



Ontario Association for Mathematics Education
Association ontarienne pour l'enseignement
des mathématiques

2008 Leadership Conference

for teachers, administrators, co-ordinators/consultants



Investigating Pathways to Understanding Mathematics

FEBRUARY 21-23, 2008

Holiday Inn Select

(970 Dixon Rd Toronto Ontario)

An opportunity as a teacher leader to investigate ways to promote understanding in elementary or secondary mathematics by focusing on ONE of the following:

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| Grades K-8 | --- | Investigating Japanese approaches for understanding mathematics |
| Grades 9-12 | --- | Investigating emerging technology |

All Inclusive Registration Fee: \$435/\$470 (OAME/non-OAME)

Includes: All sessions, 2 nights accommodation (2 people/room), meals, banquet, receptions, publishers' and suppliers' displays

WHY SHOULD TEACHERS, ADMINISTRATORS, AND CONSULTANTS ATTEND THIS CONFERENCE?

- ... to identify and link the big ideas and process expectations to student learning and teaching;
- to share best practices in order to see, hear, and experience mathematics in a classroom;
- ... to determine ways to integrate available resources that are effective in building mathematics understanding;
- ... to discuss and share thoughts and views on current emergent ideas and issues with other educators

Program Overview

DAY	TIME	ACTIVITY
Thursday Feb. 21, 2008	6 p.m. – 7:45 p.m.	Registration outside the Trillium Ballroom
	8:00 p.m. - 9 p.m.	OPENING KEYNOTE: Akihiko Takahashi: Teaching through Problem Solving: A Japanese Approach for Understanding Mathematics: <i>Use of problem solving is one of the characteristics of Japanese mathematics textbooks. In fact, most of the units in the Japanese mathematics textbooks begin with a problem-solving activity so that students are challenged to use their previous learning to attack unknown problems in order to develop understandings of mathematics. Experiencing some of the problem-solving activities based on the ideas of open-ended approach, participants will have opportunity to learn the Japanese approach for teaching mathematics.</i>
	9 p.m. - 11 p.m.	Reception / Social. Hors d'oeuvres, sandwiches, crudités, and refreshments.
Friday Feb. 22, 2008	7:30 a.m. - 8:30 a.m.	Buffet Breakfast
	9 a.m. - 12 noon	WORKGROUPS and LEADERS. Mid-morning refreshment break included. Elementary: Akihiko Takahashi, Kathy Kubota-Zarivnij, Pat Margerm Secondary: Fred and Lynda Ferneyhough
	12:15 - 2:15 p.m.	Publishers'/Suppliers' Luncheon: preview of new products and an opportunity to view the many displays
	2:30 p.m. - 4:30 p.m.	WORKGROUPS continue
	4:30 p.m. - 6:00 p.m.	Free Time, OR Participate in a facilitated open forum on Ontario Mathematics Education (optional)
	6:15 p.m. – 6:45 p.m.	Cash bar
	6:45 p.m. - 9 p.m.	BANQUET & KEYNOTE SPEAKER –George Gadanidis & friends: Math as Performance <i>What might we see differently if we looked at mathematics teaching and learning through the lens of performance? What mathematics experience might be worthy of performance and how might this be different from our current conception? This ‘talk’ will offer a conceptual framework for looking at mathematics education through the lens of performance using hands-on math experiences and live math performances.</i>
9 p.m. - 11 p.m.	Reception / Social. Snacks and refreshments.	
Saturday Feb.23, 2008	7:30 a.m. - 8:30 a.m.	Buffet Breakfast
	9 a.m. – 11:30 a.m.	WORKGROUPS continue. Mid-morning refreshments and assorted pastries. Complete evaluations.



ABOUT THE FRIDAY KEYNOTE SPEAKER

George Gadanidis has been a mathematics educator for 25 years and the K-12 mathematics coordinator at Durham DSB. He’s currently a mathematics education professor at the University of Western Ontario. Most recently, George has been a lead author for the Grades 4-6 Big Ideas documents for the Ontario Ministry of Education and he has written a number of math songs which have been performed for students, teachers and parents across Ontario. (See Math Therapy at joyofx.com)

Program Details

Each participant will remain with the same workgroup for a total of 7 hours of workshop time

ELEMENTARY WORKGROUP

Investigating Japanese approaches for understanding mathematics

This 7-hour workshop will explore some of the big ideas of mathematics in elementary and middle school grades by using the English translation of the most popular Japanese textbook series. Delegates will explore the following:

1. *Big Ideas for Understanding of Addition and Subtraction*: Let's explore a variety of ideas that may promote a deep understanding of addition and subtraction in elementary school students. With such an understanding, students are less likely to encounter difficulty with regrouping in multidigit addition and subtraction, and solving story problems.
2. *Multiply? Divide? Representing Quantitative Relationships Using the Number Line*: When students have difficulty determining what operations to use to solve a problem, a model that clearly represents quantitative relationships is helpful. In this session, ideas will be shared for helping students develop increasingly more sophisticated ways to model problems using number lines.
3. *Let's represent it visually!: A gateway to algebra*: Being able to represent the relationships among quantities involved in a problem is an important step toward algebra. Such representations will in turn help students know what mathematical operations to use to find the answer. In this session, the participants will develop a deeper understanding of the usefulness of mathematical representations.



Workshop Leader

Akihiko Takahashi is an assistant professor of mathematics education at DePaul University, Chicago. He received his Ph.D. in mathematics education from the University of Illinois at Urbana-Champaign, and his doctoral research focused on using technology in problem solving in middle school mathematics. Before coming to the United States, he spent most of his teaching career as a member of the mathematics department at the Setagaya Elementary School, affiliated with Tokyo Gakugei University. During his 19 years of teaching in Japan, he taught mathematics for all grades from first through sixth grade. He has been internationally active in reforming mathematics teaching and learning through lesson study.



Ontario Facilitators

Pat Margerm teaches preservice and inservice courses at York University, writes, and works for EQAO in grade 6 math and was the TEAMS chapter rep on the OAME board. **Kathryn Kubota-Zarivnij** is a Student Achievement Officer at the Literacy & Numeracy Secretariat, an OAME Abacus co-editor and a Past President.

SECONDARY WORKGROUP

Emerging technology

As a leader in your board or school, it may fall on your shoulders to lead others through the technology of the 21st century. Over the past 15 years we have seen an explosion in the use of technology in secondary school mathematics. Handheld devices are changing the way that we communicate, teach and learn. Cell phones are commonly owned by our students and the capabilities seem to grow monthly. PDAs have changed the way in which we store data and schedule our lives. Blackberries allow us to access email and the Internet on the go. In the classroom, the use of both handheld devices and software have changed the way our students learn math and how we present content and activities to them. TI Nspire is the newest product from Texas Instruments. Available in either handheld or software version, this product will do everything that we used to do on a TI84 or TI89 – plus more. The tools allow us to create Lists and Spreadsheets that are Excel compatible. A more robust interactive geometry package serves the need for constructions and detailed graphs. The Calculator can double as a scientific calculator or a CAS tool. Finally, the Notes tool provides basic word processing. These tools are linked so that multiple representations of a problem can be presented to students and solutions can reflect several approaches. There has also been a steady growth in the use of Smart Boards in Ontario classrooms as well as interactive pads that allow a teacher to be mobile while presenting their lesson. Using these technologies, many teachers save work created in class and post lessons, exemplars and solutions on personal web pages. Each of these technologies appeals to students raised in a technology rich environment. Combined, they often spark interest in the process of learning mathematics. Chalk and talk can be good – teaching with technology can be great. In this workshop, teachers/leaders will be introduced to these technologies and learn how to inservice them with others in their board through applications from the Ontario secondary mathematics curriculum. Emerging technology can be used to establish dynamic classrooms that energize teachers and students and facilitate mathematical learning. Participants are asked to bring a notebook computer with Windows XP Professional.

Workshop Leaders



Fred Ferneyhough is a retired Peel DSB math teacher, an advocate for the use of technology in math, a certified National Instructor for TI, a technology consultant and author for McGraw-Hill Ryerson. Since retirement, Fred has spoken at math conferences across Canada, the US, France and Belgium. He is currently a VP on the OAME executive.

Lynda Ferneyhough is the Head of Mathematics at Fletcher's Meadow SS in Brampton, a showcase school for the use of technology in math. She is certified Regional Instructor for TI, an assessment consultant and author for McGraw-Hill Ryerson and a presenter at conferences in Canada and the United States. Lynda is the CHAMP chapter rep on the OAME board of directors.

