

UtahStateUniversity



Spring 2016 Graduation

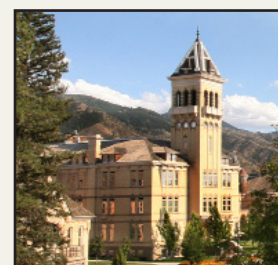
A record number of students from the Mathematics Education and Leadership Concentration graduated with PhDs in the spring 2016 graduation ceremony. Members of the graduating class included Jennifer Boyer-Thurgood, Jodi Mantilla, Jessica Shumway, Stephen Tucker, and Kathryn Van Wagoner. Jennifer Boyer-Thurgood's dissertation was titled: *The Anatomy of Virtual Manipulative Apps: Using Grounded Theory to Conceptualize and Evaluate Educational Mathematics Apps*. Jennifer is the Director of the Elementary Mathematics Teachers Academy at Utah State University. Jodi Mantilla's dissertation was titled: *Identifying Factors Common among Students Who Do Not Fit*



the Typical Mathematics Self-Efficacy and Achievement Correlation. Jodi is an Assistant Professor of Mathematics Education at Brigham Young University. Jessica Shumway's dissertation was titled: *A Counting-Focused Instructional Treatment for Developing Number System Knowledge in Second Grade: A Mixed Methods Study on Children's Number Sense*. Jessica has accepted a position as an Assistant Professor of Mathematics Education at Utah State University. Stephen Tucker's dissertation was titled: *An Exploratory Study of Attributes, Affordances, Abilities, and Distance in Children's Use of Mathematics Virtual Manipulative iPad Apps*. Stephen is an Assistant Professor of Mathematics Education at Virginia Commonwealth University. Kathryn Van Wagoner's dissertation was titled: *College Student Perceptions of Secondary Teacher Influence on the Development of Mathematical Identity*. Kathryn is the Director of the Department of Developmental Mathematics at Weber State University. Congratulations to all of our graduates!

L to R: Jodi Mantilla, Kathryn Van Wagoner, Stephen Tucker, Jennifer Boyer-Thurgood, Jessica Shumway

Spring 2016 Issue No. 2



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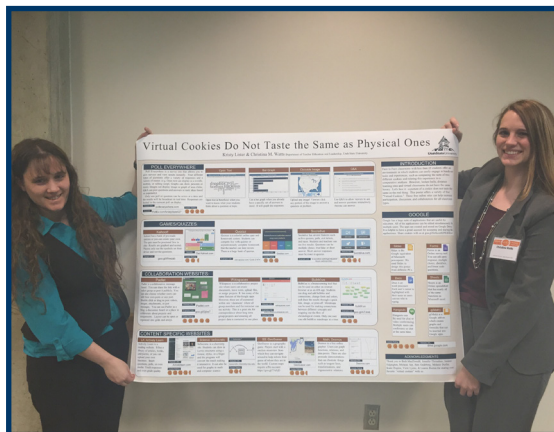
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Doctoral Students Provide Technology Ideas for Teaching Engagement

Today, there are so many different types of technology that can be used by K-12 teachers for instruction. That was the theme of a poster presentation by Kristy Litster and Christina Watts titled: *Virtual Cookies Do Not Taste the Same as Physical Ones*. They presented their research on a variety of classroom technologies for instruction in April 2016 at Utah Valley University's Scholarship of Teaching Engagement Conference. The poster provided information on a variety of free online resources for use in mathematics education courses that can help increase participation, discussion, and collaboration for all classroom types. Some of the examples shared included: Poll Everywhere, online games and quizzes, collaboration websites, and content-specific websites. The impetus for the poster topic arose from Kristy's desire to use physical cookie recipes as a metaphor for comparative analysis. The broadcast format of the course she was taking necessi-

tated the use of "virtual cookies" instead. Even though virtual cookies do not taste the same as physical ones, they can still be used for enrichment and engagement.



Kristy Litster and Christina Watts

Virtual Manipulatives Research Group Presents at 100th Annual AERA Meeting

Four members of the Virtual Manipulatives Research Group (VMRG) recently presented at the 100th Anniversary of the American Educational Research Association Annual conference held in Washington DC in April 2106. Members of the group included: Patricia Moyer-Packenham, Professor and Director of the Mathematics Education and Leadership programs at Utah State University; Stephen Tucker, Assistant Professor of Mathematics Education at Utah State University; Emma Bullock and Christina Watts, PhD students at Utah State University. The group's research paper presentation was titled: Using Virtual Manipulatives on iPads to Promote Young Children's Mathematics Learning. The purpose of the project was to examine young children's mathematics learning using virtual manipulative touch-screen apps.

The VMRG interviewed over 100 young children as they interacted with mathematics apps on iPads and examined how the interactions supported mathematics learning and contributed to changes in efficiency. Children interacted with six different mathematics apps under the direction of an interviewer. Results of the study indicated that children's learning and efficiency improved between the pre- and post-assessments during a short interview time period. Close alignment of the learning apps with the pre- and post-assessment apps contributed to these positive changes. The study demonstrated that a brief interaction with a mathematics app can have a significant impact on a child. Researchers and educators must be selective in choosing apps for mathematics experiences. Additionally, features and affordances



Front: Christina Watts and Emma Bullock
Back: Stephen Tucker and Patricia Moyer-Packenham

of the mathematics apps supported or hindered children's mathematical development. It was the affordance-ability relationship, between the app and the child, that determined how children experienced the apps. To conduct this study, VMRG researchers created a variety of research tools that were not available because research using touch-screen devices is still in its infancy.

Where are they now? Spotlight on Dr. Kathryn Van Wagoner



This semester we spotlight Dr. Kathryn Van Wagoner. While working on her PhD in USU's Mathematics Education and Leadership concentration, Kathryn Van Wagoner secured the position of Director of the Department of Developmental Mathematics at Weber State University (WSU) in Ogden, Utah. Dr. Van Wagoner has been able to apply much of

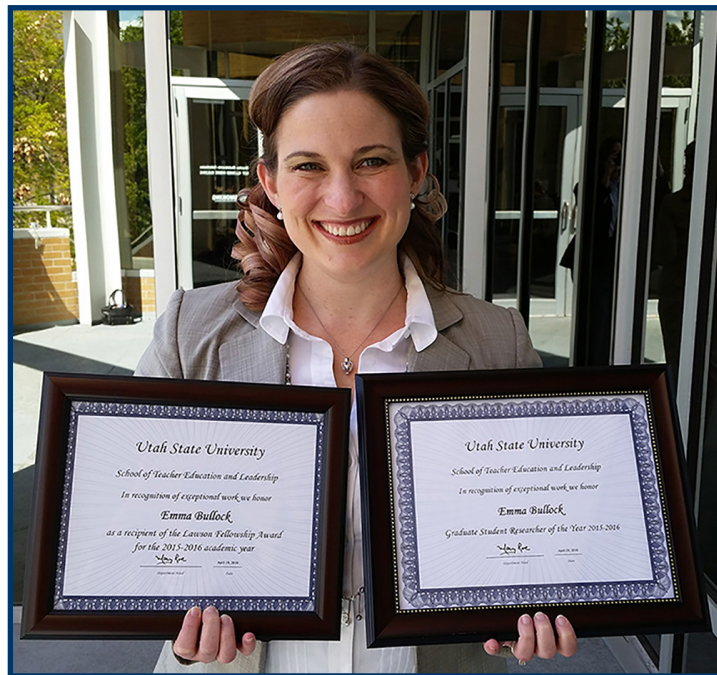
what she learned in her doctoral classes to improve student learning experiences at WSU. In 2015, Kathryn completed her doctoral studies and published her dissertation titled: College Student Perceptions of Secondary Teacher Influence on the Development of Mathematical Identity. Working with developmental mathematics students gave Dr. Van Wagoner a keen understanding and compassion for those who struggle to learn mathematics. With developmental mathematics students as her research participants, Dr. Van Wagoner investigated how the students had been influenced by the teachers they had for mathematics in their middle and high school years. The study found a strong, positive student-teacher relationship was foundational to developing a positive student-mathematics relationship and identity. In essence, students believed if the teacher was not worth knowing, neither was the mathematics. Dr. Van Wagoner's current focus is on reforming developmental mathematics curriculum and pedagogy to reflect best research-based practices in mathematics education. She is pursuing ways to positively affect how preservice elementary teachers are taught mathematics, so that good teaching is modeled for them during their preparation at WSU.

Doctoral Student Wins Five Major Awards

To say that this has been an outstanding semester for PhD student, Emma Bullock, might be an understatement. During the spring 2016, Emma was the recipient of five major doctoral awards. These awards included: TEAL Graduate Student Researcher of the Year, Graduate Research and Creative Opportunities Grant, Lawson Fellowship Award, Graduate Student Senate Enhancement Award, and a Dissertation Fellowship Award. In a spring 2016 ceremony, Emma was named the Graduate Student Researcher of the Year for the School of Teacher Education and Leadership. This is the sixth consecutive year that a doctoral student from the Mathematics Education and Leadership concentration has received this award. Emma had an incredibly productive year in research with 4 published journal articles and 1 additional journal article in press. Emma received the Lawson Fellowship Award for her work with children and families. She has served as a Board Trustee at Thomas Edison Charter School for the past two years and provides extensive leadership and service to children and families. Emma currently coordinates a major research project in which over 200 elementary children will participate in interviews on their use of touch-screen apps for mathematics learning.

Three of the awards Emma won were dissertation research awards (Graduate Research and Creative Opportunities Grant, Graduate Student Senate Enhancement Award, and Dissertation Fellowship). Emma's dissertation is titled: An Explanatory Sequential Mixed Methods Study of the School Leaders' Role in Students' Mathematics Achievement through the Lens of Complexity Theory. Her study explores the pressures school leaders face as they are held accountable for mathematics achievement. Her research ap-

proach allows her to delve into the roles that the school leader can play in effecting positive change for mathematics learning. Emma's use of a mixed methods design will allow her to understand relationships among parts of the system quantitatively, and then investigate qualitatively the deeper underlying issues that are at the heart of why and how school leaders make decisions about the allocation of resources, time and professional development that directly impact mathematics learning and achievement in schools.



Grant Awarded for Partnership with Weber School District

Collaborators from USU's mathematics education programs and leaders from Weber School District were recently awarded a grant from the Utah State Office of Education in the amount of \$145,981 to provide

mathematics professional development for elementary teachers. Sheri Heiter (PI), Weber School District (WSD), Patricia Moyer-Packenham (Co-PI), USU's Mathematics Education and Leadership Programs, Kady Schneider (Co-PI), USU's Department of Mathematics and Statistics, and Jennifer Boyer-Thurgood (Project Director), USU's Online Elementary Mathematics Teacher Academy were awarded the 3-year Mathematics and Science Partnership (MSP) Grant. The K-6 Mathematics Professional Development Partnership grant takes advantage of USU's cutting-edge online technology delivery structures.



Front: Kady Schneider and Sheri Heiter
Back: Patricia Moyer-Packenham and Jennifer Boyer-Thurgood

The goals of the project are to provide professional development coursework for 60 teachers, the six Elementary Mathematics Endorsement courses for 25 teachers, and face-to-face PD sessions. During the project, 25 teachers will earn their Elementary Mathematics Endorsement in USU's innovative online program. Sessions will: 1) increase the mathematical subject matter knowledge and teaching skills of the teachers, and 2) increase the mathematics achievement of their K-6 students. The online program combines the use of cutting-edge mathematics learning technologies with innovative communications technologies to provide rigorous, high-quality, research-based learning experiences for teachers. Face-to-face PD sessions will be designed to help teachers take their new knowledge, apply it in their classrooms, and lead professional development sessions for additional teachers.



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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 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!



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