

Junior Math Study

LOGISTICAL STRUCTURE

- Building capacity is not a quick fix
- Professional development needs to be active and sustained in order to provide opportunity to practice and grow (Educational Leadership Feb. 2009. How Teachers Learn. P.46-53)

x 6 cycles

STUDY DAY

- 4 schools together for 1 full day
- Each group supported by 1 math facilitator
- 2 junior teachers per school (more if funded by school. Some brought LRCs)
- Administrators from each school
"When it comes to supporting educators as they learn and work to improve student achievement, nothing a principal does "has a bigger payoff than learning visibly and publicly alongside staff in a school" (Katz & Dack, 2013, p. 46)." Principals as Co-Learners monograph

FOLLOW UP 1

- Half-day in the next day or two after the study day
- Math facilitator support
- School A teachers and admin

FOLLOW UP 1

- Half-day in the next day or two after the study day
- Math facilitator support
- School C teachers and admin

FOLLOW UP 2

- Half-day approx. 2 weeks after the study day
- Math facilitator support
- School A&B teachers and admin

FOLLOW UP 2

- Half-day approx. 2 weeks after the study day
- Math facilitator support
- School C & D teachers and admin

FOLLOW UP 1

- Half-day day in the next day or two after the study day
- Math facilitator support
- School B teachers and admin

FOLLOW UP 1

- Half-day in the next day or two after the study day
- Math facilitator support
- School D teachers and admin participate

Junior Math Study

COMPONENTS

STUDY DAY

After examining current research we studied the importance of:

- increasing students' number sense and number fluency to improve basic skills in mathematics
- having students develop both a procedural and conceptual understanding of mathematics
- building a mathematical community in the classroom through effective use of Math Talk
- creating a culture of problem solving that is both responsive to student learning and precise.

Lesson Debrief

- Participants discuss the student work from an assess stance and consider possibilities for next steps
- Focus on assessment for learning

Examine current research using Ministry monographs and video which can be found on Edugains website.

- Jo Boaler
- Cathy Fosnot
- Kathy Richardson
- Kathy Kubota-Zarivnij
- Cathy Bruce
- Alex Lawson
- Lucy West

Classroom Experience

- Participants are at the desks of the students observing and documenting (inquiry and asset stance) as students work in pairs solving a rich problem.
- Facilitator presents the activation and working on it parts of the three part lesson, modelling effective questioning during the activation and encouraging math talk in the classroom.

Participants do the math

"Teachers must be able to work with content for students in its growing, unfinished state, they must be able to do something perverse: work backward from mature and compressed understanding of the content to unpack its constituent elements" (Ball 2000 p. 245).

Support Numeracy

Used Cathy Fosnot's Mini -Lessons resources to support teachers in understanding and developing numeracy with students and also automaticity with basic facts.

Connect to Curriculum

- Digging deep into the Patterning and Algebra Strand grade 6 and looking at the continuum from grade 4-7. e.g. Equality, variables, patterning, representations.

Junior Math Study

COMPONENTS

PLANNING NEXT STEPS

FOLLOW- UP DAYS

Follow-up 1

- Math facilitators partner with teachers and admin at their own school for Follow- up 1 where teachers have the opportunity to co-teach the lesson or observe the lesson from the study day in their own classroom depending on their comfort level.
- Teachers and admin plan a consolidation and then the lesson is consolidated with the students (with an independent piece if time).
- Opportunity and time provided for discussion and questions around the study day in a smaller setting and in a context that is relevant to the teachers and admin at their own school through the lens of their own students.

Follow-up 2

- Math facilitators partner with teachers and admin from 2 schools for Follow- up 2. This occurs 2 weeks after the study day to allow teachers an opportunity to put in to practice their learning from the study day and to bring to the table their experiences and questions to share with others again in a small group format
- Teachers have the opportunity to co-plan and co-teach a lesson in the curriculum area of focus or in an area relevant to them.

LESSON DEBRIEF

FOLLOW UP 1:
Continue lesson study

FOLLOW UP 2:
Co – plan, Co-teach

CLASSROOM EXPERIENCE:

- Three part lesson
- Focusing on consolidation and assessment for learning

Junior Math Study

Pre-study and post-study online survey using survey monkey website related to teacher efficacy and mathematical knowledge for teaching studied.

- Teachers have grown in their level of comfort in using strategies that support learning and teaching mathematics through problem solving (e.g. activating prior knowledge, rich problem solving tasks and consolidation of concepts)

"My time in the hub has improved my ability to promote meaningful mathematical discourse in the classroom. Also, I feel it has helped me to become more aware of student thinking and how to help move students forward in their thinking rather than relying on a textbook to drive instruction."

"Hub work has challenged me to totally rethink my math classes! I have tried to apply new ideas in classroom practice after each hub. I've found math talk and partner problem solving immensely helpful/powerful in strengthening students' skills. I've rethought my own assessment strategies. It's been a very influential experience!"

Teacher Feedback

Qualitative Feedback Survey Cycle 3 And Cycle 6

- Participants expressed that the professional learning they had engaged in through the year had led to increased pedagogical knowledge and mathematical knowledge for teaching, which in turn led to changes in pedagogical practice and student experiences in the math classroom.

Measures of Success

Pre and Post Diagnostic Student Assessment

- Student achievement improved as measured by effect size.

Student Feedback

Student efficacy survey sheet attached to diagnostic

- data was not analyzed however facilitators and teachers noted high levels of engagement during classroom visits students demonstrated excitement when math facilitators visited classrooms

My math plan outlines the board wide project I was part of last year as a mathematics facilitator. We are now in year two of our project and have followed a very similar model this year. We have focused the mathematics more on proportional reasoning and fractions instead of focusing on the patterning and algebra strand. We believe that by digging deep into one area of the curriculum teachers, given time, will apply their learning to their practice in other strands of the mathematics curriculum. While I was not involved in the logistical plan, four other math facilitators and myself, under the guidance of our system principal, together designed the content of our study days, and gathered and analyzed data as measures of success.