

TOPcast Episode #119: Chatbots in Online Education

Narrator: When you realize what your future can be, you want to do it right. UCF Online offers more than a hundred fully online programs plus personalized support from success coaches. So, you can get to the future that's right for you.

(Musical intro)

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. Greetings, Kelvin Thompson.

Kelvin: Greetings, Tom Cavanagh. I won't give you the full the letter in the middle, and we did that show already. I'm well, thank you. Except that, as we were just saying, right before we hit record, I'm hoping we don't have any sound effects in my office here because the window washer just made the biggest smack on the window right next to me with this ginormous squeegee. It made me jump out of my skin. So, that could be a whole new shtick for the podcast, "See the facial expressions Kelvin makes." [Laughter]

Tom: Yeah, maybe we'll get some more viewers as opposed to listeners because it'll be entertaining to watch you get startled by the window washers.

Kelvin: Kelvin's horror face, new hashtag. [Laughter]

Tom: And just to reassure everyone that the squishy wet noises they're hearing have nothing to do with the coffee that you're drinking.

Kelvin: So, noisily. [Laughter]

Tom: That's right, yeah. So, just a reminder for our friends, I did mention the coffee, that we like to bill TOPcast as a collegial conversation about online and blended learning and digital teaching over, or as we say, conducted over a shared cup of coffee. We try to put as much alliteration into our description as we possibly can. But coffee is sort of our shared beverage that lubricates the conversation.

Kelvin: Yep. That is all accurate. That's all accurate.

Tom: So, what's in the thermos today and in my cup?

Kelvin: Well, Tom, today's coffee is a single origin Guatemalan, technically a Finca San Victor. We've had Guatemalan coffees on the podcast before, but I had missed this little historical tidbit that I'm going to share with you today. I missed this up until just recently. So, turns out coffee was introduced to Guatemala by Jesuit missionaries in the mid 1700s.

So, you see little historical nuggets like that all over the place, but not for the reason you might think. The coffee bushes the Jesuits brought to Guatemala were used as decorative shrubs. So, I don't know. I guess somebody had a thing for ornamental shrubbery. [Laughter] I have no idea. So, it wasn't for another hundred years when Guatemalan export crops like indigo... That was a big export crop for Guatemala until artificial dyes took hold... When those export crops were in decline, somebody hit upon this idea of, "Well, we've got all this coffee tree stuff here. Let's do something with the fruit there. Other people actually make coffee and sell it. Maybe we should do that." So, today we know that the growing conditions in Guatemala make for some of the finest coffee in the world. But I suppose we could just know Guatemala as a place with lots of ornamental coffee bushes. In fact, this particular farm, Finca San Victor, actually has volcanoes on either side of it, I kid you not. I looked it up. [Laughter]

Tom: Okay.

Kelvin: So, how is the coffee? And how's the connection?

Tom: The coffee's excellent. And as I was just about to say, I assume there's a connection in there somewhere.

Kelvin: [Laughter] I don't know. Maybe. This might be one of the weaker ones. I'm not going to prejudge.

Tom: The coffee's not weak, though. [Laughter]

Kelvin: Sometimes, I think it's weak, and you find a connection.

Tom: All right. So, I do have one, but I don't think it's what you were intending, just because of my own knowledge of Jesuit history. When they would go as missionaries into a new culture, they would basically just, that would be their new lives. They would just live there the rest of their lives. They would accompany, as they would say, the locals. And that was their way to evangelize, by just embedding themselves within the community. So, as I think about what we're talking about today, there's a certain aspect of embedding oneself in the environment. But I don't know. I don't know if that's what you meant, and it may be a bit of a stretched analogy. [Laughter]

Kelvin: That might be a better connection than what I've got. So, we'll go with that one. Here are the two things I was thinking of, however fine these strands might be that I'm going to be grasping at. One, I think that little tidbit from Guatemalan coffee history reflects an opportunity that was seized, an opportunity that was missed at first, and then an opportunity that was seized. And then the contrast between this ornamental, decorative, not fulfilling agricultural crop thing. Fake, you might even say, versus a working agricultural cash crop. There's little dichotomy there between the ornamental coffee shrubs and the working coffee trees that have landed in our... The fruit of which has, well, the nuts of the fruit of which have landed into our cups today. So, that's what I was thinking. I thought there might be a little bit of a connection. But why don't you tell people what we're actually talking about that isn't coffee.

Tom: Yeah. We've been observing this growing trend of chatbots and artificial intelligence, or as we may refer to it throughout here as AI, showing up in online learning and both in the

ancillary support help desk services, but also in the core instruction, which seems to be a really interesting development. So, we thought we would pull apart, based on our lack of complete expertise, but just as external observers, some of those threads and dig into this whole idea of chatbots and AI.

Kelvin: Yeah, specifically in our work of online education broadly. So, we'll talk about that. So, maybe it's helpful to situate the chatbots within the AI field a little bit. I did a little bit of, as little as possible, Tom, a little bit of legwork in advance of the episode, and there's a lot of different ways of classifying AI. But the one that I found that seems to show up multiple times, anyway, is a very broad classification. The difference between artificial narrow intelligence, ANI, and artificial general intelligence, AGI, narrow is focused and specialized applications. That is something less than our human capabilities, but it's a focused task. The AGI, the general is on par with human capabilities. Then the third category is artificial super intelligence, which is more capable than a human. Some people wonder whether that's really a thing or not. But chatbots, arguably, are a particular type of artificial narrow intelligence, specialized.

Tom: Yeah. Well, thank you. I didn't know that, but that's helpful. All I know is sometimes when I'm trying to book an airline ticket, or I'm trying to talk to some customer service person, I end up on a chatbot. And I hate it, mostly because I find it not helpful. [Laughter] It's not until I can get to a human being that I get my problem solved. You end up in these loops where it doesn't help you. I think that just might be a function of the knowledge base that it's operating from. That maybe it's just, it's not deep enough, or rich or robust enough to address the issue that I particularly have. But I don't know. I don't know if I'm that unique. You try to exhaust all the things that you have at your disposal, whether it's researching and getting on the web and before you... Sometimes that's your only recourse is go through the chatbot. So, that's not what we want for instruction. We want value-added.

Kelvin: That would be a non-example. [Laughter]

Tom: A big non-example, thank you. But unfortunately, I think when you mention chatbots, that's the first thing a lot of people think about is like, "Oh."

Kelvin: That's right.

Tom: "This thing that just keeps trying to put me in this loop of questions."

Kelvin: But there's definitely possibilities. Because even in... We're recording this in 2022. The EDUCAUSE 2022 Horizon Report for Teaching and Learning identified two separate key technology practices associated with artificial intelligence, specifically learning analytics that has an AI bent, and learning tools that have an AI bent. So, I tend to pay attention to things that bubble up from the Horizon Reports. So, that's a thing. I think broadly the reason that we all look to the horizon... ooh, no pun intended... for AI developments is because there's possibility, as we've talked about with other technology platforms, there's the possibility of scaling effective practices. In the case of AI, scaling in a way that frees up humans for more important and more complex roles. For instance, in a recent episode, we talked about enhancements to our traditional online discussions. One of the things that a faculty group said that they would find important is feedback in that context, providing meaningful feedback to students, having support to provide that

feedback better. Well, AI-based feedback, maybe that helps. We're not looking to replace an instructor, but maybe there's a support there. So, that's just maybe one example. So, we're looking for aspirational, successful implementations of chatbot in a variety of context and online learning.

Tom: Yeah, and despite my criticism of it, I've been an advocate for it here, internally, and have been pushing our team to think about it along those two dimensions that you hinted at before. One is around student services, and the other is around direct instruction. I should say the university where we work has a chatbot installation that's been mostly focused on financial aid. Because we have 70,000 students, most of whom are undergrad, who are on financial aid of some sort, there are a lot of questions, especially around the beginning of the semester, and it can overwhelm the staff we have. The chatbot has been a huge benefit for us in being able to address that scale, especially the scale that spikes at certain times of the year because you can't staff up for just a couple of weeks or whatever it is. Then scale back down. The chatbot allows us to serve that many more students during those peak periods, and it's been, it's been really, really useful. Specifically, the areas that I've been pushing in, we can dig into these, but when I say student support, I'm thinking of the Help Desk. So, we manage Learning Management System Help Desk for students and faculty who teach online, having a 24/7, always awake, always available chatbot who has absolute mastery of the entire knowledge base available all the time, would be really beneficial. Likewise, somebody who could take inquiries for UCF Online Virtual Campus all day, all night, 24/7. If somebody is in a different time zone, somebody's in Hawaii or Australia or something and is on UCF Online website and says, "You know what? This program looks interesting." They can have a conversation with chatbot and get some basic programmatic information answered. And then on the instructional side, and this is an area where I think there's still work to be done, but a huge possibility to your point about scale, having a teaching assistant who is infinitely available across an infinite number of students 24/7, that can answer the vast majority of questions about a particular course or something. Just think of the benefit of that to a student who maybe is doing their coursework at two in the morning or something like that, and suddenly has a question, and they can get an answer right away from a chatbot that never sleeps.

Kelvin: Yeah, I think there's all kinds of possibilities. There's an opportunity here, and we've talked before. The example that has been trotted out for what, six, seven years now is from Georgia Tech, the "Jill Watson" virtual assistant. You've cited that many times, and we'll throw some up-to-date information there.

Tom: Well, maybe just give a 30-second overview of what the Jill Watson initiative has been.

Kelvin: Sure. Why don't you do that?

Tom: Oh, okay. I was inviting you, but I can do that.

Kelvin: I don't do pithy, Tom. [Laughter]

Tom: So, a professor at Georgia Tech, Ashok Goel, if I'm pronouncing his name correctly, has leveraged the IBM Watson supercomputer to create a teaching assistant for one of his computer science courses that is virtual, and is infinitely scalable, and expert in the subject matter. A lot has been written about it, especially at the beginning before he went public with it. He called the teaching assistant, "Jill Watson," and Jill Watson passed the

Turing test. The students in the class did not know Jill Watson was artificial, and they gave her high-rate rankings as a teaching assistant in their end of course evaluations. Now, it's public. So, the Turing test would be hard to implement. But I've been personally fascinated by that because I could just see the potential there, and there are companies that are working on this, commercializing this approach. Now, we've looked at it. The reason why the Jill Watson thing works so well is because it was completely optimized. It was bespoke for that course, and it's taken a number of iterations for it to get right. So, it's hard to scale at that level of rigor and efficacy. But there are things that can be done, that could be built into a knowledge base, just like a student support chatbot could be. Or maybe some templating where faculty could input a certain amount of information, or even assistants or administrators, that could vary from course to course. So, that at least it adds some value to students. For the deeper, harder questions, then it could refer to a human being.

Kelvin: Yes, and again, well, in the show notes, you can find out a lot more about the current state of the Jill Watson ongoing initiative. But you don't have to look at the page too long before you see that over time now, the ramp up time for a course has gone down dramatically. At first, it was like 1,500 hours of that building, and working with, and training the AI. Now, it's like five hours for create a course for that. But I think there's also much more zoomed-in applications. Tom, you know that through our Florida Innovation Summit that we host here at UCF every year, we have some colleagues from the University of Florida, our sibling institution in the state, some faculty who shared some early results in a legal psychology course of a chatbot implementation. We won't get into all the weeds of it. But as I understand it in legal psychology, there's an assignment where you want the students to be thinking about all that goes into eyewitness testimony. So, there's an assignment where they go through a role-playing simulated exercise, where you would query the defense attorney. Ask specific questions. Then you're going to, as the student psychologist, you're going to write up an analysis, and a recommendation, and so forth. Well, you could imagine playing that out in a face-to-face classroom and maybe one or two students comes up, and the faculty member role plays that, and everybody else benefits. But with the chatbot implementation, every single student could have that back-and-forth experience. Then based on that experience, they could write up their findings and their recommendations. So, we actually had a faculty member here in a related class who asked if she could build her own implementation here at UCF based on their work at UF. We're supporting that. It's in that training, and build up, and structuring time right now, but it's promising. But it's a very fine grained... It's not the virtual assistant for the entire class. It's one particular learning exercise that the chatbot's going to support.

Tom: Yeah, it's cool. I saw that presentation from our colleagues at UF and have spoken to the faculty member here who's doing that. It's a really interesting application, but I think it's one of many possibilities. I wonder if it's worth just talking about some best practices that I've both heard as well as have observed since we've had our own implementation. One of the main things that has been emphasized to us, and I think it really holds true, is that when you're implementing a chatbot, with the exception of that Jill Watson, which is a specific experiment, be honest with the students about this being a bot. Don't pretend that it's human. So, for example, our financial aid thing, we have KnightBot because we have the Knights at UCF. There are an equivalent number of those at all the institutions that have something similar. It's the whatever, the "BadgerBot," or whatever their mascot is. That, I think, is really important to play fair with students, and be honest with them.

Kelvin: Yeah, I think that's right. Transparency, the preserving of human agency, all of that, I would classify as you really want... It may be a little counterintuitive... But for the way I think about it, you want all your efforts to result in better humanizing the experience, not inadvertently dehumanizing the experience.

Tom: Right, yeah, that's right. And ironically enough, what we have found, and also have heard from our partner, is that students will be amazingly vulnerable in interacting with the chatbot. They will say things, the most intimate things to the chatbot about mental health challenges or other things. They know it's not a human, but they'll do it anyway. So, obviously you need to have built in that certain words or expressions that will trigger an intervention or a referral by a human who can actually address whatever that concern might be. But I found that to be really an interesting development in this whole chatbot space.

Kelvin: Yeah, it makes you wonder. Is it because it feels more anonymous even in that you're aware that it's a technology? So, you're just thinking out loud to yourself or whatever. I wonder what it is about that moment that invites that vulnerability. But regardless, speaking of seizing opportunities, not letting that disclosure just be poured out like water onto the ground. Do something with it, to your point, I think is excellent. Maybe without missing this, too, we should state that really what we're trying to do here through these implementations is pursue scale, and efficiency, and affordability of effective practices in education. People are always the most expensive part of anything, highly skilled faculty members and instructional designers that are behind the scenes, and all of that. So, how can we better support effective practices through these technologies, so that it frees up the human time? And so, we can give that concentrated... I don't know if you want to call it "time on task" or "personal support" for the learner through that chatbot experience... But the key has got to be that it's got to be a positive experience. It can't be your 11 o'clock midnight looking for an airplane going, "Hello, how could I help you?" "Well, here's what I'm struggling with." "How could I help you?"

Tom: Yeah, that's what happens unfortunately sometimes, but you know, I think maybe the next evolution of this is chatbots who learn better than maybe they have. Right now, they seem to rely a lot on a knowledge base or pre-populated database of prompts and responses and things that might be similar. But when you have a supercomputer like Watson, that can infer, and learn, and grow, that's when things are going to get really interesting. Of course, you want to check to make sure that it's learning in the way you want it to, but I think we're going to get there. I think that these things are going to evolve in some ways on their own, based upon the volume of inputs that come in. We're doing this now in some ways with our CRM through UCF Online where we don't have a chatbot yet, but we are using the live chat to help us populate the knowledge base that we will implement when we do pull the trigger on a chatbot.

Kelvin: Because you've got those transcripts that can feed as data. Maybe two of the moment comments, and I don't know if I'd call both of these critical comments or not, but I think it is important always in our implementation of technology to support our work. I think we need to be critical about what we do. One, just last week I saw an article from *Scientific American*. There were news articles in early Summer 2022, but now just within the last week, there was a *Scientific American* article about this Google engineer, who's gone public with the fact that there's this Google chatbot called, "Lambda," that he believes has achieved sentience. It's easy to make jokes about it. I know I did. [Laughter]

Tom: Skynet, right, yeah. [Laughter]

Kelvin: I made my share of jokes about it, but it's interesting. Because there are all kinds of folks who would, like you said, Tom, that Jill Watson passed the Turing test. I found folks who will debate that. There's levels and all. But like Ray Kurtzweil's been saying for gosh, more than 20 years, that in our lifetime we'll see an AI that surpasses the Turing test, he believes. Still have his 1999 book, *The Age of Spiritual Machines*, on my bookshelf. So, one, that's interesting. We haven't even quite figured out in higher ed how to even get simple implementations, but we've got Google with maybe a sentient chatbot. Don't know.

Tom: Maybe.

Kelvin: That's interesting. Don't know. I, for one, welcome our benevolent artificial overlords. The other critical comment, I was really struck by a comment in a recent advisory board call that I participated in. I'm really fortunate because I just sit there. It's hard to imagine, but I sit there quietly and listen most of the time because there's some really incredible people on this board. And then I'm there. So, Dr. Jutta Treviranus from Ontario College of Art and Design University, who is actually one of the eight 2022 Women in AI Award recipients, we were talking about inclusive design, and accessibility, and so forth. She's got this big background in AI work, and she made this passing comment that I wrote down because I was so struck by it that I think it probably deserves a mention in this context. She said that disability can be defined as a, "...divergence from the average." So, she said more automated approaches tend to amplify the average. That challenges us in terms of our inclusive design implementations. We often... I know I do... pursue principle of the greatest good for the greatest number, and that's understandable, but we've got to guard against systematic exclusion of any human differences as we carry out our work, obviously.

Tom: Yeah, that's interesting. Obviously, we don't have time to dig into that, but I wrote my dissertation many years ago about performance support technologies. Mostly, I was focusing on the way systems can accommodate themselves to both expert and novice users. But you could apply that same thinking to both disabled and non-disabled users. You wouldn't want to, you would want the system to, as I think it was Donald Norman may have said, "The system should adapt itself to the user." I think in many ways, this AI technology holds the potential for something like that. So, whether that's somebody who needs an accommodation, or somebody who just doesn't understand, or maybe English is not their first language, or whatever it is, the system should be smart enough to adapt itself to the needs that the user has.

Kelvin: That would be a good aspirational goal. You want to... I know we're about to run out of jet fuel and coffee. You want to try to get us on the ground?

Tom: I will. All right, so Kelvin, artificial intelligence may play an increasingly important part in various aspects of our lives, as we have discussed. So, as online education professionals, chatbots have perhaps the most readily available AI role to fulfill in various aspects of our field, if we are prepared to seize the opportunity.

Kelvin: Seize the opportunity. I saw that. You seized the opportunity. That's good. Yeah, I think that's right. I think that's right.

Tom: Carpe.

Kelvin: I know we're running low on time, but can I slip in a quick little self-promotional plug?

Tom: Yep.

Kelvin: We are the self. It's not just me.

Tom: Yeah. [Laughter]

Kelvin: So, it's duo self-promotional. Dear TOPcast listeners, from now, when you're listening to this episode up until the end of September 2022... So, if you're listening to this in 2023, sorry. Just go ahead and fast forward past this now. But from now until the end of September 2022, if you share a link to TOPcast via social media, and then email us a link to your post, you will be entered in a drawing to win a TOPcast listener mug. You know you've always wanted one. Right? They're beautiful. It'll change your life, probably. Tom's got one right now. If you're looking on the video screen, you're seeing it. Look at that, I heart listening to TOPcast. Isn't that lovely? That's great. So, multiple entries are allowed. The more you enter, the better chance you've got of winning. Please send a separate email message for each social media posting that you're documenting. No more than one social media post every 24 hours, please. Send those entries via email to topcast@ucf.edu, topcast@ucf.edu with the subject line, "Drawing Entry." That would be very helpful. The winner will be announced in a future episode after the drawing. Can't wait to see who's going to win the coffee mug.

Tom: Me, too. And I can't wait to see the social media posts. That will be really cool. So, Kelvin, thank you for the Guatemalan coffee. Thank you for the artificial intelligence discussion. Who knows? Someday, there may be a TOPcast episode where it's just an AI Kelvin talking to an AI Tom, and you and I can just sit back and listen. Who knows? [Laughter]

Kelvin: Wouldn't that be something? [Laughter]

(Musical outro)

Tom: Yes. Until that time though, Kelvin, for TOPcast, I'm Tom.

Kelvin: I'm Kelvin.

Tom: See ya.