

ON THE INSIDE:

- Spotlight: Stephen I. Tucker
- MSP Grant with Weber Showing Growth in Teacher Knowledge
- Graduate Students Present Research
- Summer UCTM Conference



SHUMWAY RECEIVES GEM GRANT TO RESEARCH CHILDREN'S NUMBER SENSE

How can young students' interest and achievement in mathematics be improved? Dr. Jessica Shumway, Assistant Professor in USU's School of Teacher Education and Leadership, speculates that one way could be to strengthen students' number sense. Number sense describes one's understanding of number relationships and ability to manage numerical situations. Research has shown that number sense gained early in life can predict mathematics achievement later. A strong number sense foundation is a critical component to children developing an interest in STEM fields.

Shumway's work was recently selected for funding through a Grant-Writing Experience through Mentorship (GEM) seed grant, a unique format that allows Shumway to develop her grant-writing skills while collaborating with a skilled mentor. The research through this grant will focus on the way different teaching methods influence a child's number sense development.

Shumway's long-term goal is to gain a better understanding of which classroom practices are most effective for supporting children's learning. Dr. David Geary, Professor of psychology at the University of Missouri-Columbia, will mentor Shumway as she writes a National Science Foundation grant based on the findings from the GEM grant project. (This story originally appeared on the CEHS webpage, September 2017; <https://cehs.usu.edu/news-archive/20170905-number-sense>).



MOYER-PACKENHAM PRESENTS AT NATIONAL ASSEMBLY IN SEOUL, KOREA

Professor Patricia Moyer-Packenham, a mathematics education faculty member in the School of Teacher Education and Leadership, was recently invited by the Mathematics Education Society of South Korea to give a talk at the Korean National Assembly in Seoul, Korea. Professor Kyeong-Hwa Lee of Seoul National University hosted the visit. Moyer-Packenham traveled with Dr. Jennifer Suh, Associate Professor of Mathematics Education at George Mason University, and two of Dr. Suh's graduate students, Sara Birkhead, and Kathy Matson.

When the group arrived in Seoul, they traveled by KTX train to Busan, where they toured a local school and met with the Education Governor of Gyeongsangnamdo, Jong-Hoon Park. The group provided professional development for 60 mathematics teachers. Moyer-Packenham presented on the topic: *Explorations with Digital Math Apps that Promote Access and Creativity*. Later during the visit, Moyer-Packenham gave a talk at the Korean National Assembly titled: *Research on How Virtual Manipulative Environments Provide Access and Promote Creativity for Mathematics Learning*. Following the talk, she participated on a panel with Kyeong-Hwa Lee of Seoul National University and Education Governor of Gyeongsangnamdo, Jong-Hoon Park. An important goal of the National Assembly discussion was the creation of a Mathematics Cultural Center. The next day the group provided professional development for 45 teacher leaders from different regions of the country before returning to the US.



Left to Right: Patricia Moyer-Packenham, Professor Kyeong-Hwa Lee of Seoul National University, and Jong-Hoon Park, Education Governor of Gyeongsangnamdo

WHERE ARE THEY NOW? SPOTLIGHT ON DR. STEPHEN I. TUCKER



Dr. Stephen I. Tucker, graduate of USU's Mathematics Education and Leadership PhD program, is an Assistant Professor of Mathematics Education in the Department of Early

Childhood and Elementary Education at the University of Louisville (UofL), in Louisville, Kentucky. He leads the Embodied Mathematics Education Research Group (EMERG), which is currently involved in community-engaged research focusing on young children's development of physically embodied early number sense as they interact with multi-touch technology. His teaching includes elementary mathematics teacher development and doctoral-level courses in foundations of mathematics education and advanced qualitative methods. He serves on committees focused on diversity and doctoral programs. In 2015, Dr. Tucker completed his dissertation, *An Exploratory Study of Attributes, Affordances, Abilities, and Distance in Children's Use of Mathematics Virtual Manipulative iPad Apps*, won the USU CEHS Graduate Student Researcher of the Year Award, and became an Assistant Professor at Virginia Commonwealth University. Dr. Tucker moved to UofL in 2017

to join the strong STEM Education faculty and help grow the doctoral program.

Dr. Tucker notes that the focused, yet well-rounded, experiences at USU involving research, teaching, and service, combined with collegiality and excellent mentorship continue to serve him well in his faculty position. In particular, Dr. Tucker appreciates learning to be aware of and intentional in approaching the multi-faceted role of a university faculty member. Now, he aims to provide similar support for students at UofL. Dr. Tucker sees his experiences in USU's Mathematics Education and Leadership program as critical foundations that helped him align his research, teaching, and service into a coherent, yet evolving agenda for his career in mathematics education. For more information about Dr. Tucker and EMERG, please visit <http://guru.louisville.edu/emerg/>.

MPS GRANT WITH WEBER SCHOOL DISTRICT SHOWS GROWTH IN TEACHER KNOWLEDGE

In January 2016, Weber School District and Utah State University (USU) were awarded an MSP grant: *The K-6 Mathematics Professional Development Partnership*. An important goal of the project is to increase the mathematics subject matter knowledge and teaching skills of the teachers. The grant provides funds for 20 teachers from Weber School District and 5 teachers from Greenwood Charter School to complete the six courses in the Elementary Mathematics Endorsement (EME) by participating in USU's high-quality online courses that can be taken at times convenient for the teachers. Teachers also participate in customized online standards-based modules in the summer that are tailored to their grade level and to specific mathematics standards, along with face-to-face professional development sessions aligned with the EME coursework.



Over the past two years, grant partners have been collecting data to document changes in teachers' mathematical knowledge for teaching Grades K-6. These measures of teacher



knowledge and teaching skills have included: 1) process evaluation metrics, 2) pre- and post-test scores, 3) classroom observations, and 4) teacher-led PD feedback/surveys.

Teachers have demonstrated substantial gains in mathematical knowledge between pre-tests taken prior to coursework

and post-tests taken following coursework. Teacher gains are also significant when compared with the test scores of a group of teachers who did not participate in the grant-funded coursework. The research team is currently evaluating teachers' implementation in classrooms and how teachers' new knowledge is supporting students' mathematics learning.

MATH EDUCATION GRADUATE STUDENTS PRESENT RESEARCH AT USU SYMPOSIUM

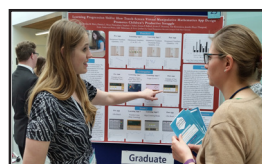
Each year during Research Week, the Office of Research and Graduate Studies at Utah State University hosts the Student Research Symposium. The Student Research Symposium is Utah State University's largest showcase of student research each year and includes undergraduate and graduate student researchers. The symposium is an opportunity for students to share the research they are conducting and provides an opportunity for students to communicate their research with an audience through oral and poster presentations. During the annual event in April 2017, over 300 graduate and undergraduate students shared their research with peers, administrators, students, staff, faculty judges and the campus community. Mathematics education graduate students, Emma Bullock and Christina Watts Lommatsch presented research posters, and

presented an oral presentation and a research poster at this year's event.

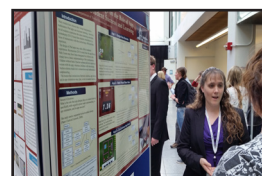
During the oral presentation, Kristy presented her research to a board of judges using a PowerPoint presentation. During the poster presentations, each presenter created and set up a poster in the Merrill-Cazier Library Atrium and discussed their research findings with attendees. Students, faculty and judges interacted with the presenters. Presentations were judged in different divisions, including oral (PowerPoint presentations in meeting rooms) and poster (posters displayed in the Library Atrium), and at different levels, including undergraduate and graduate. After the feedback and scores were computed, Emma Bullock was named the overall winner for the university in the Graduate Poster Division. Congratulations Emma, Christina and Kristy!



Emma Bullock
The School Leaders' Role in Students' Mathematics Achievement



Christina Lommatsch
Learning Progression Shifts: How Touch-Screen Virtual Manipulative Mathematics App Design Promotes Children's Productive Struggle



Kristy Litster
Preliminary Findings on the Role of App Design on Student Success and Learning

MATH EDUCATORS AND LEADERS PARTICIPATE IN SUMMER UCTM CONFERENCE



Back row L-R: Arla Westenskow, Jan Farmer, Don Busenbark, Andrew Glaze, Vicki Lyons, Mandy Seifert, Nancy Stewart, Jennifer Jenkins, and Barbara Child.
Front row L-R: Lauren Burton, Jessica Shumway, Laura Reina, Sara Urbanek, Jessica Hoggan, and Beth MacDonald.

The theme of this year's Utah Council of Teachers of Mathematics (UCTM) conference was: *Maximize Mathematics Learning for all Students*. Utah State University and Cache Valley mathematics educators were well represented at this year's annual UCTM summer 2017 conference. Representatives in the group included Mathematics education faculty from USU's School of Teacher Education and Leadership, graduate students from USU's PhD Program in Mathematics Education and Leadership, and teachers and mathematics leaders from the schools surrounding USU.

In addition to a number of invited keynote speakers featured at the conference, USU students and faculty also presented at the conference. Dr. Beth MacDonald, USU Mathematics Education faculty, presented a session titled: *Early Number Development to Allow All Students Access to Part-whole Reasoning*. Dr. Jessica Shumway, USU Mathematics Education faculty, and Edith Bowen Lab School 2nd grade teacher, Jessica Hoggan, presented a session titled: *Quick Images: Engaging All Students in Mathematical Discussions about Quantities and Symbols*. Vicki Lyons, USU Mathematics Education doctoral student, presented a session titled: *Using 2-Stage Testing to Promote Student Collaboration and Growth*. Lauren Burton, USU PhD Student, is currently serving as the Jr. High/Middle School Representative on the UCTM Board of Directors. As a member of the UCTM Board, she worked with vendors and introduced presenters at the conference. The UCTM conference is an excellent venue for bringing together mathematics educators, graduate students, teachers and administrators from all over the state in an event focused on strengthening mathematics teaching and learning for students in Utah.





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 program, the Elementary Mathematics Endorsement emphasis in the Master of Education Degree in Elementary Education, professional development credit in the online Elementary Mathematics Teachers Academy, 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