On Computational Thinking: A Perspective From Rural Saskatchewan

Episode 4: Melissa Lander Script and Transcript

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SH: Welcome to another interview episode, I'm Stephen Hadden, and we are taking about computational thinking. Yay! I have had the great privilege over the last 3 years to work towards a Graduate degree in Educational Technology and Design from the University of Saskatchewan. One of my classmates was Melissa Lander, we built an Android application for Early Years Literacy in our Multimedia Design for Learning course a few years ago. I also have the pleasure of working with Melissa in the Sun West School Division. This is episode 4 of my series on computational thinking, I'm Stephen Hadden.

Melissa happened to visit our school recently for some professional development and I was able to get some of her time and thoughts on computational thinking. Here's Melissa:

ML: My name is Melissa Lander, and I'm a learning consultant for Sun West for curriculum and instruction.

SH: Melissa spends much of her time figuring out how to best provide instruction for students, ensuring that us teachers have great strategies and tools to carry out our jobs as we work to meet curricular expectations, learning needs, and still enjoy our work. I started with the same quote from Denning and Tedre as with Kim Fick, Computational thinking is the mental skills and practices for

• designing computations that get computers to do jobs for us, and

• explaining and interpreting the world as a complex of information processes (Denning & Tedre, 2019, p. 16). How do we make that definition fit for elementary students?

ML: So, I think we would have to take some of the skills required for computational thinking, like being able to make a step by step process or thinking of algorithms and break them down into the smaller components and think about the prerequisites. For what students need to do those things and then we would be looking for creating opportunities to have them practice those prerequisite skills at the elementary level. So, as they progress through, they'd be able to do more of the computational thinking and designing at a higher level. But I think we actually will have to be very purposeful in looking for the opportunities I think sometimes. We're doing things that are, you know, decomposing problems and but we don't tell the kids that's what we're doing and that actually is computational thinking. Thinking like a word problem in math and you break it down into this is what I do need to know. This is what I not what I do not need to know that that's actually decomposing a problem and that they can that's actually. Computational thinking, you know, but I think right now many educators don't even know that that is computational thinking because it has not been really broached or there hasn't been a lot of PD provided. So, if they can't make that connection, then their students are not going to make that connection.

SH: This was the second interview where I heard that teachers likely have not heard of the term computational thinking, though I am not particularly surprised at that. The term is relatively obscure, I guess. Or at least more associated with the concepts of computer science and coding (Denning & Tedre, 2021). The thing is, as technology use in school has become more common, and as students have more access to devices, the advancement of computer and technology skills are not following the rapidly

rising trajectory. We have a few more options for developing technology skills within courses like robotics and automation, and we have renewed our computer science curriculum in Saskatchewan, but we don't have any specific allowances or expectations for computer application in our elementary courses, or even most of our high school courses. Lots of organizations and professional development providers are doing their best to help teachers see where we can make connections between curriculum and computational thinking. I wanted to know from Melissa what ways curriculum renewal, or division initiatives could provide teachers with opportunities to make connections between computational thinking and their practices, or how computational thinking might be further integrated into curriculum.

ML: So ideally what I would absolutely love to see is something similar to what happened to Ontario, where they developed a specific curriculum as part of science or part of math or part of STEM. I don't know how it would fit best, but a specific curriculum dedicated to computational thinking. I think with the connections made to the other content areas, but I know there's been a step forward in this province to connect only grade one to six, but to connect existing math and science outcomes to computational thinking. But the document it's really good for someone who knows already about computational thinking and connect like that is able to see those connections, but somebody who was not familiar with it. I don't think it would be. You know, something that they would just pick up and run with even though the examples and there are. It's really, there's really good stuff in there. I just feel like we would have to start by in servicing teachers and getting them comfortable with what computational thinking actually is and them having that aha moment where it's like, well, this isn't scary. Because there's there is like, well, I can't do that. That sounds really like high tech, but actually, you know, if you're playing the, I'm going to a picnic and I'm bringing mayonnaise sandwiches. And they finally figure out after about three or four people, everybody's bringing something that starts with their first name. They're actually making an algorithm, right? So just showing that. How it can be done in a fun way but

also making sure that teachers truly understand what it is so that they're able to make those connections. But to get to that point, I think we're going to need a dedicated curriculum and dedicated people to in service the teachers throughout the province. And then even if it's a train, the trainer kind of thing where each division offers up somebody to get that training and then their job is to come back and train everybody in the division. I think I guess the thinking has to shift on a grand enough scale that it can't just be seen as something we're just kind of doing on the side. It's going to have to have some effort put into it and processes put in place so that we make sure it actually happens.

See the reality of classrooms is very cross curricular and teachers think in boxes of curriculum often still so they haven't quite met. Some teachers are complete geniuses at planning cross curricular, but I think we have a lot of people who still see things in boxes like I teach biology or I teach this right. This is my thing. So I think as a starting point, we might need it in isolation, with hopes being that as we become better and better at looking for those cross curricular connections, we would be explicitly. Taking them and sharing them with the kids so that they can see how many different things they're doing and how it would apply to math, but it also applies to science, but it also is computational thinking. Look at all these amazing things you guys are doing with this one activity. But I think if we would, we're going to make headway initially. I think it would be probably best. Done as a Stand alone. That we would then hopefully eventually get to the comfort level that we could infuse it.

SH: How can we get children to become better producers and not just consumers of digital media and content?

ML: Oh, I love this question. I think first of all, we have to make sure they have the skills to become the producers, so we have to allow them to play around with things. And sometimes it looks

like they're doing nothing, and we're worried they're going to break things, but they're really not going to. You know that that it's actually quite hard to completely break something in tech. You can delete it. I guess that's the worst. So, you can always save a good copy of if you're coding or something like that. But I think kids need the flexibility to play around with things, and I think we need to let them try things we don't know necessarily or haven't heard of and invite them to bring those things to us, because if we're not in an area where we're hearing about what's new and cool and exciting, we would never know, right. And we could be missing out on a really good opportunity to do that. So I think making sure that the kids, when we are instructing them, we're teaching them in a way that they're transferable skills. So, like. Right now, let's not just teach Excel as an example or MS word, because there's also Sheets and there's, you know, all kinds of different word processors. So, but if we teach the skills that they need to do, then they're able to apply them and whatever else comes. So, I think in the same kind of thing, if we were teaching the skills for using the tech. Then hopefully, when the tech came, they'd be able to apply those skills so keeping it generic. Having time to play and I think just giving a creative space too so that they and a comfortable space so they feel comfortable coming to you and say I know there's a product coming up I need to you've given me these choices for my end product. I really want to do this and know that I'll say, OK, let's try it. Right. So, I think that you build that that safety and that. Create that creative vibe in your class and in your school so that kids know it's OK to take some risks and try some new stuff.

SH: I love the idea of flexibility and play with our technology tools. As we look towards teacher education and how to do computational thinking, that idea of play and exploration come up again. Playing with technology is great because there is not many ways to break things - but there are so many ways to create things!

I want to thank Melissa for her time. It's always great talking with Melissa about instruction, I learn so much. And thank you for listening. Next episode we will take a look at teacher education and professional development. I'm Stephen Hadden.

References

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