TOPcast Episode 94: Digital STEM: Building On Successful Teaching Experiences of Faculty

Narrator: What will your future look like? The job you do today could be different than the jobs of tomorrow. Some see this as a challenge. At UCF, we see opportunity, a chance for you to grow your knowledge, and strengthen your skills from anywhere life might take you. With in-demand degree programs and resources for your success, UCF Online can help you prepare for the future and all the possibilities that come with it.

(musical transition)

Tom Cavanagh: From the University of Central Florida’s Center for Distributed Learning, I am Tom Cavanagh.

Kelvin Thompson: And I am Kelvin Thompson.

Tom: And you are listening to TOPcast: the Teaching Online Podcast. Hi, Kelvin.

Kelvin: Hey, Tom.

Tom: Here we are in a rainy summer afternoon here in Central Florida. We are deep into our summer weather patterns where we have a daily afternoon rainstorm.

Kelvin: Although, I’m going to tell you, I don’t know how it was for you yesterday, but daily rainstorm is one thing. But I had a monsoon hit yesterday when I was working remotely. Like there’s branches falling, and I think a tree went down like a block away. I don’t know if it was that way everywhere, but right before that, we have a new team member joining us from out of state and she hasn’t transitioned here yet. And you know, we said something about, you know, rain’s coming, and she looked a little apprehensive like, “There’s a lot of storms in Florida, right?” Yeah, but you get used to the storms. Storms are different than hurricanes. Like, those are two different things. There’s not an alligator that’s gonna be on your yard, and there’s not going to be a hurricane every afternoon. Except that then, there was this monsoon. I thought, “What in the world?” But today? A little rainstorm’s okay.

Tom: A little one. Yes, that’s right.

Kelvin: Downed trees is different.

Tom: What would be an appropriate beverage to drink on a rainy afternoon, I wonder?

Kelvin: I’m in favor of coffee.

Tom: Coffee! Sounds great! Fortunately, I have some my friend and colleague Kelvin Thompson has recently poured for me. If only I knew what I was drinking. There’s no way to know.
Kelvin: You can ask.

Tom: (gasp) I’d rather guess.

Kelvin: (laughter) Well, that’ll be entertaining. Go ahead and guess. It’ll be a longer episode than normal that way.

Tom: Maybe I’ll just try and guess the connection. Maybe we’ll do that.

Kelvin: You might need some of that. I’m using one of my newest coffee mugs [that] I think is from down at Universal Studios, Florida. That chocolate place.

Tom: Oh, I’ve been there.

Kelvin: The chocolate emporium. Yeah, it’s good.

Tom: Yeah, it’s like Willy Wonka.

Kelvin: It’s very steampunk. Yeah, it’s cool! I like the steampunk vibe.

Tom: Yeah, it is. It’s very steampunk. Yeah.

Kelvin: I don’t know if you can tell, [but] it has that kind of golden chocolate hue to the outside of it. So, I’m trying to now imagine, you know, chocolate notes in the coffee. I don’t know that they’re...Cacao, maybe, but not so much chocolate. Not really. Today’s coffee, though, is a single origin Costa Rica from Bones Coffee Company in Cape Coral, Florida. We’ve had coffees from Bones, but they’re always flavored. This one? Not flavored. So, this is an actual single origin, and this coffee, besides that, is notable because I got it thanks to producer Tim’s heads up on a great discount, which just makes me think that after all, he is independently wealthy and is just doing this, you know, video and audio production thing just because he loves it, because you know, it’s Bones Coffee Company, and you know, some people have the nickname Bone. So, because he’s the one who told me about it. I’m like, “Well, how do you know about it?” But I got a really good deal on the coffee. So, personal recommendations are a powerful thing as it turns out. So, thanks to Tim for the heads up on this. I like it. What do you think of the coffee?

Tom: No, I like it, too. Yeah, it’s good.

Kelvin: And how’s the connection to today’s episode?

Tom: Alright. So, kind of you made a point of saying personal recommendations are kind of powerful. So, that’s gotta mean something. It’s not in there by accident, I don’t think.

Kelvin: It never is.
Tom: I’m thinking that’s probably part of the connection. And then that does come up in the interview today a little bit so yeah, I’m gonna hang my hat on that big fat bread crumb you left me.

Kelvin: Yeah. No, that’s where I was going. That’s what I was thinking because, like you said, it’s at least a point, if not a theme, that there’s power in faculty to faculty dialogue. There’s power in that in terms of fostering adoption of online teaching and other teaching innovation so you know, I sometimes have said that faculty talking to faculty about teaching and learning is the only faculty development that really is. Anything beyond that just facilitation, I think, so, we’ll see. Yeah. Good picking up the breadcrumb on our way to the chocolate house where there might be somebody ready to put you in an oven.

Tom: *(laughter)* Okay.

Kelvin: That was a Hansel and Gretel thing.

Tom: I didn’t see that at Universal, but maybe that’s part of the new Hansel and Gretel land.

Kelvin: *(laughter)* That’ll be the fairy tale horror section.

Tom: There you go. Right next to Seuss Land so you can terrify all the kids.

Kelvin: You thought it was G and turns out not to be.

Tom: Well, thank you. Thank you, Tim, for the recommendation, and thank you, Kelvin, for pouring me a cup. So, should I kind of bring us around to the reason why that is a connection? So, Kelvin, get back into the Wayback Machine here. Way back in 2019 at OLC Accelerate, you interviewed Dr. Julie Mendez. You remember this?

Kelvin: I do.

Tom: Dr. Mendez is a Clinical Assistant Professor and Program Director in the Division of Mechanical Engineering at Indiana University-Purdue University, Columbus (IUPUC). In addition to her disciplinary scholarship, Dr. Mendez has also published and presented on topics related to course design and teaching in a digital learning context, which is why she was at OLC Accelerate. So, first, apologies to her for waiting to get the interview. This, I think, is our last one that that owe apologies to. Yeah. But do you want to say anything about the conversation before we go in the podcast time machine?

Kelvin: Sure. Perhaps I’ll maybe further place this interview in context a little bit. At the time of recording this interview, we had already prepared Episode 56, which was “The Last Mile: Getting STEM Online.” And there’s kind of a reference to the recent episode about STEM in the interview. So, that’s what that’s referring to: Episode 56. And in Episode 56, we promised to gather some additional perspectives because you know, we’re just a couple of online education professionals talking about STEM education.
Tom: I teach technical writing. I teach English.

Kelvin: (laughter) That’s right. I teach educational technology and instructional design kind of stuff. So, we promised we’d get some additional perspectives. And we did hear from Dr. Euan Lindsay in Episode 66 titled, “Curricular Innovation, Engineering, and Adaptive Learning,” but honestly, much of the past year plus has been focused on remote instruction, and while we have spoken multiple times over the past sixteen months about the possible STEM-related benefits of remote instruction, maybe this is a particularly good time to talk about taking advantage of the ubiquity of online tool use by STEM faculty, as we all emerge from a remote instruction and think seriously about opportunities for more hybrid or blended and online STEM courses. So, in this pre-pandemic interview, Dr. Mendez speaks from her perspective as an engineering professor, practiced in blended design and teaching, and you’ll hear that she values the individual perspectives of other engineering and STEM faculty and is kind of loath to advocate for one size fits all approaches to persuade colleagues to engage in digital teaching and learning. So, that’s my contextualization of the interview.

Tom: Great. That helps. Thank you. So, thanks to the magic of podcast time travel, here’s your interview with Dr. Mendez.

(musical transition)

Kelvin: Hi, Julie. Good to have you on TOPcast.

Julie Mendez: Hi, I’m excited to talk to you today.

Kelvin: Oh, people aren’t usually excited. They’re resistant, perhaps reluctant, but not often excited. So, that’s good. This was a great, serendipitous kind of an opportunity to have an interview. We were talking recently about STEM and online, and we’ve done a recent episode on that topic in TOPcast, and you’re a STEM faculty member and you’re engaged with online and blended or hybrid course design, and I thought, “What a great person to kind of give a from the discipline kind of perspective on this question?” So, do you mind if I just ask first just to comment on to what extent you have seen or not seen a disconnect between STEM and online or blended?

Julie: It does seem like there’s some perceptions that it’s more difficult to put a STEM class in an online format, but I think we’re definitely seeing a lot more people making courses online or in a hybrid format. I’m most familiar with what’s going on in engineering.

Kelvin: Yeah, of course. Yeah. Why do you think it is perceived as difficult to put, say, we’ll just say engineering courses online?

Julie: So, one concern is about the courses that have labs. And some of the things about labs, some of it is that we really need to have the hands-on aspect of it, in addition to helping reinforce some of the concepts that get covered in other lecture courses. So, being able to actually touch the equipment and think about maybe what went wrong in the experiment and being able to explain some of
that, I think that really a lot of times needs the in-person experience. I think another challenge has to do with a lot of the courses that have a lot of equations and solving longer problems, it may be a little more challenging to, or people may perceive that it’s more challenging to put that into a video or in some other online format. But there’s a lot of technology tools that are making that easier.

Kelvin: Now, you’ve engaged, it seems like to me from talking before, a lot more perhaps in hybrid or blended approaches. Do you think hybrid or blended lend themselves better to engineering than online purely does?

Julie: Possibly. There are definitely online courses, fully online courses being offered. I haven’t participated in one. I guess I’ve been a little hesitant to go totally into that, and I like interacting with my students in person, too.

Kelvin: So that blended best of both worlds thing really hold some appeal to you.

Julie: Right.

Kelvin: Yeah. Just for you personally, is it the hands-on thing or is it just the lack of looking into the eyes of your students in the classroom that makes you personally a little reluctant to the fully online?

Julie: I think it is the being able to interact with students in real time. I like to do a lot of active learning type things in class and be able to see right when the students are working on a problem, what part of it they’re struggling with and be able to help correct it right then. And one of the challenges I’ve been experiencing in doing the online portion of the hybrid courses is everything taking a little bit longer. So, if they turn something in, I can see maybe where there’s a common error. I can’t talk to them in real time as easily to be able to get them to try again.

Kelvin: So, let me ask this maybe a different kind of way. Given what you just talked about, why even do blended or hybrid? What’s the what’s the pull into that world for you as opposed to just doing just a regular face to face class?

Julie: Well, in my experience, sometimes there’s just the scheduling issue. I teach a lot of courses, and I’m in a small department. So, we have a couple of faculty members also teaching a lot of courses, and nearly all the courses we’re teaching are required in the program. So being able to get everything scheduled in so that the students can take all the required courses. Sometimes that’s challenging with students who maybe are working during the day and want to have classes at night, but then maybe there’s students that don’t want to have classes at night because they’ve got family responsibilities. So, it gives a little bit more flexibility when we have less seat time.

Kelvin: Yeah, that’s certainly something we hear commonly from students, especially less so-called traditional aged college students—schedule flexibility—but it’s interesting. Schedule flexibility for the faculty also is an appeal in in your context. So, that’s kind of cool. In a past episode that we did when Tom and I talked about kind of STEM online/blended disconnect, we commented on the potential lack of intentional design sometimes in we might call it purely face to
face courses. I just wonder if you have some thoughts about that. You know, from what I’ve been able to determine [from] some of your work, you’ve been very much into intentional course design. I just wonder what comments you would make about course design and modality. Do you think face to face courses don’t get as much intentional course design broadly and that’s, you see more of it in blended and online? Or do you think it’s just simply a matter of the individual? How do we foster more intentional design, regardless of modality? That was a long and sprawling question, but I hope you get the gist of it.

Julie: Yeah, that’s a big question. So, I think it sort of depends on modality but sort of depends on the person. I know when I first was learning about online or hybrid and doing some training with Quality Matters, I was really struck by how there’s not necessarily in a face to face course, there’s not necessarily like a list of things that you should be doing to design— Well, of course, there’s things you should be doing to design the course well, but it’s like not until we move into online where we need to check the quality of it, and so, obviously, there are a lot of people who care a lot about their intentional course design in a face to face course. I’m not sure that I covered everything in your question.

Kelvin: Let me try this. I’m gonna throw this out there and see if you agree or not or if you might resonate with it. I sometimes say that online makes the implicit more explicit. And I thought I heard you kind of go in that direction as well with intentional design, that when you’re walking into a face to face setting, apart from, say, the syllabus, or any other formal course documents that you might pass out or distribute digitally, so much is intangible. And you know, you’ve got a plan in your head, or you’ve got some notes about what you want to accomplish, but when you’re dealing with online courses—or to a lesser extent, blended—the intentions are a lot more crystallized. They’re made more explicit, you know, in materials. So, I wonder if that is… I see you nodding. So, I wonder if that lines up with your thinking of intentional design. Do you think the modality kind of pulls you along toward more intentional design and hybrid and online and it’s more of a challenge face to face? And if so, what can we do about that? That’s another sprawling question.

Julie: Right. Yeah, so I’m definitely agreeing about in online, we need to make everything more explicit. You know, be very careful about how the directions are worded. Maybe even make videos of showing where to click on things in the learning management system. I found that when I’ve kind of learned how to be more explicit, then that does help inform how I teach in the face to face environment. So, I think there’s some things, you know, we can learn about how we approach online course design and apply it to our face to face classes.

Kelvin: Yeah, it’s like… I don’t know. I’ve never really done this, but, you know, I hear that, you know, some people train by running with lead weights, and then they take the lead weights off, and then they’re like, “Wow, I am light as a feather as I’m out here running.” And so, maybe there’s something to that. Like, go through the exercise of designing an online or blended course, and then taking some of those principles and spilling back over into the face to face context. Maybe that wouldn’t be a bad training regimen.
Julie: Yeah.

Kelvin: Within your own context or just within your field, what kind of—I hate to frame it negatively like this—but what kind of resistance to online do you encounter from folks who haven’t done online or blended at all? Is there just a hesitancy to it? Is it just a concern for the lab component in general? When someone is poised right there thinking, “I might try that,” or not, what do you think that tips people away from it?

Julie: I think sometimes it’s being reluctant or unsure about technology, or maybe thinking that doing an online course means we need to use a lot of technology. And another issue, I think, is just sometimes people aren’t familiar at all with online courses. So, they’re not sure if the quality is the same as what’s going on in the face to face class. So, I think those are a couple of concerns that I see.

Kelvin: Do you find yourself seeking to address those concerns when they come up? I mean, like, what do you say to colleagues who broach the quality question?

Julie: Well, I think it kind of goes back to what we were talking about with learning how to do an online course helps you learn how to be more intentional about course design. So, there really are some opportunities to really make a good course in that modality.

Kelvin: Identifying some of those specific attributes and so forth in course design. Yeah. That makes sense. I really appreciate you joining us today for TOPcast and getting a from-the-field kind of response to our prior episode. As we start to wrap up—I just haven’t asked you this and I should—like, how did you personally get drawn into like this explicit emphasis on course design and Quality Matters? Given what we’ve talked about, you know, it’s not always something that’s pursued in the field of engineering. How did you find your way into that?

Julie: So, when I was at a previous job, I think this was around the time when MOOCs were kind of big, there was some concern that we need to be putting more stuff online. So, that was when I first learned about Quality Matters and first taught a hybrid course. And then more recently, it seems like there’s always more of a push to try to get more courses online. And so, I’ve got two courses that I regularly teach in hybrid formats.

Kelvin: Wow. So cool. Well, I think it’s wonderful to have a colleague in STEM broadly and engineering specifically who’s doing this work and advocating for good design and seeking to cross that chasm that we’ve talked about before. So, thanks very much for that work, and thanks for joining us.

Julie: Thank you.

(musical transition)

Tom: So, Kelvin, that was your interview with Dr. Julie Mendez. Thank you, and, again, apologies to Dr. Mendez for taking that long to finally get her interview on the show.
Kelvin: Yes, indeed. Agreed. Yeah, that was, and I think it’s so important, right, to engage with our faculty colleagues who are sometimes unsung, who are teaching in digital formats: fully online, reduced seat time, blended. They’re folks who’ve been innovating in that space, and we don’t always give them enough credit, right? So, building on their expertise as we seek to make further inroads into STEM disciplines as digital learning professionals, I think is really important.

Tom: Yeah. And you know, one of the things you touched on in your conversation with her was about kind of these misperceptions/miscceptions about how hard it is to do STEM online, and that is a conventional wisdom. And there may be some truth in it, but I think in some ways, it’s a bit of a cop out. Because, I mean, as she’s proven, you can do some stuff online, and I think we’ve both seen even before the pandemic that there are virtual labs and other kinds of things that, I mean, as long as you’re not teaching psychomotor skills, if it’s more knowledge based, these virtual labs are highly effective, and you can be infinitely mistake-prone. You’re not like blowing something up or breaking some piece of equipment or wasting chemicals and resources. You can kind of have infinite supplies to try things. You could be a lot more, I don’t know, exploratory in some of your activities. But post-pandemic—

Kelvin: Yes.

Tom: We were all forced to deal with the idea of virtual labs for everything over the past year and a half, and I think we’ve made some believers out of people that might have previously said, “You can’t do that.” Now they’ve had to do it. And we’ve supported them, and at least speaking for UCF, we had a team that we stood up as sort of a virtual lab task force that we put on them as a tiger team to try and help all the departments. But the truth is a lot of departments just solve their own problems, just by their own ingenuity and creativity. They came up with all kinds of awesome, like tabletop experiment kind of solutions that were just really clever. So, it can be done.

Kelvin: Yeah, no, I agree. I think that’s an excellent point. And, you know, there’s been a lot of personal experience during this remote instruction era, right? And you could say that—well, I’ve said often—that some things have to be experienced in order to be understood. I think that I’ve said often, I guess, through the years that that’s really kind of true of online and blended teaching and learning. You can talk about it a lot, but until you really kind of get hands on with it, it’s just kind of talk. And, I think Julie makes that passing comment in the interview like that as well. That, you know, you can talk to colleagues, but until they really get hands on themselves, and as she really got hands on herself, it only goes so far, right? And so, I think the personal experience through the remote instruction era will really help in a lot of ways. I’m a little concerned that it might hurt in some ways, because maybe there will be misperceptions about what online really is or can be. I think we’ve talked plenty about, you know, working to assure quality as we emerge from remote instruction, but I think we must not diminish the personal experience of many STEM faculty who may have stretched in their perceptions of what is possible.
Tom: Yeah. Yeah, I agree. I agree. And by the same token, you know, kind of how we set up that your interview with your coffee connection that these personal experiences shared with colleagues, so that they become more secondhand experiences are as important also. We’ve learned if nothing else here at UCF that colleagues will— faculty will listen to their colleagues probably before they’ll listen to us. Right? If their colleague tells them, “Hey, this thing works really well.” They’ll be more inclined to trust the validity of that than if I show up in their office and say, “Hey, this thing works really well.” Just because, you know, there’s a certain level of trust and understanding that they’ve got the same experience.

Kelvin: Yeah, yeah. I agree. That’s good. Well, that might be a good place to leave it. Shall I try to put all the wheels of the plane neatly on the tarmac?

Tom: Please do. Yeah. We’re gonna have to get a pilot’s license before.

Kelvin: *(laughter)* Well, or we just use the flight simulator.

Tom: There we go. That’s a perfect virtual lab.

Kelvin: That’s right.

Tom: Well done.

Kelvin: So maybe we’ll say STEM courses have faced challenges going online in the past, but our lessons learned from remote instruction can be filtered through experienced online or blended teaching faculty to lead the way to the future of online and blended STEM education.

Tom: There you go.

Kelvin: How’s that?

Tom: Yup. Plane landed. You know, any landing you can walk away from is a good one, Kelvin.

Kelvin: That’s right. A crawl out of the burning hole of the plane.

Tom: I think, you know, mission accomplished there. So, you know, as long as we’re talking about personal recommendations, can you indulge me a plug? So, as we said, these word-of-mouth personal recommendations are powerful. My coffee that I’m drinking says so. So, let me ask our dear listeners, would you please consider telling someone else about TOPcast. You might email or text a link to an episode that you particularly liked, or you might just point a colleague to the main TOPcast page, which is topcast.online.ucf.edu. topcast.online.ucf.edu so that they can listen, and if they like it, subscribe, and they tell a friend and they tell a friend.

Kelvin: And so on and so on.
Tom: It’s network effects. So, that would be great. We’d appreciate it, and you know, if you think there are others out there that are looking for this kind of content. Cool. So, thanks again for the coffee. Thank you, Tim. Thanks to Dr. Julie Mendez. And until next time, for TOPcast. I’m Tom.

Kelvin: I’m Kelvin.

Tom: See ya.