

# HAVING A PASSION FOR MATHEMATICS

## The Role of Mathematics Specialist Teachers in Grades 6-8 Classrooms

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# CONTEXT AND BACKGROUND TO STUDY

- In Saskatchewan: K-8 (elementary) schools and 9-12 (secondary) schools; in rural areas, often K-12 schools
- Generally, K-8 schools have generalists teachers (a homeroom teacher who teaches mathematics, science, social studies, ...) while 9-12 schools have specialist teachers for each subject area
- Plenty of discourse these days around new WNCP-based curriculum, teaching for deep understanding using inquiry-based approaches, and the question of who should teach mathematics
- Another component of SSHRC-funded research studies the experiences of 'novice' (U of R graduate 1-12 years ago) secondary mathematics teachers
- One finding: it is a struggle to work with grade 9 students due to limited basic skills in, and poor attitudes toward, mathematics
- Recommendation emerging from that study: A need for grade 6-8 (if not, K-8) mathematics teaching specialists

# RECONCEPTUALIZING (SECONDARY) MATHEMATICS TEACHER EDUCATION

- Research Question: What perceptions do individuals, involved in mathematics teaching and learning, hold of the use of mathematics specialist teachers in Grades 6-8?
- “Individuals” (or stakeholder groups) were: School administrators, grade 6-8 classroom teachers, grade 6-8 students and their parents, middle years pre-service teachers at the University of Regina
- This presentation: focus on data from pre-service teachers
- Method of data collection: online surveys; middle years pre-service teachers of 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> year in teacher education program invited to participate



# MIDDLE YEARS PRE-SERVICE TEACHER (PST) SURVEY/QUESTIONNAIRE

- Part A: Current Attitudes and Practices (questions focus on understanding PST experiences of learning mathematics and their goals/priorities in teaching it)
- Part B: Mathematics Specialists (questions focus on PST current understanding of, and comfort with, curriculum; if they would choose to specialize in the teaching of mathematics, and their ideas on benefits/shortcomings of MST)
- A definition for “Mathematics Specialist Teacher” (MST): A **mathematics specialist teacher** is one who acts as a catalyst for promoting and supporting good attitudes and good pedagogical practices in mathematics classrooms in schools and in school divisions. Mathematics specialists may act as mentors or coaches to their colleagues, or they may take on the exclusive role of mathematics teacher in many classrooms, while other teachers take on the responsibility for teaching other subjects.

## SURVEY QUESTION:

### A5. IS IT IMPORTANT TO YOU THAT GRADE 6-8 STUDENTS ENJOY MATHEMATICS?

Examples of survey responses:

- I believe it is important for students to see the relevance of math and be engaged in their learning.
- Yes, because if they do not enjoy it at that age, they will never enjoy it and probably won't excel at it.
- I think it is because the more a person enjoys something, the harder they will try to be good at it and are more likely to succeed.
- Yes, math is so often treated as a necessary evil. [...] Math can be fun and doesn't have to be an awful experience.
- Yes, engagement is key. If students can see where they will use their mathematics that they are learning [sic] they will enjoy it and do better.
- [...] I think that it is important for kids to develop the basic skills which stems [sic] from an enjoyment of mathematics.

**Q: Do we need to make math “fun” in order for students to enjoy learning?**



## SURVEY QUESTIONS:

***B1. HOW IMPORTANT IS IT THAT TEACHERS HAVE A DEEP UNDERSTANDING OF THE MATHEMATICS THEY TEACH?***

***B2. HOW COMFORTABLE ARE YOU WITH THE GRADE 6-8 MATHEMATICS CONCEPTS***

- The curriculum uses the term “deep understanding” often to describe the level to which students should aspire.
- How, though, do we measure deep understanding within ourselves?
- Of 13 respondents,
  - 10 replied that deep understanding is very important
  - 2 replied that it is somewhat important
  - 1 believes that it is not important at all.
- Of these same 13 respondents,
  - only 8 feel that they are very comfortable with the mathematics curricula
  - 4 are somewhat comfortable
  - 1 is not comfortable with content.

**Q: Within ourselves, how do we interpret “deep understanding” as it is influenced by our confidence and level of comfort with mathematics?**

## SURVEY QUESTION:

### *WOULD YOU CONSIDER TAKING ON THE ROLE OF A MATHEMATICS SPECIALIST TEACHER IN A SCHOOL? WHY OR WHY NOT?*

- Out of 13 Canadian pre-service teacher survey respondents, 6 responded yes, and 7 responded no.
- The 'yes' responses were similar in reporting that they enjoyed learning Mathematics and so would enjoy teaching it.
- One 'yes' respondent stated: "Yes, because I love math and I would love to inspire others to love it as well."
- The 'no' responses were a bit more diverse in terms of their reasoning:
  - "Nope, don't feel comfortable with content"
  - "The new math program is horrendous. It makes teaching difficult and not enjoyable."
- In addition to explanations focusing on not feeling comfortable, confident, or enjoyment in teaching Mathematics, there were also 'no' responses highlighting positive feelings toward Mathematics but not wanting to specialize in teaching it. According to one respondent,
  - "I enjoy teaching other subjects too."

**Q: Who is our prospective middle years teacher and why are they choosing to teach at this level?**

# CLOSING QUESTIONS TO OPEN THE CONVERSATION...

- Do we need to make math “fun” in order for students to enjoy learning?
- Within ourselves, how do we interpret “deep understanding” as it is influenced by our confidence and level of comfort with mathematics?
- Who is our prospective middle years teacher and why are they choosing to teach at this level?

