

UtahStateUniversity

Virtual Manipulatives Research Group Receives Grant and Presents Research



Virtual Manipulatives Research Group: (front) Jessica Shumway, Kerry Jordan, Patricia Moyer-Packenham, Kati Rodzon, & Joe Baker; (back) Jennifer Boyer-Thurgood, Cathy Maahs-Fladung, Katie Anderson, Arla Westenskow, & Stephen Tucker

The Virtual Manipulatives Research Group (VMRG) was formed in 2009 when faculty members Patricia Moyer-Packenham (Math Education, College of Education and Human Services – CEHS) and Kerry Jordan (Cognitive Psychology, CEHS), began a cross-disciplinary collaboration that focused on the intersection of their research interests. Moyer-Packenham's research focused on dynamic technological mathematics objects and representations (i.e., virtual manipulatives) and Jordan's line of research focused on human uses of multiple sensory modalities and numeracy. Doctoral students in mathematics education and psychology also joined the

collaboration (Katie Anderson, Jessica Shumway, Arla Westenskow, Stephen Tucker, and Jennifer Boyer-Thurgood, in Math Education; and Joe Baker, Kati Rodzon, and Justice Morath in Psychology, CEHS). In Fall 2011, Cathy Maahs-Fladung (TEAL, CEHS) joined the USU faculty and brought to the team expertise in measurement and statistics. In Fall 2012, Taylor Martin (Instructional Technology, CEHS) will join the team and bring expertise on technology applications for mathematics. In 2009, the VMRG started a two-year project conducting research in local schools on the use of virtual manipulatives for mathematics instruction. This study addressed the need for a large-scale, random-assignment, and retention effects study of virtual manipulative use in school mathematics. The group received a SPARC grant, funded by the USU Vice President for Research Office, which supported the second year of school-based data collection and the submission of a \$3 million dollar grant proposal to the National Science Foundation. In 2011, the group presented their preliminary research results, titled School Mathematics Research on Virtual Manipulatives: A Collaborative Team Approach, at the School Science and Mathematics Association conference in Colorado Springs, Colorado.

Math Education Doctoral Student Earns Prestigious Vice President for Research Fellowship Award

Only 11 students at Utah State University earned the prestigious Vice President for Research Fellowship Award during the 2011-12 academic year. One of those students was Stephen Tucker, a doctoral student in the Mathematics Education and Leadership Program in the School of Teacher Education and Leadership in the College of Education and Human Services. The Vice President for Research Fellowship Award is for outstanding incoming graduate students and included a \$15,000 stipend for the academic year and an award to support the nonresident portion of tuition. The criteria to qualify for this award includes a 3.5 GPA and quantitative and verbal GRE scores at the 70th percentile or above. In addition, the student must be in a research degree program that includes a master's thesis or doctoral dissertation. Stephen Tucker came to Utah State University in Fall 2011 from Charlotte, North Carolina. During his time in one of the

largest school districts in the United States, he taught second and third grades in urban and rural settings. He also created extracurricular academic activities across multiple grades and led professional development in mathematics and technology at school and district levels. Originally from Cary, NC, he earned degrees from American University and Western Governors University before enrolling at USU. His primary research interests in mathematics are virtual manipulatives and teacher development.



Stephen Tucker, Doctoral Student, Mathematics Education

Spring 2012 Issue No. 2



On The Inside

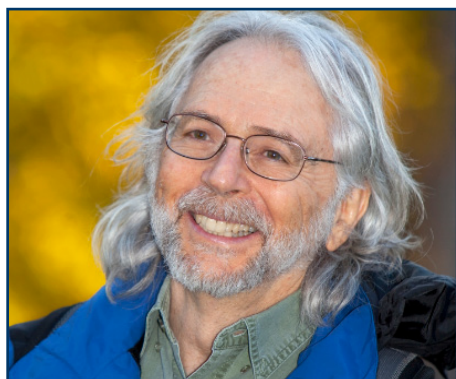
*Mathematics Professor
Jim Cangelosi Named
Utah's Carnegie Professor
of the Year*

*Grant Funds Equipment
for Elementary
Mathematics
Endorsement Broadcast
Cohort*

*Doctoral Student
Participates in U.S.
Mathematics Delegation
to Brazil*

*Mathematics Educator a
Leader in Mathematics
Teacher Development*

Mathematics Professor Jim Cangelosi Named Utah's Carnegie Professor of the Year



Jim Cangelosi, Professor
Department of Mathematics and Statistics

Dr. Jim Cangelosi, Mathematics Professor in the Department of Mathematics and Statistics in the College of Science at USU was recently named a 2011 Carnegie Professor of the Year. Cangelosi was one of 31 professors from across the nation selected for this year's prestigious honor announced at a November 17 ceremony in Washington, D.C. The award is administered by the Carnegie Foundation for

the Advancement of Teaching and the Council for Advancement and Support of Education, and recognizes outstanding professors for their influence on teaching and their extraordinary commitment to undergraduate education. USU President Stan Albrecht noted, "Do the math: Jim Cangelosi has voluntarily expanded his teaching load to 2.5 times the average load for his department and has employed more than 200 students on his funded projects. His commitment to the success of each of his students is incredible and it's an honor to have him on our faculty." His students also have high praise for his dedication to their learning. "Dr. Cangelosi has a way of blending critique with encouragement that leaves me feeling like I am capable of more than I thought possible," says Morgan Summers '11. "He does this, in part, by making an explicit distinction

between my worth as a person and the quality and value of my work." Cangelosi describes his strategies for reaching out to students in his mathematics classes. "I use a tablet laptop that allows me to circulate through the classroom, while displaying coursework on a large screen," he says. "This allows me to overhear students' muted expressions, read their body language and prompt otherwise quiet students to contribute to discussions. I establish a classroom climate where students feel free to experiment and make mistakes without embarrassment." Cangelosi received the award for his dedication to future teachers of mathematics and statistics and to the field of mathematics education. (The content of this story was adapted from the USU website and materials shared by Mary-Ann Muffoletto.)

Grant Funds Equipment for Elementary Mathematics Endorsement Broadcast Cohort

In January 2012, Robert Wagner (PI), Associate Vice Provost for Regional Campuses and Distance Education, and Patricia Moyer-Packenham (Co-PI), Professor of Mathematics Education, College of Education and Human Services, received a grant from the United States Department of Agriculture to support the new Elementary Mathematics Endorsement program. The grant, titled Preparing Utah Teachers for the Elementary Mathematics Endorsement, is funded for three years (2012-15). Funds from the grant will be used to enhance the broadcast capabilities of the elementary mathematics endorsement courses through a distance learning project designed to equip two sites and four rural communities with distance delivery broadcast technology. This



Grant Funds Equipment for Elementary Mathematics Endorsement Broadcast Cohort

includes funding to equip broadcast locations with technology, which will allow the locations to serve as broadcast origination sites. Receiving these funds at this time supports the launch of USU's new Elementary

Mathematics Endorsement program which began in Fall 2011. Enhanced broadcast equipment will help the mathematics education programs to support the land grant mission of USU to reach rural communities with opportunities for teachers to earn their elementary mathematics endorsement. The 18-credit endorsement program includes courses designed to improve mathematical knowledge for teaching at the elementary school level. Courses in the program focus on rational numbers, algebraic reasoning, geometry, data analysis, and assessment. The program is designed for working professionals, with courses offered in the evenings and summers, so that teachers can complete the endorsement in two years. There are currently 25 teachers participating in the Elementary Mathematics Endorsement RCDE broadcast coursework statewide.

Doctoral Student Participates in U.S. Mathematics Delegation to Brazil

In October 2011, Katie Anderson, a doctoral student in Mathematics Education and Leadership, traveled to São Paulo and Rio de Janeiro, Brazil as part of a mathematics education delegation with People to People Citizen Ambassadors. Led by Dr. Johnny Lott (past-president of NCTM), Anderson and 14 other mathematics educators from across the country spent 10 days meeting with Brazilian education researchers and conversing with teachers and students at local schools and universities. Being fluent in Portuguese, Anderson especially enjoyed talking one-on-one with Brazilian teachers during a professional development course and interacting with middle-grade students as they shared their achievements in mathematics. At each school, delegates presented teachers and students with donated school supplies and teacher resources (including supplies donated by

TEAL faculty and staff). Highlights of the trip included a visit with renowned educational researcher of ethnomathematics, Dr. Ubiratan D'Ambrosio, and a Q&A session with a group of secondary mathematics students. Anderson learned that Brazilian mathematics educators face many of the same challenges that educators face in the United States. For example, students come to school with a wide range of ability, universities struggle to accommodate large numbers of students, and major professional development efforts hope to improve teachers' understanding of mathematics teaching in order to impact learning for all students. Prior to arriving at USU, Katie Anderson taught sixth-grade and provided professional development for teachers in elementary mathematics for the Alpine School District. She currently teaches an Elementary Math Methods course (ELED



Katie Anderson (left) with former NCTM President Johnny Lott

4060) at the Logan campus, and is involved in mathematics education research groups at USU and Brigham Young University. Her main research interests include classroom mathematical discourse, the use of virtual manipulatives in teaching and learning mathematics, and teachers' professional development.

Mathematics Educator a Leader in Mathematics Teacher Development



Dr. Brynja Kohler (center) working with local mathematics teachers

Dr. Brynja Kohler, an Assistant Professor of Mathematics Education in the Department of Mathematics and Statistics at Utah State University, is a leader in multiple efforts for mathematics teacher development throughout Utah. Kohler is director of the Master of Mathematics Program. This program is for mathematics

educators seeking master's level training in mathematics and statistics relevant to their teaching positions. This program features a breadth of courses in upper division mathematics and statistics and the capacity to individualize programs of study towards professional goals. For the past 4 years, Kohler has worked in the Park City Mathematics Institute. At the institute, held each July, teachers from all over the country learn and do mathematics through investigative problem sets, study pedagogy research as a means to reflect on and improve their practice, and engage in special projects so that they become resources to their colleagues and the mathematics teaching

profession. During the 2011-12 academic year, Kohler began working in collaboration with the College of Education and Human Services on the Elementary Mathematics Endorsement coursework. This resulted in a collaborative grant with Logan and Cache Schools. In this grant, Kohler works with teachers and district leaders to ensure the mathematical content of professional development opportunities is challenging and relevant to the Utah Common Core Standards. Kohler also leads the Journal Club and Club MED (Math Ed) for students interested in secondary mathematics. These clubs are opportunities for students to share and critique research articles, as well as each other's work on teaching or preliminary research projects.



2605 Old Main Hill
Logan, UT 84322-2605



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!



Patricia Moyer-Packenham, PhD
Mathematics Education and Leadership Program Director

patricia.moyer-packenham@usu.edu
(435) 797-2597