Introductions

Dean Shareski
Well, welcome everyone. My name is Dean Shareski. I'm going to be moderating today's session. We're very excited to provide this learning opportunity for you on building capacity and planning for literacy and numeracy instruction, and we're all coming together from all corners of the province of British Columbia, and for me I'm coming to you from Saskatchewan, and I'd like to acknowledge our Treaty Four land.

The land of the Cree, the Soto, Dakota, Lakota, Nakota, and the home of the Metis Nation, welcoming me and allowing me to live and work and play on their traditional territory. Even though it is minus 30 today, I'm still grateful for the place that I live, and am very happy to be here, and I invite you for a moment to maybe consider the Indigenous peoples of the land where you're currently sitting. Consider the people who, for thousands of years, lived in reciprocity of the land, who have stories about those places nearby, with gratitude and respect in your heart. I invite you to consider the original people of the place you are currently calling in from.

We are going to be joined both again by Nikki Lineham and Stephan Biela. They're both passionate teachers in the classroom who have a deep love for numeracy and literacy, so let's just get started right in here.

Nikki Lineham
Good afternoon, and my name is Nikki Lineham, and I am Zooming from the traditional territories of the Lekwungen speaking peoples of the Songhees and Esquimalt nations, as well as the Saanich peoples, and I'm very privileged to be able to live and learn and do my work on these lands, and part of the work I'm doing is learning about these lands and the waters that surround me and doing my best to be a good steward for them moving forward.

I'm involved with many different aspects in my work to do with numeracy. First of all, I'm working as a consultant for the Ministry of Education on the numeracy proficiency standards project, and what we're doing there is we're really working towards a better understanding for all teachers of what numeracy is, and how it's already embedded in a lot of what we do, but we want to bring some more intentionality to it, as well as define, "What does proficient mean for different grade levels?"

I'm also co-founder of Educating Now. It's a website that has videos and lesson plans for teachers on how to use manipulatives and other visuals, as well as specific language and context to help make math more meaningful. It's really around numeracy as well, and in that role I also create and facilitate professional development around BC and I'm doing some work in Alaska.

I'm also co-creating and co-teaching an ethnomath class in Angoon, Alaska, remotely, which has been really interesting, because ethnomath is a holistic way of teaching math so everything that we're doing is cross-curricular, so we're combining social studies, geography, history, science, art, with mathematics, and lastly I'm actually on an educational leave for my position. I work at Cedar Hill Middle School in Victoria, but I'm working on my PHD right now and that's around math education and numeracy.

So lots of things there. I'll let Stephan introduce himself and then we'll move forward.

Stephan Biela
Thanks, Nikki. So, Stephan Biela, and I'm so grateful to live, work, and play in the traditional un-ceded

territory of the Ts'elxwéyeqw peoples who have been here since time immemorial. Right off the bat, I want to say that the most important thing about me is that my wife and I are proud parents to four adult children, and it's been really fascinating to see the unique journeys that each of them is engaging upon.

My usual teaching gig is senior social studies at GW Graham secondary here in Chilliwack, but I'm on a 50% secondment to the Ministry of Education this year to lead the development of the Literacy 12 assessment. Now, my last formal coursework or curating of literacy was way back in 1996 at a course at UBC that I think was called reading across the curriculum, and since then my understanding of literacy and numeracy has matured over a quarter century of teaching through sporadic professional development opportunities and I think the best probably I've done altogether is many years of involvement on Ministry of Education committees.

Might be as provincial assess model, provincial exam development. It might have been the curriculum setting for social studies K-12 and writing some of the senior social studies courses. And currently, like Nikki is working on the proficiency benchmark projects as a consultant for numeracy, I'm doing that on the literacy side along with a few other amazing teachers from this province.

Stephan: Definitions and Considerations

Dean Shareski
I think Nikki and Stephan are going to help us see how these aren't two separate things. They're kind of one and the same, and they kind of overlap, and they work together, and I think that's the beautiful part about what we want to do, but why don't we start with you, Stephan? You take about, like, what does this mean to you, and how does it manifest itself in your classroom?

Stephan Biela
Here's the actual word art that was generated from those ministry definitions, and I'm not going to read them to you, but we'll keep them on the screen for a bit as I go through my next points, and as I'm saying stuff, maybe you'll see how the words that are listed there jive with what I'm saying.

I'm a socials teacher, and so we do stories. At least that's what we tell ourselves. So let me begin with a story. Once upon a time, in a land far, far away, there lived a young immigrant boy. When the boy grew up to be a man, he realized that the people of his land had no real say in their own government. John, for that was his name, joined a movement to wrest control from distant rulers, and he began to dream of a new country spanning an entire continent. *Amari Uskwa Admari*, or as we say today, from sea, to sea, to sea.

And so perhaps you feel cheated that I conned you into thinking about Sir John A. Macdonald, and Canadian confederation, but here's the point. It highlights the power of narrative as a fundamental grounding structure. The fact that narrative is a key way that the brain makes sense of the world, and there's a little fairy-tale about Big Mac as I like to call him. Well, that was an intentional gimmick to grab a hold of your attention.

As my first slide suggested, traditionally literacy has meant reading and writing, and numeracy has meant arithmetic. That's kind of a reductionist approach, eh? But numeracy and literacy are each a mindset as well as a skillset, and so as we go beyond the old school understandings of the three R's, we

see how nicely literacy and numeracy fall into the core competency of communication. But I think we need to widen our definition even further.

We need to include critical and reflective and creative thinking. Really, who cares if I ace a reading comprehension test, if I haven't thought extensively about the deeper meanings, the interpretations, the contexts? I mean, a basic computer algorithm could show factual comprehension a lot faster than I ever could.

A third key understanding, at least for me, about literacy and numeracy, is that they are processes rather than outcomes. They need to be intentional and purposeful processes. Using these skills takes time, develops over time, improves over time, and as such the value of formative assessment kind of comes to the forefront, doesn't it? My final consideration about literacy and numeracy poses this question. What is the purpose of literacy and numeracy anyways? What role do they play in our student's lives?

To me, the answer's readily obvious. Ultimately, it's to help our students become successful in life, and so let me share some data from the 2016 census that shows historical levels of education. The first thing you'll notice is this huge discrepancy between the four western provinces overall versus the city of Vancouver specifically.

Because it might be hard for you to read on your screens, I'll do a quick summary. Western Canada, almost half the population has no education beyond high school, and in fact one in five, almost, doesn't even have that, whereas Vancouver has barely a quarter who only have grade 12 levels of education or less.

And so perhaps here we can make an argument that literacy and numeracy need to be understood differently with the different demographics, that not one size fits all. We need to ask ourselves as educators whether we are providing literacy and numeracy development for all our students, for all possible life paths~~, and as an aside, don't get me started on elitist definitions of academic rigor.~~

Nikki: Definitions and Considerations

Dean Shareski
I just love the idea of critical and creative thinking and seeing how that applies specifically to literacy and numeracy but let me pass it over to Nikki and same kind of approach. When you think about numeracy, how does that manifest itself in the work you're doing? How do you define it? And let us get started there.

Nikki Lineham
Yeah, thanks, Dean, and I'm going to actually start by thanking Stephan by representing or doing a really good example of why numeracy skills are so important, because they're required to even understand these graphs that he's showing, so they're required to understand percentages as well as pie charts, but also we need to be numerate to know when we are potentially being misled, especially in these days I find.

Here's an example of a misleading graph. I'm just going to pause for a moment, and take a look at it, and see if you can figure out why it's misleading, and I'll give you a little hint. Look at the vertical axis or the Y

axis. And so when you first see this visual, it looks like a huge increase, right? It looks like the new tax rate is like four times the size of the previous one, but if you notice the graph starts at 34%, so this is what a proper bar chart would look like given that exact same data, and you can see that, sure, there is a tax increase, but it certainly isn't four times as much, or what it looked like before, so I feel like numeracy skills are really important for and to be critical of the media, and of information that is being thrown at us at a rapid rate.

And I also agree with Stephan that it's a set of processes, so numeracy and mathematics are often confused, or people think they're the exact same thing, and they're obviously very closely linked, but they're not exactly the same. A lot of the times in mathematics, not always, but a lot of the times, we work in abstractions, and we kind of work to higher levels of abstraction, whereas numeracy is really based in context and I see it as a set of processes as well, and these processes are all intertwined, and it's the processes of taking a real life context that we want to solve a problem and then using mathematics, whatever mathematics is the best tool to solve that problem, making sure that the results actually did solve the problem, and that they make sense, and being able to communicate what we did, our processes with other people.

And because it's based in context, literacy and numeracy are intertwined as well, so the processes are intertwined and the two are inseparable.

Nikki: Planning

Dean Shareski
So that gives us sort of this overview of where we are. Now we want to talk a little bit about how this actually looks in the classroom and when you're planning for it for different grade levels and learning areas. What challenges have you faced, and also since we're talking about this, how have opportunities for collaboration and maybe cross-curricular connections happened? Nikki, since you're still on, why don't we just continue with you on that side of things?

Nikki Lineham
Sounds great. Yeah, I've had a lot of different successes and challenges, and I've seen a lot with other teachers as well, so I'm going to start with successes. This is an example of a project that we created at Cedar Hill Middle School, and the group of us were grade eight teachers with different specializations, so we had science guys, social studies, we had literacy, language arts, and we also paired up with the art teacher and with the tech ed teacher, and the idea for the project was for students to design and they eventually built their own metal box for a purpose of their choice.

And the literacy aspect of this project was, there was a lot of considerations the students had to overcome because the sheets of metal came in a certain size, and the equipment that they were using to build the boxes had very specific guidelines around them. They had to have a tab so there was only certain lengths and heights to be unused, so students had to navigate all these different considerations to create their product. They also created mock ups, and then like I said eventually got to build this.

We incorporated most of the curricular areas and many of the curricular competencies as well, and the collaboration that was involved with that, it's actually one of the reasons, collaborating is one of the reasons, I've stayed in middle school for so long. I started my career teaching math and English in high school, and when I transferred over to middle school, I loved how the collaborative planning time is built

into our schedules, and that's within the greater Victoria school district, so we are always planning together, and the work that we create, the literacy and the numeracy lessons where we're intentionally designing ways for students to develop their competencies is always so much better than anything I create on my own, so I do really want to invite you to find opportunities for collaboration.

I know that sometimes schedules aren't designed the way that ours are where the collaboration is built in, but it just leads to such powerful learning. In terms of challenges, there are two main ones that I found. The first one is the reading challenge. I hear this a lot from teachers where they say, "You know, the student that struggles with reading, now they struggle with numeracy because there's so much language in there." And so they feel like it's unfair, like, "At least just give them abstract math so that they can feel successful in that."

And you know, I come at that with context and language is necessary within numeracy, so we can't escape the reading, but there are strategies that we can do to help students overcome those obstacles. One is working in collaborative groups, the students, and if you have someone who maybe isn't a very strong reader, someone else in the group can do the reading, and as a group their first task is to make sure that everyone in the group understands what the problem is about before they start trying to solve it, so then we really spend some time making sure that we understand the meaning of the problem before we jump to trying out different math ideas.

And the second biggest challenge that I see is, for teachers, trying to find the numeracy within context. Maybe you're teaching social studies and your brain isn't on math or numeracy, so it's sometimes hard to see those, and we're not really trained for that, especially if we were taught math very procedurally, we don't necessarily see how it's embedded in everyday life even though it really is, so my suggestion there is to, again, because intentional. Whenever you see a bar graph, a pie chart, statistics, any numerical whether it's implicit or explicitly stated, whether it's in science, or socials, or art, and focus on that, and bring it to light, and so students have a chance to see that numeracy is embedded in all of those other subject areas.

Dean Shareski
Thanks, Nikki. When you were describing that collaboration, I was going back to the last year that I taught, I taught grade six, and never felt like I was really a great math teacher, and I don't even remember how I came to this, but it was get your kids talking about mathematics more, working in groups, and that was just a small thing, but it really transformed the way I thought about mathematics, and then putting that in the context of supporting kids who might struggle with that. That's a golden tip, so appreciate that.

Stephan: Planning

Dean Shareski
All right, Stephan, what about you in terms of the idea of any challenges, or opportunities for collaboration, and cross-curricular connections?

Stephan Biela
Well, I just want to comment on the old guy sitting on top of the bar graphs that we just saw, and those of you who have been teaching for a while know there's always in the staff room that couch corner

where the grumpy old men get to sit, and I've graduated to that level, but that doesn't make me necessarily a curmudgeon. I readily admit that the core competencies and the curricular competencies, they did revitalize or maybe even revolutionize my teaching 20 years in when they came out.

For me, they provide a clear, and it's an intuitive framework, that helps me conceptualize content. I grasped the nuances, I sensed them, but I couldn't articulate them, and so this new curriculum rewrite with curricular and core competencies has really helped me out. Kind of think of a goldfish in a fishbowl, right? The fish represents content while the watery environment consists of the core and curricular competencies, or if you need to picture it differently, making a burrito without a tortilla, or building a shed without some kind of footing.

I don't know, whatever metaphor you want. Disaster would certainly ensue. And yet, for so long, my unit tests valued student recall of content, rather than their ability to think and communicate critically, creatively, and reflectively about this content. And I'm going to repeat those three words throughout what I have to share with you here today.

By prioritizing these core competencies and these curricular competencies, I'm not negating content, which was a criticism of the curricular rewrite, but I'm contextualizing it, and after all, what matters is how we use information, not the facts that we've memorized. If you haven't gathered this already, I love social studies, and I'm quite passionate about the curriculum rewrite, which was centered around the so-called big six of historical thinking, and so as Nikki clicks through this list, ask yourself which if any of these considerations that I outlined earlier apply.

Will each of these big six allow for a deeper understanding of narrative? Will they allow for a critical mindset? Will they help lead to an enhanced intellectual process? Now, I don't think in the webinar feature of Zoom that we can do a raise hands or a thumbs up, but I do hope that you, as you saw each of these six pop up on the screen, realize that they tie in with what I think are the fundamental skills of numeracy and literacy. Well, these are foundational curricular competencies for social studies. I'd argue that things like continuity and change, and cause and consequence, establishing significance, perspective taking, ethical considerations, they're equally important in sciences, in the language arts, and other disciplines.

In terms of challenges in planning for numeracy and literacy, this is more of a confession really, is I teach grades 10 through 12. I've never had to teach kids how to read, or write, or count. Even emerging students in my classes have rudimentary skills, and so I've had to figure out ways to meet them at that basic level. I realized quickly that there was no one fix to help a struggling student with the so-called three R's, and that we as educators need to meet each student's needs individually.

Perhaps the biggest challenge I've encountered as a secondary teacher is breaking down the isolated silos of academic departments. How dare mathematics tell science, tell English, tell socials how to do something? We're all experts. I know what to do. Leave me be. I think it's a bit of a leftover culture from the days of high stakes, subject specific provincial exams that were worth 40% of the student's overall mark, and we all know that school cultures, they take time to change.

Nikki mentioned the word collaboration. She talked about the importance of collaboration, and I really believe that collaboration is one way to break down these isolated silos, but again, that collaboration must be intentional. It must be valued. It can't be only those informal conversations around the coffee pot as you're waiting for the coffee to brew.

Different districts do collab differently, but I firmly believe that we need to promote cross-curricular interdepartmental collab instead of always just working on creating the newest and best next thing for our own department, and also while you're at it, you may as well join a PSA, one of the Provincial Specialists Associations, that the BCTF offers. I know I'm really grateful for all that I've gotten from my involvement with the BS Social Studies Teachers Association.

Dean Shareski
Thanks, Stephan, and just as an aside, I can tell you as somebody who travels a lot, and I speak about the British Columbia curriculum all the time, and you need to know that what you have there is something that is the envy of many educators around the world, and so that's just important.

Supporting ELL

Dean Shareski
Considering the challenges that many students face with a language barrier and/or processing time, how do you support them so that the groups are not held back or slowed down?

Nikki Lineham
I'm actually going to sort of speak to something similar a little bit later, but I'll mention it now. First of all, I honestly think that even students who read well benefit from that collaborative reading of a task and discussing, "What does it mean? What is it asking us to do? What are we actually supposed to do here?" Oftentimes with numeracy what the tendency is is to jump to, "We need to multiply." Like it's to an operation, rather than really digging into, "What does this mean, and can we draw a picture of it? Can we act it out in some way?"

And I think all students benefit from that, and the ELL students for sure. Obviously, for them, it's more of a necessity, but I really do think that it doesn't hold people back. It allows all of the students to really think about the meaning before they jump off into applying mathematics to it, so I do think that that collaborative group does work in that way well, and then word walls is the other thing.

In numeracy as well as literacy, having word walls up for mathematical ideas, a picture, a very brief few words, and the definition, so students have something to refer to that's in their site line, and sometimes we even provide sentence stamps, so for students to be able to engage in a conversation, and that works well for French emergent teachers as well as with ELL.

Dean Shareski
Well, that's an awesome idea. Stephan, what do you got?

Stephan Biela
I'm going to evade the question slightly before addressing it. In my school of about 1,500 students out in Chilliwack, we have fewer than probably 15 kids with ELL designations. It's not really something that we need to consider in our day to day teaching with the demographics that we have in our student body. But I'm going to break it down into comprehension versus communication, and I'll share in a few minutes the value I place on primary source documents, the importance I place on visuals.

And that is a different type of comprehension, I think, than just having to read from a textbook or listen to the teacher drone on and on and on in a lecture. And so even a kid who struggles with the language

skills, perhaps, can pick up the story more readily. Now, expressing the story, that's an issue I'm not able to give a proper answer to at this point.

Stephan: Instruction Strategies — Authentic Artifacts and Experiences

Dean Shareski
We want to talk about instruction, and specifically looking at strategies. Right? And strategies that maybe help students get past learning road blocks, so we've sort of just started with that one, so we'll sort of segue right into that one and maybe, Stephan, I'll get you to start us off with this one, the idea of instruction.

Stephan Biela
Yeah, sure. Thanks, Dean. I've got another confession that I was a library nerd in middle school. Books were my escape from boredom on the long bus ride home to and from school. It was about an hour and 15 each way from the rural hinterland of Chilliwack to the school I was at, and so for a brief moment I will confess I was into this series, the choose your own adventure. Those of you of a certain age may recall these books. And here's the gimmick, after reading a few pages readers were asked to make a decision, you can see that to the left, which determined the next round of reading.

Readers weren't fully choosing their own adventure, but they were following a series of predetermined paths. As teachers, we might use the word scaffolding for this, or better yet, differentiated learning. Now, some of you might have noticed the red X over instruction, even though I was just kind of saying that we as teachers are actively scaffolding or mediating student learning. I just think the word instruction signals a focus on the teacher, when what really matters is how students apply their mindset with narrative and with process.

Here's my personal experience regarding student agency. How many kids claim they can't read or write, yet they can spend hours following rabbit holes down Reddit, or Wikipedia, or whatever, and then they can communicate articulately about what they've learned and how it connects to their worldview? I imagine some of you are probably nodding your heads in agreement to this, and so I prefer to give students a choice, or at least to vary my learning activities so they can show their insights in different ways. Why not communicate understanding and meaning in non-written formats, such as interviews, presentations, Socratic seminars, three dimensional models?

One of my favorite stories is I once had 26 students from my grade 11 social studies class come to my place for an overnight field trip, and they had to dig a regulation World War One trench, they had to sleep in it, and I fed them hard tack and canned beef, or as close as I could get, which was just stoned wheat thin crackers and Spam, and so I think back on that, and yuck, poor things.

Okay, but we're talking here about some nitty gritty examples that help students engage with narrative, develop critical mindsets, and apply intellectual processes in the contexts of numeracy and literacy. Here's the first one. I have students interact with manipulatives and artifacts. They might be photographs or statistics, data tables, transcripts, models. You'll see in the picture that there's even a record of Sir Johnny Macdonald's speeches narrated by John Diefenbaker himself.

Dean Shareski
What's a record, Stephan?

Stephan Biela
Sorry?

Dean Shareski
What is a record?

Stephan Biela
Exactly, right? It's a newfangled form of MP3. This is stuff they can lay on a table. They can sort it, they can rearrange it, they can use it to create their own meaning, so this slide, I'm putting in a bit of a plug here, this slide shows Jack Daw C4 building the CPR, published in 1968.

These were brilliant and expensive collections of primary source documents. Sorry, just a moment here. This particular Jack Daw was a special gift from a retired colleague of mine, when I visited him a few weeks before he died of cancer, and it's kind of interesting, right? The things that we bequeath to one another.

Just moving on. There's this wonderful thing called Google Images. There's online data, there's the vast holdings of municipal or provincial national archives. They make it easy for teachers to curate their own sets, as in these two examples. I'd like to give a shout out to Glen Tealman from Prince George for sharing these two.

Now imagine expanding this concept of manipulatives and images to literature circles or to scientific inquiry projects and so on. A second instructional strategy I rely on: ditch the textbook, and select short, provocative, varied texts to engage students with a topic instead. Had I seen this article a few years ago, I would've probably skipped it.

Too many numbers, right? Dollars, percentages, lots of zeros. But now what an authentic way to invite students to engage with numeracy. What could they do? Bar graphs, line graphs. They could study the meanings between X and Y axes. Rates of change, taxation, accounting, budget allocation. All kinds of stuff, and how cool is that?

Now here's another idea. Why not use this article to scaffold that entire unit on how the Indian Act, and its inherent wholesale disenfranchisement of Indigenous peoples, was a prerequisite to building the CPR and opening the west to European settlers? Other tangents, I've highlighted some of them in green. Transitions of power from one political party to another.

The intentional extermination of the bison as a tool of suppression. Ethical judgments on the true humanity of Macdonald's funding of Indian affairs. As it says there at the end, some despot? My response, "Some despot, indeed."

Dean Shareski
You brought me back, Stephan, to my Canadian studies days as a high school student, and how my history teacher would bring in articles from Alan Fotheringham's. And he just died, I think, recently ago, and I remember thinking at that time, "This is radical. Aren't we supposed to be using a textbook to learn social studies, and he's bringing in articles from Macleans Magazine?" So he was ahead of his time. I love that example.

Nikki: Instruction Strategies — Manipulatives

Nikki Lineham
It's worked out really well with Stephan and I, because I also say use manipulatives. If you're delving into a numeracy task that involves some sort of fractional reasoning, make sure that the tools are there available for your students, so have fraction squares, or fraction circles, or strips of paper, or Cuisenaire rods. It doesn't have to be an actual manipulative, but something: grids, graph paper.

Things that allow students to use visuals, and I can't say enough about the importance of bringing visuals into mathematics and numeracy. It's so key, especially for students whose brains are still developing, and again, we often think of math as very abstract, so we want to bring in some concrete and visuals for them as well.

And I also, I'm going to say collaboration again. I already said it, but I'm going to say it again, because it's so important for how we learn. I think about the classroom as an ecosystem. Students are learning from one another; they're learning from the teacher. The teacher's learning from the student, I hope. There's the relational learning. And the students are also learning from the tools they're interacting with, as is the teacher, so we're all influencing and building our understanding together.

And so the more opportunities we have for collaboration within small groups of students, and then back to whole group where they can hear what the other groups did or a chance to visit or what have you, the deeper the understanding is going to become. The collaborative piece, I just can't say enough about both for the teachers, collaborating with themselves, but for students as well, collaborating with themselves. And I think we need to really train ourselves to listen for understanding. I feel like, as teachers, we often listen to hear for an answer, and it's probably the answer that we're expecting, maybe the way we think about it, but students have the most genius ways of thinking mathematically that often get shut down because it's not the way that we understand it.

And sometimes there's a fear around that, because math provokes a lot of fear in people. There's a lot of folks that think that math is something that only some people can do, only some people have a number brain. We all have a number brain, so that's categorically false. We can all develop numeracy skills, and you can develop as a teacher your numeracy skills by listening to what your students' thinking is, and they benefit from listening to their peers.

Sometimes I honestly think they benefit more from hearing the explanation from their peers than they do from us as the teacher. Those pieces, I think, are really the key things to keep in mind, that I keep in mind, as we're going into how do we access, how do we develop numeracy skills? Those are the instructional pieces that I would have in play, the tools, the collaboration, and for us as teachers to be tuning into what students are saying. Really listening deeply.

Nikki: Takeaways

Dean Shareski
Mathematics is a lot more than calculating. That's not what mathematics and numeracy is, and you're doing a wonderful job of helping us get there. As we sort of wrap up this part, we're going to dive a little bit more deeper into some of those, again, just sort of building on some of those strategies that teachers can take away with sort of the right of way stuff. This is the immediate stuff we always want to

focus on. Nikki, keep going with that. Just sort of help us sort of think about some of the things we can do right away.

Nikki Lineham
Thank you. I'm going to start here with basically what Stephan said at the beginning. He's talking about narrative and story, and story is really important in mathematics as well, and I feel like over the time we've stripped mathematics of its humanity. We've taken away the people and how people have used it and developed it, and the mathematicians themselves, and it's kind of just become this numbers that we do things with, and I always tell stories in math, whether it's about the concept, like this is where the concept was used and this person used it in this way, this person did it this way, or just about, I talk about the cult of the Pythagoreans, and they are hooked.

They want to know about this religious mathematical cult that happened thousands of years ago, so I think it's really important to use story. Also, not just histories, which I've been talking about, but stories. You could start with a storybook. That's a great hook, and there's going to be something in there that you can examine numerically. There's all sorts of storybooks that are specific to numeracy concepts, but you could really pull out a numeracy example from many different storybooks.

And another invitation for you is to use open tasks, and I've given you a link on the slide to Peter Liljedahl numeracy tasks, and they have been co created with teachers from around BC, and there's all sorts of wonderful information on there if you're just getting started with this, and the encouragement is always to make your own that's relevant to your context, so in this example imagine that your class, and this is something that we talked about at Cedar Hill, we wanted to create school gardens. We wanted to have some garden beds and we wanted it to be a community garden, because we have a retirement residence right next door.

And we thought, "Wouldn't that be great, if we could connect kids to those folks, and have them share their knowledge of gardening with our students?" The students are going to have to create a proposal to the district to say, "Hey, can you help us with funding for this?" And in that proposal, they're going to have to cost out all the material for building the beds, filling the beds. They're going to have to do some investigation of what plants grow in this area, and what kind of maintenance is necessary. Is it going to work if they all come ripe in the middle of the summer and no students are at school?

They're going to have to create a demonstration or, with the proposal for the district, that's where the literacy comes in. They're going to have to give a speech, they're going to have to organize a PowerPoint, how they're going to prepare their argument for why they should get this funding.

That's an example and on this site you'll see many more examples of that for you to get started, and then to start creating your own, and the last tip I have is just, it was already said once, but I'm going to say it again. The more opportunities we give our students to think numerically and to interact with numbers in various different contexts, the better their numeracy skills will become.

Stephan Biela
If those students were to move to Chilliwack and go to one of our local schools, Sardis Secondary, Sardis Secondary has an agricultural program that runs a five acre farm including a summertime, four credit session, where they're doing exactly what you have your students do but on a five acre scale, with, I think 60 different families as part of the community supported agricultural, so again, real world experience with numeracy, costing, planting, calculating profits.

Nikki Lineham
Oh yeah. That's amazing. Thank you for sharing that.

Stephan: Takeaways

Stephan Biela
I might be getting a reputation for being somebody who complains and vents, but here's another pet peeve of mine, and it's the word chapter. Banish it from your vocabulary. It tells us absolutely nothing about the skills or concepts that students are acquiring. Chapter three? That's not an idea. It's just a section from the textbook. How about western expansion? Oh yeah, thank you. How about western expansion, or building the CPR, or colonialism in action? Don't call it chapter three. After all, students learn ideas, not textbooks.

And while you're at it, banish basic comprehension worksheet. Thank you. Instead, have students work with diverse texts and ideas, use graphic organizers to structure and communicate their critical, their reflective, and you got it, creative thinking about the stuff that really matters. Now, for those of you who like working backwards, why don't you look at the specifications and samples for the provincial graduation assessments in numeracy and literacy? They might provide a quick snapshot about the things that the ministry of education values, meshes with your own teaching.

Now, I imagine you wouldn't be attending this webinar if you weren't already a reflective thinker, but I invite you to figure out or find your own personal, short hand code for the work that you do with students. I've already shared mine, that I view literacy and numeracy through the lenses of narrative, mindset, and process. Here's another one. The good folks of the Pacific Slope Consortium, which is an informal teacher collective based out of Prince George, they proposed tinkerer, thinker, storyteller.

Maybe we should take a moment to just ponder and reflect, and if anyone cares to throw this in the chat, a word, or two, or three, that best describes your approach.

Stephan: Spelling Test

Stephan Biela
I'd like to move onto a quick spelling test. "Aha," some of you finally say, "here's a concrete literacy skill." Here's the question. How do you spell the name of my hometown, Chilliwack?

Since 1917, the bottom spelling is the official spelling of the city, but the original inhabitants of this valley prefer to call themselves and the river that gave them their name Ts'elxweyeqw, which is the second last spelling on the list. Okay, you're right, so not about spelling at all.

Rather, I'd like us to consider the power of anchoring narratives in the context of authentic place based learning. Every place has meaningful stories that lend themselves to an integrated and cross-curricular approach. Here's a map, and it's from the 1860 boundary commission, Americans and British who surveyed the 49th parallel, and where the red arrow is, where the Chilliwack river once turned north. Well, you can see how the map, how it turns north.

It now goes straight west into the Sumas Flats, where the Chilliwack once turned north, there is this traffic roundabout with this powerful work of art. It's got seven paddles that represent the seven First Nations of the Ts'elxweyeqw people, and the eighth paddle represents the people and the city of Chilliwack, and in the middle circle at the word there's engraved the words “inhalcimalum”. That says, "Ey kwese e mi," which means, "It's good that you are here. Welcome."

Now, looking upstream from the bridge that you may have seen in the background, the river crosses through the Suwali Reserve, and near here the first man of the Ts'elxweyeqw tribe was born. At a time in the distant past, when things were not quite right, as the story goes. And his name was T'xwelatse, and I'm grateful to Herb Joe, who also bears the name T'welatse, for sharing the story of his ancestor.

Let's meet T'xwelatse and I will read out the words of Herb Joe. T'xwelatse and his wife were on the river bank arguing when Hahals happened upon them. Hahals, the great transformer, being given the responsibility for making things right as he traveled through our lands, asked this man and woman if they would consider not arguing, and that there were better ways of resolving conflict and resolving problems.

As a result of his intervention, Hahals and T'xwelatse, who was a shaman, decided to have a contest. They tried to transform each other into various things. A salmon, a mink, a twig. Finally, Hahals was successful in transforming T'xwelatse into stone. Hahals then gave the responsibility of caring for stone T'xwelatse to T'xwelatse's wife. Stone ancestor was to be brought home and placed in front of their house as a reminder to all of the family, that we have to learn to live together in a good way.

Ey kwese e mi. It's good that you are here. Thank you.

Concluding Remarks

Dean Shareski
Nikki or Stephan, do you have sort of a last takeaway, a last thought?

Nikki Lineham
I have one last thing, and it's just, I sort of briefly mentioned it, but I know from the work I do with teachers that they're doing a lot of this work already, and so I think what this is about is just coming to it with a bit more intention, and so with numeracy, you're embedding it. It's happening.

But maybe just being more aware of when it's happening, and helping to develop those numeracy processes, those skillsets around translating a context into a mathematical equation or even deciding what mathematics would be useful to solve the problem.

But this isn't an add on. It's not something more you need to do. It's already within there. I think we're just inviting you to think about it more intentionally.

Stephan Biela
Thanks, Nikki. I so like what you said there. I think what I would add to that is the idea of a spiral curriculum. I talk about processes taking time, and in the social studies curriculum we write, for instance, there was an intentional design to look at a topic kind of like an inverted funnel. You start in kindergarten down here. You look at it.

But then a few years later, you look at residential schools again. A few years later, you look at something else again, and every time you got a bit more distance, a bit more perspective, and it's a circular structure that allows you to really grasp what's important, as opposed to a linear structure of, "What's my scope in time?"

And that applies in literacy, in numeracy.