



Center News

Mathematics Education Center

College of Education and Human Development

Hjalmarson Singapore Teacher Development



Dr. Margret Hjalmarson spent the winter break in Singapore consulting on the Generative Activities for Algebraic Thinking Project (GenSing) Project. Dr. Sarah Davis of the National Institute of Education in Singapore is the principal investigator. The goal of the project is to revise the algebra curriculum for grade 7 in a middle school by introducing higher-order activities for algebra using the TI Navigator System. The class design is highly interactive. The students use the

networked calculators to submit their responses, to generate graphs, and to interact as a class. The advantage is that a class set of responses can be viewed and aggregated. In addition, the students can participate anonymously when they submit their responses. The activities are "generative" as students are generating concepts and developing their understanding of fundamental concepts such as function and linear relationships. The focus of the activities is on their understanding of functions, linear functions, and inequalities. The students and teachers will be completing the activities over multiple weeks. Dr. Davis worked with the school to reorganize the curriculum to integrate the generative activities into the regular curriculum over approximately eight weeks. Dr. Davis is building on work begun at the University of Texas at Austin with Dr. Walter Stroup.

Dr. Hjalmarson's role on the project is to aid with the design of a pre- and post-test assessment to be used to document student learning. In addition, she will be aiding with the on-going data analysis of student work as they participate in the generative activities throughout Spring and Summer 2008. Singapore, while leading the world in terms of test score results on exams such as the TIMSS, is also interested in developing the problem solving and conceptual understanding of their students.



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Special points of interest:

- *Singapore Teacher Development*
- *Third Annual Spikell Award Winner*
- *\$5K Texas Instruments Research Grant Awarded*

Kridler Receives Third Annual Spikell Award in Math Education

In 2006 Dr. Mark A. Spikell, Professor Emeritus, established The Spikell Award in Mathematics Education in honor of Hy and Lillian Spikell, loving and supportive parents; and brother and sisters, Bruce Carl, Stefanie Hope and Deena Rae Spikell.

The award, currently in the amount of \$1,000, is given annually in the Spring semester to a Ph.D. student in Mathematics Education in the College of Education and Human Development at George Mason University. The student submits a curriculum vita and completes an application focused on their most significant mathematics leadership activities, their mathematics service contributions, and what they believe to be their most significant contribution to mathematics education over the past year.

This year's winner of the Spikell Award in Mathematics Education is Patricia Kridler. Trish is the Department Head of Mathematics and an 8th grade mathematics and algebra teacher at Auburn Middle School in the Fauquier County School System. In her application, she described her significant mathematics leadership activities to be the development of a Probability and Statistics course for GMU's Math Specialist program, conference presentations at NCTM and at PME-NA in Mexico, and a program evaluation on the Connected Mathematics materials. Among her service activities are participation on the Fauquier County Mathematics Vertical Team, the Teacher's Assistance Team, and the Building Leadership Team. An article on which Trish is the lead author titled,

"Mathematics Circles: A Structured Approach to Problem Solving," was recently accepted for publication in the journal, *Mathematics Teaching in the Middle School*. Overall, Trish writes, "I still feel that my most significant contribution to mathematics education is what I accomplish in my classroom each day." Congratulations Trish!



Trish Kridler, MEL PhD student

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Master's Degree Students Earn Fellowship Awards

The recipients of the 2007-08 Master's Degree Fellowship Awards for Mathematics Education Leadership are Jennifer Flora and Frank Ondish. Jennifer Flora is currently in her fourth year of teaching and is an assessment coach at Kilmer Middle School in the Fairfax County Public School System. In this position she focuses on school testing and the interpretation of student achievement data. She recently presented to her colleagues at the FCPS district-wide mathematics conference.

Frank Ondish is currently in his 10th year of teaching and is a 7th and 8th grade mathematics teacher at Isaac Gourdine Middle



Jennifer Flora and Frank Ondish,
MEL Master's Degree Students

School in Prince George's County, Maryland. He has the honor of having the students in his mathematics classes consistently among the highest scoring students on the state standardized mathematics tests for Maryland.

Each fellowship winner will receive \$500.00 from the College of Education and Human Development to continue studies in the Master's Degree program as Math Specialist leaders.

Congratulations Jennifer and Frank!

Schudmak Interns for NCTM

For her EDUC 994 doctoral internship, Wendy Schudmak, MEL Ph.D. student, spent part of the summer of 2007 as a Professional Development Intern at the National Council of Teachers of Mathematics (NCTM). Monique Lynch, Director of Professional Development Programs and Services and GMU Ph.D. alumni, helped structure an experience that gave Wendy insight into the workings of Professional Development for educators at NCTM. As an intern Wendy reviewed past e-workshop and e-workshop follow-up modules, and wrote modules for the upcoming focus of the year, Data Analysis and Probability. Additionally, she completed training to become an e-workshop leader. The staff at NCTM was welcoming and supportive, always available to answer Wendy's questions and support the development of the e-modules.

Wendy writes: Using the same format as the modules that NCTM had already developed, I engrossed myself in NCTM curriculum, including Illuminations, e-examples, Navigations, and more, all of which supported NCTM's Principles and Standards for School Mathematics. I also brought in my knowledge of the National Library of Virtual Manipulatives and learned about another site with interactive applets, Shodor.com.

As a result of this experience, NCTM has offered me several contracts to conduct E-workshops throughout the school year. I am looking forward to putting the modules I created into the hands of teachers and seeing how they respond to this online environment. Should I decide to pursue more work in the field of professional development for teachers, this experience has tremendously

helped further my knowledge and experience. With a deeper understanding of how NCTM functions as an organization, I feel equipped to reach out to other teachers and share resources developed by the organization.



Wendy Schudmak, MEL PhD student

2007 PME-NA Conference



(left to right) Dr. Johnna Bolyard (WVU), Drs. Margret Hjalmarson and Patricia Moyer-Packenham, Gwenanne Salkind and Dr. Jennifer Suh are pictured with renowned mathematics education scholar, Dr. Dick Lesh, Indiana University.

In October 2007, MEL faculty and students traveled to Lake Tahoe, Nevada, for the 29th annual conference of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA). The theme of this year's conference was *Exploring Mathematics Education in Context*. The University of Nevada at Reno, served as the host of PME-NA 2007.

GMU faculty and students had opportunities to interact with distinguished researchers and colleagues in mathematics education. The purpose of the PME-NA meeting is to provide a forum for scholarly discussion of central and current issues in mathematics education and for the exchange of research information on the psychology of mathematics education.

GMU MEL faculty and students presented several conference sessions at this year's annual meeting. For example, *Teachers' Uses of Virtual Manipulatives in K-8 Mathematics* was presented by Dr. Patricia Moyer-Packenham (GMU), Gwenanne Salkind (GMU MEL PhD student), and Dr. Johnna Bolyard (WVU).

Dr. Margret Hjalmarson (GMU) led a working group on *Models and Modeling*. This session was part of a continuing working group on this research area. Dr. Jennifer Suh (GMU) presented a conference session titled *Preparing Pre-service Teachers to Model Mathematics with Tech-knowledge*.

Cathy Scott Accepts Virginia Tech Position



Cathy Scott, MEL PhD student

Mathematics Education Leadership Ph.D. student, Cathy Scott, has accepted the position of Mathematics Education Faculty and Program Advisor at the Northern Virginia campus of Virginia Polytechnic Institute and State University (Virginia Tech). Cathy joined the faculty of the School of Education at Virginia Tech in

August 2007. In her new position, Cathy teaches the following courses: Secondary Mathematics methods, Teacher as Researcher, and Implications of Mathematics Education Research. In addition to her course teaching, Cathy has been engaged in working with the National Institute of Aerospace to design and deliver a professional development workshop focused on STEM (Science, Technology, Engineering & Mathematics) pedagogy. The participants in the workshop were trainers who will train others on STEM pedagogy throughout the country. Since joining the faculty of Virginia Tech, Cathy has been involved in a variety of activities including outreach, recruiting, and course development focused on the integration of science and mathematics.

Cathy holds a B.S. in Mathematics Education, a Master's degree in Educational Psychology (emphasis in gifted education), and dual endorsements in Secondary Mathematics and Computer Science. Prior to joining the faculty at Virginia Tech, Cathy served as a high

school mathematics teacher in the Fairfax County Public Schools for 14 years where she mentored new high school mathematics teachers. She is also a National Board Certified Teacher in Adolescent and Young Adult Mathematics. Cathy is currently finishing her Ph.D. in Mathematics Education Leadership at George Mason University where she is pursuing a dissertation focused on the process of curriculum selection and implementation in STEM high schools. She attributes her successful transition from "classroom teacher" to "university researcher" to the preparation she received in the Mathematics Education Leadership Ph.D. program. Cathy writes: "The Math Ed Leadership program really did a great job of preparing me for the university setting. This program taught me how to write a curriculum vita, design university level courses, synthesize research studies, write literature reviews, and design research that is relevant to the Math Ed community."

Faculty and Students Present at AMTE Conference

The twelfth annual conference of the Association of Mathematics Teacher Educators (AMTE) was held in January 2008 in Tulsa, OK. The AMTE is a member of the Conference Board of the Mathematical Sciences and is an Affiliated Group of the National Council of Teachers of Mathematics. This conference brought together teacher educators from around the country.

GMU MEL faculty and students presented conference sessions and gathered with mathematics education colleagues at the annual meeting. Christopher Johnston (MEL PhD student) presented *K-5 Teaching and/or Learning with Tech-*

nology: Beginning Elementary Teachers' Use of Virtual Manipulatives, Websites, and Applets in Math Instruction. This session reported the results of a study on elementary teachers' evaluation of technology tools based on their own criteria for selection.

Dr. Jennifer Suh and Jana Parker (MEL PhD student) presented *K-5 Teacher Professional Development: Mathematics Knowledge Side-by-Side through Collaborative Planning.* This session discussed a project involving preservice and inservice teachers working collaboratively on planning, teaching and reflecting on mathematics lessons.



Back row (left to right): Dr. Patricia Moyer-Packenham, Dr. Robert Berry (UVA), and Jana Parker; Front row (left to right): Chris Johnston, Dr. Jennifer Suh, and Dr. Johnna Bolyard (WVU)

Linda Gantz Awarded \$5K Research Grant by Texas Instruments



Linda Gantz, MEL PhD student

In October 2007, Linda Gantz was awarded funding by Texas Instruments to conduct research using the TI-Nspire Computer Algebra Systems (CAS) calculator. This grant was part of the Texas Instruments Phase I Grant Projects, whose purpose is to do research on the new TI-Nspire CAS calculator. As part of her award, Linda received CAS resources totaling \$5,000, which include a class set of 30 TI-Nspire CAS calculators, an overhead graphing calculator panel, computer software, and \$1,775 in funding to conduct and present her research on the use of the TI-Nspire calculators in her classroom.

Linda's research will focus on the effects of the TI-Nspire CAS as a symbolic manipulation

tool for student learning. The 11th and 12th grade students in her class will use the TI-Nspire CAS to study algebra and geometry concepts. Student activities using the TI-Nspire CAS will focus on analyzing patterns and testing conjectures based on the patterns that they notice. Her research will be conducted over a three-month period in her classroom at George Mason High School, in the Falls Church City School System.

As a result of Linda's expertise and research in this area, she has been invited to serve on a panel at the USA Computer Algebra Systems Conference in Chicago, Illinois, in June 2008.



MATHEMATICS EDUCATION CENTER

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We're on the web!

<http://gse.gmu.edu/cscvm/main>



The Mathematics Education Center (MEC) is located in the Graduate School of Education in the College of Education and Human Development at George Mason University, Fairfax, VA. The MEC conducts mathematics education research, provides professional development, and designs instructional materials. The MEC works in collaboration with the Mathematics Education Leadership programs at George Mason University to support the scholarly research and professional development of PhD and Master's level graduate students enrolled in the programs.



MEC Faculty and Staff