

# Canadian Mathematics Education Forum Report

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The Canadian Mathematics Education Forum was held at the University of Toronto on May 6–8, 2005, and was organized by the Canadian Mathematics Society. The forum encouraged a national dialogue among educators at all levels of schooling on issues and concerns in the development and future of mathematics education in Canada. Through MCATA, Alberta Education funded 10 Alberta teachers to attend the forum and discuss the central questions that drive the work of mathematics educators.

Delegates to this forum included representatives from all levels of education—from university math professors to preschool teachers to researchers. Most provincial ministries of education sent representatives, as did a number of larger school jurisdictions. The multiple viewpoints and passionate commitment to excellence in mathematics education in Canada produced rich and fruitful discussions in all of the working groups.

The forum opened with a panel discussion on the central question: Why teach mathematics? The panelists expressed their viewpoints on this fundamental issue with great passion and verve in both French and English. “Mathematics is a living form, a manifestation of energy, spirit and mystery,” stated one panellist. “Faire les choses difficiles, c’est amusant” (“It is fun to do difficult things,”) said another. Their commitment and excitement continued to inspire everyone in the working group discussions that followed.

The key question was considered from three viewpoints: mathematics and society, mathematics in classrooms and the mathematics education community in Canada. For two days, working groups of 10–20 participants met and discussed in depth a significant issue in mathematics education.

Participants also heard about promising practices and the thoughts of national and international leaders in mathematics education.

At the end of the forum, each group made recommendations for action and/or stated points that they wished to bring to the attention of the larger group. The statements are summarized here:

1. To support mathematics teaching and learning in Aboriginal communities, there needs to be an emphasis on culturally appropriate methodology and content. Parents need to be involved and need to be taught how to support their children’s mathematics learning.
2. Curriculum for the early years of education needs to be based on big ideas in mathematics. We need to better understand the mathematics that children bring to school and how children think about mathematics.
3. Mathematical literacy enables participation in a democratic society, is essential for careers in science and technology, and provides an awareness of history and culture.
4. Mathematical experiences need to be meaningful and accessible if students are to succeed. For students struggling in mathematics, early intervention is often the most effective strategy, but this does not mean that we should abandon older learners. It is possible for all students to achieve their potential in mathematics.
5. In creating a curriculum for powerful mathematics, the tension between understanding and the need for technical proficiency can be a catalyst for change. More time needs to be spent in pre-service education on what to teach and how to teach it, followed by ongoing inservice professional development. Elementary teachers in particular need to have a deep understanding of basic mathematical ideas. Texts and teaching resources need to support the curriculum and show student work.
6. Technology is essential for exploring, reasoning, modelling and communicating. Teachers need to be enabled to help students learn important mathematical skills through rich tasks in which technology is used effectively as a thinking tool. A national network of leaders in teaching mathematics with technology is needed. There is a great divide between high school and university in the use of technology. It is the considered opinion of

this working group that if you are unfortunate enough to have to learn mathematics in the absence of technology, the only job you will be fitted for is that of a university mathematics professor!

7. A collection of mathematically rich activities will allow teachers to collect data and build a portfolio of mathematics through children's eyes. It will also help build a community of learners that includes both students and teachers.
8. Education faculties, math departments at universities and colleges, math associations, ministries of education and school boards all need to see teachers as researchers and support their work.
9. The following are the criteria for promising programs of support for teachers:
  - Cross-group collaboration from K-post-secondary
  - Preservice and inservice teachers
  - Sustained engagement over time
  - Face-to-face interaction in responding to a need
  - Doing math and experiencing deep math
  - Support connections and good resources
10. A national bilingual association is needed to ensure a quality mathematics education for everyone, to

support the teaching and learning of mathematics, to facilitate communication and to make connections among provincial associations.

Another crucial issue was raised by several participants. Mathematics is increasingly seen as an academic gatekeeper, just as Latin was seen in the past. However, advanced mathematics (and algebra in particular) is essentially useless for many paths in higher education. "Algebra for all" is no more useful than "Latin for all." Using mathematics as a gatekeeper bars intelligent people from academic opportunities. This is a concern throughout all levels of the mathematics education community and is one of the emerging issues in Canadian mathematics education.

At the end of the three-day forum, participants returned home invigorated from discussing in-depth issues that matter deeply to them and aware that they are part of a national community. As one participant said, "A number is a door that opens into the farthest reaches of the human imagination."

MCATA members who attended the forum found it fascinating, challenging and informative. They are grateful for the funding provided by Alberta Education that allowed them to attend.