

Knowledge Building

BC: **[00:20]** Hi, my name is Beverly Caswell, and I'd like to welcome you to the Robertson program for inquiry-based teaching.

[00:26] Inquiry is about creating equitable, inclusive, engaging and active learning environments that spark children's natural curiosity, that makes students' thinking visible and that transform classrooms into communities of learners.

[00:41] Inquiry puts ideas at the centre of the learning experience. Ideas in mathematics and science, and ideas that come from students' questions and interests. Inquiry-based teaching is about really listening to and valuing what our students have to say.

[00:55] Inquiry-based teaching provides opportunities for deeper and more equitable learning experiences for all of our students. By creating communities of learners and exploring ideas in mathematics and science, we increase students' engagement and participation, and students begin to see themselves as doers of mathematics and of scientists in the making.

MS: **[01:22]** The issue of what does a classroom look like, if students are really engaged in knowledge creation, of course, comes up a lot, and the trouble is there's just no easy answer to that. It's hard to go into any classroom and in 3, 5 minutes say, "Oh! That's knowledge creation." You've got to also appreciate that in Nobel laureate labs, you would not go into them and in 3 to 5 minutes say, "Oh! That's a Nobel laureate lab." You know, the, the, there are long lulls in getting stuck with ideas. There are plateaus. There are kinds of struggling. There are some high points and breakthroughs. The literal point of putting a new idea into the world is rare, in, in all contexts.

[02:15] So what you really need to do is—for me, I always listen to the discourse. If I hear students on one hand saying, "Oh, we're writing an essay and it's to be this many words and"—or, "I'm doing my homework," if they're talking about the jobs they're doing, "I'm solving this problem. I am, I'm going to read this chapter and then we're going to meet and talk about this. I asked these questions and I'm interested in this," so they're talking about their activities, I'd listen for things like, "You know what I'm wondering? The piece I don't quite get that I wish—like, I wonder if anybody else is interested in this? You know, is(?) studying this and do you know Einstein used to think ..." Like, they think of themselves as one with great thinkers, historically. And so I, I listen to the, the discourse of wonderment, discovery. Also try to listen—so inquiry classrooms are becoming, of course, much more dominant.

[03:31] But if you think about inquiry in the, the sense that students ask questions, other people answer them, then we don't have knowledge creation. We still have questioning as this, "Oh, I ask the questions, the knowledge creators give the answers." That's really different from saying, "I'm going to ask a question that I am going to pursue. Like, maybe I could work at the cutting edge of this field."

[03:59] So that's a, a kind of—that takes a kind of discourse where students say, "Hm. So what do people know now? Well what is it that people don't quite understand? Where, where's my idea along this trajectory?" So, listening to the

discourse is one thing I listen for, to see if we have a classroom that's, that's on a knowledge creating trajectory.

Male: **[04:28]** How could you possibly differentiate, right, for different learners in an inquiry context?

Female: Mm-hm.

Male: Mm-hm.

Male: And, I think, you know, that it's such a misconception because, in a way, inquiry is differentiation.

Male: Yes.

Female: Absolutely.

Male: By definition.

Male: Right? Like, it just is differentiation by definition. Because every child will be taking their approach.

Female: Yes.

Male: They'll be, they'll be contributing their questions, their ideas. And it's our job to give them the ways to do that, right? But it's such a natural fit for differentiation because there are so many ways, right? You can—you know, I have children contribute their understanding by writing, by presenting in front of a class, by making a video, by making an animation, by doing all kinds of things.

[05:14] They're, they're able to do it. But I think that the great part about it, in terms of differentiation too, is that for even the child whose skills make it difficult for them to, difficult for them to contribute in the traditional way, say, writing, you know, they're still doing ...

Male: Yeah.

Male: ... the high level ...

Male: And contributing, yeah.

Male: ... the high level cognitive work that usual we reserve only for the gifted children. Right? They're still doing it, right? They're still asking questions. They're still coming up with hypotheses. They're still doing experiments. They're doing all of those things, and—that, that normally, you know, we think, "Oh well, no, no, no."

Female: They're not ready for that.

Male: "You know, once you learn to write, then you can do those things."

Male: Yeah. Yeah.

Girl: **[06:06]** So basically, this is Knowledge Forum. And there's a bunch of different sections. And, like, it's basically someone has an idea, and then people just add on to all the ideas, and it's like a spider web. So it's really cool.

Boy: **[06:16]** So, yeah. So this is, like, one of the ideas over here. And, yeah.

Girl: You just have to, like, double-click.

Boy: Yeah.

Girl: And then I would see someone's idea and you can add on, like ask a question.

Boy: **[06:28]** So it's all—so if—so you can read it, like, "I need to understand, how does water get polluted?" And then if somebody has an idea, they press, like, "Build on," and then they write their idea.

Oh yeah, so, we get into groups and, before we go onto Knowledge Forum, we would talk about some main ideas and stuff. So, yeah. So here we can just (inaudible). So there's different sections because we wanted, like, one section for, like, say, water in, in the human body. So, yeah. So we would talk about it. And we would say, "How about if we make this a new (inaudible)?"

[07:08] And then we would talk about, like, some people would say, "Look, how (inaudible), how much water is in the human body? Like, how much percent of the percentage?" So, yeah.

Girl: **[07:17]** And some of the webs are, like, bigger, because some questions, people really, like, really want to talk about. Other questions—like, some, as you can see, they're, like, left by themselves because no one really knows how to answer them, or it's a little bit complicated. But, like, you're just giving what you think is right, like, yeah. So it's, like, "Well, I think ..."

[07:38] When you give ideas, you're just giving what you think, and people can learn from that. And—but, like—it's not like it's a mistake though. Like, you were just trying your best and you were learning what you could. Like, it's what you thought. And it might have been really close to the truth or not so close, but it was, like, still what you thought and it might have been a really good idea.

Boy: So (inaudible) ...

Girl: **[08:02]** Well, I think if you don't take risks, you don't get anything accomplished, because you're not getting better. You're just doing what you already know how to do.

[END OF RECORDING – length, 08:10]