

Welcome to the UP TechTalk Podcast. Coming to you from the new Academic Multimedia Studio on the University of Portland campus. Produced by: Academic Technology Services. With your hosts, Maria Erb and Sam Williams.

Sam: Thank you for joining us for the UP TechTalk Podcast. We have with us today Dr. Ellen Arwood professor in the School of Education. Thank you Dr. Arwood for joining us today!

Dr. Arwood: It's my pleasure Sam.

Maria: Ellen thanks so much for making the trek over to Tyson today on this rainy day. And we're just so excited to talk to you about the new Certificate in Neural Education that we're developing together. Can you tell us a little bit about some of the courses in that program?

Dr. Arwood: Yes, it's a postmaster's program for neuro-education, and the courses are based around a philosophy that has to do with how we translate neuroscience into educational applications. And most programs translate that neuroscience into education applications, without thinking about the cognition that humans use, the mouse models and Muller models don't use, and they don't think about the language piece, how we assign language. So, for example, there's a whole bunch of neuroscience experiments that have been done recently, where they have the mouse model, basically swimming around in a big vat of water, and the mouse is supposed to find a platform, and it's supposed to check to see how mice brains basically think in terms of memory. The problem with that is that, the mouse may return to the platform, but we really cognitively and language wise don't know why, because to say that the mouse was anxious, the mouse can't be anxious, he doesn't have language. And to say that he was frustrated or that his brain was stressed, we can say neurologically, we can the signs of stress physically, but we don't know if that's how he felt, because he doesn't have the language and that cognition part of the brain is missing. So, a lot of neuroscience that's being interpreted and translated into education, tends to forget that a lot of that material's not coming from human being research. So, but we have this whole body of literature in cognitive psych, memory, attention, mind, that kind of thing, and we have this whole realm of literature and language, that dates way way back even to the 1800s about how it is we use language to name our thinking. So what our program has done has taken and triangulated the 3 areas of literature, the neuroscience, the cognitive psych and the language, so that neuroscience has basically how it is we learn. Cognitive psych is what we think about our learning. And then of course the language is how we name the learning. And by putting the 3 together, we've been able to come up with some really fabulous applications that are extremely effective out in the field, out in schools and K-12 education.

Maria: And what are some of the courses in your certificate program?

Dr. Arwood: The courses, yeah you asked that and I kind of went off on the other side because I had to explain why. So the courses are neuroscience and learning, because we have to have that piece of it, the cognitive psych piece which is another course, and we have a course that basically has to do with disabilities, it has to do with the way that we apply the neuroscience and the cognitive psych to things like Alzheimer's, and ADHD, and children with Autism, and with Down Syndrome, and a whole bunch of different types of problems that might go along with the brain, either environmentally or genetically. And then we have a course that talks about the social-cultural pieces of language that affect the way in which we interpret that data. So we basically have 4 courses in this certificate, and we have 3 that are very specific to those 3 areas I described, and we have a fourth one that's about the applications.

Maria: And you said K-12 is different?

Dr. Arwood: Well, we do K-12, but the principles of learning actually apply, they're more than philosophical they're actually neurological, so they actually apply to adults. And when we do the disabilities course we actually talk a whole lot about different types of problems that occur with the brain as we age.

Maria: And, who do you feel the audience will be primarily for the certificate program?

Dr. Arwood: Well so far the audience has been on campus, and then I know we're taking this off campus in terms of making it online, but it includes administrators, special educators, educators, we've had social workers, we've had a speech-language pathologist, we've had an occupational therapist, we've had a lot of people that are interested in the brain, and interested in surveying people that have issues regarding learning as it relates to the brain. So they want the brain information but they are people that also applying it like gen-ed teachers who, we have a lot of general education teachers who pre-k all the way through high school.

Maria: I would like to talk about that great discussion that we had last time you were in my office together, about reading and how what we, what a lot of us would consider just simply an everyday activity that you don't think about very much that you've just kind of done that you've really forgotten about it, but you had so many incredible insights and it was just this fascinating discussion about, you just can't take something like that for granted, because not everyone reads in the same way, not everybody gets the same things out of it, not everybody comes to it with the same types of equipment really, and approach.

Dr. Arwood: Exactly. One the things that we've kind of forgotten is that when we learn, we actually learn in a series of steps that parallel the function of the receptors, the eyes, the ears, that kind of thing, all the way through the pathways of the brain to the cortex. And what we've forgotten is that there's more than just the input and output of that system. And so the way we teach reading today is, let me take it as a

task, reading this as an adult, here's where the language assumptions come in, and I want you now to do a task analysis, break it down. So we breakdown reading into parts, from a adult language based perspective, which consist of words that you sound out and have letters. So we look at the letters and formations, and they we put the sounds to it. We name it. And then that's called reading. And then we practice it with fluency. That's a behaviorist model of task analysis. It comes out of the 1950s and 60s, which parents, my parents for example, never had any of the alphabetic phonic kinds of ways, approaches to reading. And the reason for that is because they were taught that reading names you're thinking, therefore reading is a language task. And when we develop the behaviorist model to teach kids the same way. What came out of that was you break it down into its parts, so then we have the words, the letters, the sounds, that kind of thing. Well, there's a little bit of a problem with that. One is the brain doesn't work that way. The brain is very centergistic, and information comes in and forms those patterns of oral fluency, but then what you have to do is you have to have enough thinking, that you know what those patterns represent, and you have to be able to name what it is that you just saw on the page. So, there's research out there from Harvard that says Dyslexia is an auditory processing problem, and what that means is that you can't take the sound and the sight, that's what the auditory pathway is, two things, acoustic and visual, and you can't put it together necessarily to form a pattern. So, we've literally taken some of the changes that we can do with pattern parts of the brain, ok, and we've actually taken that and said, ok then we'll practice more patterns using the Western psych of behaviorism model of practice. And what the brain research shows is that practicing actually disengages the brain, and actually because you're not taking in new information. So what you end up doing is, I can have a child with Down Syndrome for example who could read a college level book at second grade, recall it beautifully, she could say everything on the page but she had no idea even how to ask to go to the bathroom in real life. And that's probably an extreme example, but the majority of our students today think with a visual metacognition, and they don't have the acoustic ability to take and put the sound to what they see on the page. They're also coming into school with not the same levels of language, and so if you don't have the language than you can't see what's on the page, and you haven't learned the patterns before, most of the college students when I say to them, when did you learn to read? They'll say before they went to school. And that's not the case for the mass majority of kids that are going to school. So, they don't have a full language, ok, to name what it is they see on the page. We then break the task down as if they were adults. We ignore the fact that kids don't acquire words, what they form is the patterns of the forms that they think with, and they think with a visual system not with a sound based system. They don't hear an r, and s, a t, they don't hear those bits and pieces that we are naming as letters, that type of thing. So, the result is that instead of increasing our literacy we're decreasing our literacy.

Maria: So what's different, I mean, are we really different types of learners than we used to be?

Dr. Arwood: Part of that is true, too. There's a, back in the 40s and 50s, as antibiotics became more used throughout our country, then kids would not die from an ear infection, and the result was that they would no longer have the infection, but the patterns that they were taking with the sound, ok, were not clear. And because when you get an infection you have fluid in the ear that, the ear fluid that gets infected, you can clear up the infection with the antibiotic but the fluid stays behind 8-12 weeks. And if you have that within the first couple years of development, there's actually, American Pediatric Association back in the 80s made the connection between kids who had those kinds of ear infections and the fact that they had been having reading problems, writing problems, academic problems in 3rd and 4th grade, again we ignored that. And we continue to teach with those sound patterns, assuming that this population coming through in fact could hear the sounds. Of the words on the page which is thinking in terms of sounds and pictures, graphics, visuals, that type of thing. So, our population has changed that way. From an anthropological standpoint it has also changed, the population has changed, because we don't have a need to name something that we haven't seen. So, and that's what explores did and that's how languages that have time based properties, like English and Russian and German and French, those languages, they all have a time based component and an alphabetic sound based reading component to them. All the other languages in the world do not. And so, basically what you're looking at is also a very huge cultural difference and an anthropological difference in the sense that I don't have a need to basically name something like explore, you know and see it, you know and that type of thing. The closest thing to it today would be space or something like that, where people haven't seen it, but they're exploring it. But in terms of everyday, we're all going to vertically stack. Where you're standing or sitting somebody else is going to be sitting or standing today. So, we basically are using space and not time, and space is recorded through the visual system, not the acoustic-auditory system. And it's relational, it's not out of context, so it's not word based. And so our thinking is different. From a social standpoint it's different from a cultural standpoint and it's different from a neurobiological standpoint. And yet our practices are 50 years old and we're still using them, and then when kids can't read what we do is give them more practice. And we know that you can train the brain at the sound to pattern level, what you can't do is train thinking. Thinking is actually acquired and it's acquired through layers of brain functions. So my personal opinion about Dyslexia is that is a cultural problem, it's an educational problem, and that we could probably, in my experience working with individuals who have reading difficulties, get rid of that problem if we were to teach individuals differently.

Maria: Well how would this play out in the K-12 system when students are learning how to read?

Dr. Arwood: We do it with a language base. There's a few people out there, a few teachers that have come to UP and have learned and they're out there doing awesome things, including they start a lesson with a story, an eye story, typically they draw it in real time and say something like, yesterday I went to the store and they draw themselves going to the store, and then they, the kids are all, if they just

absolutely still and they start drawing like that the kids absolutely do not move, and they're watching because they're watching the point of the pencil, and the teachers will say, you know make pictures in your head while I'm telling the story, watch my mouth move, watch my hand move, giving them all those visual motor kinds of queues. And then they name it by writing on that story the words, so they'll write, the teacher, I'll call myself Ms. Arwood, so I put Ms. Arwood and then what I was doing, my actions, my objects then words, so then I answered the who, what, when, where, why, so it's really rich language. And then the kids are asked to tell their story about what they see to each other, peer kind of thing. Or they can do other things like be sent back to their table with a pencil and paper and they draw their stories about something they did yesterday. And then we ask, so we get on the same page developmentally, and then we basically have them index those visually, that is put them into a space, we call it like a picture dictionary or a vocabulary dictionary where you can see the idea and put a picture that goes with it. Then they start writing with their things that they've put into those spaces. And the next thing you know, they're telling you what they wrote and their writing is up and their reading is up. And now they're starting to see patterns. So then they come back through and they say, oh, this is a different idea, this is a different letter and the teacher will go, oh yeah that's a t or that's an s, you know that kind of thing. But they don't go the other direction, they don't go from part to whole they go from whole to part in language is the basis. In Finland and some of the Scandinavian countries, they do not break down the language until kids have acquired it. So they don't start doing the reading as a broken down process until kids are at least 7 or 8, okay. And then the other piece is that for Finland, they actually use a language-based approach. And their literacy level for reading and writing is very very high.

Sam: So, with this certificate, you're, you and Maria are working together to deliver the certificate, are there any special things that you're paying attention to in the delivery of the content, considering the actual content itself, or is there anything that you're paying attention to for the delivery?

Dr. Arwood: Yes. One of the things that we know about learning is that you have to assign meaning to concepts. So I have a concept, that's my own thinking. And it's unique to me because all experiences are unique, okay. And so, you have told me something or I have read something, and then it's my turn to do something with it. So then I either have to write it, talk about it, do something with it. And then somebody who has more meaning about that topic has to assign meaning that combats it and say, have you thought about such and such, do you understand why that takes pace or yeah I saw you draw that cartoon, but you're people aren't facing one direction so they're going to run into each other as they're walking from one frame to the other, that type of thing. So you give it some type of assignment and meaning. Know that when we assign meaning that way, what happens that I take that input in I organize my patterns again, it helps me scaffold my thinking, and sometimes it even creates a little stress and then I get to jump to the next level, because I can understand what I'm doing. That's conceptual learning. And so, the real question for me is how do I create that conceptual learning opportunity with

refinement in a still, recorded, online version of the course in which I'm not there to assign meaning and, you know we may have limited the opportunities. So, I'm thinking with the help of Maria of course, and you, is I'm thinking the problem that we're going to have to build in scaffolds in more opportunities for individuals as they are learning to basically run, what I call run the information back through their own learning system with language. So they'll draw, they'll write it, they'll use it in an application, that type of thing. And we also talked about the fact that, because the majority of our learners even today, even adults are visual thinkers. They've got to be able to see my face when I am talking. They've got to be able to see me draw the concepts. They've got to be able to see the materials that are written, and they've got to be able to cross-reference those with any pictures like for the PowerPoint examples, that kind of thing. So it means multiple inputs to have maximum access for maximum integration of the concepts.

Sam: I know we're excited about a capture add-on that Kaltura's bringing us, that allows the student to toggle between inputs, and so this is a case where we can have you, you know under an Elmo actually see you physically writing so we can see your handwriting, we can video of you, we can bring in the PowerPoint's. So you know I'm pretty excited about that add-on. I've emailed recently to find out when we're actually going to physically get that add-on.

Dr. Arwood: Good.

Sam: So that way we can have that for you, so that you can have that multiple input. So we're pretty excited about some of the things that we're going to be able to try out for the first time.

Dr. Arwood: Excellent, because I asked Maria about that today, because I knew that you had mentioned that last spring, and I thought are we ready to go, do we have this so we can do that multiple inputs, because we you know in reality that's what learners do is they shift between, they may all be sitting in the room together, but their shifting between what's in front of them and what's on their device, what the person is doing up at the front, and they're shifting according to what they need. And we've got to provide that same shift, from a learning standpoint, otherwise, the learning's going to disengage. And they'll just be going through the material online without necessarily learning conceptually, and I don't, and I don't want that.

Sam: Well they can re-watch a video from a different perspective.

Dr. Arwood: Exactly.

Sam: So they can go back to the beginning and watch a different component of the video especially if they have those multiple inputs.

Dr. Arwood: Exactly.

Sam: Now, I'm very excited about this collaboration with yourself and the School of Education, and excited about getting the certificate off the ground.

Dr. Arwood: Oh Excellent, yeah. I am too I am too. I just, you know it's a different way of providing education than I'm used to, and I just want to make sure that we maximize everything about learning in an online course.

Sam: Well you're definitely fearless and willing to take on new challenges.

Dr. Arwood: Yes.

Sam: We love that in Academic Technology Services.

Maria: We sure do.

Dr. Arwood: And that's how we learn, you know. We try certain thing that we don't know how to do it and somebody gives us feedback and we move on.

Sam: Well I will definitely keep everyone up to speed as the certificate gets off the ground and thank you so much for visiting with us today.

Dr. Arwood: Excellent.

Maria: Thank you Ellyn.

Dr. Arwood: It's been my pleasure, thank you for having me.

Sam: Thank you for joining us for another episode of the UP TechTalk Podcast. Just a reminder that we post a new podcast every Friday morning, and you can find us at techtalk.up.edu.