Title: Virtual Reality: Immersing Learners in the Experience

Episode Description:
In this episode, Greg Nagy, a Systems Developer and Instructional Designer at our center, helps us understand some basic concepts and language around virtual reality. A fully immersive experience for the user, virtual reality is a 3D environment, that with advancements in technology, is only going to get better. We see a future where virtual reality and simulated hands-on training experiences serve as a valuable tool for organizations, educators, and learners.

Fara Allen: Welcome to CETE Works, a podcast produced by the Curriculum and Training Team at the center on Education and Training for Employment—a translational research center on Ohio State's campus. We work where research meets reality. I'm your host, Fara Allen, a Program Coordinator at the center. This podcast series will focus on the various approaches and supports that our center offers to educators of all learners. How do educators engage, nurture, and support their learners? Listen in on these discussions that highlight how educators can connect with and understand their learners! At CETE, we believe that everyone deserves to experience lifelong learning! To learn more about our work, you can visit our website CETE, that's C-E-T-E, dot O-S-U dot E-D-U.

Fara Allen: In this episode about virtual reality, I'm joined by guest Greg Nagy, a Systems Developer and Instructional Designer at our center. Greg builds online courses, creates websites, and captures and edits audio and video. In his 20 years at CETE, he has built dozens of online modules and created multiple project websites. Greg's interest in computers and technology began when he was young, as he recalls time spent enjoying the arcade. As his interest grew, so did his curiosity, and he decided to earn his engineering degree. You'll sense Greg's love for technology as he takes us deeper into the topic of virtual reality.

Fara Allen: Hi Greg, I'm happy to have you join us today to talk about virtual reality and how it can be used as a supportive learning tool for educators. It's not only for entertainment and games anymore. So, I'm really excited to learn more about virtual reality, or VR, as it seems to be gaining popularity within the training simulations, be it at the workplace or school environment. Can you start us off by explaining what virtual reality is and how it relates to the theme of this series which includes designing different learning approaches that educators can use to support their learners and their learners' needs?

Greg Nagy: Yes, Fara, thank you for having me. So, there's a lot of different things with VR and I'll try to make it simple. And you may hear different things, so VR means virtual reality and that's been in the vernacular for a while now. There's other things, called AR,

which is augmented reality and what that is you still see the world as you normally do, but there are things overlaid to kind of help. Then, there's another thing called mixed reality, which is further out in the horizon, which is kind of both. So, the idea is that maybe you'll have, way in the future, you know, sunglasses or something that will be both VR they could turn off and then you can use the AR and look at things. So, those are really cool things that, as best as I can tell, they're being developed really hard by Facebook and Apple right now they're spending a lot of money and people on it, so it'll be very interesting to see. But circling back to VR, so there are, in my mind, there are two big differences. There is kind of a simple one or called three degrees of freedom. That was a kind of a big thing until just a few years ago and it kind of jumped more into what's called the higher end or the six degrees of freedom. So, three degrees of freedom is the kind where you're stuck in place, so you put a headset on, and you can look all around, but you can't really move in your environment you can't get closer or further away. And a lot of times you can't use your hands or anything so you're more of an observer stuck in place. What six degrees of freedom does for you, is it allows you to move in the environment and use your hands to grab things and that's where it gets very immersive. And pretty exciting, for you know, when you start thinking about all the different things that you could do in education and other things with that.

Fara Allen: Right. Thank you for starting us off with that explanation. Now that we have a better understanding of what VR is, virtual reality, tell us about how your work at the center directly connects to the technology of VR and how you got involved in it.

Greg Nagy: Yeah, VR has always been an interest of mine, I remember as even as a kid there were some things in the arcade, I remember going to a place called Disney quest in Disney world. Boy, that was probably 25 years ago, and they had VR there and it was pretty neat, but it was pretty simple, pretty choppy. If you did it for very long, it would make you sick. And it kind of went away and waited for the technology to kind of come along. And then I would say, maybe about five years ago, six years ago I started hearing more about it. And then, all of a sudden, there were a couple different platforms of it, and it was you know kind of affordable, in a way. It was still kind of expensive you needed a fancy computer and a headset, but for less than $2,000 you could actually have a pretty good VR experience with that six degrees of freedom that I talked about earlier and it worked pretty well. There's other things to it too that people have learned like you need to have the frame rate faster than normal. So, a lot of times you're used to seeing maybe 30 to 60 frames per second on the monitor you look at. And VR when you move your head a lot that can make you sick. So, it's better to have a higher than that, so they have 72, 90, 120, they're trying even more to make it, so people are sick less with it and that seems to help a lot. So, that's something else that came along the screens and the technology, and a higher resolution helps a lot, too. When you look into VR you may hear people talk about the screen door effect. And so, what that means is with these VR goggles, there's a screen that's just a couple inches from your eye and then there's lenses to kind of focus on that screen, but since it's so close if the resolution is low, it's almost like looking close at a screen, you can kind of see each

pixel. And for some people that kind of bothers them, takes them out of the immersion. I find that if, when you move you don't really see it, if you were to stand still, you can see it, but it's becoming less of an issue as the years go by, because the resolution gets higher and it's harder to even notice that.

One of the projects that I worked for, still work for, decided to see if we could use VR to help with some of the things that they were doing in terms of education. And you know I don't remember exactly how we landed on this, but we were able to get one of the early oculus rift goggles, they were called. And I was playing with it and showed different people in the project and they're like wow, this is something. And they said Okay, so now, how can we actually implement this, you know, today? I said oh there's a lot of things coming down the pike, but right now, we probably could do it more like a chat, and being able to interact with people, because there were free Apps. And there still are free Apps where people can go inside of an area, doesn't necessarily, well, some of them look real, most of them don't. But you could talk to a person, and when you got closer to someone it's louder and you have kind of a cartoonish look, but your eyes blink and your mouth moves to your mouth movements. And they even had hand movements, so we could kind of pretend shake hands and that. We had a connection with a school in Beijing that provides education outside of the normal public education. So, in China, you'll have your math and sciences all day long, but there were families that wanted to have more for their children, so they might learn music and other things, and augment maybe their math and science. So, with that school, we thought that would be a good connection to try using this chat and avatar stuff, to have high school kids in America talk and react with these Chinese students who are learning, not just wrote English, but conversational English. There was a school that my kids went to had Mandarin that you could learn, and we thought boy wouldn't be great if the same students could help with their Mandarin. So, with that, we decided to launch a pilot and myself and one of the people in the project actually went to Beijing. It was a wonderful trip, and we helped set up and purchase two different VR systems for them. One was that simple three degrees of freedom, where you put your actual your phone in. But the other one was a full-fledged computer system with six degrees of freedom. And we got it set up in their school and tested it back home and it worked great. And then we actually had a meeting with the kids and the parents one evening to show them this technology and they all tried it and it was very wonderful and it's very exciting.

Fara Allen: I think it's fascinating how VR enabled students here to be connected to students all the way across the world to benefit each other, that's awesome. And I think that kind of helps explain how the work you do benefits, educators, and learners, and helps us understand a little bit better your connection to the work, so thanks for sharing that with us. I think one part of your work is to support others I feel like there must be some personal or professional motivation behind that. So, tell us what motivates you to do this work for the center.

Greg Nagy: I am very interested in technology and excited my whole life I way back in high school in the 80s ended up being a president of a computer club of adults and had a computer and programmed and typed my own games. And back in those days you type them for magazines, too. Learned to type from there and just kind of geek out on that. And I went into college then, in engineering, which still had some of that, this is still in the late 80s early 90s, so it wasn't quite as impressive as it is now. But and then I got out of it and the job market was hard and my friend said, you know what, you're mister computer, you should just stay in that. So, I bought myself a computer and learned more and more. I learned how to build them, and all that stuff. And so, I've always been into technology. But I really love kind of the cutting edge of computer technology. So, I'm a gamer, I love the high-end graphics, and there were demos in the old days that you could run that were really impressive, that they can make computers do things that you wouldn't think they could do. And just computer graphics and Pixar and all that, I love. So, you put all those things together, and for me, I remember when I was first shown the internet, was working at a local place called Micro Center and they showed us the internet and I had this epiphany moment, where I was like, I could just see this tunnel and all the stuff going by, I'm like oh my gosh, this is going to change everything. You could see all the good and bad that's going to come from this I just you know had a moment of clarity with that. And I feel like I had a similar thing with VR a few years ago, when I put it on and tried it, I was like okay, this is another game changer, kind of like the internet, maybe not next year, the year after, but eventually this is going to be something that has a lot of good and bad uses and it's coming, and I want to be part of that and be ahead of that. And with my interest and my experience, I think it could be.

Fara Allen: I think it's really neat that you have that clarity and you're able to say Oh, how could this be used in the future, I appreciate that insight. Now that we have a look into what motivates you, how do you turn that around to inspire and support others in your work?

Greg Nagy: So, in terms of VR, since I am very excited about it, I love talking about it.

I'm kind of a quiet person usually, but there are certain things that excite me, and this is one of them. And I've had the opportunity to demonstrate VR for different projects, different places around Ohio State University. People have asked me to show it, I've shown it to doctors who want to use it to help people recover using it, to recover better with less pain. And I've had a great experience showing it at different conferences. And you know, over the past few years to get people excited and kind of explain what I just explained to you what it is, how you could use it, and where the future is.

Fara Allen: So, Greg when we talk about training, especially adult education and career and technical education, can you tell us how those schools or centers can implement virtual reality into their programs, especially during the pandemic or in a post pandemic world?

Greg Nagy: Fara, I remember the week before the pandemic hit us here in Ohio, and I was working with subject matter experts from carpentry in career and technical education. And, as I was working with them to write questions for a test, their phones were going off about how they were going to have to shut down for the pandemic. And they were going nuts because they were just getting texts saying, you're going to have to use zoom for the next couple weeks, course we learned it was much longer, and they were thinking how the heck am I going to teach carpentry over zoom. And that made me think that I wish we were further ahead, because I believe VR technology could provide those kinds of things. That we could build a workshop where students could go in and, you know, use VR and their hands and everything to actually manipulate and build things. These subject matter experts told me how they were bothered by some of their students would complain that they had trouble taking our WebXam tests, because you have 95 multiple choice questions about carpentry, but the students could build a house, but it was hard for them to go and say, well, I use this and that, it was hard for them to remember. And so, one, if you could teach in an environment like that and have a student experience it, you know, now all of a sudden, you don't have to go to a school. A person in the VR system could have their own workshop and build as much as they want and play and mess up and try things. And then on top of that, further down the road, if we or the state could test towards that, that would be wonderful. So, it's not necessarily replace the test, maybe still have a multiple-choice test, but you could say, pick this nail out of these five containers of nails. And you'd watch a student actually look there and go yep, this is the one. And for them it's much easier than trying to remember what the number of nail was. And then you know we could watch them do that and record and test them against that I think that would be so much more powerful for everyone.

Fara Allen: I can hear the inspiration and excitement in your voice when you talk about this topic. And since we're learning organization at CETE, I'm going to turn the table on you a bit, can you share with us what professional development you've participated in most recently and what your biggest takeaway was or how did you grow from that experience?

Greg Nagy: During the past year and a half, with the pandemic and working from home, there were other issues that have popped up in our country and around even our city that made me look into things to do with Black justice, and I felt motivated that it was time to kind of look into it and do something for myself. And I was very fortunate that at CETE, I was not the only one who felt that way. And there was a large group of us that said, alright, we need to get together and do something, and so I am very fortunate to be part of a REDI group, as a Steering Committee Member, which is racial equity, diversity, and inclusion. And, as a team, our center put together a curriculum that we are now sharing with the rest of the center to learn the things that we have gone through as a team. And it's been very fulfilling and eye opening, and it stretches what I could do. It does not involve VR or technology, necessarily, but it was something I'm very proud of and very happy to be part of.

Fara Allen: And it will lead into decisions that you make in your work, I'm assuming, at one point or another.

Greg Nagy: I hope so, yes.

Fara Allen: Thank you for taking the time to share your expertise insights and your personal story with us Greg.

Greg Nagy: You're welcome. Thank you.

Fara Allen: On behalf of the Curriculum and Training team at The Center on Education and Training for Employment, we'd like to thank our guest today. If you would like more information on this topic, please contact us at go.osu.edu\OhioState4Work. We would be happy to hear from you and share more information about our services and our work. Follow us on Twitter at OhioState4Work. See our description for details. Thank you for listening to CETE Works, we hope you enjoyed this episode. Be well and bye for now.