

Elementary Math Focus Project Report

November 2019

Submitted to LCEEQ
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Under the auspices of the LCEEQ Professional Development Subcommittee (PDSC), in collaboration with MaST, the Mathematics, Science and Technology Committee made up of the Math and Sciences Subject Consultants, the **Elementary Math Focus Project (EMF)** was initiated as a pilot project in August 2015. More than one hundred teachers and Mathematics Consultants from across the province were invited to participate in an intensive four-day residential professional development session held at Manoir St. Sauveur. The pilot originated from a proposal to offer a three-summer training to Elementary Math teachers. The pilot was conducted to ascertain whether the proposed animation team would be well-suited to meet the goals of the project.

Dr. Juli Dixon, University of Central Florida, one of the founders of DNA Mathematics (<http://www.dnamath.com>) and three of her colleagues were engaged to animate the workshops. The experience proved to be very successful. As a result, the three-year training model originally conceived was therefore fully endorsed by the community and LCEEQ. Participants in the pilot were invited to make a commitment for the subsequent two summers. Seventy percent agreed and have affectionately been known as “Cohort One” ever since.

School Boards/Associations were invited to commit to a long-term training model that would see participants attend sessions over three summers. In addition, participants would be provided with a minimum of two professional days of training by the local Consultant(s) during the regular school year following each of the summer sessions.

The original model designed to include three Cohorts of teachers would have seen the project continue through 2020. An agreement was reached with DNA Math, to deliver:

Summer 2015	Cohort One	Pilot
Summer 2016	Cohort One	- Year Two Introduce Cohort Two
Summer 2017	Cohort One	- Year Three Cohort Two – Year Two
Summer 2018	Cohort Two	- Year Three Introduce Cohort Three
Summer 2019	Cohort Three	- Year Two
Summer 2020	Cohort Three	- Year Three

Following the Summer 2016 workshops, the original plan was altered to introduce Cohort Three a year earlier to take advantage of the enthusiasm within the community. It must be noted that school teams were encouraged, thus opening the possibility of administrators joining the training process. The amended schedule became:

Summer 2017	Cohort One - Year Three	Cohort Two – Year Two	Introduce Cohort Three
Summer 2018	Cohort Two - Year Three	Cohort Three – Year Two	Introduce Cohort Four (including a Grade 8-9 strand)
Summer 2019	Cohort Three - Year Three	Cohort Four – Year Two	Introduce Cohort Five

The planning and organization of the EMF Project is the responsibility of the LCEEQ Professional Development Committee. The present members of the **EMF Steering Subcommittee**:

- Laurette Barker, Math Consultant – Central Quebec School Board (until June 2019)
- Cheryl Cantin, Math Consultant – Eastern Township School Board
- Jeff Harvey, Math Consultant – Western Quebec School Board
- Lisa Lorenzetti, Cycle 3 Elementary Math Teacher at The Study School representing QAIS/AJDS and facilitating the training for these Associations
- Kathleen Murray, Math Consultant – Lester B. Pearson School Board
- Franca Redivo, Ministry of Education - (retired in June, 2019)
- John Ryan, LCEEQ Coordinator

During 2018-2019 the Steering Committee convened nine meetings. In addition, several working sessions were held in which particular members focused on specific tasks (e.g. revise content proposed by the DNA team, order manipulatives for the Summer Institute...).

At the end of each Summer Institute the Steering Committee reviews feedback provided by participants gathered in online surveys. The response to the August 2019 questionnaire was most encouraging given the number of respondents (Cohort Three was 75.5%, Cohort Four was 84.2%, Cohort Five was 80.9%). The compiled results of the survey are found in the Appendices of this report.

It can be readily understood that a project of this nature and scope is a major undertaking and a costly endeavour. Given that participants are giving up part of their summer vacation every effort has been made to ensure high quality workshop sessions in a comfortable environment. Arrangements have been made with Manoir St. Sauveur to offer special rates to family members so that many of the participants can take advantage of being accompanied by family and friends during their stay. All expenses were covered for participants choosing double occupancy while those opting for single or family occupancy were expected to cover the difference.

Although all funding is made possible by the Canada-Quebec-Agreement, at present, the project is financially supported by two budgets. LCEEQ is responsible for defraying the cost of the animation team, while a Ministry Math and Sciences budget covers costs related to accommodation and materials.

The following is an overview of the cost of the Summer 2019 session:

Animation: There were nine animators needed to accommodate three Cohorts (a total of more than 300 participants in the combined three Cohorts. Four animators were in attendance for five days, while five additional animators were required for two days.
Cost: **\$155 587.**

Accommodation/Meals **\$229 385.**

Travel subsidy for those at a distance **\$52 122.**

Materials \$ 7005. (three thousand dollars of manipulative materials were distributed to the schools following the workshops)

The total for the August 2019 Summer Institute: \$444 099.

Considering that there were roughly 320 teachers and Consultants involved, the overall cost was approximately fourteen hundred dollars per participant.

Appendix A

Cohort Three– Year Three
Started Summer 2017

Summary of the Feedback from Cohort Three – Math Summer Institute 2019

Number of respondents: **n= 74** (75.5%)

	Excellent (1)	(2)	(3)	(4)	Poor (5)	Comment
Experience booking accommodations	42 56.8%	20 27.0%	7 9.5%	5 6.7%		<p>Poor communication from the hotel. (2)</p> <p>Booking the hotel was difficult because the exact dates for our Cohort were unclear in the information provided. We ended up making a mistake when booking and it was complicated to fix prior to the conference</p> <p>The hotel “lost” my online reservation and when I wanted to book a family suite there were none left and they made me pay extra for the rollaway bed which I wouldn’t have had to pay for in a family suite</p> <p>I did not book a room and couldn’t indicate this.</p> <p>As in past years, I found booking the accommodations challenging. It took several emails to get a confirmation that I had successfully booked my room.</p> <p>There was a mix up with my reservation and it took 5 phone calls to get ahold of someone to confirm. This has never happened when I booked before so it could have been a mix up or it may be due to a busy time of year.</p>

<p>How would you rate accommodations</p>	<p>55 66.3%</p>	<p>24 28.9%</p>	<p>2 2.4%</p>	<p>2 2.4%</p>	<p>I booked a Mezzanine Suite and the mattresses were old and in need of some updating. The spring in the pull-out sofa was broken and we had to call for repairs. It would be great if the room had extra pillows for the sofa bed in the room. Furniture was damaged in room. A dishwasher could be installed in the kitchen. The soaps were exchanged each day even though they were rarely used. We were ok with reusing the soaps. An additional shelf in kitchen area would be nice to lay things. We missed the snacks (fruit) at morning break time. Food in dining room was super good.</p> <p>The rooms were a bit dirty and AC could not be turned off (too cold)</p> <p>I was in one of the renovated rooms for the first two years. The third year the room was old, the taps in the bathroom leaked. There was no shower pressure, no hot water in the shower. There was a used bottle of shampoo in my "clean" bathrobe. The door did not close without at least 3 tries per attempt.</p>
<p>How would you rate the meals</p>	<p>54 65.1%</p>	<p>22 26.5%</p>	<p>6 7.2%</p>	<p>1 1.2%</p>	<p>I have extremely bad food allergies and I found that there was a lack of food available for me to eat</p> <p>The food was not very good for people with allergies. Even after indicating my concerns there were items I could not eat.</p> <p>More food selection for the entire time range of the meal (ex. Lunch is 12-1:30 but getting sparse by 1)</p> <p>They unfortunately removed snacks from break times.</p> <p>More gluten free options especially dessert</p>

How would you rate the breakout session room	40 54.1%	29 39.2%	4 5.4%	1 1.3%		<p>AC was too high at times - cold room! (2)</p> <p>Breakout room with Windows.</p> <p>The conference room (Matterhorn B) was attached to the kitchen or prep area and we heard the staff laughing and talking loudly on the other side of the door during our sessions.</p>
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Note: Participants who rated a 3 or greater were asked to comment

	Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree	Comment
I received all the information required regarding the Math Summer Institute	55 74.3%	18 24.3%	1 1.34%			
I received the information regarding the Math Summer Institute in a timely manner	54 73.0%	19 25.7%	1 1.34%			
The goal of this PD experience was clear to me prior to my arrival	61 82.4%	13 17.6%				
Mathematics is something I'm good at	12 16.2%	56 75.7%	4 5.4%%	2 2.7%		

If you were to observe another teacher's math classroom for one or more lessons, what are three (3) things you would look for in order to decide whether or not the instruction is of high-quality?

Response included: (order reflects frequency)

- ✓ Student engagement
- ✓ Rich tasks
- ✓ Use of manipulatives
- ✓ Rich questioning – open ended questions; TQE process
- ✓ Math talk

(the vast majority of response include one or more of the above elements)

- ✓ Students discuss/explore concepts
- ✓ Showing/Using multiple strategies to solve a problem
- ✓ Students talk more than teacher
- ✓ Clarity of explanation
- ✓ Verifying understanding
- ✓ Clear objectives with activities that reflect such
- ✓ Time for exploration – not giving answer or how to do it
- ✓ Just in time scaffolding
- ✓ Classroom culture
- ✓ Students justify their answers and those of others

- ✓ Evaluation built into lesson not added on
- ✓ Acceptance of student ideas

Please indicate how often you invite student-invented strategies prior to teaching an algorithm or procedure:

All the time	3	4.1%7%
Often	41	55.4
Sometimes	21	28.3
Rarely	4	5.4
Not at all	1	1.4
Not applicable – administrator	4	5.4

In your current context, for every ten (10) lessons you teach, on average, in how many lessons are the students using manipulatives

Zero	1	1.4%
1-2 times	6	8.1
3-5 times	14	18.9
6-7 times	15	20.3
8-10 times	32	43.2
Not applicable – administrator	6	8.1

Briefly list and describe some factors that influence how often manipulatives are used in your lessons

Response included: (order reflects frequency)

- ✓ Time
- ✓ Availability/cost
- ✓ Topic/content
(Frequent response to the first three)
- ✓ Knowledge of how to use them effectively
- ✓ They are readily available for students to use
- ✓ As a Resource Teacher I encourage the classroom teacher to make use of them
- ✓ Workbook makes it difficult to use them
- ✓ My school (high school) did not have many manipulatives. I have purchased some and use those regularly.
- ✓ Quantity for each student, maturity of students to use them appropriately and/or share

	Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree	Comment
The content of the workshops at the Summer Institute was representative of my needs as a Mathematics teacher	39 52.7%	35 47.3%				
The amount of content in the breakout sessions was appropriate	43 58.1%	28 37.8%	3 4.1%			
The pacing of the breakout sessions was appropriate	43 58.1%	29 39.2%	2 2.7%			

If you disagreed with any of the statements, please indicate why:

- There should have been more information on the slides besides the TQE process. I feel like the handouts were a waste of paper since I had to write all the activities on a separate paper to have space.
- For the first item, I only agree instead of strongly agree because I was in the grade 5-7 group, but I thought grade 8 or 9 the past 2 years. No that I am tenured, I should teach mostly grade 8 (secondary 2). The activities and tools we learned were awesome. I will have to adapt to the concepts I teach in my level.
- I didn't disagree but I would appreciate online content available from workshops rather than just hard copy

- The pacing could be quicker. I feel Day one this year was a bit slow and backtracked to basic principles of TQE as a trade off for mathematical content.
- The sessions were excellent. However, the last session with consultant was not.
- Some of the material was not at the grade level of my students. In many instances it was way above their understanding. BUT personally, as a teacher, I took away so much knowledge from the workshops. There wasn't anything I could not adapt and make it appropriate for their grade level.

How would you rate the presenter's facilitation of your breakout session?

Presenter	Number of respondents	Excellent (1)	(2)	(3)	(4)	Poor (5)
Lisa Brooks	15	73.3%	26.7%			
Melissa Carli	19	63.2%	21.1%	15.7%		
Heidi Eisenreich	14	42.9%	50.0%	7.1%		
Farshid Safi	26	76.9%	11.6%	7.7%	3.8%	
Total	74					

What feedback could we give the presenter in your breakout room to improve your experience in the future?

Lisa Brooks:

- She was great, no other feedback. Better at managing chatting going on in the room
- Lisa did an excellent job- I have no ideas on how she could improve
- I would have enjoyed a full third day of the institute with the presenter.
- Have a handout of the activities done
- Showing more videos a lessons being taught
- She was incredibly motivated and positive. She was a real pleasure to learn from.
- To have all the videos and suggested activities pertain to the cycle. It was pretty good but it could have been better, in my opinion.
- She was phenomenal. Anyone I spoke to preferred her and this years experience to previous year.

Melissa Carli:

- She was amazing! She handled our group with such patience and professionalism..
- She was fantastic, great pacing. She really knew her stuff.
- Maybe allow less time between lessons
- Less on higher level math
- Find a way to ask someone who talks constantly, to stop while others are talking including the presenter.
- Some of the activity could have been shorter. I would have liked to have more concepts to explore.
- It was all very good
- I found Melissa very knowledgeable and engaging. It was interesting to hear her ideas and she had some great tips and tricks. I did find at times she gave us a bit too much time to figure out a problem or talk to our peers.
- It was too high a level for grades 3-4
- It was excellent!
- She was approachable and very friendly and I enjoyed the lighthearted environment of the class. She was well organized and was open to questions. At times, it can be somewhat intimidating to tackle math concepts and strategies you may be unfamiliar with. I honestly enjoyed her class best.

Heidi Eisenreich

- Great work, Heidi! You were thoughtful, and precise!
- Sometimes her explanations of certain tasks were not clear.
- This is in no way the presenter's fault, but in case there is not another opportunity to say so, I'd like to mention that not having the « tasks » in our handout made for very disorganized note taking. And thus, caused some frustration amongst participants. We were trying to copy down the tasks as she was talking, and it made things frustrating. The previous 2 years included the tasks in our slide package.
- Heidi was on task and she has a positive interactions with the participants.
- Give photocopies of activities presented on slides
- More videos as I learn best by observation but overall, Heidi did an excellent job!
- Having similar slides to her presentation (although they were sent later).
- the pace was a little slow, too much repetition of asking about TQE process, more content could have been given (somewhat basic for 3rd
- There should be handouts to go with the activity slides she presented. We did receive them after the fact, but now we have to go back and place them where they belong in the slide presentation. Not sure exactly where they go now
- Make sure that all slides are provided.
- Needed PowerPoint slides provided prior so we didn't need to take so many notes

Farshid Safi

- Tasks to be solved with others in the session (not limit communicating with only those at our table). This way, we can network with even more teachers.
- In my opinion, Farshid is exceptional!
- I appreciate the fact that he wanted to include everyone and build a relationship with all of us, however, as someone who suffers from severe anxiety, never knowing when or if I would be called upon to answer a question made me very uncomfortable and nervous. I would have appreciated a "head's up" like a silent signal or even a verbal "your turn is coming up" so that I would feel more at ease. I found I sometimes missed what was being taught because I was worried I was going to be called on to answer what was happening.
- Awesome! Engaged everyone, The time flew by
- I did not like how he ran the sessions. I felt very stressed and unable to do some of the work. I would have liked much more hands on approach and more time to figure out the solutions. The trapezoid component completely lost my entire group and was not applicable to the student with whom I work.
- Slightly faster pace to cover more material
- EXCELLENT sessions. Learned a great deal. Would like the opportunity to present questions that could be answered the next day at end of class
- I do not have any constructive feedback...he was terrific.

Cycle Workshops (Wednesday session)

The information in this section has been shared with the individuals immediately concerned.

What feedback could we give the presenter(s) of the Wednesday consultant-lead session to improve your experience in the future?

The information in this section has been shared with the individuals immediately concerned.

The content of the Wednesday consultant-lead session was appropriate and met my needs.”

Strongly Agree	21	28.4%
Agree	44	59.4%
Doubtful	6	8.1%
Disagree	2	2.7%
Strongly Disagree	1	1.4%

If you stated that the content did not meet your needs, please indicate why:

- I would have appreciated being directed towards resources for quality tasks during the session
- I would like access to the PowerPoint
- It was redundant to what I had learned in the last three years and by that time teachers are brain dead !.
- I would have appreciated more time with Farshid. Unclear what the goal was - was it to determine what was a cognitively demanding task?
- I wanted more examples of rich tasks that I could bring back into my classroom.
- Activity only reinforced what we already knew...

What support mechanisms do you feel your school board could provide to help you continue to grow professionally after this PD experience?

- Follow up at the school a few times each year.
- Continued PLC sessions
- Have people from the summer math institute provide meetings with teachers to show them what can be done in the classrooms
- Teachers often request more samples of 'rich' tasks and support in how to question students.
- Time to network with other math teachers
- Some LPs adapted to our existing math binder application questions
- Opportunities to meet and collaborate. We did not have any opportunity during the 2018- 19 school year and it would have been helpful to share and discuss what we were doing in our classrooms.
- Continued professional development to better understand best practice!
- Continued meetings throughout the year; an online group in which we could share resources/successes/challenges; chances to show admin what we're doing (including in meeting?)
- I need time with my MSI team to continue to build and develop our tasks and manipulatives.
- Budget for more manipulatives
- Time to work on questions and lessons that are grade and level appropriate as a team.
- Manipulatives made more accessible, wider pd for my colleagues

- Workshops based on what are the common misconceptions to look out for, based on topic.
- Being the resource teacher it would be nice to receive a follow up like the cycle teams have received.
- Resources to build tasks, continue to show ways manipulatives can be used
- Our school board is doing an excellent follow up.
- Access to more high quality problems.
- Consultants visits, seeing other teachers teach
- A bank of TQE problems to draw from by math strand.
- Continue to provide us with fun and rich critical thinking tasks to do with our students that pertain to each topic
- PLC , classroom visits, curriculum mapping to move away from workbook use.
- Create a bank of solid tasks that can be used in the classroom.
- Allow us time to sit in our colleagues classrooms and see what they are teaching and how we can learn from them. Also have the consultants come and present to the teachers that were unable to attend. Obviously not the whole program as that's impossible, but the important factors
- Continue to offer training on just in case and just in time scaffolding.
- There needs to be many more teachers participating in their workshops so this approach to math can be started earlier and with the entire school participating. I am the only one from my school that has done this and don't feel it will benefit most of the students as know one else knows what is going on or how to do math in this way.
- Additional PD time to refresh our memories
- Time to meet same cycle teachers in board to share tasks
- Continue with PD sessions during the year
- Planning and implementing rich tasks
- More math manipulatives available. Continued PD Sessions in school where teachers could work together once a month for sharing. Website available with Math Learning Goals and Success Criteria written for math strands.
- More time to plan out and discuss tasks following this model with other teachers at the same level who have completed the training
- Buy enough manipulative, provide one on one coaching in planning and in class
- Examples of rich learning tasks that are already vetted.
- Workshops and classroom visits with teachers using this approach.
- Continue to provide training opportunities, provide collaboration opportunities between schools.
- Create a DNA group in our Google Drive with successful lessons, tips, etc.
- Facilitate opportunities for DNA teachers to watch/team teach with other DNA teachers to practice our new skills and receive feedback.
- more workshops with each other(other attendees within our school board) to do co planning
- Continue creating lessons per cycle and allowing us to invite a collègue to the sessions
- Having more resource time to help in rotations and facilitating student discussion and understanding.

- Provide a bank of sample lessons suggesting materials and possible misconceptions based on different topics. This could be worked on during the ped days when we are scheduled to meet, or just be a forum where we can add these lessons ourselves and have access to others who have uploaded them
- More time to meet with other teachers to talk about math.
- We need to keep the PLC alive, open it to more teachers.
- Meeting with members of the math institute at the School board.
- PLC, release time with in school team
- To provide math manipulatives to facilitate math teaching to all classes. To provide math workshops school wide, not only to a handful of teachers.
- Having a PDIG or PLC group during the year to continue discussing these ideas and developing lessons with colleagues.
- I think we're doing a good job in this area.
- To provide opportunities for K-2 teachers to meet and share rich Math tasks following the T. Q. E. process together.
- Provide access to the "tasks" discussed during break-out sessions, which were not included at all in the slide show notes given (for K-2)
- Sharing rich tasks with us as to create a base task bank that we could use. This would also help in developing our own.
- using manipulatives in the classroom
- How to develop conceptual learning in a multi grade classroom.
- Time to plan tasks. Opportunity to collaborate with other teachers in my cycle
- to gather the different participants by cycle for a couple of meetings.
- Administrator supporting PD opportunities (ex. Prioritizing coverage for teachers to gain valuable collaboration opportunities with cycle colleagues, especially in the smaller schools where there may be no cycle partner).
- Time to sit with teachers and map out some tasks according to TQE
- I'm looking forward to PLC that my school board has planed for this school year.
- Content sharing if TQE's between teachers and cycle levels.
- meet by cycle and brainstorm tasks.
- Monthly plc meetings
- Continued meetings and classroom visits
- Providing time to share with our colleagues who did not have a chance to attend the summer training sessions.
- A bank of tasks and questions that work well.
- Cycle presentations by consultants
- Suggested readings (2-3 per year) related to to DNA topics.
- Small classes
- Time in our schedule to meet with colleagues (already working on it)
- Access to the books written by the presenters
- A shared google doc for tasks and meetings to discuss lessons we have used for various concepts.
- More PD in the area. Consultations with other teachers.
- Lessons on manipulative sand in class access to them

- By offering paid release time to train our colleagues in the TQE process By offering paid release time to train our colleagues in the TQE process
- Provide us with resource books that are available to help in developing tasks or to provide us with ready-made tasks. Provide us with all of the manipulatives necessary.

From the list of teaching practices below, which three would be your top priority for professional development?

Teaching Practice	Indicated as first choice	Indicated as second choice	Indicated as third choice
Representing student thinking and key ideas	6	7	14
Orienting students to each other's ideas	2	12	10
Recognizing students as competent contributors towards developing understanding	6	10	10
Eliciting and responding to student thinking	7	15	14
Designing and facilitating rich math activities that allow for student sense-making	46	10	5
Establishing and maintaining expectations for student participation	2	5	10
Identifying and teaching towards an instructional goal	5	15	11
Other:			

What content should be the focus of future PD (i.e. what content area or curricular goal(s) do you feel least prepared to teach conceptually?

- ✓ Designing rich tasks for place value.
- ✓ Designing rich Math tasks (not specified) (5)
- ✓ I would like PD that would help me rely less on using a workbook.
- ✓ Fractions often seems to be the greatest issue for students and teachers. (7)
- ✓ Questioning techniques (5)
- ✓ Tasks clearly identified (or created) to support our curriculum essentials.
- ✓ More ideas for effective teaching in the classroom!
- ✓ Situational Problems- within this context (6)
- ✓ Helping students navigate Situational Problems using DNA strategies. (3)
- ✓ Decimals (6)
- ✓ Word problems
- ✓ This type of conference would be beneficial in other subject areas as well.
- ✓ breaking down concepts to know the order in which parts of a concept should be taught to facilitate understanding.
- ✓ Focus on student misconceptions. This would save a lot of time if we knew and understood them ahead of time.
- ✓ Identifying learning goals for a differentiated class
- ✓ more project based learning
- ✓ Time (3)
- ✓ Probability (3)
- ✓ Support in creating the specific learning targets would be really helpful.
- ✓ Geometry (6)
- ✓ Algebra
- ✓ Geoforms
- ✓ Functions grade 9-10
- ✓ Area/Volume
- ✓ Proportional and spatial reasoning in relation to real life situations
- ✓ Planning lessons
- ✓ teaching big ideas instead of specific content
- ✓ How to strengthen links between the different curricular goals.
- ✓ Curriculum mapping around the big ideas and progressions of learning (2)
- ✓ Being more a facilitator of the concepts for the children rather teaching concepts to a whole class
- ✓ Ideas for other grade levels not related to our session.

- ✓ A Language Arts program with tried and true strategies for students struggling with reading, reading comprehension, grammar, and students who are non-readers.
- ✓ Number sense and place value
- ✓ Teaching numbers to Kindergarten (sensory tricks for Kindergarten students to make more sense of how to trace numbers, how to remember,...).
- ✓ place value - appropriate manipulatives to use and manner to teach
- ✓ Multiple grades in one classroom
- ✓ Measurement
- ✓ Ela writing
- ✓ Helping students to create the content in classrooms.
- ✓ Ratio versus fractions
- ✓ creating tasks related to clear leaning goals
- ✓ Teaching creativity
- ✓ Following the activity on fractions, it would be nice to have an activity on proportions. A complete activity on the number line would be interesting. We talked about it, but I think we could focus even more on that important concept.
- ✓ Exponential reasoning, divisibility, prime factorization, circle graphs and interpreting graphs
- ✓ Integers
- ✓ Using manipulatives
- ✓ Trigonometry (how do st

Is there any other feedback or recommendations that you wish to provide the organizing committee?

- I strongly feel that slides with task examples should be included in the presentation. There were none in the K-2 packages.
- Thank you to the organizing committee! It's quite a feat to organize so many of us! You did a fabulous job, we had 3 great years of learning, in a beautiful location!
- Thank you to all the people who were involved in organizing these there wonderful years of learning, dicovering and meeting great people.
- More videos of what other teachers are doing in their classroom. Similar to the Julie Dixon videos but ones that show the learning process of the questioning.
- I would love each of the participants to be given a list of resources that we could look into purchasing to further our development.
- Do you have a support group for those who finish this year? :) I will miss it so much

- What a wonderful opportunity and experience this has been! I am so grateful to have been a part of this. It has also encouraged me to engage in professional readings on my own and projects with my school MSI team to improve my understanding of the TQE process. Thank you so much for helping me to grow as an educator.
- This experience has been practice changing for me. I have learned so much in the last three years. I am more confident as a math teacher and have direction on how better support my students. This is how 'teaching math' should be taught at the university level, we would have much more proficient and effective math teachers.
- This conference has been AMAZING!
- I would like to thank you for a wonderful 3 years! I have truly enjoyed my time and have grown as a teacher! Thank you!!
- The planning of the whole seminar was exceptional and greatly appreciated! A lot of work went into it and it showed! I wish it hadn't come to an end!
- These Math Institutes should continue annually. There will always be teachers in need of learning - new and experienced. All math teachers and elementary teachers can benefit from these math institutes.
- A schedule with more specific timings for the last day prior to arriving at the institute would be helpful to plan our departure times etc.
- The check out was bad. The staff seemed mean and angry.
- Can you have a grad option like you do with the LCEEQ leadership conference?
- The organizers of the Math Institute (or Math Camp, as I call it), are incredibly dedicated and well organized. You can see them working hard all day long (and into the wee hours of the night) while we teachers get to enjoy the best PD experience of our careers. I can't say enough about the team. Thank you so much for running such a well organized and professionally beneficial week.
- Notify the participants that there will not be any snacks during their health breaks so that they may pack their own.
 - **Editor's note:** that message was include in the preliminary documents to participants. It was clearly stated that there would be liquid refreshments only.
- Best PD ever!
- This is a beautifully organized conference, people feel welcome and recognized as professional.
- You all did a great job ! Thank you
- There should be a bit of time dedicated to planning with colleagues.
- As I mentioned earlier, not having the « tasks » in our handout made for very disorganized note taking. And thus caused some frustration amongst participants. We were trying to copy down the tasks as she was talking and it made things frustrating. The previous 2 years included the tasks in our slide package.
- I do believe our notes (Power Point papers) could have been stapled instead of being wrapped
- wish we had more information in our given slides (K-2). The TQE process slide was printed every 3 slides, as well as the instructional shifts slide - which is not necessary by Year 3. What we were missing was having the tasks in writing, and other useful information that would be helpful when bringing this PD back to our schools. I was not able to write down all of the tasks in my notebook as I was trying to take part in the activities.

- the training could possibly be condensed into 2 years
- Thanks for all the professionalism and the hard work.
- Well organized and accommodating. It was an experience that will not be forgotten as it has given me lots of insight on bettering myself as a teacher
- Really, truly, a fantastic PD above the quality of most other PD I have participated in!
- Thank you (4)

Appendix B

Cohort Four– Year Two
Started Summer 2018

Summary of the Feedback from Cohort Four – Math Summer Institute 2019

Number of respondents: **n= 80** (84.2%)

	Excellent (1)	(2)	(3)	(4)	Poor (5)	Comment
Experience booking accommodations	53 66.3%	17 21.2%	6 7.5%	3 3.7%	1 1.3%	<p>I wanted to book a double room to be shared with another person attending whom I did not know; this was not an option and it was impossible to get the person in charge of reservations on the phone so I finally had to go through the Organizers for help</p> <p>The staff at the Manoir were not helpful when trying to confirm reservations. Calls were not returned and when I was able to reach the hotel I received inaccurate information. I attempted to add my partner to the meal plan and was told I would be unable to do so, however, upon arrival to the Manoir I saw many non-participants with meal plan bands.</p> <p>On the phone, It was very difficult to get in touch with the person responsible for our group.</p> <p>There was an error in the computer system upon check out that required the Organizers to intervene with the manager to correct.</p> <p>Somewhat confusing to know if I reserved my room or not</p>

						It was unclear how to register for only one person because this year, you had to register with your roommate. I wanted to be paired with someone to not pay the extra fee.
How would you rate accommodations	52 65.0%	17 21.3%	6 7.5%	5 6.2%		<p>First night in the room the air conditioner blew over the bed all night making it very cold. Dead bolt and safe did not work.</p> <p>My hotel room was dirty, falling apart and only "cleaned" one morning. The fridge had a horrible smell to it and it took 24hrs to fix it (I had medication that needed to be kept cold). Then there was no hot water to take a shower on Wednesday morning.</p> <p>Overall the quality of the hotel service has drastically decreased from last year. The room/hotel grounds cleanliness, hotel amenities, overall services and food were of poor quality. There seemed to be a shortage of staff, a lack of concern for guest satisfaction, and a lack of attention to the maintenance of the hotel grounds. My room especially, including the hotel bathrooms were the most disappointing. I placed many complaints to the front desk before they finally changed my room. This is not a hotel I will recommend to others. I am considering returning home after the sessions next year as this stay was unsatisfactory.</p>

						<p>Upon booking had requested to have all down and feathers removed. This was not done and required 3 visits to the front desk to have it resolved.</p> <p>Hotel room was okay but carpet very stained.</p> <p>My room was out dated but I know they are renovating..</p> <p>Keep us in the central building as much as possible.</p>
How would you rate the meals	47 58.7%	26 32.4%	5 6.3%	1 1.3%	1 1.3%	<p>The food was great but healthy options for drinks would be encouraged. Only the last day did they have option of Perrier.</p> <p>The food was okay but needs to remain hot until service is complete.</p> <p>The first year we came to summer institute there were more food options. I would say breakfast seemed more restrictive while dinner had more choices. Also the breakout room was cold due to the constant air changing controller.</p>

<p>How would you rate the breakout session room</p>	<p>30 37.5%</p>	<p>27 33.8%</p>	<p>19 23.7%</p>	<p>4 5.0%</p>		<p>It was always freezing in the Aspen room (3)</p> <p>The Whistler rooms are either extremely cold or muggy and uncomfortable. We tried many different things to make the room more comfortable but to no avail.</p> <p>Break out-room was uncomfortably cold. (6)</p> <p>The room that we met in, the ac was on high and we froze. We tried often to reset the temperature but it did not change anything. (5)</p> <p>Temperature in one room, in the other room we could hear the neighboring presenter through the divider.</p> <p>The break out sessions were quite cold, not a huge issue but at times it was very uncomfortable.</p> <p>At several times the water pictures were dirty and there were some dirty glasses that were supposed to have been clean.</p> <p>The break-out room had a strong scent of fresh paint.</p> <p>The room was freezing.. I had to wear jeans long shirt and sweater.. outside it was 30ish. it was not solved by changing the thermostat.</p>
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Note: Participants who rated a 3 or greater were asked to comment

	Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree	Comment
I received all the information required regarding the Math Summer Institute	59 73.7%	20 25.0%	1 1.3%			
I received the information regarding the Math Summer Institute in a timely manner	61 76.5%	16 20.0%	2 2.5%			
The goal of this PD experience was clear to me prior to my arrival	60 75.0%	19 23.7%	1 1.3%			
Mathematics is something I'm good at	15 18.7%	49 61.3%	14 17.5%	2 2.5%		

If you were to observe another teacher's math classroom for one or more lessons, what are three (3) things you would look for in order to decide whether or not the instruction is of high-quality?

Response included: (order reflects frequency)

- ✓ Rich questioning – open ended questions; TQE process
- ✓ Student engagement
- ✓ Rich tasks
- ✓ Use of manipulatives
- ✓ Math talk
- ✓ Clear goals

(the vast majority of response include one or more of the above elements)

- ✓ Teacher who does not answer for students
- ✓ Teacher as facilitator
- ✓ Is the teacher interested in the topic
- ✓ Student interaction – student lead learning
- ✓ Explanation through process
- ✓ Just in time scaffolding
- ✓ Student lead discussions

- ✓ Class management
- ✓ Relevance of task
- ✓ Showing/Using multiple strategies
- ✓ Students talk more than teacher
- ✓ Clarity of explanation
- ✓ Verifying understanding
- ✓ Evaluation is evident
- ✓ Clear objectives with activities that reflect such
- ✓ Time for exploration
- ✓ Students justify their answers and those of others
- ✓ Acceptance of student ideas
- ✓ Students are motivated
- ✓ Set-up of classroom

Please indicate how often you invite student-invented strategies prior to teaching an algorithm or procedure:

All the time	3	3.7%7%
Often	31	38.7
Sometimes	37	46.3
Rarely	2	2.5
Not at all	2	2.5
Not applicable – administrator	5	6.3

In your current context, for every ten (10) lessons you teach, on average, in how many lessons are the students using manipulatives

Zero	3	3.8%
1-2 times	21	26.2
3-5 times	19	23.7
6-7 times	17	21.3
8-10 times	14	17.5
Not applicable – administrator	6	7.5

Briefly list and describe some factors that influence how often manipulatives are used in your lessons

Response included: (order reflects frequency)

- ✓ Knowledge of how to use them
- ✓ Time
- ✓ Availability/cost
- ✓ Topic/content
- (Frequent response to the first four)
- ✓ Will student maintain focus on topic
- ✓ Fear of losing them

	Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree	Comment
The content of the workshops at the Summer Institute was representative of my needs as a Mathematics teacher	42 52.5%	35 47.3%	3 3.8%			
The amount of content in the breakout sessions was appropriate	43 53.8%	35 43.7%	2 2.5%			
The pacing of the breakout sessions was appropriate	41 51.2%	36 45.0%	3 3.8%			

If you disagreed with any of the statements, please indicate why:

- While I don't disagree, I did find things were rushed a bit. We just didn't have enough time.
- Sometimes there was too much dialogue (from the participants) and we didn't get to all the content George had planned. Need to be able to know when to stop and continue the next topic
- I needed more time to understand some of the concepts.
- Would love to have done more examples and less dialogue
- Wish we could have more time with the interactions and explorations
- In both years, we have not covered the entirety of our predetermined content. While I know it's not necessary because it's the second year this happened, I'm a little disappointed in this aspect. Our instructor was very kind, but let too much time go to teacher's sharing "war stories".

- The pacing of material was much better than the first year. We wondered if that's because it was shorter?
- The content was for much older students than what I teach
- Much time was spent with debates that we should have moved on from more quickly so less time was left to practice with manipulatives and apps most of us had never seen before
- Mostly good but sometimes the discussion went on too long and we could have gone to another topic
- I am now teaching cycle 1 but was part of the Grade 5,6,7. The strategies can transfer cross cycle but it would be nice to be able to exchange with another teacher for the grade level you will be teaching.
- The presenter was very knowledgeable of the content she was presenting.

How would you rate the presenter's facilitation of your breakout session?

Presenter	Number of respondents	Excellent (1)	(2)	(3)	(4)	Poor (5)
Thomasenia Adams	22	72.8%	27.2%			
Juli Dixon	16	100.0%				
Ed Nolan	22	77.3%	22.7%			
George Roy	20	55.0%	27.2%	15.0%	2.8%	
Total	80					

What feedback could we give the presenter in your breakout room to improve your experience in the future?

Thomasenia Adams

- To remember we are teaching k-2, and keep the time learning about math in that range. At times I was learning grade 7 math.
- I am an administrator, and English is my 2 language. On Tuesday, I went to see the presenter personally and asked her to stop asking me questions about geometry. My math concepts are in French. I was unable to focus on the answer. She was still kept asking me questions. I was embarrassed , not a good feeling.
- Not spend too much time on solving problems because then many are off task and it can be distracting. Also, I would like to have in the print-outs all the problems that were done in class.

- Keep reminding teachers that every bit of effort counts! That to me was a gold piece of advice during the break out session. I apply it towards everything I do since then!
- Nothing (2)
- She was fabulous!
- Continue with the hands on/practical examples, sometimes too much time given for group work/discussions
- Perhaps to time manage her presentation more effectively. As she explains some topics more thoroughly and then due to timing goes quicker over others.
- I left feeling excited and inspired.
- She was excellent!
- Reiterate the goal of the breakout session before start

Juli Dixon

- I like that Juli offers us the opportunity to chat with the other teachers at our table. It provides me with helpful insight. I also like seeing the instructional videos.
- Juli Dixon was an excellent presenter. I don't have an feedback that could improve her instruction.
- Another really successful year, I feel like I got a lot out of it. Please continue to encourage those who don't get something to ask questions and challenge others, I feel like I get so much from that.
- None to give. It was excellent.
- Juli Dixon is inspiring!! She models exactly what teachers should be doing in class. She asks questions. She gives us time to think, share and work out our strategies. She focuses on what is essential. Juli allows us to use the manipulatives. She scaffolds. She allows breaks, just at the appropriate time. Juli builds a bond with the teachers by telling us stories from her personal life! Juli must continue exactly what she is doing.
- Nothing
- Keep it up
- Perhaps more movement among the participants. More hands on.
- She's amazing!!!!!!
- Juli is perfection! Engaging, funny and very knowledgeable!

Ed Nolan

- As always.... more time would be appreciated. Your interactions with the group and the ideas presented are fantastic.
- I appreciate his approach
- To ensure that everyone understood the concepts before moving.

- Continue being his fantastic self! Ed was very inspiring and motivating!!
- We have a lot of material to cover and I enjoy learning everything. I felt this summer's workshop was a bit more "rushed" as last summer's workshop. We went over some parts very quickly, especially by the end.
- Nothing. He is excellent!
- I really can't think of anything. He does a great job.
- Include the manipulatives more often as there are many uses that are not apparent until we see it in action; show a few more of the videos so we see what we are discussing taking place at the time we are discussing it - increases understanding to see it in action.
- It would be great if all the activities were included in the PowerPoint handouts.
- Show more example videos. It's nice to see the content in action.
- cover more concepts
- I would love more lesson planning and concrete examples. I would also love to be solving the problems using manipulatives myself even more! Maybe modeling a lesson from beginning to end, including formative evaluations.
- It was a pleasure to work with Ed for a second year in a row and it would be amazing if our breakout group would be able to work with him for our final year.

George Roy

- Trying to minimize teachers' comments (not always easy) so that we can hear more from George and his wonderful work
- more content and less connections
- I wouldn't change my presenter nor his info. I would try to have more interactions with the individuals involved and allow more time to explore
- Some discussions went on for too long and others were rushed.
- None, I really enjoyed it
- Find a respectful way to limit the teacher telling of anecdotes that don't always relate to the topic at hand...
- George is an excellent presenter because he models what he presents. Each is asked to participate in their own way which makes for an overall rich discussion.
- I personally enjoy and feel reassured when there is some sort of conclusion to each session, a wrap up of some sort to highlight the objective of the session. So perhaps a little more of that.
- Although the discussion among teachers is valuable, the pace could be pushed in order to achieve more.
- Personal successes are interesting and worth celebrating but should be limited.
- More concrete strategies
- As teachers, we don't want to disservice our students by using incorrect vocabulary, but we are still learning too. We were passionate about knowing the answer to the definition of a variable, so if we had been given the expert's opinion we would not have spent nearly a full day's worth of sessions debating it. Like in a classroom, sometimes we have to move on and assess how our knowledge has evolved later.
- I understand his choice to leave us with open-ended questions, but we are teachers who like this stuff...So he could speed it up.

- I liked how he would let us express our opinions and have discussions but sometimes he could have stopped the discussion (when it kept repeating itself) to move on to other subjects
- I love that he adjusts his plan according to our needs.. but near the end he quickly flies through slides he planned on presenting... but we never address it. It would be nice to have access to these slides.. or.. I would suggest to not flip through them.. it kind of peaked our interest in what else could of been presented but a bit frustrating that we don't have the ability to spend time on it.
- We were often off track. this became tedious in the long run.

Cycle Workshops (Wednesday session)

The information in this section has been shared with the individuals immediately concerned.

What feedback could we give the presenter(s) of the Wednesday consultant-lead session to improve your experience in the future?

The information in this section has been shared with the individuals immediately concerned.

The content of the Wednesday grade band session was appropriate and met my needs.”

Strongly Agree	20	25.0%
Agree	46	57.5%
Doubtful	11	13.8%
Disagree	3	3.7%
Strongly Disagree		

If you stated that the content did not meet your needs, please indicate why:

- I am no longer teaching grade 5-7, but we were told we should get a copy of all the tasks from the break out sessions so that should be helpful to me
- A lot of off topic talk. Never ended up planning a math task. Too much lecturing
- The session was repetitive of what was presented. The task that was required felt scripted and lacked a meaningful take away.
- Provide more direct instruction and more concrete examples.
- Was repetitive and did not bring any new ideas.
- Again, it would be more beneficial to look at content that is relevant to the grade I teach.
- It would have been nice to know the topic ahead of time. Many seemed to feel that it was rushed and that we didn't get much out of it.
- I'm not teaching at this grade this upcoming school year. It would have been nice to go to this session at the grade level I will be teaching.
- The content of the grade-band session was appropriate, however it felt rushed.
- The topic was interesting and useful but sadly the presenter had trouble guiding me towards a clear understanding of the topic

What support mechanisms do you feel your school board could provide to help you continue to grow professionally after this PD experience?

More manipulatives to be involved in our teaching

Involvement of the school principals

More manipulatives available in schools, reconsidering end of year math exam execution, sharing with colleagues

Observations in other classrooms of actual lessons that I can use or adapt, meeting with other K teachers

Networking opportunities

To encourage this teaching practice philosophy across diverse grades. I taught Numeracy to a grade 1 class where students said I agree with this... and disagree with that... but it needs to be reinforced.

Our math consultants do an outstanding job!

Create a team drive or folder in which teachers could drop their lesson plans and resources.

Offer the opportunity to see into classrooms where the TQE process is being used. For example filming model teachers or allowing us to team teach in a classroom where the teacher has been trained by DNA.

Teacher networks to share ideas and experiences.

Perhaps a PLC based around the instructional shifts, (and other ideas presented) could be useful in keeping teachers motivated & accountable to continue thinking about and experimenting with the content presented.

Providing teachers time and a way to share what they learned and what worked and what didn't.

Time to observe other teachers.

Being able to meet with other grade 3/4 teachers halfway through the year. See what others are using and what still needs support. Many, many reminders and encouragement to try new things.

Putting together a pool of student led tasks, sharing resources and having small groups of teachers - those with TQE experience and those wanting to learn more

collaboration with other teachers purchase material resources

Provide manipulatives and workshops on how to use them.

Meet with other teachers who attended (the dream team!) often during the year.

We need to have a PDIG with our cycle team during this school year to help implement what I've learned over the past two years.

Time for participants to meet to develop a support network.

Much more training with manipulatives and math technology

Have the session offered again, but for teachers like myself who also teach grades 10-11 as an extra cohort.

Meet with teachers from different schools in the same school board that teach the same level to continue the discussions

I really felt I grew more with the follow up meetings with our math consultant. And being able to meet with her at the same time as the others who have gone.. it helped me understand more.. and feel more confident about things.. as well as we created tasks together and tried it out in our classes and were able to come back for feedback. What else is needed though is more thought from the school admin team on workloads.. release time was allowed, but my workload had too many different courses that I couldnt put the needed time for growth with what I learned.. Near the end of the year I needed to decline some meetings. In addition, it would be great if we were able to step into each others classes for observation or team teaching.

Pd throughout the year

Time to meet with teacher in classroom settings. Model teaching and networking sessions.

Help us access more rich tasks

School visits from our math consultant would be greatly beneficial

Release time with my colleagues who don't attend the summer math institute to introduce them to what I've been learning.

Meeting with other teachers that teach math at the same grade level.

Time to get together with other teachers in the board to develop lessons and activities.

Meet as a cycle do develop open ended questions.

Support the release of teachers to observe classrooms, have time for discussions afterward. Gather math teachers by cycle to talk about the essential learning at each cycle level, possible student misconceptions in learning and how to tackle misconceptions by the usage of proper tasks and questioning techniques and scaffolding at the appropriate time.

Networking and community online (Facebook group)

More manipulatives and lessons on how to implement certain content

My school board provides monthly meetings to discuss goals/lessons which is fantastic.

Grade level workshops throughout the year to share and discuss what we've been doing.

Opportunities to meet with teachers who have attend the institute to discuss, time to plan using DNA mathematics principles

There are a few of us in our school who have attended but it would be nice to see the framework of DNA in more classrooms so it is not just grade 2 they see it and never again. Can see the benefits of the continuation over multiple grades. Hard to teach an old dog new tricks is a very valid in our school especially among the FI teachers.

Also chatted about the exam and how it doesn't quite align with the instructional shifts.

There are a few of us in our school who have attended but it would be nice to see the framework of DNA in more classrooms so it is not just grade 2 they see it and never again. Can see the benefits of the continuation over multiple grades. Hard to teach an old dog new tricks is a very valid in our school especially among the FI teachers.

Also chatted about the exam and how it doesn't quite align with the instructional shifts.

Have the math consultant come to my class guide me through a math lesson to give me suggestion/support to be a better facilitator of the program

Quarterly meetings to discuss progress

Quarterly meetings to discuss progress

PD to get together for planning and sharing with other members

More follow ups with consultants

We had a PDIG last year which permitted each cycle to work on the TQE approach and develop tasks and discuss misconceptions

Support on teaching the curriculum without the text book. Time to visit other classrooms. Providing a growing bank of rich tasks by math concepts.

opportunities to create tasks. Last year's workshop was excellent as we got to see what other teachers had put into action in their classrooms.

What else is there except for a consultant to come to our schools to do follow-ups?

Provide workshops to continue develop so that other teachers in the board (who have no attended) may have opportunities to sit together to share, plan and discuss teaching ideas. More teachers need to be on board with these strategies.

Provide me with the opportunity to work with my peers who attended this conference to develop lessons.

Organise "official" TQE-based group meetings throughout the year by cycle.

Common workshop

To arrange periodic meetings between teachers.

I would like to meet with teachers who attended the cycle 2 session.

word problem strategies

Continue to encourage Math PLC's in schools and support teachers that did not attend the institute.

Time to watch other teachers or time.to model for others.

Shared folder with rich tasks to use

Offering time to get together with other teachers with the same training & show how they are implementing in their classrooms. Also, refreshing ideas that we have seen to keep it fresh in our minds.

It would helpful to know who from the my school board participated in the Summer Math Institute both currently, and in the past. That way, we could discuss, inquire, and possibly collaborate together with someone who is aware of DNA Math, MSMT, and the TQE process.

Continual formation for teacher and a introduction to the methods for integration aids, resource and support staff (homework program)

Advertise opportunities more, especially ones that are out of city/out of province

As discussed at the end of this workshop, we would like time, every term to determine high quality tasks (questions) for students, per theme. This would represent 1/2 day per term with Math consultant

Math consultants need to check in a few times during the year with teacher who attended. Consultants (or Board) need to also get other math teachers to attend PD sessions on the same topics

Would be great if they could supply us with cameras to teach and Algebra tiles.

Release time to plan more activities to be used in the classroom. Manipulatives.

As a consultant I would like to spend more time with my teachers who attended the MSI. I would like to meet with a teacher to develop an activity, be in the classroom to help facilitate the activity and then debrief with the teacher afterwards.

A consultant who is actually available to us and present

Organizing ped days, at least twice a year, where we could meet up with math teachers of other schools in the board and share how we approach the different math courses/levels.

teacher sharing, teacher to teacher observations, providing manipulatives

perhaps an online platform (google drive) or message board to share lesson ideas, feedback, successes or cautionary tales with teachers who teach the same grade level. Access to more manipulatives. The DNA math books.

Continued support from math coordinator

periodical meeting to share our progress

The type of word problems to be introduced in grades 1 and 2 from easiest to most difficult for students. Teach us how to differentiate word problem types.

To provide a bank of tasks for the different learning goals. A Team of teachers which this DNA math experience to help other teachers understand that did not attend this PD.

Opportunity to meet and collaborate on creating rich math tasks and learning from others

We are lucky to have 4 teachers and an administrator from our school either attending or who have attended the MSI and we have also spent two years working on a PDIG to align our math and create tasks. I feel that we should have time together to be released to continue to move our math forward in the school. We should also be working with other teachers at other schools to see how they are implementing their learnings from the MSI experience.

Ongoing support in the classroom (teachers visiting other classrooms that are using the approaches we've learned). Maintaining a connection and dialogue about improvements to the math program and providing a written document to help support teachers who were unable to attend the math institute. Of course finances to help build individual classroom resources and manipulatives supply.

Meetings to touch base, share ideas & pitfalls during the year, more \$ allocated to purchase manipulatives

Continue to focus on TQE process within our cycles/schools. Presented with engaging tasks that can easily be used in the classroom so that more teachers can be involved.

From the list of teaching practices below, which three would be your top priority for professional development?

Teaching Practice	Indicated as first choice	Indicated as second choice	Indicated as third choice
Representing student thinking and key ideas	1	9	11
Orienting students to each other's ideas	3	4	16
Recognizing students as competent contributors towards developing understanding	6	7	9
Eliciting and responding to student thinking	13	15	15
Designing and facilitating rich math activities that allow for student sense-making	43	23	5
Establishing and maintaining expectations for student participation	2	12	9
Identifying and teaching towards an instructional goal	12	10	15
Other:			

What content should be the focus of future PD (i.e. what content area or curricular goal(s) do you feel least prepared to teach conceptually?

Area and perimeter of 2-D or 3-D shapes (geometry for secondary levels)
How to organize manipulatives to maximize use of them
probability, stats
fractions of a set
More is needed on linear algebra.
Time. Math facts

Situational problems

Problem solving

Would be interested in more talk about assessment / evaluation. We briefly chatted about use of talk rubrics and different forms we can use. Seeing examples or creation time for math rubrics would be great.

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How to approach situational problems with the children? How can we guide them? How can we help them and not?

I would still like to work on developing rich tasks.

Long division

Working through a situational problem.

Geometric solids (polyhedrons) & Statistics

time

Fractions

I think I understand the tasks better, but I find I need more to change how I have been teaching.. being comfortable with the attention away from me and on the students. I also find multitasking difficult and need to practice and find ways for me to carry out the lesson.

Statistics

Effective questioning to help develop student understanding

geometry

There are quite a few

Use of manipulatives

Problem solving is always a big necessity.

3-d shapes

continued review of place value and fractions to consolidate our learning this summer

geometry

assessment, formative and summative, of all subjects, but math and writing specifically.

Percentages

Fractions, decimals and number sense

Situational problems

Questioning and small group instruction.

Statistics

unsure

Establishing rich math activities

Fractions, time (especially elapsed), teaching students how to approach, solve & record answers/math thinking for situational problems (& application problems somewhat as well)

geometry

probability

Geometry

Developing more rich tasks

Probability

Go deeper into number sense.

Word problems (application/situational): how to choose them and work with them in our classrooms

How to decide when to move on to the next concept?!

Examining working with small groups and RTI

How do I get the kids to come up with the key notions that need to come out in order for the sense making to happen. How do I get the others to recognize or make sense of their peers ideas.

Different ways to teach algebra since it is such an important concept

Geometry

spatial sense

Designing rich and engaging learning tasks. Our current application and situational problems need a revamp

Problem solving strategies

We haven't done Geometry, but it is my understanding this is part of our sessions next summer

Choosing the most important area to focus on to best prepare students for their future grades.

Statistics

Rich math questions

How to make the situational problem activity, worth 30 % of each term, a rich task.

Problem solving

Math vocabularies

How to work through decimals in relation to tenths, hundredths and thousandths. I am not sure how to guide the students.

Looking at the progression of learning and identifying those key learning goals and creating rich math lessons.

I am an administrator. But I would say from the discussion in the session that teachers wanted to go back on geometry... we did not get to spend much time on this.

Manipulatives and math technology relevant to high school curriculum

There is a nice variation in content being given. I feel that I am gaining knowledge and hands-on ideas that can be transferred to many areas of the preschool curriculum. Thank you

Situational Problems that are multistep.

word problems

more algebra and proportionality

Algebra

Fractions/decimals. I think it could also be potentially useful to work on strong instruction of place value

Evaluation

Measurement

None at this time but I am always interested to hear how other fellow K colleagues are teaching math.

Administrator and have not thought of an answer for this question

Eliciting and responding to student thinking to reveal and unblock misconceptions.

More practice on preparing appropriate lessons.

Rich learning experiences with quadratics and logs.

How to choose appropriate formative and summative lessons.

Teaching students to effectively work in groups.

Creating lesson

Is there any other feedback or recommendations that you wish to provide the organizing committee?

I think it's unfortunate that we are locked into a group. It would be nice to have the option to switch grade levels to ensure that we get the most out of this pd.

Having a general schedule of the 3 days beforehand so we know more or less when the day will start and on the last day when it will end to plan our return

Excellent job. To provide our three-day schedule in advance via email to plan for our families attending with us.

Would it be possible to move the Summit to a later date in August (the week before going back to school)?

No, thank you! Fabulous !

I would just like to say thank you to the organizers and animators for a wonderful experience.

It would be nice to be able to switch groups if we are teaching a different grade...

I think this survey is an excellent way to get our feedback and I know you actually read them - so I think that's the best place to start. Honestly, I think the organization of this conference is impeccable and the fact that so many of us get to participate free of charge is a privilege that I appreciate whole-heartedly.

Amazing conference! Rich opportunities for learning and I left feeling inspired to continue to improve my teaching of mathematics.

Amazing job! So so so helpful, I wish I had learned this much in University!!!

An amazing job. I am so grateful to be able to be a part of this. Thank you so much..

Very impressive. Your hard work is very much appreciated. Fortunate to have been a beneficiary.

Excellent work! This conference is both very enjoyable and a rich learning experience. I would prefer if it took place later in the summer.

Everything ran smoothly. Well done!

Absolutely love this learning opportunity!!

More examples of math activities that we could do with our students.

More coffee if possible, especially in the PM

Maybe a social event like a quiz night or a karaoke night. I would love to take on the task of the social night.

It would have been nice to have a different animator this year to see a different style.

Thank you for your incredible planning and organization. I understand that there are many hours dedicated to provide such a large summit.

We have had the pleasure of having Juli as our presenter for 2 years. The members of my cohort would love nothing more than to complete our third and final year with Juli as our presenter!

- I found it very difficult to hear in the Chamonix conference room. The curtain divider doesn't provide sufficient noise blockage.
- I really appreciated the snacks during the health break. Is there a way to bring this back?
- It would be nice to have our schedule a few days before arriving at the conference. Or even just a breakdown of what time we will be starting and finishing each day in order to coordinate travel, child care, etc.
- Thank you so much for all of your hard work! It's truly a pleasure to attend the conference each year and I feel more and more competent in my teaching skills. It's motivating and enlightening to speak with other educators and the relaxed environment is the cherry on top.

To not use plastics the wrap all handouts...very wasteful.

Keep doing what they are doing!

I enjoyed this opportunity to explore math based on the conceptual understanding opposed to procedural! Also, I liked how you can teach a geometry lesson just by using an envelope. This shows how an enriching lesson can be so valuable and engaging!

I appreciated having the opportunity to have Juli Dixon for the second year in a row. Not only was she fantastic, but it was nice being able to continue our sessions together since we had started with her. Also, knowing her already helped with the continuity and flow of the learning sessions.

Snacks at break time

Somehow I did not remember to bring my binder. Perhaps next year this could be added to one of the final emails in July. Thanks!

Math vocabulary and student participation

You all do an amazing job organizing these PD sessions!! Thank you

You are doing a great job! Thank you for allowing teachers and administrators to participate in such a great summer institute.

This was a great 2 1/2 days for learning and growth. I came out of it energized. I would just say BRAVO to the organizing committee. I can't begin to imagine all the work that goes into making our week go by so smoothly.

Awesome work!

I am truly appreciated all the hard work that is going into the summer math institute. thank you!

amazing and sooo inspiring

If possible, perhaps the opening plenary could take place on the Sunday evening when those who are returning to the Summer Math Institute arrive so that we could have an additional break-out session on the Monday morning with the presenters from DNA Math.

The opportunity to attend this PD was very much appreciated. Because the presenters had so much to offer, and the days were so well organized, I was able to benefit greatly. Thank you!

Thank you for organizing and always having smiles on your faces!!

Fabulous and supportive LCEEQ team; presenters build confidence and trust

Thank you to the organizing committee for allowing teachers from all anglophone school boards to meet and exchange on subjects that we teach daily in our classrooms. Teachers and students alike from all across the province greatly benefit from these joint PD experiences. I finally feel supported!

Time to plan. Time to discuss best practices.

It was a great session. I wish there was a way to have more time working with our groups.

Breakout Session room was way too cold for many of us.

Appendix C

Cohort Five – Year One
Started Summer 2019

Summary of the Feedback from Cohort Five – Math Summer Institute 2019

Number of respondents: n= 93 (80.9%)

	Excellent (1)	(2)	(3)	(4)	Poor (5)	Comment
Experience booking accommodations	44 47.3%	32 34.4%	8 8.6%	6 6.5%	3 3.2%	<p>The online service did not work for online booking so I had to fill out a form and fax it to M. David Bolduc. Never got a confirmation upon reception of the fax. Then I waited for a full month. I had to follow up with M. Bolduc. He told me he would get back to me which he never did. I had to call the hotel myself to make sure I had a room (2 months later).</p> <p>During my stay, I got charged a deposit on the first day, then 150,00\$ random fee was charged on the second day and then 192,73\$ fee was charged on the third. It was a pain getting these refunded. However, Marie-Christine (the hotel receptionist) worked really hard to get it fixed for</p> <p>There was a very large lack of communication with the hotel. The process was overly complicated for no reason.</p> <p>It was a little bit confusing when booking the room and I would have liked to receive an email confirmation (with price) once it was booked. The hotel was going to charge me a 30\$/day upgrade fee but luckily I had</p>

						<p>taken a screen shot of my booking so I did not have to pay the fee.</p> <p>I called the Manoir and made my reservation over the phone but there was some confusion with more paperwork that was needed. Everything worked out fine in the end, but the organization was a little confusing.</p> <p>Reservations took from April to the day before I arrived. Having to trend my reservation paper multiple times & calls. Maybe the rooms could be booked for us with confirmation of it all. I don't like to complain as my room was an older room and clean at least. However, there was a very strong smell of mold or a closed up room string scent. Bathroom bathtub water filled up as I took a shower & the sink the same as I brushed my teeth.</p> <p>The reimbursement process wasn't very clear... Example of the total fees should be more specific in the first email.</p> <p>It could have been simpler when booking for a family.</p> <p>The booking was stressful! And I wish the cost for bringing our families was clearer (for a single occupancy room, it was clear, but not house much it would cost to have them eat with us).</p>
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						<p>It wasn't clear when I signed up that I was taking an upgraded room as it was the only choice available to me at the time.</p> <p>room was not ready for 4 pm on the first day.</p> <p>Booking could have been greatly simplified by having a representative (perhaps our school board consultants handle multiple room bookings at a time on our behalf). Calling the hotel directly led to a lot of confusion and misunderstandings, with some people needing weeks to get things settled.</p>
How would you rate accommodations	62 66.6%	23 24.6%	6 6.5%	2 2.3%		<p>Carpet in our room was very dusty. Difficult to breathe at times.</p> <p>My room was BEAUTIFUL though, I loved it and it was VERY clean.</p> <p>I had one of the older rooms that wasn't renovated and noticed there was mold in my fridge. Ewww!</p> <p>My asthma was really bad with all the carpet everywhere in the hotel.</p>
How would you rate the meals	60 64.5%	23 24.6%	8 8.6%	2 2.3%		<p>The meals were wonderful. So delicious but the staff wouldn't replenish the cutlery and we often felt like squirrels scavenging for forks knives and cups for coffee. On our last day my friend and I needed to share a fork after asking for one and being told to find it ourselves.</p>

						<p>Meal time : it was important to go at the beginning, because during last half hour, there was no food left.</p> <p>Day 1: having people drive in and sit through a 3 hour conference with no munchies or coffee was unacceptable. If you were not providing, please tell people to stop off at Tim 's before coming to the hotel at the very least</p> <p>The food was absolutely great; however, the only hassle was that whenever I would sit down, I had to search for my own utensils. I can't seem to understand why we couldn't get our own utensils from the buffet. Even getting a glass for an orange juice was not the easiest. For next year, I will bring my own plastic forks and knives.</p> <p>I would have liked healthy snacks at the breaks.</p> <p>The meals needed more vegetables & salad options.</p> <p>The meals never had enough drinks (I actually never got there early enough in all the meals to get one) The food seemed to be refilled slowly and at times not at all</p> <p>Dinner was very late. I would prefer eating at 5, not 6.</p>
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<p>How would you rate the breakout session room</p>	<p>33 35.4%</p>	<p>41 44.1%</p>	<p>14 15.1%</p>	<p>5 5.4%</p>	<p>The animator has difficulty with closing the blinds in our room. Wasn't a major issue, but got us off track for 20 minutes</p> <p>Our workshop room was very cold</p> <p>The breakout rooms would go from hot to VERY cold quickly and vice-versa</p> <p>Our break-out room was very cold at times. We had a difficult time keeping the room at a comfortable temperature.</p> <p>The breakout room had a very strong paint or stain smell. Gave many of us instant headaches.</p> <p>it's freezing in the hotel. Otherwise, great experience.</p> <p>Temperature was cold and lighting was bad</p> <p>The room was really cold (6)</p>
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Note: Participants who rated a 3 or greater were asked to comment

	Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree	Comment
I received all the information required regarding the Math Summer Institute	44 47.3%	43 46.2%	3 3.2%	2 2.2%	1 1.1%	
I received the information regarding the Math Summer Institute in a timely manner	49 52.7%	36 38.6%	6 6.5%	1 1.1%	1 1.1%	
The goal of this PD experience was clear to me prior to my arrival	46 49.5%	39 41.9%	8 8.6%			
Mathematics is something I'm good at	22 23.7%	58 62.3%	11 11.8%	1 1.1%	1 1.1%	

List the top four (4) characteristics that makes someone good at mathematics:

Most frequent replies:

- ✓ Curiosity
- ✓ Perseverance
- ✓ Patience
- ✓ Resilience
- ✓ Logical thinking
- ✓ Creativity
- ✓ Strong problem solving
- ✓ Good number sense
- ✓ Positive attitude
- ✓ Ability to explain concepts
- ✓ Risk taking
- ✓ Open-minded

Less frequently mentioned in no particular order:

- ✓ Efficient and effective strategies
- ✓ No fear of asking questions
- ✓ Deep understanding of Math concepts
- ✓ Ability to express through thought process
- ✓ More than one way to achieve an answer
- ✓ Ability to see relationships
- ✓ Able to organize work
- ✓ Good spatial sense
- ✓ Early exposure to number sense activities
- ✓ Feel safe to explore
- ✓ Seek guidance and not answers
- ✓ Driven
- ✓ Willing to learn
- ✓ Fluent
- ✓ Risk taking
- ✓ Good knowledge of basic facts
- ✓ Open-minded
- ✓ Analytical
- ✓ Participates in discussions
- ✓ Cause and effect thinking

If you were to observe another teacher's math classroom for one or more lessons, what are three (3) things you would look for in order to decide whether or not the instruction is of high-quality?

Most frequent:

- Engagement
 - Use of manipulatives
 - Good questioning
 - Time for learning
 - Multiple strategies
-
- Strong Math culture
 - Student-centered
 - Use of Math language
 - Encourages exploration
 - Relevant, hands-on learning
 - Clarity of task
 - Student led discussions
 - Students come up with strategies
 - Clear goals
 - "Lies" when teachers don't get what they are looking for
 - Student explaining their thinking
 - Differentiation
 - Student talk versus teacher talk
 - Creativity
 - Type of feedback
 - Good organization
 - Use of technology
 - Classroom management

Select the frequency with which you use the following teaching practices related to communicating the expectations for learning:

I create lesson-specific learning goals:	Consistently	21	22.5%
	Often	55	59.2%
	Sometimes	14	15.1%
	Rarely	1	1.1%
	Not applicable – I am an administrator	2	2.2%
I communicate these goals at critical times during the lesson:	Consistently	10	10.7%
	Often	45	48.4%
	Sometimes	32	34.4%
	Rarely	4	4.3%
	Not applicable – I am an administrator	2	2.2%
My students understand the lesson's purpose	Consistently	18	19.3%
	Often	40	43.0%
	Sometimes	31	33.3%
	Rarely	2	2.2%
	Not applicable – I am an administrator	2	2.2%

Select the frequency with which you use the following teaching practices related to using tasks that promote reasoning:

I use tasks that lend themselves to multiple representations (e.g. physical, symbolic, visual, contextual, or verbal) strategies or pathways:

Consistently	18	19.3%
Often	36	38.7%
Sometimes	33	35.5%
Rarely	4	4.3%
Not applicable – I am an administrator	2	2.2%

[I use tasks that encourage student explanation and justification of student thinking:	Consistently	16	17.2%
	Often	35	37.6%
	Sometimes	33	35.5%
	Rarely	7	7.5%
	Not applicable	2	2.2%

I provide opportunities for students to compare different representations	Consistently	13	14.0%
	Often	31	33.3%
	Sometimes	36	38.7%
	Rarely	11	11.8%
	Not applicable –	2	2.2%

Select the frequency with which you use the following teaching practices related to orchestrating mathematical discussions:

My students share, listen and critique each others' ideas to clarify and deepen mathematical understanding and language

Consistently	10	10.8%
Often	25	26.8%
Sometimes	40	43.0%
Rarely	16	17.2%
Not applicable – I am an administrator	2	2.2%

I strategically invite participation in ways that facilitate mathematical connections:	Consistently	12	12.9%
	Often	42	45.1%
	Sometimes	33	35.5%
	Rarely	4	4.3%
	Not applicable	2	2.2%

I pose questions that deepen students' understanding or promote meaningful reflection	Consistently	18	19.4%
	Often	35	37.6%
	Sometimes	35	37.6%
	Rarely	3	3.2%
	Not applicable –	2	2.2%

Select the frequency with which you use the following teaching practices related to encouraging strategies and methods

I give students time to think about different ways to approach a problem

Consistently	19	20.5%
Often	39	41.9%
Sometimes	31	33.3%
Rarely	4	4.3%

I encourage students to use their own strategies and methods]	Consistently	31	33.3%
	Often	38	40.8%
	Sometimes	21	22.7%
	Rarely	3	3.2%

I ask students to compare different methods and explain why a strategy is a good choice:	Consistently	10	10.8%
	Often	25	26.8%
	Sometimes	45	48.4%
	Rarely	13	14.0%

My students use manipulatives in the classroom to make sense of the mathematics	Consistently	23	24.7%
	Often	26	28.0%
	Sometimes	19	20.4%
	Rarely	25	26.9%

Select the frequency with which you use the following teaching practices related to encouraging learning from mistakes:

I explicitly discuss mathematical errors or misconceptions and how to overcome them

Consistently	21	22.6%
Often	37	39.7%
Sometimes	28	30.1%
Rarely	5	5.4%
Not applicable –	2	2.2%

I encourage making multiple attempts

Consistently	42	45.2%
Often	37	39.7%
Sometimes	11	11.8%
Rarely	1	1.1%
Not applicable	2	2.2%

I ask students to compare different methods and explain why a strategy is a good choice]:

Consistently	13	14.0%
Often	25	26.8%
Sometimes	36	38.7%
Rarely	17	18.3%
Not applicable –	2	2.2%

My students use manipulatives in the classroom to make sense of the mathematics

Consistently	23	24.8%
Often	25	26.9%
Sometimes	19	20.4%
Rarely	19	20.4%
Not applicable –	7	7.5%

Select the frequency with which you use the following teaching practices related to evidence of learning:

I use observations and students' responses to determine what students understand]	Consistently	34	36.6%
	Often	47	50.5%
	Sometimes	9	9.6%
	Rarely	1	1.1%
	Not applicable	2	2.2%

I use student thinking to inform in-the-moment discourse	Consistently	26	28.0%
	Often	41	44.0%
	Sometimes	22	23.6%
	Rarely	2	2.2%
	Not applicable	2	2.2%

I use student thinking to inform future lessons]	Consistently	29	31.2%
	Often	36	38.6%
	Sometimes	22	23.7%
	Rarely	4	4.3%
	Not applicable –	2	2.2%

	Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree	Comment
The content of the workshops at the Summer Institute was representative of my needs as a Mathematics teacher	44 47.3%	47 50.5%	2 2.2%			
The amount of content in the breakout sessions was appropriate	46 49.5%	39 41.9%	7 7.5%	1 1.1%		
The pacing of the breakout sessions was appropriate	44 47.3%	36 38.7%	8 8.6%	5 54.0%		

If you disagreed with any of the statements, please indicate why:

- Signed up for grade 5-7 but often covered grade 3-4 curriculum
- I would have like more time on division and multiplication . I felt we had a lot of time out of class the first day and too much on the last 8:30 to 12:45 is to long.
- The first day was very slow. Too much time was spent getting to know the participants and taking too many comments and thoughts the participants. It left the last day extremely rushed when we were into the algebra and we were very excited to take some time with that but alas there was no time left.
- Pacing could have been faster.
- Didn't disagree but I'm a Sec 1-2 teacher in the grade 5-7 group which is fine (I also offer resource support to grade 6) but most of the examples from this session were from grades 2-4. It is all useful of course but I'm hoping next year there are more examples with older students.
- I need more time to practice and then go back
- I would have liked to cover differentiation. We spent too much time on ratio and fraction. I would have liked to spend more time on algebra
- I found that some topics were over discussed and then the last day everything was rushed
- I wanted more time on specific topics
- I teach grade 1/2. I would have preferred to be in a session geared towards that instead of grade 3.
- We were shown how to use task and problem solving to encourage students making sense of mathematical concepts. However, it would be nice to also see how to transition from students working in groups on problems to teaching students the general algorithm of the concept at hand.
- I wish they would have moved quicker and covered more concepts and how to approach them. They were treating us like students, which is valuable, but using this strategy all the time meant less content was covered.
- Although the content was beneficial due to the pacing we rushed through some of the most beneficial content on the last day.
- We spent a lot of time talking about some topics and the last day session we rushed through the more advanced material that I would have like to cover more deeply.

How would you rate the presenter's facilitation of your breakout session?

Presenter	Number of respondents	Excellent (1)	(2)	(3)	(4)	Poor (5)
Thomasenia Adams	22	45.5%	40.9%	9.1%	4.5%	
Juli Dixon	22	100.0%				
Ed Nolan	22	72.8%	22.7%	4.5%		
George Roy	27	51.8%	48.2%			
Total	93					

What feedback could we give the presenter in your breakout room to improve your experience in the future?

Thomasenia Adams

- More in context examples other than the videos
- She was amazing. But there were times when we had been sitting/writing for a while. It would have been cool to do the hands on work more often. At times it felt like we were being taught how to facilitate the learning, but not applying that.
- I felt like Thomasenia was a little reserved but when she would talk about her son and his reaction to money her unreserved personality really shined through and it was easier to connect .
- Keep engaging teachers the way you do!
- Less time to complete examples, so we can get through all the material
- Nothing, she was excellent
- Longer breaks if possible (5 min more!)
- More movement or discussion
- Please only call on people who are raising their hand - we are adults and if we want to speak and participate we will. Calling on a table is a good way not to single somebody out but many people didn't enjoy the fear of being called on at any moment
- Not randomly calling on students
- More hands-on approach. More strategies in order to teach students different ways to calculate, etc.

Juli Dixon

- It was wonderful and inspiring
- I honestly don't know. She was entertaining, was transparent, had a good vibe, she knows what she's talking about. I liked it all.
- More movement during the sessions (if pacing allows)
- Juli was an outstanding presenter. I enjoyed how she consistently returned to the teacher's role in support students learning in Mathematics. Excellent break-out sessions.
- Keep doing what you are doing, you make it engaging, informative, and personal. It ensures my trust that you are truly connected to us as learners and you want to do all you can to make us become better educators.
- Ms. Dixon, you are so intuitive and patient. The patience you have to wait for beautiful learning moments for students (teachers) is commendable. I try to be like you. Wish me luck!
- Nothing, she was fantastic! (2)
- Possibly allow more time for questions
- She's amazing!
- Honestly, I was so blown away by Juli that there are no suggestions for improvement. I really hope to get her again next summer!:)
- None! Juli was excellent.

Ed Nolan

- More time to talk within our groups but overall loved the experience.
- We only did hands on work on the last day. I would have like to have done the human number live along with the 3-4 group
- More activity. There was a lot of sitting and listening which made it overwhelming at times.
- He was fantastic! I appreciated his expertise, patience, and humor!
- There was a lot of sitting and listening for long periods of time. More interactive opportunities would be welcome (with manipulatives or movement). The discussions and activities that were given were great.
- It would be interesting to see concepts presented using questions/problems from the textbooks our students use.
- Honestly, he was so great. Can't wait for next year.
- I truly enjoyed his presentation. He answered all questions, was well timed, and was also funny which took us away for a bit! I am looking forward to hearing Ed again next year!
- Fantastic experience he was engaging and paced the sessions well
- Target videos and examples more specifically to the grade level 5-7
- More examples from grades 5-7 curriculum. Excellent communication and presentation. FULL of solid information, no 'fluff' which is a good thing.
- I would like to have access to some of the videos he shared with us.

- The one thing that I would highly recommend is that we move around more and do more hands on activities/examples. I was surprised at all the sitting we did and all the direct instruction that was given. Especially since on one the main points I took away was that we learn best through experiences :)
- More hands on activities to provide practice for what I want to see in my classroom.
- It was great to work with Ed. He made it fun to come to each session. And his sarcasm, jokes, and real life situations, made the presentations genuine and enjoyable.
- Fantastic job, can't wait for next year!

George Roy

- George Roy stressed the importance of student-student talk and modelled this approach. However, I personally feel this often allows for unproductive talk.
- My experience was better than anticipated.
- Do not give all packages at the start as it made me impatient to get to the next package (or last package on algebra). Then with each new section we were given duplicate packages of information which I thought was weird and confusing and wasteful. Whereas, if I had only been given each package as it was time to start it I would have been more patient with the pacing of the first packages given. Overall he connected well with each of us and created an amazing learning environment!
- I would have liked to have seen the groups we were sitting in changed each day so that we had the opportunity to collaborate and work with more people.
- He was totally amazing!!! Maybe move a little faster on the first day... :)
- The presenter was good but he was too much guiding the audience towards his PowerPoint.
- Which manipulative(s) are the best to use in the senior Mathematics topics - More use of manipulatives
- Amazing
- Although building a teacher-student relationship is important, for the purpose of getting through as much content as possible the time spent getting to know one another on the first day could have been shortened. I would have loved to see examples of other tasks in grade 9 such as area, volume, linear function etc.
- Spend more time and depth on essential topics
- Nothing! It was great!!
- We were shown how to use task and problem solving to encourage students making sense of mathematical concepts. However, it would be nice to also see how to transition from students working in groups on problems to teaching students the general algorithm of the concept at hand.
- I loved his humour and it made the sessions fun. I would just like to see more content covered (algebra was rushed and didn't fit).
- While some of the discussions were beneficial it would have been nice if the pace had been a little faster in order to cover all content in handouts.

What support mechanisms do you feel your school board could provide to help you continue to grow professionally after this PD experience?

Getting more manipulatives. Discussion groups.
They are offering 2 mandatory follow-up ped days and the option of attending a PLC. This will be sufficient.
Meeting with consultant at least once per year
How to integrate technology in Mathematics
Continued discussion with other teachers about how we are implementing what we learned into our teaching practice. Developing questions and lessons collaboratively.
We are providing PD sessions to our Cycle 3 elementary teachers board-wide.
There could be focus groups throughout the school year, of those from the same cohort, coming together to explain and share the new information we have learned and implemented in our classrooms. A blog for ETSB professionals who attended the conference are sharing their new ways of teaching so all to see.
We could have had our internal sharing clinics, pedagogical training within our own staff.
Purchase the books for each school that were shown in the workshops.
Make sure every school have access to the Math Book " Making Sense of Mathematics For Teaching"
Regular ongoing PD specific to mathematics
More manipulatives
Allowing time to observe other classrooms/schools and share in our teaching methods.
Provide the books and manipulatives used
For teachers to have the time to sit and discuss the changes in their practices during the school year, and have a way for us to support each other during our transitions. Having a quick and easy way to communicate with each other.
Resource text books
Manipulative and white boards
Invest in books and manipulatives
opportunities to check in with questions, concerns. I have co-workers who have participated so I have resources at my school however, not all teachers may have this. Also, opportunities to discuss how other teachers are applying what we learned in concrete ways.

If every teacher had this training, then it would be extremely easy to continue the following year
I would love to have something similar in Language Arts
Provide class set of manipulatives
An online forum (maybe google classroom class) with the teachers who attended the workshop so we can share what we did with our students and support each other in implementing these new concepts
Meetings of participants to discuss our teaching practices.
More manipulatives
Check ins throughout the year.
Encouragement to share new ideas with other teachers within our schools/ board. This does not happen enough! So much money is spent on wonderful PD experiences, but little is done to share these new concepts or teaching techniques with others afterwards
Would love to read the books that the workshop was based on.
Meeting to share with other teachers from other grades so we can have a continuity in math. Clear understanding of the concept between cycles and grades.
PD time to plan lessons and/or financial help to receive more manipulatives
A refresher course every so many years get together to share ideas & receive new ones from other teachers of your grades of new things or ways.
Manipulative, mentoring
Cycle teams, more time with math consultants
Coming in to check my application of the ideas
Time to plan
manipulatives
Access to more manipulatives/full sets
Providing the manipulatives used in the sessions. Providing release time to plan and reflect on lessons
Purchase the material that was pitched to us. Make sure each classroom has proper manipulatives. Offer time for us to get together.
Have more manipulatives in the classroom and continue supporting our PD sessions.

From the list of teaching practices below, which three would be your top priority for professional development?

Teaching Practice	Indicated as first choice	Indicated as second choice	Indicated as third choice
Representing student thinking and key ideas	4	3	17
Orienting students to each other's ideas	3	10	15
Recognizing students as competent contributors towards developing understanding	9	10	11
Eliciting and responding to student thinking	9	21	14
Designing and facilitating rich math activities that allow for student sense-making	56	15	7
Establishing and maintaining expectations for student participation	3	9	18
Identifying and teaching towards an instructional goal	9	25	11
Other:			

What content should be the focus of future PD (i.e. what content area or curricular goal(s) do you feel least prepared to teach conceptually?

problem solving
Grade 6 math concepts, this is my first year teaching grade 6
ELA, narrative writing
Polynomials
Preparing for ministry exams without teaching for ministry exams
Fractions and Multi-Step Word Problems
Geometry
Time. Fractions.

Geometry and Measurement

It would be interesting to bring in real- life examples of student situations and examine them during this PD. Perhaps in a form of video, or student math sample

Place value

Geometry: area of solids and volume.

I am very new to teaching math in a homeroom...so at this point I do not feel prepared to teach several concepts. In a few months of doing it I might have a better sense of where I need more assistance. I am teaching cycle one this year but my cohort is cycle 2 so I am figuring out how to take what I learned and apply it in my classroom.

Geometry

Go through meaningful activities for senior math students

not a particular area but sharing best practices / tasks is incredibly helpful to those of us working alone in 'bubbles'.

Geometry

Fractions

How to apply this teaching to a situation problem for example

Fraction of a number, percentage of a number, discounts/taxes

I would like to know more about student evaluation and grading for report cards

Probability, percentage, decimals

How to create rich tasks.

Algebra

Algebra

Area and perimeter

Fractions/decimals

algebra, foil, gcf

I would like to see more ideas for centers/station work

Sec 4 and 5... function, trig, graph

integers, fraction operations, functions (linear, quadratic)

Sec 4 and 5 math...factoring of polynomial functions and conics

algebra

Geometry

Time and calendar

Polynomials, functions and relations are usually abstract topics for students.

how to use more manipulatives/games for a variety of learning needs.

Division

Word problems that are misleading or don't follow common rule to look for key words (multiple steps). Students with difficulties.

Exponent laws

Grade 11 SN topics (namely Logarithms, Trigonometric Functions (Sine, Cosine, and Tangent), and Trigonometric Identities)

Fractions

Fractions and decimals.

Fractions and decimals

Fractions!!!!

algebra, laws of exponents, negative and fractional exponents, polynomial operations

Fractions

Geometry

Algebra and Functions (linear, quadratic, exponential)

How to teach concept instead of procedures

How to find questions to discuss or represent with higher level math courses

Algebra

Designing activities to go with goals to deepen student understanding.

Algebra
statistics
The concept of time The volume and the capacity
Fractions
More the questioning part
Problem solving
Geometry
Word problems and functions
Decimals and fractions
Geometry
Algebraic reasoning, especially in larger word problems.
Critical thinking skills
Fractions, measurement
Math and movement
Situational problem solving, teaching high school students who lack basic foundational math skills
Science
Geometry- shapes and solids
Drawing. Using the artistic strengths to visualize the solutions to Mathematical concepts.
More on eliciting and responding to student thinking, designing and facilitating rich math activities that allow for student sense-making, and identifying and teaching towards an instructional goal
Anything Quebec grade 9 or algebra. I would have liked more examples on how to actively get students involved with algebra or more complex math examples.
The numeracy concept
High school grade 10-11

We didn't cover operations with decimals or percentages, so new ideas on how to introduce and teach these concepts would be beneficial.

More details on teaching missing numbers with addition and subtraction

number sense and fractions

Fractions

Strategies for multiplication and division (multiples digits) and teaching fractions.

probability and exponents

Decimals, probability, geometry

Decimals

EIapse Time

Algebra

I feel unprepared to use manipulatives well in my classroom. Are there manipulatives for teaching analytic geometry (linear with cartesian planes)?

Situational word problems.

Functions

Is there any other feedback or recommendations that you wish to provide the organizing committee?

Perhaps on the first night have an activity for us to get to know one another and exchange ideas as we will be coming for 2 more years. Exchange email addresses, etc.

Juli Dixon is fabulous. I truly enjoyed the experience and learning with her.

Please do not schedule the last day on a Friday afternoon. There are always traffic and family concerns. The conference should have ended at lunch. Also, 4 hours is a long for one session.

It was an excellent experience. I look forward to continue participating in this PD for the next 2 years!

I greatly appreciated this experience and opportunity! I would love to have access to resources and follow up materials:

The organizing committee did an excellent job. I am so thrilled to be part of this PD and very much look forward to next summer.

Great work

Thank you!

No, it was obvious you've done this several times, everything was very well organized.

The conference was so very well organized. Thank you

Thank you so much. This workshop was amazing, the organization was beyond my expectations, the hotel and food were divine and I had a super week!

Great job! Thank you so very much!

I was disappointed to see how much single use plastic was used to distribute the information packages. I wish the plan for Friday afternoon had been communicated to us more clearly. Everything else was great.

One the last day, the raffle could have been combined with lunch so I didn't feel like I had to shovel it down in a hurry. It could have been done in our current places while eating.

It was beautifully organized. Thank you for all of your hard work.

Offer workshops throughout the year similar to the Summer Math Institute

The giveaways of manipulatives was wonderful, however rather than making groupings a three items perhaps consider giving them away individually so that most, if not all, participants get something.

These methods and ideas should be shown to K to Grade 2 teachers so the children get this kind of teaching at a younger age and continue on. Why start at Grade 3/4?

Wonderful job!

More affordable food options for family members attending trip.

No...enjoyed it

Finishing at 2:30 is too late for people who have to drive very far (6+ hours).

The workshop was fabulous! I know this is not helpful for improvements but you deserve the praise.

This was the best organized and most engaging PD I have attended in my 28-year career. I am privileged to be a part of it.

Thank you!

Small snacks during the nutrition breaks during each break-out session.

I would love to take part in a session that focused on grades 10-11

Thank you for all the hard work!

Would be nice to not use the plastic from the packaged notes in order to minimize plastic usage. Thanks

Thank you to the organizing committee for your time and making this happen! I feel overwhelmed but more excited than ever to step back into the classroom.

Great work, it was one of the best pedagogical development activity I have ever participated.

Have a public online space available to teachers who may be from different school boards looking to share accommodations.

Excellent PD. One of the rare times I really felt I left a professional development positively and able to begin using the tools I had learned right away when returning to the classroom.

I would like to have the option to stay some where else. It is tough when we have a dog. I was not impressed that I would have to stay at another hotel and pay for it myself.

Plastic-wrapped notes. I appreciated the notes from the presenters, however, the excess plastic is not very environmentally friendly.

Thank you for the opportunity to go to this great conference. I'm re-energized to start back to school!

Excellent workshop

This PD was FABULOUS! I can't wait for more in PD sessions throughout this year and next year's summer session! Keep doing what you're doing!

I wish we could have had our schedule beforehand. That way we could better take advantage of the spa or other activities in the region. Everything was booked once I found out when I was off.

I thought the whole experience was excellent, and well organized. The organizing committee was professional and helpful. Thank you.

It was a truly fantastic experience

I would love to continue learning from the same presenter during the next lessons!

Thank you for the great learning experience, looking forward to another great experience next summer!

All was amazing! learnt so much, and look forward to the next two years :)