

ON THE INSIDE:

- Where Are They Now? Spotlight on Dr. Emma Bullock
- Mathematics Education Doctoral Student Receives Award for Excellence in Research
- Kristy Litster Receives Outstanding Dissertation of the Year Award
- Graduate Students Share Their Research Virtually at Conferences



Dr. Hilary Tanck Joins the Math Education Faculty at USU



In the fall of 2021, Dr. Hilary Tanck joined the Mathematics Education and Leadership faculty as a Professional Practice Assistant Professor in Elementary Mathematics Education. Dr. Tanck is based in Tooele as part of the Utah State University Regional Campus system. She obtained her BS in Middle School Education with an emphasis in mathematics and social studies from Southwest Baptist University in Bolivar, MO, and received her MSE from Arkansas State in Education Theory and Practice. Tanck received her PhD in Curriculum and Instruction with an emphasis in Mathematics Education from Clemson University. Her dissertation, Mapping Middle School Mathematics Teachers' Curriculum Assemblage: A post-qualitative

Inquiry, investigated teachers' curriculum work during the COVID-19 pandemic. The study challenged what it means to do research pushing the boundaries of qualitative research. Participants in the study adjusted their curriculum assemblages by cutting, adding, translating, and reorganizing components to meet the demands of teaching during the pandemic. The findings are important because they raise questions about which components remained entrenched and which components participants were willing to change.

Dr. Tanck holds career teaching licensure for grades 5-9 mathematics and social studies in the state of Missouri. Prior to pursuing her PhD, Dr. Tanck taught in a range of K-12 settings: four years teaching 8th grade at a Title I school, a year teaching English to 5th and 6th graders in Beijing, and returning for three years to teach 6th grade math in her hometown of Platte City, MO. Dr. Tanck enjoys spending time hiking, whitewater kayaking, and biking. She also loves traveling, trying new foods, and experiencing different cultures. Welcome Dr. Hilary Tanck!

Roxburgh Wins Graduate Teacher of the Year Award



The School of Teacher Education and Leadership (TEAL) named Allison Roxburgh the 2021 Graduate Teacher of the Year. In her experience as a research and teaching assistant, Roxburgh has taught 10 different courses in various formats (face-to-face and online) and at different levels (undergraduate and graduate). These teaching experiences provided Roxburgh with knowledge of effective pedagogical practices for mathematics education and instructional technology in higher education. Roxburgh's classes are highly engaging, include hands-on experiences for students, and promote online communities through meaningful online discussions. She constantly uses student feedback to strengthen and improve aspects of her teaching. Roxburgh finds the IDEA Student Ratings of Instruction (SRI) to be extremely helpful in providing specific information about her instruction. In addition, Roxburgh gathers mid-term student feedback, which has been especially helpful in understanding the needs of her students during the changing circumstances of COVID-19. Over the past four years as a teaching assistant, Roxburgh has made important contributions to the School of TEAL. For example, she re-developed an online graduate-level course. She also supervised 16 preservice elementary teachers' during their practicum experiences in local elementary schools. The focus of her teaching and supervision is always on her students' success. In addition to teaching at USU, Roxburgh has contributed to undergraduate students by serving as a judge for the Undergraduate Student Research Symposium, and reviewed applications for the Undergraduate Creative Opportunities (URCO) grant applications. This voluntary experience shows Roxburgh's commitment to her students' academic needs in and out of the classroom.

Where Are They Now? Spotlight on Dr. Emma Bullock

Dr. Emma Bullock earned a PhD in Education with a concentration in Mathematics Education and Leadership from Utah State University in 2017. Dr. Patricia Moyer-Packenham served as her dissertation chair. Bullock was the winner of several dissertation awards including the 2018 Mixed Methods International Research Association, 2018 Award for Outstanding Dissertation Research, and the 2017 TEAL Outstanding Dissertation of the Year Award. In addition, her dissertation is the #2 most downloaded dissertation from the TEAL department with almost 20,000 downloads!

Dr. Bullock is in her fifth year as an Assistant Professor of Mathematics Education in the Mathematics and Statistics Department at Sam Houston State University in Huntsville, TX. She serves as the graduate advisor for the MA in Mathematics program. Bullock's current research has two foci. First, she seeks to understand the helpful and hindering design features in digital mathematics



representations found within digital math games and online learning platforms. Second, she explores complex adaptive systems within educational settings, with a particular emphasis on mixed methods. Dr. Bullock credits her outstanding doctoral research and teaching preparation at USU for her present ability to balance research, teaching, and service. Some of her recent publications include:

Bullock, E.P., Webster, J.S., and Jones, D. (2021). Helpful and hindering features of GeoGebra: Understanding what affords conceptual understandings of definite integrals among pre-service middle grades mathematics teachers. *International Journal of Technology in Mathematics Education*, 28(2), 81-92. DOI: 10.1564/tme_v28.2.02.

Bullock, E.P., Roxburgh, A.L., Moyer-Packenham, P.S., Bektas, E., Webster, J.S., Bullock, K.A. (2020). Connecting the dots: Understanding the interrelated impacts of type, quality and children's awareness of design features and the mathematics content learning goals in digital math games and related learning outcomes. *Journal of Computer Assisted Learning*, 37(2), 557-586. DOI: 10.1111/JCAL.12508.

Mathematics Education Doctoral Student Receives Award for Excellence in Research

Joey Kozlowski was named Doctoral Researcher of the Year by the School of Teacher Education and Leadership in spring 2021 for his outstanding work as a Graduate Research Assistant. He was recognized for his productive and high-quality record of scholarship and research skills. Kozlowski is a fourth-year PhD student in the Mathematics Education and Leadership concentration at Utah State University. During this time at USU, he has worked as a Graduate Research Assistant on two large research projects. In his work with the Virtual Manipulatives Research Group, led by Dr. Patricia Moyer-Packenham, Kozlowski conducted interviews with elementary school children to study their learning with digital mathematics games. As a senior member of the Coding in Kindergarten Research team, led by Drs. Jessica Shumway, Jody Clarke-Midura, and Victor Lee, Kozlowski has been an essential teacher-

researcher for the project's classroom-based design experiments and an excellent mentor for undergraduate student researchers. Kozlowski led the analysis process for a paper on students' spatial perspectives, recently published in the *International Journal of Child-Computer Interaction*. In fall 2021, he will lead a presentation at the PME-NA conference on his dissertation pilot study titled: *Eliciting Kindergarten's Use of Mathematics: A Pilot Study on a Coding Toy's Design Features*. Kozlowski has 13 publications and a total of 20 presentations during his doctoral studies. Outside of his work on these research projects, he partnered with Edith Bowen Laboratory School teachers to develop an effective Response to Intervention structure to support students' mathematics learning. Kozlowski is currently a second-grade teacher at the Edith Bowen Laboratory School, where he mentors undergrad-

uate pre-service teachers. He is currently working on his dissertation about the design features of coding robot toys and ways they afford young children's engagement in mathematics.



Joey Kozlowski with Students in his Second-grade Class

Kristy Litster Receives Outstanding Dissertation of the Year Award

Dr. Kristy Litster received the Outstanding Dissertation of the Year Award for the School of Teacher Education and Leadership in 2021. The title of her dissertation was: *The Relationship Between Small-Group Discourse and Student-Enacted Levels of Cognitive Demand when Engaging with Mathematics Tasks at Different Depth of Knowledge Levels*. Dr. Litster's dissertation used a crossover design to look at how 97 Grade 5 students engaged with 26 tasks designed at four different levels of cognitive demand, and the relationship between student performance and two types of discourse. This dissertation used a variety of qualitative and quantitative methods such as magnitude coding, explanatory pattern coding, exploratory thematic coding, structural coding, frequency tables, chi-square tests of independence, difference in propor-

tions tests of association, and two different graphical analyses of frequencies to visualize the data, which included 1,234 pages of written data and 140 hours of verbal data. Dr. Litster's research showed that both Reflective and Exploratory Discourse can be used by teachers to promote high student-enacted levels of cognitive demand in different ways.

When asked about her experience at USU, Dr. Litster said, "I enjoyed my experience in the TEAL doctoral program and learned a lot about myself and the field of mathematics education. I appreciated the various growth opportunities to teach, research, write, and present. I would like to especially thank Dr. Patricia Moyer-Packenham for her time and mentorship throughout my entire program of study and particularly in the design, implemen-



Dr. Kristy Litster

tation, and writing of my dissertation. I would also like to thank my committee members, Drs. Beth MacDonald, Jessica F. Shumway, Colby Tofel-Grehl, and Kerry Jordan, for their support and assistance throughout the entire process."

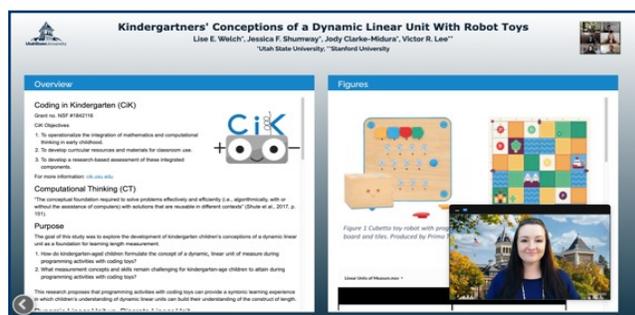
Graduate Students Share Their Research Virtually at Conferences

Despite the COVID-19 restrictions of the past year, graduate students in mathematics education have been sharing their research virtually at multiple professional conferences. Third-year doctoral student, Lise Welch, and mentor Dr. Jessica Shumway, presented at a roundtable paper session at the American Educational Research Association (AERA) on the topic of kindergartners' conceptions of a dynamic linear unit with robot toys. They found that social context, gesturing, and verbal descriptions influenced

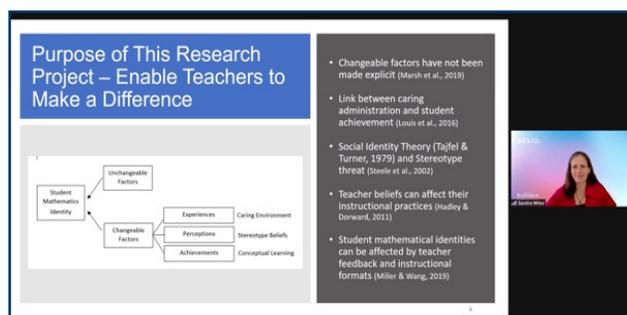
children's understanding of a dynamic unit.

First-year doctoral student Sandra Miles, and mentor Dr. Katherine Vela, presented research on self-efficacy and interest in a STEM career at the Southwest Educational Research Association Conference (SERA). Miles also presented at the USU Student Research Symposium on teacher behaviors, such as teaching for conceptual understanding, that strengthen students' mathematical

identities. First-year doctoral student, Jameson Hardy, and third-year doctoral student, Kimberleigh Hadfield, presented at the Intermountain Mathematical Association of America (MAA) Conference. Hardy's presentation focused on integrating the Rubik's cube in art, computer science, biology, chemistry, and mathematics. Hadfield's presentation focused on how to reduce cognitive load in introductory statistics courses by using worked-out problems, specifically when teaching probability concepts.



Lise Welch presents at the AERA Conference



Sandra Miles presents at the USU Student Research Symposium



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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 Concentration 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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