



Networks of Inquiry and Innovation Aboriginal Enhancement Schools Network

2016 - 2017 AESN / NOII Case Study

School Name: A.J. Elliott Elementary

School District: SD#85 Vancouver Island North

Inquiry Team Members: Melody Watson, Serena Lansdowne, Lynn Walker, Claudia Maas, Jodie Lukow, Richelle Beatty

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Type of inquiry: NOII

Grade levels: Primary (K - 3), Intermediate (4 - 7)

Curricular area(s): Mathematics / Numeracy

Focus area(s): Core competencies (for example, critical thinking, communication, problem solving), Differentiated instruction, Flexible learning, Formative assessment, Growth mindset

In one sentence, what was your focus for the year?

Teaching math through a cyclical approach in multi-aged classrooms with a strong focus on building deep understanding

Scanning: Briefly summarize your scanning process. How did you use the four key questions as part of the scanning process? What did you notice about the experiences of your learners that were most important to your team?

-This is the end of the fourth year that we have been focussing on math as our staff inquiry. We have noticed that number sense, problem posing and problem solving have improved with this approach to teaching math. Teaching math cyclically, as opposed to teaching it in units, gives students more opportunities to master a concept and to build upon it. We have continued to see a deeper understanding of the core concepts in math and the ability for students to apply this knowledge in different contexts developing. This approach has also been very successful in supporting our students with special needs. Our evidence includes: anecdotal, self-assessments, three-way conference goal setting, FSA, DMA, Supplementary Assessment (basic facts (Calkins), How Many Ways (Calkins), problem posing), problem posing/problem solving rubrics (Calkins), and Mastering the Basics data (Calkins). Minute



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by minute formative assessment guides our teaching and individualizes math for each student. All learners are stretched. The OECD principles of learning and the First Peoples Principles of Learning are embedded into our beliefs about how children learn best and are reflected in the approaches we take.

Focus: In a few sentences, explain why you selected this area. What changes were you hoping to obtain for your learners?

We selected this area to focus on because we noticed that our students had weak number sense and did not have the deep understanding of concepts that we hoped they would have. We wanted our students to have a strong grounding in basic concepts. We wanted them to become confident problem solvers and to be able to transfer concepts to different situations and to make connections. We were also hoping that teaching concepts cyclically would support and stretch all learners as concepts were revisited over and over again throughout the year.

Hunch: Describe your hunches about the ways in which practices at the school may have been contributing to the experiences of your learners that were of concern to you.

Years ago, when we were teaching with a text book, concepts were covered and then we moved on. Story problems were taught in the context of the unit and didn't really require deep thinking or understanding. We would often have to move on to the next unit even if not everyone had mastered a concept. Concepts were revisited for review at the end of term/year and many students had forgotten things they had learned previously.

New professional learning: What new areas of professional learning did you explore? What resources were most helpful? What specific designs did you use to support the learning of your colleagues?

We continued to deepen our understanding and use of formative assessment. We also began to study Mathematical Mindsets by Jo Boaler (this will continue next year). We also continue to work on developing the framework we use to teach cyclically and the instructional strategies we are using. This year has also been a time to align our teaching to the new curriculum.

Taking action: Describe strategies you and your team decided on and how your actions worked out.



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This year we wanted to:

- continue to develop our understanding and organization of cyclical teaching (We build on this framework each year, trying new strategies/approaches etc.)
- deepen our understanding of formative assessment (this is ongoing)
- further develop our use of math notebooks to help intermediate students with organization and support parents (These math notebooks are created by the students throughout the year as new concepts are introduced. The math notebook takes the place of the textbook acting as a resource for the students and their families.)
- use more projects (water consumption, house, architecture, etc.)
- use the 4 key questions formally on a regular basis in the context of math learning
- Align our work with the new curriculum
- Continue to work with Trevor Calkins' resources (Trevor is retiring)
- Continue collaboration with elementary and high school teachers
- Explore Mathematical Mindsets by Jo Boaler

Checking: Summarize the differences you made. Were they enough? Were you satisfied?

We are very pleased with the growth we continue to see in our students' math understanding. They are all making good progress as shown in the evidence that we collect. We are also pleased with the growth they continue to show in their abilities to reflect on their learning and set goals.

Reflections/Advice: Finish by sharing what you learned from this inquiry, where you plan to go next, and what advice you would offer other schools with a similar interest.

Next year we will continue this inquiry.

Where to next?

- Continuing to develop mathematical growth mindsets-Students need to see themselves as mathematicians. They need to believe that they can be successful and that they are "math people". Research tells us that, "the difference between successful and unsuccessful students is less about the content they learn and more about their mindsets." (Boaler, J. Mathematical Mindsets, p. 55)
- Further developing the use of digital portfolio assessment as a way for students to make their learning visible, reflect on their learning, and improve their goal setting (making goals, monitoring progress, adjusting goals, etc.), and communicate with their parents and teachers about their learning.



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- Expanding and improving our use of complex instruction: multidimensionality, roles, assigning competence, and shared student responsibility.
- We would like to have another Family Math Night in the fall and share information with parents around growth mindset, cyclical teaching, math strategies, etc. (This year's Family Math Night was a huge success, but many parents missed the informational aspect we had built into the one the previous year)
We would encourage other schools to look at the way they are teaching math and consider moving away from textbook/unit teaching. We have found teaching cyclically, allowing formative assessment to guide our instruction, and individualizing instruction to be key factors in our students' math success.