

The eLearning Coach Podcast #70
Conversation Design for the Voice User Interface
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Connie: Hello, learning people, and welcome to episode 70 of The eLearning Coach podcast. Do you wonder what learning experience designers will be doing in the future? I think one area where we will need to upskill is in conversation design. Think of the possibilities that chatbots and voice interfaces will provide for accessing information, for learning and for support in the flow of war. In this episode, I speak with Myra Roldan, about designing for the voice user interface. Myra is a senior technical program manager at Amazon web services. She brings a unique mix of technical business and adult ed expertise to her work. Myra is a TEDx speaker, author, and subject matter expert in competency development and effective learning delivery. You can find the show notes and a transcript at theelearningcoach.com/podcasts/seventy. Here's our conversation.

Connie: Hi, Myra. Welcome to The eLearning Coach podcast.

Myra: Hi, thank you so much. I'm looking forward to this conversation.

Connie: So am I. We're going to be talking about voice user interface and conversation design and to make sure all the listeners have the same understanding. Can you define what a voice user interface is?

Myra: Yeah, so a voice user interface is the underlying technology that allows a human to interact with the computer or a system using just our voice. So no keyboards, no computers, just using your voice. We use that on a regular basis. So if you have a smartphone and you talk to Siri on a regular basis, she's driven by a voice user interface. So it's like an Alexa device. So.

Connie: Yeah. Okay. How is the voice user interface used in a learning environment? What are some applications of it?

Myra: So when you think about use cases in like L&D or learning environment, most of the common ones are performance support, right? So it's like after training or after learning, but it can also be used for reinforcement learning. It can be used for mobile learning, mobile based learning, because you have a voice user assistant that you can download to your phone, like an Alexa app or a Google app. And it can be used from micro learning. So think about roles where people don't have access to a computer, right. Or aren't on a laptop all day where they're doing some kind of tasks that's more, a little bit more manual and requires more attention. You can install a device, right. A voice device into that work environment and provide micro learning, using the devices in their voice while they're still on task. Right. So it's like learning in the moment, where they can actually pull learning instead of learning being pushed, it could be pulled learning. So there's some interesting use cases around there.

Connie: Are you talking about something like a mechanic needs to fix a new kind of car that may have some new types of software in it. Their hands are busy. So they might say computer, tell me how to get started. Or instead of just getting all of the steps, maybe they could get a little background on how the system works.

Myra: Yeah. Think about also, I'm going to give you a really fun example. So I worked on a project with some realtors. They don't carry around with computers. Right. We go to see a house. They hand you a paper. They're like, sure. All the specs. So what we did with this realtor group I worked with is they installed Alexa devices in home set they were showing, and the devices, either the agent or the buyers could ask about specific features of the home. Right. And we know that now with green

technology, solar panels and new water systems and smart homes, we were able to provide some education about specific features of a home using voice. And that was really interesting, because it was both for the buyers who were purchasing the house, but also for the agents to learn about the house, an agent does not know every single house they go into and how specific features work. Especially now with smart homes, it was an interesting use case.

Connie: Mm. That is a great use case. Thanks for that. So what do you see as the advantages of using voice?

Myra: So as I mentioned, I think one of the key advantages is that learners aren't tied to a computer or to a desktop and training can be delivered through a device that's located in a general area or even to a phone using a voice app. In that instance, also voice learning is, as I mentioned before, a pull situation instead of a push situation. So the learner can decide when they're ready to engage in a task and they know that it's there. I mean, you have to have clear communication so they know when something is available to them and what's available to them, but when they're ready to do it, they can pull it and they can pull it multiple times. Right. So they're not just taking it once they're doing it three or four times. And so that's, it creates an interesting scenario around the whole L&D space.

Connie: Hmm. It does. I'm thinking of all kinds of possibilities right now.

Myra: I was just going to add, I worked on a project where we tied some xAPI to get some metrics around usage and past people were taking through a learning scenario and that was really successful. So you can do so much with it and get such rich data.

Connie: What kind of software were you using where you were able to embed xAPI statements?

Myra: So when you create a voice user interface, most of the time, there's a framework that you have to use that's provided by the voice provider. So Google has a framework. Amazon has a framework. Siri does not have a framework, but these frameworks actually guide you. And you use codes. So for the instance that we use the Amazon platform, and we use JSON, which is a programming language, it's a human readable programming language and its code so you just add your xAPI code. I wanted to simplify it for those who didn't know how to code directly. And we used Zapier with watershed and that worked beautifully. So we created triggers and we created like these data flows, and it was amazing.

Connie: Interesting. And even for people who aren't familiar with those technologies, it's at least good to know what the capabilities are. So thank you. Let's talk about accessibility for a moment. Now, of course, the voice user interface is going to be wonderful for people who are visually impaired. Perfect. Now what about the people who are hearing impaired? What kind of alternatives can we provide to them?

Myra: Earlier on I thought about just because there's a bunch of different disabilities, like there's the hearing disabilities, there's cognitive disabilities also, right? So it may not be like hearing specific, but it may be just the ability to process information, also physical disabilities, where people may not be able to speak right. Engaging in voice. So in these instances we really need to shift to a multimodal interface. A multimodal just means like it has voice, it has touch. So you can engage with it in different formats. And maybe some Bluetooth controls for people who may be confined to a wheelchair who don't have ability to move their arms, so they move around using a wheelchair. But most of the time they use like a little pipe to move their wheelchair. In instances like that, having a

multimodal interface really allows for that interaction to kind of feel the same way.

Myra: I would say for definite hard of hearing, you need to make sure that you have volume controls and both Alexa and Google home are really great at that, where you can turn up the volume or turn down the volume, just using your voice. And then when we think about deaf people also is to include probably some form of touch interaction, because they may be able to sound some words out but may not be able to hear the responses. So maybe it's like using a device that has the screen on it so they can see, they can read what's being said, right. It's just thinking about how we transmit the voice and what is appropriate for that group of individuals.

Connie: Thanks. Are voice interfaces being used much in learning products right now? What is the current state of things?

Myra: You've heard of the Gartner Hype Cycle? Right? So the Gartner Hype Cycle is the cycle that shows the expectations and timeframes of a product. And so right now, every product starts off in the innovation trigger, which is like, there's this thing out there, we're going to try to figure out how to use it. And it goes into that peak of inflated expectations where everyone's like, we're going to use it to do all this cool stuff. And then you go down into the trough of disillusionment where you're like, it's not doing what you thought it would do because you had like these inflated expectations, but that's where you really start to figure out the use cases for it.

Myra: And that's where we are right now with voice user interfaces. We're in that trough of disillusionment, it's not a bad thing, but it leads to ultimately a slope of enlightenment, which is where we were like, ah, this is the right way we should use it. And these are some good use cases for it. So I think that's where we are right now. And that's my personal opinion. Other people may

say we're still in that peak of inflated expectations. And some people may say like that trough of disillusionment is total disillusionment, but.

Connie: I appreciate your optimism about the trough of disillusionment. And I think it's kind of cool to think about it in that cycle. And it makes sense that that disillusionment will make people say, okay, how can we use this? What are the realistic and practical ways to do it?

Myra: Yep.

Connie: Let's turn to conversation design. I'm pretty fascinated with that. Several podcasts to go. I interviewed Vince Han about chatbots. There we were talking about text-based conversation design. Can you just talk a little bit about the importance of effective conversation design?

Myra: Yeah. If you think of us as human beings.

Connie: And I usually do. Yeah.

Myra: And we're, well, most of the time, right. But right now, you and I are having a conversation and there's this it's almost like a tennis match. Right. Where there's information going back and forth. And it has to flow in a manner where you're engaged in that conversation. That whole conversation design is extremely important because just like with visual design conversation design can lead to cognitive overload. Right. If it's not designed properly, once you're overloaded, you tend to shut down. Okay. And in the case of voice, you stop interacting. Right. You're just like, this is dumb. I'm walking away. I'll just Google. Right. So I think it's important because if you want it to be adopted, you need to ensure that that conversation is as natural as possible.

Connie: That's a good point. So I haven't mentioned yet that you have this workbook and I'll link to it where you can start out with a project and work through it and end up understanding more about conversation design and end up with an actual program or skill that you've created. So can you just talk a little bit about what some of the key principles are of effective conversation design? I think you talk about some of them in your book.

Myra: Yeah. So in my book, I talk about Grice's Maxim. I introduced like this whole thing about Grice's Maxim. Some people get stoked about it and geek out on it. Other people are like, I don't even know what this is. Right. But when you think about Grice's Maxim, it's about the quality of conversation. So there's four Maxims. It's quantity, how much is being said. Quality is the information I'm getting valuable is just like fluff. And then manner and relation, right? So manner is, is it truthful? Am I getting facts? Or is this just like someone making stuff up? And then relation is that, is it relevant? But I want to share the seven principles of conversational design from a UX design perspective.

Connie: Perfect. Please go ahead.

Myra: So there's seven. These are principles that are used in UX designs and therefore conversation. Engaged, so you want to be Responsive, and you want your UI or your voice not to interrupt. You don't want it to be like an interrupting cow. You know that joke. Knock Knock who's the interrupting cow moo. You don't want that. And then recall, and it's being aware of the context that the conversation is in. So you don't want to have your voice user interface, take a conversation out of context. Don't ask things that their user already knows or don't share that information that a user already knows. Anticipate, so being predictive and that's really hard. And that's an important design piece because that's where you come into like edge cases. And

what do you think someone would say in thinking through that in a conversational format.

Connie: That's a good one.

Myra: And then it's Adapt. You want the conversations to be organic and you want it to flow. So it has to flow in Rhythm, and it has to flow just like in general conversation. You don't want it to be mechanical, right. Or rule based. Reflect, so repeat, you want your UI to be able to take important pieces of information and repeat it back because when we're getting information, a regular conversation, sometimes I don't know if you've been in a conversation, will you say something and someone will say to you, let me just make sure that I have all the information I'm going to repeat back what you just shared.

Connie: Love that.

Myra: I like when people do that, when we're having good conversations, especially when I'm not sure people understand what I'm saying.

Connie: Or when the waiter didn't write things down.

Myra: Yeah. Yeah. And then pull. So as I mentioned again, I'm going to keep on saying this, voice user interface is a pull activity. You're not pushing anything because the user has to initiate the conversation, so you want to use like cues and directions or instructions to keep the conversation flow. We had some fun developing some voice user interfaces and a few workshops that I did. And one of my instructions was you have to keep that conversation going and you can't just give an answer and it ends the conversation. Your voice user interface has to kind of give a clue as to like, what is it expecting next. And it can't be like, what else? Because that doesn't work.

- Connie: Yeah. So I see how you have to find ways to keep the flow of the conversation going if that's your goal.
- Myra: Yeah. And then flow is you want it to send simple messages, keep the conversations relevant. If you ask an Alexa device, Alexa, how far is the moon? She'll give this whole range. She's like, I found a Wikipedia and she'll just read off a Wikipedia. Right. And it's like four paragraphs in a conversation design. Maybe it's the moon is about whatever miles away from earth. How interesting do you think that is? Or something like that. So it's keeping that flow but keeping it concise.
- Connie: Nice, nice.
- Myra: Yeah.
- Connie: In your workshop, I'm sure the design process is simplified. People who are listening might be thinking, well, how would I go ahead and design one? What process would I use? Can you just briefly run through that design process? You can simplify it.
- Myra: Yeah. Yeah. So in my workshops, we usually just focus on design and the build is like, we get 30 minutes to build something out really cool. Just like two or three conversation pieces. But I like to do like a task breakdown. So the most important piece is to be user centric and identify who is your user, who you're building this for? You can't say it's for everyone. Cause everyone doesn't need the information you're sharing. Right? So you have to figure out who your audience is, who's your target audience. And then you have to figure out in that target audience, what are the use cases, what are their levels of knowledge? Right? So you can have people that may have no knowledge. Some people that have intermediate knowledge, some people that are like experts. And then you have people who are going to try and break your voice user interface, right? Those are your edge cases.

Myra: It's called the user continuum. So you always want to design for that middle person. So you provide enough context for the beginner, and you don't want to bore your advanced user, that middle case, the best to design for. And then you want to define what's your VUI persona. So this goes back to that, applying a voice, improve an experience. So do you want your voice to be very formal, right? Is it going to be formal conversation? Is it going to be like an everyday conversation using slang and contractions and words that you may use in regular conversation? Is it going to be mechanical? Right? Do you want it to be robotic because maybe that's the intent of the application?

Connie: Right.

Myra: And then you want to define the task that you're focusing on. What's the topic you're focusing on? Is it cooking? Is it auto mechanics?

Myra: Is it project management? Figure out what is the topic your voice user interface is going to cover. And then you want to plan the dialogue out. I always start with a happy path. So if you ever had a conversation in your head, like you're getting ready for like an interview or something, you always start off with the happy path. You're like, I'm going to introduce myself and then they're going to introduce themselves. And then I'm going to ask this question and they're probably going to say this, and then I'm going to follow up with this. And when you think about the happy path, and then after you plan that happy path out, you want to start thinking about those edge case. What if it goes wrong? What if the conversation just goes totally off the rails? How do I recoup from that? And then what are the extremes? You may have extreme users that may require a little bit more advanced conversation and who just want to know where to find stuff.

Connie: What would an example of that be?

Myra: I don't want to have this full conversation. Tell me where I can find this stuff or pull it up on Google for me. And so having something like that, thinking of those edge cases, planning out, writing out these conversations, and then you want to test it out. This is where we have the most fun in my workshops.

Connie: Can you talk more about what happens when you test it?

Myra: In my workshops when we test out the voice user interface design, I tell people okay, now you got to pair up with someone and you're both going to test your conversations. And then you're going to rate each other's conversations. And I tell them, you have to read out exactly what you wrote. So like you're the voice user interface. The other person is reading what you wrote for what the other person's going to say. And all you hear is giggles because they realize that some of the stuff they wrote is just ridiculous. Like the way they wrote it, because they're writing for reading, not writing for conversation. And so then they go back and they try to fix it. And so that's a really fun exercise. And I think testing is really important.

Myra: So once you test it, then you can build it out, build a prototype. If you use Amazon, we have the Alexa blueprints. And so you can build a prototype in there. Just know there's some constraints because it is conversational flow and you have to add alternatives and you have to figure out like, how am I going to get it to the next conversation piece? So take some thinking through, but it's a great exercise in helping you prototype your design. Cause then you can use it on your device. Once you save it, you can launch it on your device, either on an Alexa device or your phone using the Alexa app to test out that interaction. It's really cool.

Connie: Sounds like nerdy fun. So what do you do? Do you upload it to AWS or where do you upload the blueprint?

Myra: Yes.

Connie: The program.

Myra: Yeah, the Amazon blueprints is tied to Alexa already. It's tied to your Amazon account. So if you have an amazon.com account, you log into your amazon.com and as long as your device uses that same email address, once it's saved, it's in your pocket and you can just initiate the interface by voice, either on your phone or on a device to test it out and to tweak it. So it's really important cause you want to test it out and see like where the hiccups are. And if she's sounding weird, when she's asking a specific question, she doesn't do great with acronyms, and you have to be very specific when you're using that. But yeah, and it's free.

Connie: You could really surprise people who come to visit, with having all these interactions with their name or something. It seems like it could be really funny. What's an example of a phrase to bring someone back to the conversation when they've said something oddball or when they're an edge or outlier case? Like is there some way to bring people go back quickly?

Myra: Yeah. So right now, if you leave it to Alexa, she'll tell you, I didn't understand what you just said, can you please repeat or I don't have the answers to that question, can you ask it another way? You can design that for those edge cases, but you have to be able to anticipate what they're saying, what's someone's going to come up with, and those are your extreme users where they're going to try and break your skill. Think about what are some key words that they may say, so Alexa picks up on it and maybe have her say, that's not within my scope of this skill. You

might want to check out X, if you have a different skill there or you might want to Google that or.

Connie: I see. There's an entire generation of children who have spent years trying to break Siri, Alexa, trying to trick them, trying to get them to say funny things. And I remember one time seeing kids who were a thousand miles away from each other saying the same exact thing to Siri to try to get it, to come back with a humorous answer. It's just like spread throughout kid subculture. They all know what to say. It's fascinating.

Myra: Yeah. The cool thing with the voice user interfaces is that they're AI based. So you're programming it once. And the case of blueprints is very prescriptive because you're just building a prototype and it's not AI based. So that's why you have to, it's prescriptive, right? So you're giving it the answers and the questions, but when you're building it in the regular interface and the Alexa interface, she is learning, or it is learning with every interaction. And so, because it is AI based, it's adaptive, it will adapt, which is really super interesting. When you think about AI use cases, that's a whole other conversation. That's my other area of knowledge. The reason I started with Alexa and these voice user interfaces is because they are AI based and it's a great way to teach people about AI.

Connie: So when it's AI based, it's constantly learning and picking up the data from all the conversations that are going on.

Myra: Yes. And so if you build a skill and the regular Alexa framework, and you have a million people use that skill, she will adapt. She'll start to get information from other places to fill in those knowledge gaps and she'll learn what are the most, what are the questions that people are most frequently asking? Where are they getting stuck? So you can get some really good metrics around it too.

Connie: Hmm. I should add that a skill in terms of the Alexa framework, it's a set of actions or tasks that are accomplished by Alexa. Have you read any research regarding the effect of adding like a specific type of personality to the voice?

Myra: Yes. Right now I did some digging on that and there is no like real research around adding personality to a voice in the responses. However, we have conversations every day. Some people are good at it. Some people aren't. Some people can have engaging conversations. And if you think about the types of conversations that have captured your attention, even if you're just a passive participant, what has that looked like? Have the speakers been mechanical? Have they been very formal? Have they been very matter of fact, are using casual language? Are they authoritative? When you think about those things and how you react to it? That's a great data point until someone does research on it. That's really quantifiable and qualitative. I think we have to go by our experiences and the types of conversations that we hear in everyday life.

Connie: While you were saying that I was thinking, well, there is research on voice talent. And people tend to like friendly voices and a little bit more conversational and informal. And I'm guessing that would apply to an Alexa or a Google home type of device too. I forgot about that. When I asked the question.

Myra: We don't tend to speak formally, unless you're an academic, most people just have informal conversations.

Connie: Right. So that makes sense. Can you talk a little bit more about the technologies and frameworks that you use to make a real voice user interface application, not the blueprints, not the prototypes? How does that work?

Myra: So as I mentioned, both interfaces have frameworks that you have to use where they have blocks that you fill in. Some of the

blocks are just text-based blocks where you make decisions around like, what's it going to be called? What are the triggers? What are the interactions? But then the actual conversation piece is written in code. So there's a bunch of different languages. You can write it in there's YAML, there's JSON, there's Java script. I prefer Python and YAML just because they're easy languages to use. And you can write out your conversation where they make sense. There are certain parameters that you have to have in there, but you do need to have some programming knowledge to be able to build out a full skill.

Myra: And that's where one of the drawbacks of learning and development is that we think we can do everything, instead of, we can't engage anyone else in our development where you have to take that step back and say like, I don't have the skills to be a program, but I have the skills to design it. So I'm going to design it. I'll write out this conversation. And then I will hand it over to a programmer or someone that knows how to program a skill to actually build skill for me. I

Connie: I actually think those are fairly common roles for people who work in teams that designers is different than the developer. Last question. And thank you so much for sharing all that you know about this. What do you think the future is for using VUI and learning experiences?

Myra: I would say we're going to start seeing more voice user interfaces. I mean, I can tell you, my house is like, I have so many Alexa's devices. It's not funny. And it's part of my everyday life. I use Siri on my phone. I use Google voice to type documents because I'm lazy sometimes. So I think that we're already seeing the adoption of it.

Connie: Agree.

Myra: I think that in L&D the adoption is still going to be slow going because people are still trying to figure out use cases. And there's so much new noise in the industry because there's always a tiny object, right? That we never tend to focus and specialize in one area. Everyone wants to do everything. But I said like, if you want to focus on VUI and this design and how to implement and do that research around it. I think there's a huge opportunity for that. Take the time to learn about it. Take the time to research, take the time to play with it. Take the time to build proficiency in it. So you can talk about the use cases because the lessons you learn in doing that, you can apply it to those other shiny objects.

Connie: Great answer. Okay. Thank you so much, Myra.

Myra: Yeah, this is fun. Thank you.

Connie: I hope this conversation helps you to imagine new ways we can leverage technology to facilitate learning and information access, and I hope you found it inspiring. Once again, you can find the show notes and a transcript at theelearningcoach.com/podcast/seventy. Please take care and I'll talk to you next time.