Emma Eccles Jones College of Education and Human Services

Mathematics Education and Leadership Newsletter

UtahStateUniversity

USU Announces New Doctoral Program in Mathematics Education and Leadership

USU Math Education Doctoral Students: (front) Sheryl Rushton, Jodi Mantilla, Kathy VanWagoner, Ron Twitchell; (back) Jennifer Boyer-Thurgood, Sonnet Gravina, Jessica Shumway, Katie Anderson, Arla Westenskow

In 2011, USU's School of Teacher Education and Leadership in the Emma Eccles Jones College of Education and Human Services began a new emphasis in the doctoral program: Mathematics Education and Leadership. The Mathematics Education and Leadership emphasis in the doctoral program is an advanced program designed to prepare mathematics leaders for many positions of leadership in mathematics education including academic positions as faculty at universities, leadership positions in state-level agencies or professional associations, school mathematics leadership positions, and educational consulting.

During the first year of the program, 14 different doctoral students have participated in mathematics education coursework. The Mathematics Education and Leadership emphasis consists of 18-credits of coursework that integrates opportunities for students in university teaching, scholarly research, and mathematics leadership at all levels, K-20. Courses focus on mathematics research, curriculum, teaching, learning, assessment, evaluation, research design, theory, and current issues in mathematics education. Students have experiences working with faculty on research writing, grant writing, conference presentations, co-teaching, and other collaborative academic activities.

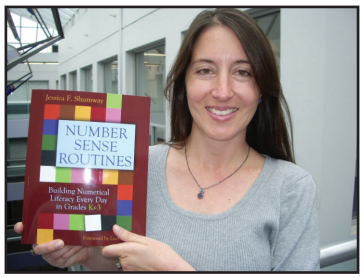
The program is designed for working professionals, with courses offered in the evenings and summers. Courses are offered on a regular schedule so that students can complete the emphasis in the doctoral program within their course of doctoral studies. All courses in the Mathematics Education and Leadership Emphasis are currently offered through the Regional Campuses and Distance Education broadcast network. For more information about the program, contact the Program Director, Patricia Moyer-Packenham at patricia.moyer-packenham@usu.edu.

Mathematics Education Doctoral Student Publishes Book

Mathematics education doctoral student, Jessica Shumway, recently published her first book titled, Number Sense Routines: Building Numerical Literacy Every Day, K-3 (Stenhouse Publishers, 2011). The book was inspired by the teachers she worked with in the Fairfax County Public Schools in northern Virginia during her years as a classroom teacher and mathematics coach.

Jessica and her colleagues studied, implemented, and reflected on instructional strategies with the aim of improving students' number sense and achievement in mathematics. Jessica wrote Number Sense Routines to assist teachers with ideas and methods for building students' number sense on a daily basis. The book provides classroom examples that illustrate how number sense routines like "Count Around the Circle" and "Quick Images" work, how children's number sense develops, and how to implement routines that are responsive to students' strengths and weaknesses as well as to teachers' particular groups of students.

Jessica represents one example of the incredibly bright and talented doctoral students currently pursuing a PhD with the Mathematics Education and Leadership emphasis at Utah State.



Jessica Shumway and her new book Number Sense Routines

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Grant Funds New Elementary Mathematics Endorsement Program

Members of the Logan City and Cache County Elementary Mathematics Endorsement Number and Operations Course

Lead PI, Barbara Child of Logan City Schools, and Co-PIs Dr. Patricia Moyer-Packenham and Dr. Dicky Ng, mathematics education professors in USU's School of Teacher Education and Leadership in the Emma Eccles Jones College of Education and Human Services, recently received a 3-year grant from the Utah State Office of Education in the amount of $222,639 to provide the Elementary Mathematics Endorsement to teachers in the Logan City and Cache County School Districts. The funding of this grant coincides with the Fall 2011 launch of USU's new Elementary Mathematics Endorsement.

The Elementary Mathematics Endorsement is a unique program designed to strengthen classroom teachers' knowledge of mathematics content and assessment. The 18-credit (six 3-credit courses) endorsement program includes courses designed to improve mathematical knowledge for teaching at the elementary school level. Courses in the program focus on Number & Operations, Rational Numbers & Proportional Reasoning, Algebraic Reasoning, Geometry & Measurement, Data Analysis & Problem Solving, and Assessment & Intervention.

The program is designed for working professionals, with courses offered in the evenings and summers. Courses are offered on a regular schedule so that teachers can complete the endorsement in two years. Courses in the endorsement are currently offered through the Regional Campuses and Distance Education (RCDE) broadcast system so that teachers throughout the state can participate in USU coursework at regional sites. Additional courses, like those offered through the Logan/Cache grant, are offered at reduced rates on-site at school locations in collaboration with school districts.

Currently there are 29 teachers enrolled in the Logan/Cache schools cohort and 24 additional teachers participating in coursework statewide through the RCDE broadcast system.

Culturally Responsive Mathematics in the Guatemalan Highlands

Dr. Jim Barta with students from the William Botnan School

At USU, mathematics educators don't just teach mathematics in Utah classrooms, their mathematics reach extends beyond our state and country's borders. Mathematics consultants, including Dr. Jim Barta of USU's RCDE Blanding campus, have traveled to Guatemala for the past five summers to provide support to teachers at the William Botnan School, a K-6 Mayan language immersion school in the highlands of Guatemala.

The goal of the team is to enhance mathematics teacher proficiency while recognizing and respecting the local Mayan culture and language. The consultants (classroom teachers, mathematics coaches, and college professors) work closely with the local teachers to teach them cutting-edge, research-based mathematics practices.

Key topics of their most recent summer workshops included assessing student learning, providing a culturally relevant and language-rich context for all instruction, and emphasizing hands-on, inquiry-based activities. Seven consultants participated this past summer in a week-long workshop.

Among the participants were Linda Gojak, President of the National Council of Teachers of Mathematics and Jennifer Bay–Williams, professor at the University of Louisville and former President of the Association of Mathematics Teacher Educators. Throughout the week, they worked in classrooms with Guatemalan teachers using a scaffolded approach. The consultants first demonstrated activities with emphasis on the inclusion of key topics, and then relinquished control to the classroom teachers as the week progressed. By the final day, the Guatemalan teachers were solely responsible for instruction as they worked to master newly gained insights and skills. The group's work continues, and plans are currently underway for professional development efforts in the summer of 2012.

Indeed, for optimal mathematics education to occur, it takes a village! Anyone interested in participating in this unique and rewarding mathematics experience can contact Jim Barta at jim.barta@usu.edu for more information.

Faculty Mentor and Doctoral Student Win Research Awards

A faculty and doctoral student team in mathematics education were the winners of the 2011 Teacher Education and Leadership (TEAL) awards for Faculty Researcher of the Year and Graduate Student Researcher of the Year.

Dr. Patricia Moyer-Packenham, Professor of Mathematics Education, is the Program Director of the Mathematics Education and Leadership Programs in TEAL. Her research focuses on uses of mathematics representations, including physical and virtual manipulatives. Her publications include two books, Teaching K-8 Mathematics with Virtual Manipulatives and What Principals Need to Know about Teaching Mathematics, and over 70 scholarly contributions including journal articles, book chapters, refereed proceedings, and contributions to mathematics methods textbooks.

Dr. Moyer-Packenham is currently Co-PI on the NSF-funded Math and Science Partnership Program Evaluation (MSP-PE), Co-PI on a grant to provide the Elementary Mathematics Endorsement to Utah teachers, and has been the principal investigator of numerous grants totaling over $15 million dollars in funding.

Arla Westenskow, Dr. Moyer-Packenham's Doctoral Research Assistant, is currently a candidate working on her dissertation research focusing on Equivalent Fraction Learning Trajectories for Students with Mathematical Learning Difficulties when Using Manipulatives. After serving as a teacher in the Davis County School District in Farmington, Utah, for 30 years, she returned to graduate study at Utah State to pursue her PhD with an emphasis in Mathematics Education and Leadership.

Serving as a Graduate Research Assistant for the past four years, her research assistance has contributed to the scholarship and productivity of faculty, as well as to her own scholarship through publications and presentations. During her time at USU, she has lead or contributed to six manuscripts (4 publications, 2 under review) and seven international and national presentations (4 additional presentations pending).

Congratulations to these outstanding mathematics education researchers!

Dr. Patricia Moyer-Packenham and Doctoral Research Assistant Arla Westenskow

USU Faculty Involved in International Mathematics Research Collaboration

Dr. Dicky Ng was invited by a research group at the University of Stavanger to a seminar on mathematical knowledge for teaching (MKT) held June 20-21, 2011 at the beautiful Sola Strand Hotel in Norway. The seminar included12 invited researchers from Norway, Sweden, Ireland, Portugal and the United States.

Dr. Ng's presentation titled Mathematical Knowledge for Teaching in Indonesia: The Case of Classification of Quadrilaterals examines the adaptability of United States based measures for use in studying Indonesian elementary teachers' mathematical knowledge for teaching geometry. This research focuses particularly on issues regarding the mathematical substance of items related to the use of inclusive and exclusive definitions of geometric shapes. After all participants had presented their work, the group discussed possibilities for future collaboration in the area of MKT. By the end of the seminar, Dr. Ng and some of his colleagues submitted a proposal for a symposium at next year's AERA conference.

While in Norway, Dr. Ng also gave an invited address to faculty members in the Arts and Education Department of Early Childhood Education at the University of Stavanger. Dr. Ng presented his talk titled Mathematics Preparation of Elementary Teachers at Utah State University where he shared information on USU's teacher preparation program and the research collaborations in mathematics education at USU.

Dr. Dicky Ng presenting at a seminar in Norway

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About Us

The Mathematics Education and Leadership Programs in the School of Teacher Education and Leadership in the Emma Eccles Jones College of Education and Human Services provide students with a variety of advanced study options in mathematics education at the graduate level. Students can select the Mathematics Education and Leadership Emphasis in the PhD or EdD doctoral programs, the Elementary Mathematics Endorsement emphasis in the Master of Education Degree in Elementary Education, or the Secondary Mathematics Emphasis in the Master of Education Degree in Secondary Education. The Mathematics Education and Leadership Programs at Utah State University provide students with opportunities to focus on enhancing their mathematics education expertise and develop leadership skills for positions at all levels of mathematics teaching, learning, supervision, and research. Contact the director today to begin your graduate work in Mathematics Education and Leadership at Utah State University!

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