because we're here for you as well. Really good, valuable, tips for any student who maybe considering this model moving forward. So, as we wrap up this episode, are there any final thoughts that you have on what we discussed today?

MAMI WENTWORTH: Yes. I have one more thing. So, I am hoping that all my calculus students have access to Wacom tablets next fall, where they can use a stylus pen to write so that - Zoom has this whiteboard feature, where everybody can write on the same screen and share the screen. So, I think it's easier for everybody to participate that way. So, I'm hoping that we can get more student engagement and more student participation with this. But I guess I'll let you know how things go.

KE'ANNA SKIPWITH: What about you, Amber, anything?

AMBER ROADCAP: I guess I just hope more professors are open to experimenting as Professor Wentworth has done. Her class was definitely the most advanced, I would say, out of all of them, and definitely the most engaging. So, I'm looking forward to hopefully seeing her back with us in the fall.

And, I mean, just to the students, yeah, just keep to the schedule and keep up with the workload. And definitely reach out. You're not alone. And everyone is going through this together.

KE'ANNA SKIPWITH: Wonderful. And my final question to you is, how can our listeners get in touch with you, if you want to share, about your work, what are you doing, or just to keep in touch?

MAMI WENTWORTH: I think email is the easiest way, wentworthm1@wit.edu. I am passionate about talking about all this active learning, and how others are doing. So, I would love to engage in any conversation related to active learning, so I welcome emails anytime.

AMBER ROADCAP: I was going to say, if students have questions for a fellow student, they can email me as well. So just, roadcapa@wit.edu. And I'm always happy to talk to anyone that can reach out on social media, as well. So.



MAMI WENTWORTH: Amber did excellent in my class, so I think anybody you can get great tips from her.

KE'ANNA SKIPWITH: Well, thanks again, ladies, so much for your time and joining me today. Good luck with everything and take care.

MAMI WENTWORTH: Thank you so much.

AMBER ROADCAP: Thank you.

SPEAKER: Thanks for tuning in. We post new episodes every month. For more episodes and information, you can visit the WIT Online learning hub at site.wit.edu/wit-online.

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