NETWORK OF PERFORMANCE BASED SCHOOLS
2011-2012

MAMQUAM ELEMENTARY
#48 Sea to Sky
3 Years in the Network

Leadership Team
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School Context/Community
Mamquam Elementary School, which is located in Squamish, B.C., has a diverse ethno-socio-economic population. Because of our growing community and the mobility of our families, the student population changes and requires that we adapt to its needs from year to year; split classes are typical. This year, we lost four out of our six Late French Immersion students and gained 2 extra kindergarten classes. Our school has gone from a predominately intermediate school to one that is predominately primary.

School Inquiry and Action

School Question
Will placing the emphasis on building number sense through the teaching of the math strategies as laid out in the PLO's from grades 1 to 3, improve student's recall of basic addition and subtraction facts?

Focus of Inquiry
Will using a series by Evan-Moor called Building Math Fluency Computation Strategies, Practice & Tests which correlates with BC PLO's and has activities which support assessment for learning practices offer teachers from grades 1 to 3 a framework that will:

- allow for a common language among primary teachers and students
- teach strategies that use, reinforce, and deepen a sense of number
- build automatic recall of basic facts without memorization, fingers, or other tools
- incorporate computation strategies into our daily teaching of math
- allow children to record and monitor their progress.

Strategies
In the fall of 2012, all teachers from grades 1 to 3 as well as the primary resource room teacher were given the appropriate grade level book from Building Math Fluency by Evan Moor.

Teachers were given a grid with all the math facts from 1 to 18. Students were asked to identify those they already knew such 0 + a number, or 1 plus a number and so on. Easy questions were colour coded with green. As a class, students identified ones they were working on, and those that are usually considered to be tough like 8 + 7 or 9 + 6.

The pre- and-post-tests dealt with addition facts only. Students were given 5 minutes to complete the sheet. After completing the sheet of 56 questions, students were asked to identify by colour coding which facts ones they found easy (were easy done in 3 seconds), which ones they were learning and which ones fell into the "not there yet" category (way too hard for me). The sheets were corrected to see how students did and how accurate they were in assessing what they knew. Students were given a 1 if they had 1 – 20 correct responses; 2 if they had 21 – 40 correct responses; and 3 if they had 41 to 56 correct responses. We matched students' results in September with results in June to measure improvement.

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Results from Pre & Post Test of 56 Addition Questions with sums from 1 to 18

Grade	September #/56	June#/56	Stayed the same	Improved 1 or 2 levels
2 – 45 students	34%	55%	42%	58%
3 & 4 – 50 students	44%	78%	58%	42%

Focus on Formative Assessment Strategies

- Clear Expectations: Evan Moor Building Math Fluency series used gave teachers a framework to follow with introductory lessons, practice, tests, vocabulary, and posters.
- Children owned learning: Children colour coded questions to show which strategies they used for a question.

  For example:
  Grade 2's:
  - 7+ 8 could be
  - doubles plus 1 red
  - doubles plus 2 blue
  - when you add with 8 think 10 – 2 green

  Grade 3's & 3/4
  Games played with grade 3 and 4 students required individuals to practice the math strategies that were taught. Students evaluated their enjoyment with an A, B, or C and their co-operative spirit with 1, 2, or 3. For the latter, teachers responded with their own mark. Developing the criteria for "Co-operative Spirit" evolved over a month or so. This accountability meant that engagement was high. Teachers were then able to go around and listen to the various ways students were arriving at answers. Games were taken home and taught to family. Responses from parents were positive. We found games that allowed those who were capable to use addition, subtraction, multiplication and division. Many children were able to create equations such as 5 x 6 – 4 to get the answer they wanted.

School Findings

- Children who stayed the same were either really strong or really weak at computing the 56 computation questions.
- Those that were weak also had difficulty accurately self-assessing what they knew
- Games that allow children to work at their level, develop a personal strategy, and can be played competitively or co-operatively are an engaging and effective way to practice basic math facts while allowing teachers to assess student progress.

School Plans for 2012-2013

- Continue to promote the use of math strategies by using the Evan Moor Building Math Fluency series.
- Increase the use of math games as a tool for practicing basic math facts at school and at home.
- Address the needs of children who make little or no progress in learning and applying the math strategies when adding or subtracting.

Reflections

- Teachers are very happy with what was done this year; however, we are happy that Job Action is over and we will be able to meet regularly to discuss progress, concerns, and successes.
- Children need to be prompted and encouraged to use strategies rather than fingers or other tools.

- Children who struggle with basic facts and made little improvement also struggle with math concepts in general.

Advice

- Teachers need to meet, discuss, and share what is going on in their classrooms. It benefits school, child and staff.
- The emphasis needs to be on building number sense and meeting children where they are.
- With children who struggle, intervention is needed to the same degree that it is for children who have difficulty learning to decode words and read.
- As children are building their sense of number, if they experience success at the level they are at, we will avoid children who say “I am not good at Math”.