

Ministry of Education
Student Achievement Division

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MEMORANDUM TO: Directors of Education

FROM: Mary Jean Gallagher
Assistant Deputy Minister
Chief Student Achievement Officer
Student Achievement Division

DATE: January 28, 2014

SUBJECT: A Forum for Action – Effective Practices in Mathematics Education

On December 11th and 12th, 2013 the Student Achievement Division hosted a Math Forum titled, *A Forum for Action – Effective Practices in Mathematics Education*. This forum was designed to identify what research is saying about effective mathematics teaching and learning as well as to identify actions/practices that work best to improve student learning in mathematics that have promise for the Ontario context.

Ontario's progress in mathematics appears to have stalled over the past few years. For example, overall achievement results for elementary [Education and Accountability Office \(EQAO\)](#) mathematics assessments have declined over the last five years in English-language district school boards. Also, while course pass rates for grades 9 to 12 mathematics courses are increasing, the gap between the achievement results for students in grade 9 academic and grade 9 applied mathematics courses remains significant. The forum's goal was to help inform the actions the ministry will take in 2014 and beyond to accelerate math improvement across the province.

The two day forum brought together approximately 100 individuals consisting of ten researchers from various universities who specialize in math content and pedagogy, representatives from EQAO, eight representative teams from selected district school boards with schools that are showing improvement in some areas of mathematics, and a number of ministry staff with responsibilities for improving mathematics teaching and learning in our province.

The following is a summary of the learning that took place.

Researchers' insights included:

- The Ontario curriculum reflects current thinking and research in mathematics education and is well aligned with curricula from other high performing jurisdictions. The curriculum will continue to evolve as we learn more.
- Pre-service and in-service teachers need more opportunities to build their mathematics knowledge so that they understand better the concepts underlying the mathematics they are teaching.
- Mathematics needs to be a balance between problem solving approaches and the integration of mathematical skill development.
- Early foundations in mathematics are important to student success in later grades. In fact, early mathematics achievement is a key predictor for later success across disciplines.
- Current research demonstrates the effectiveness of classrooms where students are challenged to investigate, represent and connect mathematical ideas.
- Effective instruction should include representing mathematical functions visually, sequencing of lessons appropriately and opportunities for students to predict and justify their thinking.
- Efficacy is the belief in one's own ability to do something. Students, who believe they will be successful set higher goals for themselves, try harder to achieve those goals, and persist through obstacles. Students with low efficacy experience a fear of failure.

Educators' discussion about effective practices included:

- Listening to students' advice on how to make mathematics more relevant and a general atmosphere of positive attitudes toward mathematics are important in the improvement process.
- Students who are struggling need the learning broken down into manageable pieces.
- Educators need opportunities to deepen their knowledge of mathematics instruction together and then apply that knowledge in classrooms.
- Leadership that supports and participates in the learning is important to building mathematics expertise.
- Parents and guardians need to be well-informed about what effective mathematics instruction involves.
- Researchers and district school boards spoke of the potential benefits from their on-going partnership for student learning.

The Ministry is in the process of putting together a report that will provide a more detailed account of both the researcher presentations and district school boards discussions, as well as provide some considerations for future action. This report will be distributed to you once it is available. In the meantime, if you have any insights or questions regarding the content of this memo, the Math Forum, or overall math achievement, please contact Richard Franz, Director, Research, Evaluation and Capacity Building Branch, Student Achievement Division, at Richard.Franz@ontario.ca.

Thank you for your ongoing support and cooperation. We look forward to working with you and your district school board to increase math achievement across Ontario.

Mary Jean Gallagher

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