

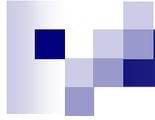
Mathematics Education Research in Ontario

Meeting of the Fields
Mathematics Education Forum,
January 22, 2005



Agenda

- n Overview of research
- n Presentations:
 - ⌘ Robin Kay, UOIT
 - ⌘ Ann Kajander, Lakehead
 - ⌘ Trish Byers, Georgian College
 - ⌘ Dragana Martinovic, Sheridan College
- n LUNCH
- n General Discussion
- n Ministry/OCT review – Stewart Craven



Mathematics Faculty



McMaster University – Miroslav Lovric

Ongoing examination of:

- n ***Transitions*** - from secondary to tertiary mathematics courses;
- n ***Education of undergraduate teaching assistants*** -- looking at the possibility of offering a course to prospective math teachers.



Queen's University – Leo Jonker

Ongoing examination of:

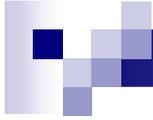
- n ***Teacher candidates' attitudes to mathematics and confidence in teaching mathematics*** – Ongoing work to measure changes (as perceived by the students themselves) resulting from participation in MATH 010 "Fundamental Concepts in Elementary Mathematics for Teachers". This course requires students to teach enrichment mathematics at grades 7 & 8.



York University – Walter Whiteley

Ongoing examination of:

- n ***Diagrammatic reasoning and 'proofs'*** - What is the role of diagrams in formal and informal reasoning? in research and in pedagogy? in problem solving by students and researchers? in recall of mathematics? in texts in mathematics, computer science, etc.?
- n ***Visual thinking*** - How do people learn to change what they see so that their visual thinking is more effective.



Education Faculty



Queen's University - Geoff Roulet

Research theme - "communication within mathematics learning environments."

- n ***Math-Towers: A Mathematical Environment for Grades 7 & 8*** – looking at how pupils interact with the tools on the website, how they structure their investigations, and the messages they exchange via the network.



Queen's University – Lynda Colgan

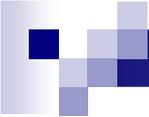
- n ***Teacher PD***- specifically looking at early career teachers and the opportunities provided through on-line mentoring and videoconferencing.
- n ***Dyscalculia*** (with John Kirby, a cognitive psychologist) - focusing on children who have difficulties with basic number processing tasks.



Trent University – Cathy Bruce

n *Preservice Teacher Efficacy in Mathematics: Experiences of Learning to Teach*

- ✧ Conducting a study to identify obstacles preservice teachers face and methods that facilitate enhanced self-efficacy.



University of Western Ontario - Immaculat Namukasa

Elementary teacher candidates (project with
George Gadanidis)

- ✧ Attempting to address the narrow or negative views of mathematics that our elementary pre-service teachers may hold. We conceptualize the purpose of teachers doing mathematics not in terms of gaining content knowledge but as a therapeutic experience.



University of Windsor – Anthony N. Ezeife – sent by Pat Rogers

The Impact of a Culture-sensitive Curriculum on the Teaching and Learning of Mathematics in an Aboriginal Classroom

This study focuses on the issue of increasing aboriginal student participation in mathematics through the introduction of culture-sensitive curriculum materials and innovative teaching strategies. The development of such curriculum materials and their implementation in an aboriginal setting is the thrust of the study.



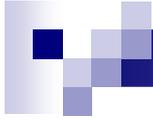
York University

n **Margaret Sinclair**

- ✧ Lesson Study in the Preservice Program;
- ✧ Design of interactive geometry applets.

n **George Frempong**

- ✧ Issues of access and equity in mathematics education
- ✧ Supporting School Improvement project – quantitative analysis of EQAO data in order to identify schools in which improvement in mathematics achievement is taking place most markedly – and to use qualitative research to explore the contributing factors.

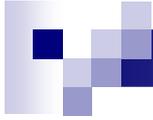


Working in groups

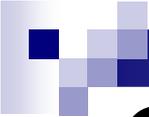


Examples of value added

- n College/university Collaboration:
 - α YSIMSTE – The College Mathematics Project to examine transitions from secondary to college tech;
- n Large scale projects:
 - α IRLT –Ron Owston- evaluating the eLearning math/science project for the Learning Partnership;
- n Networking:
 - α Fields' Mathematics Education Forum



The Future?



Queen's - Geoff Roulet's students

- n Krista Taylor - *Student Interactions in a Web-based Learning Environment* - - The focus of analysis will be on how the student-student sharing stimulates the directions of exploration and the development of understanding.
- n Kate Mackrell - *Constructing Knowledge With and Through Computers* - - This project combines the use of *The Geometer's Sketchpad*, to support student investigation, and *Elluminate Live!*, to provide a means for students to share their explorations via the computer lab network.
- n Jodi Coleman - *The Development of Understanding of the Concept of Variable in Grade Seven Beginning Algebra Students* - - Explores incidents during activities where the participants appeared to experience a shift in their knowledge of the concept of algebraic variable.



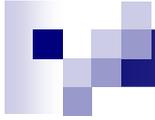
Queen's – Lynda Colgan's students

- n Garth Scott - Examination of the Construct Validity of a Self Report Survey Measuring Implementation of Mathematics Reform
- n Tom Fielding - The Impact of the Early Math Strategy
- n Alison Macaulay - The Impact of Professional Book Clubs
- n John Hargraft - Articulation between High School & University Math
- n Robert Petrick - The Role of Parents in Implementing the Ontario Math Curriculum
- n Elizabeth Suriyuth - The Role of Math-Based Children's Literature in Grade 7/8 Gifted Math
- n *Nancy Dalgarno - Laptop Schools & their Impact on Instruction
- n *Sue Hedley - Textbook Impact Study



York University students

- n Lily Moshe –use of visuals in teaching and learning mathematics
- n Louis Lim – writing in applied math classes
- n Jijun Deng – analysis of online learning objects



And now....



Today's Presenters

- n Robin Kay – University of Ontario
Institute of Technology
- n Ann Kajander – Lakehead University
- n Trish Byers – Georgian College
- n Dragana Martinovic – Sheridan
College