

Curriculum Vitae

Jessica F. Shumway, Ph.D.

Assistant Professor, Mathematics Education

Utah State University

Emma Eccles Jones College of Education and Human Services

School of Teacher Education and Leadership

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EDUCATION

Ph.D. in Education	2016
Utah State University, Logan, UT	
Specialization: Curriculum & Instruction	
Area of Concentration: Mathematics Education & Leadership	
M.Ed. in Elementary Education	2003
The George Washington University, Washington, DC	
Teaching Certificate: Elementary Education & English as a Second Language (ESL)	
B.A. in International Affairs	2002
The George Washington University, Washington, DC	
Minor in Spanish Language & Literature	
Women's Leadership Program (1998-99) and Presidential Scholarship (1998-2002)	
Study Abroad at Al Akhawayn University in Morocco (May-July 2000) and Universidad Autónoma de Madrid in Spain (August-December 2000)	

PROFESSIONAL HISTORY

Assistant Professor, Mathematics Education & Leadership Programs	2016 – present
School of Teacher Education and Leadership	
EEJ College of Education and Human Services, Utah State University	
University Instructor	2010-2016
School of Teacher Education and Leadership, Utah State University	
Graduate Research Assistant	2010-2016
School of Teacher Education and Leadership, Utah State University	
Elementary School Teacher, Grades 3-4	2008-2010
Fairfax County Public Schools, Virginia	
Title I Mathematics Teacher/Coach, Grades PreK-5	2005-2008
Fairfax County Public Schools, Virginia	
Elementary School Teacher, Grade 2	2003-2005
Round Rock Independent School District, Texas	

RESEARCH

Research Interests

- instructional practices for fostering mathematical thinking (number sense, spatial reasoning, and problem solving) in preschool and elementary mathematics classrooms
- technology for advancing mathematical thinking (number sense, spatial reasoning, and problem solving) and computational thinking in preschool and elementary mathematics classrooms

PUBLICATIONS

* Denotes graduate student co-authors; ** denotes undergraduate student co-authors; ***denotes teacher co-authors

BOOKS

1. **Shumway, J. F.** (2018). *Number sense routines: Building mathematical understanding every day in grades 3 - 5*. Portland, ME: Stenhouse Publishers.
2. **Shumway, J. F.** (2011). *Number sense routines: Building numerical literacy every day in grades K - 3*. Portland, ME: Stenhouse Publishers.

BOOK CHAPTERS/MONOGRAPHS (Refereed)

1. Moyer-Packenham, P. S., *Litster, K., Bullock, E. P., & **Shumway, J. F.** (2018). Using video analysis to explain how virtual manipulative app alignment affects children's mathematics learning. In L. Ball, P. Drijvers, S. Ladel, H.-S. Siller, M. Tabach, & C. Vale (Eds.), *Uses of technology in primary and secondary mathematics education: Tools, topics, and trends* (pp. 9-34). ICME-13 Monographs, Switzerland: Springer. https://doi.org/10.1007/978-3-319-76575-4_2

JOURNAL ARTICLES (Refereed)

2021

1. **Shumway, J. F.**, & *Reeder, R. (accepted). Characteristics of 3-year-old preschoolers' evolving mathematics knowledge: A one-year multiple-case analysis. *International Journal for Mathematics Teaching and Learning*.
2. **Shumway, J. F.**, *Welch, L., *Kozlowski, J., Clarke-Midura, J., & Lee, V. R. (in press). Kindergarten students' mathematics knowledge at work: The mathematics for programming robot toys. *Mathematical Thinking and Learning*.
3. Clarke-Midura, J., Silvis, D., **Shumway, J. F.**, Lee, V. R., & *Kozlowski, J. (2021). Developing a kindergarten computational thinking assessment using Evidence Centered Design: The case of algorithmic thinking. *Computer Science Education*, 31(2), 117-140. <https://doi.org/10.1080/08993408.2021.1877988>
4. Clarke-Midura, J., *Kozlowski, J. S., **Shumway, J. F.**, & Lee, V. R. (2021). How young children engage in and shift between reference frames when playing with coding toys. *International Journal of Child-Computer Interaction*, 28, 100250. <https://doi.org/10.1016/j.ijcci.2021.100250>

2020

5. **Shumway, J. F.**, Bundock, K., **King, J., **Burnside, M., *Gardner, H., & **Messervy, F. (2020). Visualizing number: Instruction for Number System Knowledge in second-grade classrooms. *Investigations in Mathematics Learning*, <https://doi.org/10.1080/19477503.2020.1740383>
6. *Thronsdon, J. E., **Shumway, J. F.**, & Moyer-Packenham, P. S. (2020). The relationship between mathematical literacy at kindergarten entry and preschool attendance, type, and quality. *Early Childhood Education Journal*, (48)4, 473-483. <https://doi.org/10.1007/s10643-019-01014-7>
7. *Litster, K., MacDonald, B. L., & **Shumway, J. F.** (2020). Experiencing active mathematics learning: Meeting the expectations for teaching and learning in mathematics classrooms. In A. Apposa, R. M. Welder, & Z. Feldman (Eds.), *Supporting Mathematics Teacher Educators' Knowledge and Practices for Teaching Content to Prospective (Grades K-8) Teachers*. Special Issue: *The Mathematics Enthusiast*, 17(2 & 3), 615-640. ISSN: 1551-3440

2019

8. **Shumway, J. F.** & Moyer-Packenham, P. S. (2019). A counting-focused instructional treatment to improve number sense: An exploratory classroom-based intervention study. *The Mathematics Enthusiast*, 16(1), Article 14.
9. **Shumway, J. F.**, & ***Hoggan, J. (2019). Developing spatial structuring with Quick Images. *Teaching Children Mathematics*, 25(5), 290-296.

10. **Shumway, J. F.**, Clarke-Midura, J., Lee, V. R., *Hamilton, M., & ***Baczuk, C. (2019). Coding toys in kindergarten. *Teaching Children Mathematics*, 25(5), 314-317.
11. *Hamilton, M., Clarke-Midura, J., **Shumway, J. F.**, & Lee, V. R. (2019). An emerging technology report on coding toys and computational thinking in early childhood. *Technology, Knowledge, and Learning*, 24(68), online. <https://doi.org/10.1007/s10758-019-09423-8>
12. Clarke-Midura, J., Lee, V. R., **Shumway, J. F.**, & *Hamilton, M. (2019). The building blocks of coding: A comparison of early childhood coding toys. *Information and Learning Science*, 120(7/8), 505-518. <https://doi.org/10.1108/ILS-06-2019-0059>
13. Moyer-Packenham, P. S., *Lommatsch, C. W., *Litster, K., *Ashby, J., Bullock, E. K., *Roxburgh, A., **Shumway, J. F.**, *Speed, E...Jordan, K. E. (2019). How design features in digital math games support learning and mathematics connections. *Computers in Human Behavior*, 91, 316-332.

2018

14. **Shumway, J. F.** & Jordan, K. E. (2018). Understanding students' computational fluency: Synechistically using test scores and interviews for a richer picture. *International Journal for Mathematics Teaching and Learning*, 2, 159-175.
15. **Player, C., & **Shumway, J. F.** (2018). Emerging number system knowledge ideas: A case study. *American Journal of Undergraduate Research*, 15(3), 23-34.
16. Baker, J. M., Moyer-Packenham, P. S., Tucker, S. I., **Shumway, J. F.**, Jordan, K. E., & Gillam, R. B. (2018). The brain's response to digital math apps: A pilot study examining children's cortical responses during touch-screen interactions. *Journal of Computers in Mathematics and Science Teaching*, 37(1), 69-86.

2017

17. **Shumway, J. F.**, & ***Pace, L. (2017). Preschool problem solvers: CGI promotes mathematical reasoning. *Teaching Children Mathematics*, 24(2), 102-110.
18. Bullock, E. P., **Shumway, J. F.**, *Watts, C. M., & Moyer-Packenham, P. S. (2017). Affordance access matters: Preschool children's learning progressions while interacting with touch-screen mathematics apps. *Technology, Knowledge, and Learning*, 1-27. <https://doi.org/10.1007/s10758-017-9312-5>

2016

19. **Shumway, J. F.**, Westenskow, A., & Moyer-Packenham, P. S. (2016). An exploratory study of a story problem assessment: Understanding children's number sense. *International Journal for Mathematics Teaching and Learning*, 17(3). Retrieved from <http://www.cimt.org.uk/ijmtl/index.php/IJMTL/index>
20. **Shumway, J. F.**, Moyer-Packenham, P. S., Baker, J. M., Westenskow, A., Anderson-Pence, K. L., Tucker, S. I., Boyer-Thurgood, J., & Jordan, K. E. (2016). Using open-response fraction items to explore the relationship between instructional modalities and students' solution strategies. *International Journal of Education in Mathematics, Science, and Technology*, 4(2), 112-132.
21. *Watts, C. M., Moyer-Packenham, P. S., Tucker, S. I., Bullock, E. P., **Shumway, J. F.**, Westenskow, A., Boyer-Thurgood, J., Anderson-Pence, K., *Mahamane, S., & Jordan, K. (2016). An examination of children's learning progression shifts while using touch screen virtual manipulative mathematics apps. *Computers in Human Behavior*, 64, 814-828.
22. Moyer-Packenham, P. S., Bullock, E., **Shumway, J. F.**, Tucker, S. I., Watts, C., Westenskow, A., Anderson-Pence, K. L., Maahs-Fladung, C., Boyer-Thurgood, J., Gulkilik, H., & Jordan, K. E. (2016). The role of affordances in children's learning performance and efficiency when using virtual manipulative mathematics touch-screen apps. *Mathematics Education Research Journal*, 28(1), 79-105.
23. Chedister, M. & **Shumway, J. F.** (2016). The role of questioning to develop conceptual understanding. *Wisconsin Teacher of Mathematics*, 68(2), 21-24.
24. MacDonald, B. L. & **Shumway, J. F.** (2016). Subitizing games: Assessing preschool children's number understanding. *Teaching Children Mathematics*, (22)6, 340-348.

25. Tucker, S. I., Moyer-Packenham, P. S., **Shumway, J. F.**, & Jordan, K. (2016). Zooming in on students' thinking: How a virtual manipulative app revealed, concealed, and developed students' number understanding. *Australian Primary Mathematics Classroom*, (21),1, 23-28.

2015

26. Moyer-Packenham, P. S., **Shumway, J. F.**, Bullock, E., Tucker, S. I., Anderson-Pence, K. L., Westenskow, A., Boyer-Thurgood, J., Maahs-Fladung, C., Symanzik, J., Mahamane, S., MacDonald, B., & Jordan, K. (2015). Young children's learning performance and efficiency when using virtual manipulative mathematics iPad apps. *Journal of Computers in Mathematics and Science Teaching*, 34(1), 41-69.

2014

27. **Shumway, J. F.**, & ***Kyriopolous, J. (2013/2014). Mastery multiplied. *Educational Leadership*, 71(4), 73-76.
28. Anderson-Pence, K. L., Moyer-Packenham, P. S. Westenskow, A., **Shumway, J. F.**, & Jordan, K. (2014). Relationships between visual static models and students' written solutions to fraction tasks. *International Journal for Mathematics Teaching and Learning*, 15, 1-18.
29. Moyer-Packenham, P. S., Baker, J. M., Westenskow, A., Anderson-Pence, K., **Shumway, J. F.**, & Jordan, K. E. (2014). Predictors of achievement when virtual manipulatives are used for mathematics instruction. *Journal of Research in Mathematics Education (REDIMAT)*, 3(2), 121-150.
30. Westenskow, A., Moyer-Packenham, P. S., Anderson-Pence, K. L., **Shumway, J. F.**, & Jordan, K. (2014). Cute Drawings? The disconnect between students' pictorial representations and their mathematics responses to fraction questions. *International Journal for Research in Mathematics Education*, 1(1), 81-105.

2013

31. **Shumway, J. F.** (2013). Building bridges to spatial reasoning. *Teaching Children Mathematics*, 20(1), 44-51. Reprinted in:
1. **Shumway, J. F.** (2018). Additional activities and teaching notes for "Building bridges to spatial reasoning." In S. McMillen, E. Friedland, & P. del Prado Hill (Eds.), *Integrating math across the K-6 curriculum*. Reston, VA: NCTM.
 2. **Shumway, J. F.** (2017). Teaching notes for "Building bridges to spatial reasoning." In D. Thiessen (Ed.), *Exploring math through literature Pre-K-8*. Reston, VA: NCTM.
32. Moyer-Packenham, P., Baker, J., Westenskow, A., Anderson, K., **Shumway, J.**, Rodzon, K., & Jordan, K., The Virtual Manipulatives Research Group at Utah State University. (2013). A study comparing virtual manipulatives with other instructional treatments in third- and fourth-grade classrooms. *Journal of Education*, 193(2), 25-39.

PUBLISHED CONFERENCE PROCEEDINGS (Refereed)

2021

1. Silvis, D., Clarke-Midura, J., **Shumway, J. F.**, & Lee, V. R. (2021, June). Objects to debug with: How young children resolve errors with tangible coding toys. *Proceedings of the International Society of the Learning Sciences (ISLS) Annual Meeting*. Bochum, Germany: ISLS.

2020

2. Silvis, D., Lee, V., Clarke-Midura, J., **Shumway, J. F.**, & *Kozlowski, J. (2020, June). Blending everyday movement and representational infrastructure: An interaction analysis of kindergarteners coding robot routes. In M. Gresalfi & L. Horn (Eds.), *Rethinking Learning in the Digital Age: Making the Learning Sciences Count, Proceedings of the 14th International Conference of the Learning Sciences (ICLS)*. Nashville, TN: ISLS. Paper published; conference canceled due to covid19.

2018

3. *Hamilton, M., Clarke-Midura, J., **Shumway, J. F.**, & Lee, V. R. (2018, June). An initial examination of designed features to support computational thinking in commercial early

childhood toys. In J. Kay & R. Luckin (Eds.), *Rethinking Learning in the Digital Age: Making the Learning Sciences Count, Proceedings of the 13th International Conference of the Learning Sciences (ICLS)*, Vol. 3, pp. 1739-1740. London, UK: ISLS.

2016

4. Moyer-Packenham, P. S., **Shumway, J. F.**, Bullock, E., Anderson-Pence, K., Tucker, S. I., Westenskow, A., Boyer-Thurgood, J., Gulkilik, H., Watts, C., & Jordan, K. (2016, July). Using virtual manipulatives on iPads: How app alignment promotes young children's mathematics learning. *Proceedings of the 13th International Conference of the Mathematics Education*. Hamburg, Germany: ICME.

2014

5. **Shumway, J. F.**, Westenskow, A., & Moyer-Packenham, P. S. (2014, January). A story problem assessment: Task-based interviews for understanding children's number sense. *Proceedings of the 12th Annual Hawaii International Conference on Education*. Honolulu, Hawaii: HICE.
6. Moyer-Packenham, P. S., **Shumway, J.**, Westenskow, A., Tucker, S., Anderson, K., Boyer-Thurgood, J., & Bullock, E. (2014, January). Young children's mathematics interactions with virtual manipulatives on iPads. Research Paper Presentation, *Proceedings of the 12th Annual Hawaii International Conference on Education*, pp. 1685-1694. Honolulu, Hawaii: HICE.
7. Boyer-Thurgood, J., Moyer-Packenham, P. S., **Shumway, J.**, Westenskow, A., Tucker, S., Anderson, K., & Bullock, E. (2014, January). Kindergartener's strategy development during combining tasks on the iPad. *Proceedings of the 12th Annual Hawaii International Conference on Education*, pp. 1113-1114. Honolulu, Hawaii: HICE.

PUBLISHED BOOK REVIEW (Non-Refereed)

1. **Shumway, J. F.** (2017, February 2). STEM learning with young children: Inquiry teaching with ramps and pathways [Review of the book *STEM learning with young children: Inquiry teaching with ramps and pathways*, by S. Counsell et al.]. *Teachers College Record*, <http://www.tcrecord.org> ID Number: 21812

PROFESSIONAL DEVELOPMENT PRODUCT (Commercially Available)

1. **Shumway, J. F.** (2014). *Go figure! Number sense routines that build mathematical understanding*. (Professional development video for teachers). Portland, ME: Stenhouse Publishers.

INTERNAL AND EXTERNAL FUNDING

FUNDED RESEARCH (Total: \$1,780,615.88)

External

Clarke-Midura, J., **Shumway, J. F.**, & Lee, V. R. (\$1,120,807). *Research on the Development of An Assessment to Measure Kindergarten Children's Abilities to Reason Computationally with Mathematical Problem-Solving Skills*. Funded by the National Science Foundation, STEM+C Program, 1/1/2019 – 7/1/2022.

Recker, M., **Shumway, J. F.**, & Clarke-Midura, J. (\$629,951 to USU) collaborative with Lee, V. R. at Stanford University (\$1,000,000 total). *Collaborative Research: Supporting Rural Paraprofessional Educators and their Students with Computer Science Professional Learning and Expansively Framed Curriculum*. Funded by the National Science Foundation, CSforAll:RPP Medium Pre-K through 8 Strand, 8/1/2020 – 7/31/2023.

Internal

Clarke-Midura, J., **Shumway, J. F.**, & Lee, V. R. (\$19,960.88). *Coding in Kindergarten: An Exploratory Study of Coding Toys in Kindergarten Classrooms*. Funded by Utah State University's Office of Research & Graduate Studies Research Catalyst Grant, 7/1/2018 – 7/1/2019.

Shumway, J. F. (\$9,897.00). *A Number System Knowledge Instructional Treatment: Linking Quantities with Numerals to Promote Students' Number Sense Development*. Funded by Utah State University's Office of Research & Graduate Studies Grant-Writing Experience Through Mentorship (GEM) Grant, 7/1/2017 – 7/1/2018.

GRANTS SUBMITTED

(Not Funded)

Shumway, J. F., Bundock, K., Moyer-Packenham, P. S., & Barrett, T. (\$1,307,770). *MathVision Interventions: Improving First-Graders' Visual Number System Knowledge*. Re-submitted August 2019 to U.S. Department of Education, Institute for Education Sciences (Proposed Period: 7/1/2020 – 7/1/2023). Ranked competitive (2.6).

Shumway, J. F., Bundock, K., Moyer-Packenham, P. S., & Barrett, T. (\$1,165,101). *MathVision Interventions: Improving Rural First-Graders' Visual Number System Knowledge*. Submitted July 2018 to U.S. Department of Education, Institute for Education Sciences (Proposed Period: 7/1/2019 – 7/1/2022).

RESEARCH PROJECTS

Collaborative Research: Supporting Rural Paraprofessional Educators and their Students with Computer Science Professional Learning and Expansively Framed Curriculum. (2020-current). Co-Principal Investigator. Collaboratively designing (co-designing) curriculum with teachers and paraprofessionals. Co-designing adaptations to fifth-grade mathematics curriculum to highlight and integrate Computer Science (CS) concepts, co-designing CS activities for computer lab lessons, co-designing learning experiences for paraprofessionals and teachers, and evaluating the dynamics and outcomes of a design-based Research-Practice Partnership. This project is funded by the National Science Foundation CSforAll grant. Utah State University (with PI Mimi Recker and Co-PI Jody Clarke-Midura, Instructional Technology and Learning Sciences Department; GRAs, Kimberly Beck, TEAL and Umar Shehzad, ITLS; PI Victor Lee, College of Education, Stanford University).

Coding in Kindergarten: Research on the Development of an Assessment to Measure Kindergarten Children's Abilities to Reason Computationally with Mathematical Problem-Solving Skills. (2019-

current). Co-Principal Investigator. Identifying computational thinking competencies, developing mathematics and computer science curriculum tasks, creating and testing assessment items, and conducting evaluation studies of our curriculum and assessment in kindergarten classrooms. This project is funded by the National Science Foundation STEM+C grant. Utah State University (with PI Jody Clarke-Midura, Instructional Technology and Learning Sciences Department and Co-PI Victor Lee, Stanford; Postdoctoral Researcher, Deborah Silvis; GRAs, Joseph Kozlowski and Lise Welch, TEAL; URAs, Rebecca Peterson, TEAL, Selendra Lewis, TEAL, and Kathleen Bullock, TEAL).

Coding in Kindergarten: An Exploratory Study of Coding Toys in Kindergarten Classrooms (2017-2019). Co-Principal Investigator. Developed and tested instructional activities and assessments around the use of coding toys in kindergarten classrooms. Created and piloted mathematics and computer science tasks and assessment items and conducted interviews with participants. This project was funded by the USU Research Catalyst grant. Utah State University (with PI Jody Clarke-Midura and Co-PI Victor Lee, Instructional Technology and Learning Sciences Department; GRAs, Megan Hamilton and Heather Gardner, ITLS; and URA, Kathleen Bullock, TEAL).

A Number System Knowledge Instructional Treatment: Linking Quantities with Numerals to Promote Students' Number Sense Development (2017-2019). Principal Investigator. Classroom-based intervention study investigating the number system knowledge construct of number sense and how a quantities-linked-to-numerals instructional treatment supports students' number sense development. This project is funded by the GEM grant and provided data for the submission of an IES Grant. Utah State University (with faculty collaborators Kerry Jordan, Psychology and Kaitlin Bundock, Special Education and Rehabilitation Department; GRAs, Heather Gardner, ITLS, and Emily Speed, Psychology; and URAs, Jessica King, Monika Burnside, and Felicia Messervy, TEAL).

Exploring Preschoolers' Evolving Mathematical Knowledge (2016-2018). Principal Investigator. Qualitative case study of six students exploring the ways their knowledge develops over one year within the context of their preschool classroom. Utah State University (with URAs, Alyssa Collins and Brette Hoggan, TEAL, and GRA, Rachel Reeder).

Developing Number System Knowledge: An Exploratory Study of Visual Quantities Instructional Tasks (2016-2017). Principal Investigator. Developed and tested an instructional treatment of visual quantities tasks designed to improve second-grade students' number system knowledge. Created tasks, piloted a combination of number sense assessment instruments, and conducted task-based interviews with participants. This project provided preliminary data for the submission of a GEM Grant. Utah State University (with faculty collaborator Kerry Jordan, Psychology; teacher-collaborator, Jessica Hoggan, EBLIS; and URA, Cami Crump Player, TEAL).

Affordances of Virtual Manipulative Touch-Screen Apps for Mathematics Learning Project (2016-2017). Co-Investigator. Developed iPad-based interview protocols, created assessment tools, and conducted iPad-based interviews with participants. Utah State University (with PI Patricia Moyer-Packenham and the Virtual Manipulatives Research Group).

PROFESSIONAL PRESENTATIONS

*denotes graduate student co-authors/co-presenters; **denotes undergraduate student co-authors/co-presenters;
***denotes teacher co-presenters

NATIONAL PAPER PRESENTATIONS (Refereed)

2022 Under Review

- Silvis, D., Clarke-Midura, J., **Shumway, J. F.**, & Lee, V. (under review for 2022). *Leaning in to learning: Establishing the floor of interaction through body positions during Kindergarten coding activities*. [Paper Session]. Annual Meeting of the American Educational Research Association (AERA), San Diego, California.
- *Welch, L., *Kozlowski, J., Silvis, D. A., Clarke-Midura, J., **Shumway, J. F.**, & Lee, V. R. (under review for 2022 conference). *Identifying Kindergarten Students' Strategies as they Solve Computational Thinking Performance Assessment Tasks*. [Paper Session]. Annual Meeting of the American Educational Research Association (AERA), San Diego, California.
- Lee, V., *Song, D., Recker, M., **Shumway, J. F.**, & Clarke-Midura, J. (under review for 2022 conference). *Designing for co-design: Examining the planning of collaborative work in a Computer Science Research-Practice Partnership*. [Paper Session]. Annual Meeting of the American Educational Research Association (AERA), San Diego, California.

2021

- *Kozlowski, J., **Shumway, J. F.**, Clarke-Midura, J., & Lee, V. (Accepted for October 2021). *Eliciting kindergarten students' use of mathematics with a coding toy: A pilot study on design features*. [Poster Session]. 43rd Annual Conference for the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), Philadelphia, PA.
- Lee, V. R., **Shumway, J. F.**, Silvis, D., & Clarke-Midura, J., (2021, April 8-12). *An Examination of Small-group Kindergartener Debugging with the Cubetto Coding Toy*. [Symposium]. Annual Meeting of the American Educational Research Association (AERA), Virtual Platforms and Online.
- *Welch, L., **Shumway, J. F.**, Clarke-Midura, J., & Lee, V. R. (2021, April 8-12). *Kindergarteners' Conceptions of a Dynamic Linear Unit with Robot Toys* [Roundtable Paper Session]. Annual Meeting of the American Educational Research Association (AERA), Virtual Platforms and Online.
- Silvis, D., Lee, V. R., Clarke-Midura, J., **Shumway, J. F.**, & **Lewis, S. (2021, April 8-12). *Calling Attention to Technical Details: The Role of the Invisible Technician in Kindergarten Debugging Activities*. [Paper Session]. Annual Meeting of the American Educational Research Association (AERA), Virtual Platforms and Online.
- Silvis, D., **Lewis, S., Clarke-Midura, J., Lee, V. R., & **Shumway, J. F.** (2021, April 8-12). *Child-Robot Relations: Locating a Technological Ethic of Care in Kindergarten Coding*. [Poster Session]. Annual Meeting of the American Educational Research Association (AERA), Virtual Platforms and Online.

2020

- Shumway, J. F.**, Clarke-Midura, J., Lee, V. R., *Welch, L. E., *Kozlowski, J. S., & **Evans, H. (2020, April 17-21). *Identifying the Mathematics in Kindergarteners' Play with Coding Toys* [Paper Roundtable Session]. Annual Meeting of the American Educational Research Association (AERA), San Francisco, California. <http://tinyurl.com/shh4hle> (Conference Canceled)
- Clarke-Midura, J., *Kozlowski, J., **Shumway, J. F.**, **Evans, H., Lee, V. R., & *Welch, L. E. (2020, April 17-21). *Perspectives and Shifts of Young Children Playing with Coding Toys* [Paper Session]. Annual Meeting of the American Educational Research Association (AERA), San Francisco, California. <http://tinyurl.com/rhkhvka> (Conference Canceled)
- Lee, V. R., Clarke-Midura, J., **Shumway, J. F.**, *Kozlowski, J. S., *Welch, L. E., & **Evans, H. (2020, April 17-21). *Capturing Kindergarteners' Computational Thinking Through Commercial Toy-Centered Task and Assessment Development* [Symposium]. Annual Meeting of the American

Educational Research Association (AERA), San Francisco, California. <http://tinyurl.com/yx2wzh53> (Conference Canceled)

2019

Shumway, J. F., & Bundock, K. (2019, April). *Number System Knowledge: An Instructional Treatment for Second-Grade Students*. Paper Presentation, Annual Meeting of the American Educational Research Association (AERA), Toronto, Canada.

Moyer-Packenham, P. S., *Litster, K., Bullock, E. P., **Shumway, J. F.**, & Clarke-Midura, J. (2019, April). *How Design Features Promote Children's Awareness of Affordances in Digital Math Games*. Paper Presentation, Annual Meeting of the American Educational Research Association (AERA), Toronto, Canada.

2018

Shumway, J. F. (2018, April). *Developing Number Sense: Exploring the Influences of a Counting-Focused Instructional Treatment*. Paper Presentation, Annual Meeting of the American Educational Research Association (AERA), New York, New York.

Bullock, E. K., **Shumway, J. F.**, *Lommatsch, C. M., & Moyer-Packenham, P. S. (2018, April). *Preschool Children's Learning Progressions While Interacting with Touch-Screen Mathematics Apps and How Affordance Access Matters*. Paper Presentation, Annual Meeting of the American Educational Research Association (AERA), New York, New York.

Moyer-Packenham, P. S., *Lommatsch, C. M., *Litster, K., *Ashby, J., Bullock, E. K., **Shumway, J. F.**, & MacDonald, B. (2018, April). *Affordances of Digital Games for Mathematics Learning in Grades 3-6*. Paper Presentation, Annual Meeting of the American Educational Research Association (AERA), New York, New York.

2017

Shumway, J. F. (2017, April). *The Counting Construct of Number Sense: Its Role in Number System Knowledge*. Paper Presentation, National Council of Teachers of Mathematics Research (NCTM-R) Conference, San Antonio, Texas.

Moyer-Packenham, P. S., Bullock, E., & **Shumway, J. F.** (2017, April). *The Impact of Technology Affordances in Children's Mathematical Learning*. Interactive Paper Session, National Council of Teachers of Mathematics Research (NCTM-R) Conference, San Antonio, Texas.

NATIONAL PRESENTATIONS (Refereed)

2019

Shumway, J. F., Clarke-Midura, J., *Kozlowski, J. S., *Welch, L. E., & **Evans, H. (2019, November). *Coding and Math: Playing with Screen-Free Robots to Develop Spatial and Measurement Reasoning*. Presentation for educators and researchers, School Science and Mathematics Association National Convention, Salt Lake City, Utah.

Clarke-Midura, J., **Shumway, J. F.**, *Welch, L. E., *Kozlowski, J. S., & **Evans, H. (2019, November). *Integrated STEM: Coding Toys in Kindergarten Math Class*. Presentation for researchers, School Science and Mathematics Association National Convention, Salt Lake City, Utah.

Shumway, J. F., & *Reeder, R. (2019, April). *Characteristics of Preschoolers' Evolving Math Knowledge*. Poster Session, National Council of Teachers of Mathematics Research (NCTM-R) Conference, San Diego, California.

Shumway, J. F., **King, J., & **Burnside, M. (2019, April). *Developing Symbol Sense in Early Childhood: Maintaining Meaning and Enhancing Early Number Learning*. Presentation for K-3 Teachers, 95th Annual Meeting of the National Council of Teachers of Mathematics (NCTM), San Diego, California.

***Granados, M., **Shumway, J. F.**, & ***Hoggan, J. (2019, April). *Arrays Everywhere! Engaging Students with Arrays Activities to Promote Multiplicative Reasoning*. Presentation for Grades 3-5 Teachers, 95th Annual Meeting of the National Council of Teachers of Mathematics (NCTM), San Diego, California.

*Litster, K., Moyer-Packenham, P. S., Bullock, E. P., **Shumway, J. F.**, & Clarke-Midura, J. (2019, April). *Relationship Between Children's Enjoyment, Mathematics Awareness, Strategies, and Learning with Digital Math Games*. Poster Presentation, Annual Meeting of the American Educational Research Association (AERA), Toronto, Canada.

Shumway, J. F. & *Gardner, H. (2019, February). *Teachers' Curriculum Enactment as a Means to Determine the Successes and Challenges of Ambitious Mathematics Teaching*. Poster Presentation at the Association of Mathematics Teacher Educators Annual Conference (AMTE), Orlando, Florida.

2017

Shumway, J. F. (2017 April). *Constructing Number Relationships: Foundations for Deep Mathematical Understanding*. Presentation for K-2 Teachers, National Council of Teachers of Mathematics (NCTM) Conference, San Antonio, Texas.

2016

Shumway, J. F., ***Kelley, J., ***Webb, C., & ***Child, B. (2016, April). *Jumps and Leaps: Number Lines, Number Sense, and Solving Problems*. Presentation for K-5 Teachers, 93rd Annual Meeting of the National Council of Teachers of Mathematics (NCTM), San Francisco, California.

2015

Bullock, E. P., Moyer-Packenham, P. S., **Shumway, J. F.**, Watts, C., & MacDonald, B. (2015). Effective teaching with technology: Managing affordances in iPad apps to promote young children's mathematics learning. Paper presentation in D. Rutledge & D. Slykhuis (Eds.), *Proceedings of the Society for Information Technology and Teacher Education International Conference* (pp. 2357-2364). Las Vegas, Nevada: SITE.

Shumway, J. F. & ***Everett, J. (2015, February). *Building Number Sense Across the District: Mathematics Professional Development for Elementary Teachers*. Presentation for School Leaders, 2015 National Title I Conference, Salt Lake City, Utah.

2014

Moyer-Packenham, P. S., **Shumway, J.**, Tucker, S., Boyer-Thurgood, J., Westenskow, A., Hunt, J., & Bullock, E. (2014, April). *Children's Mathematics Interactions with Virtual Manipulatives on iPads*. Paper Presentation, National Council of Teachers of Mathematics Research (NCTM-R) Conference, New Orleans, Louisiana.

Moyer-Packenham, P. S., **Shumway, J. F.**, Bullock, E., Tucker, S. I., Anderson-Pence, K. L., Westenskow, A., Boyer-Thurgood, J., Maahs-Fladung, C., Symanzik, J., Mahamane, S., MacDonald, B., & Jordan, K. (2014, April). *Young Children's Learning Performance and Efficiency When Using Virtual Manipulative Mathematics iPad Apps*. Paper Presentation, National Council of Teachers of Mathematics Research (NCTM-R) Conference, New Orleans, LA.

2013

Shumway, J. F., ***Kyriopolous, J., & ***Granados, M. (2013, April). *Manipulatives, Models, and Symbols: The Role of Representations in Building Students' Number Sense*. Presentation for K-5 Teachers, 91st Annual Meeting of the National Council of Teachers of Mathematics (NCTM), Denver, Colorado.

Moyer-Packenham, P. S., Jordan, K., Baker, J., Westenskow, A., Rodzon, K., Anderson, K., & **Shumway, J. F.** (2013, April). *Hidden Predictors of Achievement: The Equalizing Effect of Virtual Manipulatives for Mathematics Instruction*. Paper Presentation, Annual Meeting of the American Educational Research Association (AERA), San Francisco, California.

Shumway, J. F., ***Bostwick, A., Anderson, K., & Tucker, S. (2013, January). *Building Partnerships: A Collaborative Lesson-Study Experience in a Preservice Mathematics Methods Course*. Seventeenth Annual Conference of the Association of Mathematics Teacher Educators, Orlando, Florida.

Moyer-Packenham, P.S., Jordan, K., Baker, J., Westenskow, A., Rodzon, K., Anderson, K., & **Shumway, J.** (2013, April). *Hidden Predictors of Achievement: The Equalizing Effects of Virtual*

Manipulatives for Mathematics Instruction. Paper Presentation, Annual Meeting of the American Educational Research Association (AERA), San Francisco, California.

2012

Shumway, J. F. (2012, April). *Fostering Place Value Understandings Through Number Sense Routines*. Presentation for K-5 Teachers, 90th Annual Meeting of the National Council of Teachers of Mathematics (NCTM), Philadelphia, Pennsylvania.

2011

Shumway, J. F. (2011, April). *Building Number Sense Through Counting Routines*. Presentation for K-5 Teachers, 89th Annual Meeting of the National Council of Teachers of Mathematics (NCTM), Indianapolis, Indiana.

Moyer-Packenham, P.S., Jordan, K., Ng, D., Anderson, K., Baker, J., Rodzon, K., **Shumway, J. F.**, & Westenskow, A. (2011, November). *School Mathematics Research on Virtual Manipulatives: A Collaborative Team Approach*. Panel Presentation, School Science and Mathematics Association Convention, Colorado Springs, Colorado.

Ng, D., **Shumway, J. F.**, & Chedister, M. (2011, October). Teacher educators' discourse moves in supporting preservice elementary mathematics teachers' learning. Paper presentation in T. Lamberg & L. Wiest (Eds.), *Proceedings of the 33rd Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA)*. Reno, Nevada: University of Nevada, Reno.

2010

Shumway, J. F. (2010, April). *Responsive Routines for Early Number Sense*. Presentation for K-3 Teachers, 88th Annual Meeting of the National Council of Teachers of Mathematics (NCTM), San Diego, California.

2009

Shumway, J. & ***Granados, M. (2009, April). *Math Collaborative: A Journey Through the Complexities of Coaching*. Presentation for Math Coaches and Teachers, 87th Annual Meeting of the National Council of Teachers of Mathematics (NCTM), Washington, DC.

NATIONAL PRESENTATIONS (Invited)

2019

Shumway, J. F. (2019, August). *How Do I Implement Number Sense Routines? A Progression for Getting Started in Grades 3-5*. Presentation for Grades 3-5 Teachers, Building Math Minds Virtual Summit, Online Webinar. (Invited Presenter)

2018

Shumway, J. F. (2018, July). *Interventions for Multiplication: Using Arrays to Promote Multiplicative Reasoning*. Presentation for Grades 3-5 Teachers, Staff Development for Educators (SDE) Conference, Las Vegas, Nevada. (Invited Presenter)

Shumway, J. F. (2018, July). *Meeting Students at their Math Readiness Levels: Number Sense Routines for Responsive Teaching*. Presentation for K-5 Teachers, Staff Development for Educators (SDE) Conference, Las Vegas, Nevada. (Invited Presenter)

2017

Shumway, J. F. (2017, August). *Planning Your Number Sense Routines: Responding to Students' Learning Needs*. Presentation for K-5 Teachers, Building Math Minds Virtual Summit, Online Webinar. (Invited Presenter)

Shumway, J. F. (2017, July). *Meeting Students at their Math Readiness Levels: Using Number Sense Routines to be Responsive Teachers*. Presentation for K-5 Teachers, Staff Development for Educators (SDE) Conference, Las Vegas, Nevada. (Invited Presenter)

Shumway, J. F. (2017, July). *Build Persistent and Flexible Thinkers with Word Problems: How to Differentiate and Be Responsive*. Presentation for K-5 Teachers, Staff Development for Educators (SDE) Conference, Las Vegas, Nevada. (Invited Presenter)

Shumway, J. F. & Blevins-Knabe, B. (Symposium Chairs). (2017, April). *The home numeracy environment: Social and contextual influences on children's early mathematical development*. Poster Symposium, Society for Research in Child Development Biennial Meeting, Austin, Texas. (Invited Symposium Chair; Peer Reviewed Session)

2014

Shumway, J. F. (2014, April). *Playing with Numbers: Developing Flexible Computation Strategies*. Presentation for PreK-2 Teachers, 92nd Annual Meeting of the National Council of Teachers of Mathematics (NCTM), New Orleans, Louisiana. (Invited Speaker for the Focus Strand)

REGIONAL AND STATE PRESENTATIONS (Refereed)

2019

Shumway, J. F. & Bundock, K. (2019, October). *Communicating Our Number Sense: Talking and Writing in Math Class*. Presentation for K-2 teachers, National Council of Teachers of Mathematics Regional Conference, Salt Lake City, Utah.

*Kozlowski, J. S., **Shumway, J. F.**, & *Roxburgh, A. (2019, October). *How Do I Make My Textbook Lessons More Inquiry-Oriented? Some Simple Adaptations*. Presentation for teachers and math coaches, National Council of Teachers of Mathematics Regional Conference, Salt Lake City, Utah.

Bundock, K., & **Shumway, J. F.** (2019, February). *An Evaluation of Student Engagement During a Whole-Class Number System Knowledge Intervention*. Poster Presentation at the Pacific Coast Research Conference, San Diego, CA.

2018

Shumway, J. F., **King, J., & **Burnside, M. (2018, October). *Using Quick Images to Engage Students in Mathematical Discussions About Quantities and Symbols*. Presentation for K-6 Teachers, Utah Council of Teachers of Mathematics (UCTM) Conference, Draper, Utah.

*Reeder, R., **Messervy, F., & **Shumway, J. F.** (2018, October). *Putting Early Number Sense to Work and Using New Math Language with Counting Collections and Word Problems*. Presentation for K-3 Teachers, Utah Council of Teachers of Mathematics (UCTM) Conference, Draper, Utah.

Shumway, J. F., & ***Baczuk, C. (2018, March). *I Didn't Know He Could Do That?! Learning Trajectories to Assess Kindergarteners' Mathematical Thinking*. Presentation for Early Childhood Educators, 43rd Annual Utah Early Childhood Conference, Salt Lake City, UT.

***Herbert, K., & **Shumway, J. F.** (2018, March). *Student-Driven Mathematical Thinking Strategies with Preschool Counting Collections and Word Problems*. Presentation for Early Childhood Educators, 43rd Annual Utah Early Childhood Conference, Salt Lake City, UT.

2017

Shumway, J. F., & ***Hoggan, J. (2017, August). *Quick Images: Engaging All Students in Mathematical Discussions about Quantities and Symbols*. Presentation for K-6 Teachers, Utah Council of Teachers of Mathematics (UCTM) Conference, Ogden, Utah.

2016

Turner, A., **Rigby, M., & **Shumway, J. F. (2016, November). *Math Talk: Implementing Effective Mathematical Conversations in Preschool and Kindergarten Classrooms*. Presentation for K-6 Teachers, Utah Council of Teachers of Mathematics (UCTM) Conference, Salt Lake City, Utah.

Coburn, C., **Johnson, A., & **Shumway, J. F. (2016, November). *How Can I Adapt My Textbook Lessons? Designing Inquiry-Based Math Lessons Based on Your Curriculum Resources*. Presentation for K-6 Teachers, Utah Council of Teachers of Mathematics (UCTM) Conference, Salt Lake City, Utah.

Shumway, J. F., ***Pace, L., & ***Christensen, H. (2016, March). *Meaningful Mathematics: Tapping into Preschoolers Natural Strategies for Solving Problems*. Presentation for Early Childhood Educators, 41st Annual Utah Early Childhood Conference, Salt Lake City, Utah.

2015

Shumway, J. F., ***Kelley, J., ***Webb, C., & ***Child, B. (2015, November). *Jumps and Leaps:*

Number Lines, Number Sense, and Solving Problems. Presentation for K-6 Teachers, Utah Council of Teachers of Mathematics (UCTM) Conference, Lehi, Utah.

2013

Shumway, J., **Ermer, C., **Kelley, J., & **Webb, C. (2013, November). *Building Students' Math Foundations: Number Sense.* Presentation for K-6 Teachers, Utah Council of Teachers of Mathematics (UCTM) Conference, Salt Lake City, Utah.

2011

Shumway, J. (2011, November). *Fostering Place Value Understandings Through Number Sense Routines.* Presentation for K-5 Teachers, Utah Council of Teachers of Mathematics (UCTM) Conference, Magna, Utah.

2010

Shumway, J. (2010, November). *Building Number Sense Through Counting Routines.* Presentation for K-5 Teachers, Utah Council of Teachers of Mathematics (UCTM) Conference, Bountiful, Utah.

2008

Shumway, J. (2008, May). *Math Collaborative: An Embedded Professional Development Model.* Presentation, Fairfax County Teachers as Researchers Annual Conference, Fairfax, Virginia.

Shumway, J. (2008, May). *Math Collaborative: Using a Study Group in Conjunction with Coaching.* Presentation, Fairfax County Title I Mathematics Resource Teachers Workshop, Annandale, Virginia.

Shumway, J. & Granados, M. (2008, January). *Math Talk: Discourse in the Elementary Mathematics Classroom.* Presentation, Fairfax County Math Matters Conference, Lorton, Virginia.

2007

Shumway, J. (2007, January). *Everyday Mathematics and the Math Workshop.* Presentation, Fairfax County Math Mini-Conference, Fairfax, Virginia.

2004

O'Neil, S., **Shumway, J.**, & Kaynes, S. (2004, February). *Guided Reading Workshop.* TAIR Conference, Austin, Texas.

O'Neil, S. & **Shumway, J.** (2004, January). *Guided Reading Workshop.* Presentation for Elementary Teachers, Texas Council of Teachers of English Language Arts Convention, Austin, Texas.

STATE AND DISTRICT PRESENTATIONS (Invited)

2017

Shumway, J. F. (2017, May). *Young Children's Coordination of Number Sense in Solving Word Problems.* Presentation for PK-2 Teachers, Meeting of the Wisconsin Mathematics Council, Inc., Green Lake Conference Center, Wisconsin. (Invited Keynote Speaker)

Shumway, J. F. (2017, May). *Responsive Instruction for Building Students' Number Sense.* Presentation for K-12 Teachers, Meeting of the Wisconsin Mathematics Council, Inc., Green Lake Conference Center, Wisconsin. (Invited Keynote Speaker)

MENTOR FOR STUDENT RESEARCH PRESENTATIONS (Refereed)

2021

Lewis, S, Peterson, R., & Bullock, K. Mentors: **Shumway, J. F., Clarke-Midura, J., & Silvis, D. (2021, February). *Botley, you need to listen! Exploring Young Children's Interactions with Robots While Learning to Code.* Oral Presentation, Utah Council on Undergraduate Research (UCUR), Online and Hosted by BYU.

2020

Lewis, S, Peterson, R., & Bullock, K. Mentors: **Shumway, J. F., Clarke-Midura, J., & Silvis, D. (2020, December). *Botley, you need to listen! Exploring Young Children's Interactions with Robots While Learning to Code.* Oral Presentation, USU Fall Undergraduate Student Research Symposium, Logan, UT.

Evans, H., & **Peterson, R. Mentors: **Shumway, J. F., Clarke-Midura, J., Lee, V. R., & Silvis, D. (2020, February). *Coding and Mathematics Skills: Case Studies*. Presentation, Utah Council on Undergraduate Research (UCUR), Logan, UT.

Evans, H., & **Peterson, R. Mentors: **Shumway, J. F., Clarke-Midura, J., Lee, V. R., & Silvis, D. (2020, February). *Coding and Mathematics Skills: Case Studies*. Poster Presentation, Research on Capitol Hill (ROCH), Salt Lake City, UT.

2019

Evans, H., & **Peterson, R. Mentors: **Shumway, J. F., Clarke-Midura, J., Lee, V. R., & Silvis, D. (2019, December). *An Analysis of Coding Assessments for Kindergarten Students*. Presentation, Fall Student Research Symposium, Logan, UT.

*Kozlowski, J. S., *Welch, L., & **Evans, H. Mentors: **Shumway, J. F.**, Clarke-Midura, J., & Lee, V. R. (2019, April). *An Exploration of Kindergarten Students' Use of Perspective and Computational Thinking*. Presentation, USU Student Research Symposium, Logan, UT.

*Welch, L., *Kozlowski, J., & **Evans, H. Mentors: **Shumway, J. F.**, Clarke-Midura, J., & Lee, V. R. (2019, April). *Coding to Develop Early Mathematical and Computational Thinking in Kindergarten: A Case Study*. Presentation, USU Student Research Symposium, Logan, UT.

King, J. & **Burnside, M. Mentors: **Shumway, J. F. & Bundock, K. (2019, February). *Talking in Math Class? Encouraging Engagement and Achievement Through the Use of Talk Moves*. Presentation, Utah Conference on Undergraduate Research, Ogden, UT.

2018

Burnside, M. & **King, J. Mentors: **Shumway, J. F., & Bundock, K. (2018, December). *Talking in Math Class? Encouraging Engagement and Achievement Through the Use of Talk Moves*. Oral Presentation, Fall Undergraduate Student Research Symposium, Logan, UT.

King, J., **Burnside, M., & **Messervy, F. Mentor: **Shumway, J. F. (2018, April). *Variations in Second-Grade Students' Number System Knowledge Outcomes*. Oral Presentation and Poster Presentation, USU Research Week Student Research Symposium, Logan, UT.

Collins, A. & **Hoggan, B. Mentor: **Shumway, J. F. (2018, February). *Building the Foundation: Characteristics and Achievement Patterns of Three-Year-Olds' Evolving Mathematical Knowledge*. Poster Presentation, Research on Capitol Hill, Salt Lake City, UT.

Collins, A. & **Hoggan, B. Mentor: **Shumway, J. F. (2018, February). *Building the Foundation: Characteristics and Achievement Patterns of Three-Year-Olds' Evolving Mathematical Knowledge*. Poster Presentation, Utah Conference on Undergraduate Research, Cedar City, UT.

Player, C. Mentor: **Shumway, J. F. (2018, February). *Enhancing Number System Knowledge to Promote Number Sense and Adaptive Expertise: A Case Study of a Second-Grade Mathematics Student*. Poster Presentation, Utah Conference on Undergraduate Research, Cedar City, UT.

2017

Player, C. Mentor: **Shumway, J. F. (2017, December). *Enhancing Number System Knowledge to Promote Number Sense and Adaptive Expertise: A Case Study of a Second-Grade Mathematics Student*. Oral Presentation and Poster Presentation, Fall Undergraduate Student Research Symposium, Logan, UT.

AWARDS, PROFESSIONAL RECOGNITION, & COMPETITIVE PROGRAMS

2020	Undergraduate Research Mentor of the Year, School of Teacher Education & Leadership, USU
2018	STaR Fellowship, Mathematics Education "Service, Teaching and Research" (STaR) Program
2018	Proposal Writing Institute, Research and Graduate Studies, Utah State University
2017	DC Faculty Fellow, EEJ College of Education & Human Services, Utah State University
2015	Lawson Fellowship Award, EEJ College of Education & Human Services, Utah State University
2014	Graduate Enhancement Award, Student Involvement Office, Utah State University

- 2013 Fredrick Q. Lawson Fellowship, EEJ College of Education & Human Services, Utah State University
- 2012 Graduate Research Assistant of the Year Award, School of Teacher Education and Leadership, Utah State University

UNIVERSITY TEACHING

EEJ College of Education and Human Services Utah State University, Logan, Utah (2016-present)

My teaching load consists of a 2:2 course load (or a total of four classes per academic year). I have taught undergraduate (ELED 4061 and 4062) and graduate courses (TEAL 7551 and 7553) at USU as faculty.

UNDERGRADUATE COURSES

ELED 4062/4063 and ELED 4056 - Teaching Elementary School Mathematics II: Number, Operations, & Algebraic Reasoning and Practicum for Teaching Elementary School Mathematics II Undergraduate Course. Development of pedagogical content knowledge in number, operations, and algebraic reasoning for teaching grades Preschool to Grade 6. Methods for designing and implementing mathematics instruction, assessment, remediation, and intervention are applied in a field-based placement.

Taught in web broadcast format: Fall 2020, Spring 2021

Taught face-to-face on campus: Fall 2019, Spring 2020

Taught in hybrid format of IVC and online for statewide campuses: Fall 2019

ELED 4062 - Teaching Elementary School Mathematics II: Number, Operations, & Algebraic Reasoning Undergraduate Course. Development of pedagogical content knowledge in number, operations, and algebraic reasoning for teaching grades Preschool to Grade 6. Methods for designing and implementing mathematics instruction, assessment, remediation, and intervention are applied in a field-based placement.

Taught face-to-face on campus: Spring 2017, Fall 2018

Taught in hybrid format of IVC and online for regional campuses: Spring 2017, Fall 2017, Spring 2018, Fall 2018

ELED 4061 - Teaching Elementary School Mathematics I: Rational Numbers, Operations, & Proportional Reasoning

Undergraduate Course. Development of pedagogical content knowledge in rational numbers, operations, and proportional reasoning for teaching grades Preschool to Grade 6. Understanding characteristics of instruction, assessment, remediation, and intervention are critically considered.

Taught online: Spring 2018

ELED 4060 - Teaching Mathematics & Practicum Level III

Undergraduate Course. Relevant mathematics instruction in the elementary and middle-level curriculum; methods of instruction, evaluation, remediation, and enrichment. A field experience practicum is required.

Taught in hybrid format of IVC and online for regional campuses: Fall 2016

GRADUATE COURSES

TEAL 7551 - Mathematics Education Research Foundations

Doctoral Course. Critical examination of research impacting mathematics education, including historical, social, political, and economic contexts and foundations of mathematics. Reviews literature and theoretical perspectives, including topics on mathematics teaching, learning, culture, policy, trends, technology, and student outcomes.

Taught in web broadcast format: Spring 2021

Taught face-to-face on campus and broadcast to regional site via IVC: Spring 2019

TEAL 7553 - Mathematics Education Curriculum Content & Evaluation

Doctoral Course. Reviews and evaluates the content of the school mathematics curriculum at the state, national, and international levels, including research on specific mathematics curriculum topics. Emphasizes research findings and recommended practices on the development and evaluation of mathematics curriculum.

Taught face-to-face on campus and broadcast to regional site via IVC: Fall 2017

TEAL 6521, 6522, 6523, 6524, 6525, 6551 - Elementary Mathematics Endorsement courses:

Number/Operations, Rational Numbers, Algebraic Reasoning, Geometry/Masurement, Data Analysis, Assessment/Intervention and TEAL 6300 – Elementary Mathematics Teachers Academy

Masters or Endorsement Courses. The purpose of the Elementary Mathematics Endorsement courses is to ensure that Grades K-6 practicing teachers gain the mathematical content knowledge needed to teach mathematical concepts to students in the elementary grades. Teachers must also know how to develop content knowledge and conceptual understandings inherent in the content with students. An understanding of sound pedagogical practice is essential to that development.

Taught online: Spring 2019 (23 enrollments across 10 sections)

EEJ College of Education and Human Services Utah State University, Logan, Utah (2010-2016)

I taught two courses per academic year as a University Instructor when I was a doctoral student. I taught undergraduate (ELED 4060 and 5150) and graduate courses (TEAL 6521) at USU as a student.

UNDERGRADUATE COURSES

ELED 4060 - Teaching Mathematics & Practicum Level III

Taught face-to-face on campus: Fall 2010, Spring 2011, Fall 2011, Fall 2012, Fall 2013, Spring 2015, Spring 2016

ELED 5150 - Student Teaching Seminar & Supervision

Taught face-to-face on campus and on-site at a Utah school: Spring 2012

GRADUATE COURSES

TEAL 6521/TEPD 5524 - Mathematics for Teaching K-8: Numbers and Operations

Taught as a hybrid face-to-face and online; face-to-face includes IVC: Fall 2015

CURRICULUM AND COURSE DEVELOPMENT

Curriculum Development

Emerald Education and Chicago Public Schools (June – August 2020)

Grade 2 Primary Curriculum Writer for Chicago Public Schools. Wrote the Grade 2 *Working with Measurements* unit of 15 contextually-relevant lessons for Chicago Public Schools. This included the Teacher Facilitation Guides, Lesson Monitoring Charts, connections to the Universal Design for Learning framework, and task sheets and materials. Worked under the direction of lead curriculum writer, Dr. Christa Jackson, Iowa State University.

Curriculum Development for Teacher Professional Learning

Stenhouse Publishers and Staff Development for Educators (May – August 2018)

Developer of the Number Sense Routines Professional Development Curriculum. Designed the year-long to multi-year professional development program and developed course materials for the curriculum.

CV – Jessica F. Shumway

*Assistant Professor, School of Teacher Education and Leadership
September 2021*

Designed, planned, and implemented the “train the trainers” sessions. Materials developed included readings, PowerPoint presentations, discussion activities, application assignments, questions for mathematics coaching, and session agendas. Developed four curriculum modules for consultants to implement with preschool to sixth-grade teachers and designed distance and in-person coaching sessions. Conducted a two-day training for the consultants at Utah State University.

Course Development

EEJ College of Education and Human Services Utah State University, Logan, Utah (2013-2017)

ELED 4062 - Teaching Elementary School Mathematics II: Number, Operations, & Algebraic Reasoning (2017). Undergraduate course. Designed for Preschool to Grade 6 teachers to develop pedagogical content knowledge in number, operations, and algebraic reasoning. Materials developed included readings, video lectures, application assignments, and assessments for online delivery. Collaborated with Dr. Beth MacDonald to select readings, develop the syllabus, and design weekly class sessions.

TEAL 6521/TEPD 5524 - Mathematics for Teaching K-8: Numbers and Operations (2015). Graduate Elementary Mathematics Endorsement course. Designed for K-8 teachers to explore the content of Number and Operations to develop a comprehensive understanding of the number system and relate its structure to computation, arithmetic, algebra, and problem solving. Materials developed included readings, video lectures, application assignments, and assessments for online course delivery. Developed nine modules as the equivalent of a 16-week course.

TEAL 6300 - Elementary Mathematics Teacher Academy (2013-2015). Developed course materials for master’s level courses for Utah State University’s Elementary Mathematics Teacher Academy (EMTA). Courses designed to develop teachers’ mathematical knowledge for teaching aligned with the Common Core State Standards for Mathematics. Materials developed included readings, video lectures, application assignments, and assessments for online course delivery. Developed 30 second- and third-grade curriculum modules.

GRADUATE STUDENT MENTORING, ADVISING, AND RESEARCH SUPERVISION

GRADUATE STUDENT DISSERTATION RESEARCH COMPLETED –9 total completed

Doctoral Dissertation Chair/Major Professor – 1 completed

Jennifer Throndsen (PhD, Education, 2018). *Relationships among preschool attendance, type, and quality and early mathematical literacy*. Co-Chair with Patricia Moyer-Packenham. Doctoral Dissertation defended 3/12/2018, TEAL, Utah State University.

Doctoral Dissertation Committee Member – 8 completed

Will Tidwell (PhD, Mathematical Sciences, 2021). *Three reports on investigations into mathematical modeling knowledge for teaching*. Doctoral Dissertation defended 5/2021, Math and Statistics Department, Utah State University.

Jenny Nehring (PhD, Education, 2021). *Relationships between high school students’ performance in ALEKS Placement, Preparation, and Learning (PPL) modules and performance on the ALEKS College Mathematics Placement Exam*. Doctoral Dissertation defended 4/30/2021, TEAL, Utah State University.

Thomas Mgonja (PhD, Education, 2021). *An exploratory study examining the use of Culturally Responsive Teaching in undergraduate mathematics with ethnic minority students*. Doctoral Dissertation defended 4/22/2021, TEAL, Utah State University.

- Patrick Seegmiller (PhD, Mathematics, 2020). *Social justice mathematical modeling for teacher preparation*. Doctoral Dissertation defended 5/26/2020, Math and Statistics Department, Utah State University.
- Kristy Litster (PhD, Education, 2019). *The influence of small group discourse on student-enacted levels of cognitive demand when engaging with mathematics tasks at different depth of knowledge levels*. Doctoral Dissertation defended 7/18/2019, TEAL, Utah State University.
- Melanie Durfee (PhD, Education, 2018). *An exploratory case study of how high-performance team training develops sociomathematical norms and differing levels of math-talk*. Doctoral Dissertation defended 8/2/2018, TEAL, Utah State University.
- Christina Lommatsch (PhD, Education, 2018). *Learning logic: A mixed methods study to examine the effects of context ordering on reasoning about conditionals*. Doctoral Dissertation defended 3/14/2018, TEAL, Utah State University.
- Emma Bullock (PhD, Education, 2017). *An explanatory sequential mixed methods study of the school leaders' role in students' mathematics achievement through the lens of complexity theory*. Doctoral Dissertation defended 3/31/2017, TEAL, Utah State University.

GRADUATE STUDENT DISSERTATION RESEARCH IN PROGRESS – 16 total in progress

Doctoral Dissertation Chair/Major Professor – 4 in progress

Dissertation Phase

- Lise Welch (Doctoral Candidate). *Connections between mathematics and computational thinking: Kindergarten students' demonstration of mathematics knowledge in a computational thinking assessment*. Doctoral dissertation proposal defended 8/2021, TEAL Utah State University.
- Joseph Kozlowski (Doctoral Candidate). *Kindergarten-aged children's engagement in mathematics through awareness of design features: A comparison across different coding toys*. Doctoral dissertation proposal defended 4/2021, TEAL, Utah State University, Co-Chair with Patricia Moyer-Packenham.
- Awards: TEAL Doctoral Student Research of the Year (2021)
- Rachel Reeder (Doctoral Candidate). *Investigating K-1 Spanish dual language immersion teachers' conceptions of mathematics-focused content-based language teaching*. Doctoral dissertation proposal defended 1/2020, TEAL, Utah State University.
- Awards: Presidential Award for Excellence in Math and Science Teaching (PAEMST, 2019), CEHS Graduate Student Research Award (2020)

Comprehensive Exam Phase

- Jet Warr - Comprehensive Exam passed 6/2019, TEAL, Utah State University.
- Awards: Graduate Enhancement Award (2018)

Doctoral Dissertation Committee Member – 13 in progress

Dissertation Phase

- Amy Kinder – Proposal defended, 9/2021, TEAL, Utah State University
- Carrie Bala – Proposal defended, 5/2021, TEAL, Utah State University
- Melissa Jill Ashby – Proposal defended, 4/2021, TEAL, Utah State University
- Aubrey Rogowski – Proposal defended, 4/2021, ITLS, Utah State University
- Danielle Divis – Proposal defended, 4/2021, TEAL, Utah State University
- Kristen Rolf – Proposal defended 4/2021, SPER, Utah State University
- Allison Roxburgh – Proposal defended, 1/2021, TEAL, Utah State University
- Benjamin Covington – Proposal defended, 9/2020, Psychology, Utah State University
- Angie Frabasilio - Proposal defended 1/2020, TEAL, Utah State University

Comprehensive Exam Phase

- KimberLeigh Hadfield – Comp. Exam, 9/2021, TEAL, Utah State University
- Christine Hartman - Comp. Exam, 5/2020, Psychology, Utah State University

Emmett Speed - Comp. Exam, 1/2020, Psychology, Utah State University
Trent Fawcett - Comp. Exam, 10/2019, TEAL, Utah State University

GRADUATE STUDENT DOCTORAL PROGRAM ADVISORY COMMITTEES – 6 in progress

Doctoral Program Advisory Chair/Major Professor – 3 in progress

Coursework Phase

Kimberly Beck – 2021-present, TEAL, Utah State University
Jason Hart - 2020-present, TEAL, Utah State University
Michelle Parslow –2020-present, TEAL, Utah State University, Co-Chair with Katherine Vela

Doctoral Program Advisory Committee Member – 3 in progress

Coursework Phase

Sandra Miles – 2021-present, TEAL, Utah State University
Natalie Anderson - 2020-present, Mathematics, Utah State University
Nicole Parker - 2019-present, TEAL, Utah State University

GRADUATE STUDENT MASTERS PROJECTS - 2 complete, 1 in progress

M.Ed. Project Committee Member – 2 completed

Caci Jensen (M.Ed.), Project defended 11/2018, TEAL, Utah State University
Allison Roxburgh (M.Ed.), Project defended, 12/2016, TEAL, Utah State University

MS Thesis – 1 in progress

Eric Bagley – 2020-present, Computer Science, Utah State University

GRADUATE STUDENT/POSTDOCTORAL RESEARCH AND TEACHING SUPERVISION

SUPERVISION OF FUNDED POSTDOCTORAL RESEARCHER

2019-present Deborah Silvis, Ph.D., University of Washington
NSF-Funded Postdoctoral Researcher for Coding in Kindergarten research project

SUPERVISION OF FUNDED GRADUATE RESEARCH ASSISTANTS - 6 GRAs

2021-present Kimberly Beck, TEAL, Utah State University
Funded by NSF CS for All grant

2019-present Lise Welch, TEAL, Utah State University
Funded by NSF STEM+C grant
Presented at USU SRS (2019), SSMA (2019), and AERA (2020, 2021). Co-author on papers.

2019-2021 Joseph Kozlowski, TEAL, Utah State University
Funded by NSF STEM+C grant
Presented at USU SRS (2019), SSMA (2019), and AERA (2020, 2021). Co-author on papers. Awarded the TEAL 2021 Doctoral Researcher of the Year.

2017-2019 Heather Gardner, ITLS, Utah State University
Funded by GEM grant
Presented at AMTE (2018). Co-author on research papers.

2018, 2020 Rachel Reeder, TEAL, Utah State University
Funded by start-up funds
Presented at UCTM (2018) and NCTM-R (2018). Co-author on research paper.

2017-2018 Emmett Speed, Psychology, Utah State University
Funded by start-up funds

SUPERVISION OF FUNDED GRADUATE TEACHING ASSISTANTS - 3 GTAs

- 2021 Sandra Miles, TEAL, Utah State University
Funded by TEAL
- 2019, 2020 Rachel Reeder, TEAL, Utah State University
Funded by TEAL
Presidential Award for Excellence in Math and Science Teaching (PAEMST, 2019)
- 2018 Joseph Kozlowski, TEAL, Utah State University
Funded by TEAL
Presented at the 2019 National Council of Teachers of Math Regional Conference.
- 2018 Allison Roxburgh, TEAL, Utah State University
Funded by TEAL
Presented at the 2019 National Council of Teachers of Math Regional Conference.

UNDERGRADUATE MENTORING AND RESEARCH SUPERVISION

ADVISOR FOR UNDERGRADUATE HONORS OR SENIOR CAPSTONE PROJECT – 2 students

- Selendra Lewis (Honors Project completed, 2020-2021), TEAL, Utah State University, co-supervised
with Drs. Jody Clarke-Midura and Deborah Silvis
- Cierra Hinckley (Capstone Project completed, 12/2016), TEAL, Utah State University

SUPERVISION OF FUNDED UNDERGRADUATE RESEARCH – 14 students

- 2021-present Katelyn Elizondo Childers, TEAL, Utah State University
Award the USU CEHS 2021 Legacy Award
- 2018-2021 Kathleen Bullock, TEAL, Utah State University
Presented at USU FSRs (2020) and UCUR (2021)
- 2019-2021 Selendra Lewis, Biology Education, Utah State University
Presented at USU FSRs (2020) and UCUR (2021); Honor's Project (2021)
- 2019-2021 Rebecca Peterson, TEAL, Utah State University
Presented at USU FSRs (2019, 2020), UCUR (2020, 2021), and ROCH (2020)
Awarded TEAL 2021 Undergraduate Research Assistant of the Year
- 2019-2020 Hannah Evans, SPER, Utah State University
Presented at USU SRS (2019), UCUR (2020), and ROCH (2020)
- 2019-2020 Jared Walton, Biological Science, Utah State University
- 2019 Rebecca Cox, TEAL, Utah State University
- 2019 Mitchell Atkinson, TEAL, Utah State University
- 2017-2019 Jessica King, TEAL, Utah State University
Presented at USU SRS, UCTM, FSRs, UCUR, and NCTM. Co-author on research
papers. TEAL Undergraduate Researcher of the Year Award, 2018-19. Mentor for her
Cooperative Work Experience. TEAL and RGS Travel Grant Award.
- 2017-2019 Monika Burnside, TEAL, Utah State University
Presented at USU SRS, UCTM, FSRs, UCUR, and NCTM. Co-author on research
papers. TEAL and RGS Travel Grant Award.
- 2018-2019 Felicia Messervy, TEAL, Utah State University
Presented at USU Research Week and UCTM. Co-author on research paper.
- 2017-2018 Alyssa Collins, TEAL, Utah State University
Presented at UCUR and ROCH.
- 2017-2018 Brette Hoggan, TEAL, Utah State University
Presented at UCUR and ROCH.
- 2017-2018 Cami Crump Player, TEAL, Utah State University
Presented at FSRs and UCUR. First author on a research paper.

SERVICE

NATIONAL LEADERSHIP & SERVICE

PEER REVIEWS FOR ACADEMIC JOURNALS

Reviewer (2021). Research manuscript, *Canadian Journal of Science, Mathematics, and Technology Education*.

Reviewer (2020). Research manuscript, *Transactions on Computing Education*.

Reviewer (2020). Research manuscript, *International Journal of Education in Mathematics, Science, and Technology*.

Reviewer (2020). Research manuscript, *Journal of Numerical Cognition*.

Reviewer (2019). Research manuscript, *The Mathematics Enthusiast*.

Reviewer (2018). Research manuscripts, *International Journal of Multicultural Education*.

PEER REVIEWS FOR PRACTITIONER JOURNALS

Reviewer (2019). Article submissions, *Mathematics Teacher: Learning and Teaching Pre-K-12*, National Council of Teachers of Mathematics.

Reviewer (2011-2018). Article submissions, *Teaching Children Mathematics*, National Council of Teachers of Mathematics.

PEER REVIEWS FOR ACADEMIC CONFERENCES (yearly reviewer for 5 – 20 proposals)

Reviewer (2021-present). Research Conference proposals, PME-NA.

Reviewer (2016-present). Research Conference proposals, American Educational Research Association.

Reviewer (2014-2019). Research Conference proposals, National Council of Teachers of Mathematics.

PANEL MEMBER FOR GRANT PROPOSALS

Panel Member (2018). Reviewed grant proposals (12) for the Discovery Research in K-12 (DRK-12) program, National Science Foundation.

PEER REVIEWS FOR BOOKS

Reviewer (2011-2013). Stenhouse Publishers, under the direction of Toby Gordon, Senior Editor. Provide recommendations and feedback on book proposals and manuscripts. Consult for Pembroke Publishers, a Stenhouse sister company.

GUEST LECTURES

Invited Lecture (2021, April; 2017, October). Invited by Dr. Katie Anderson-Pence at University of Colorado, Colorado Springs to present *Chat with the Author: Number Sense Routines* in her undergraduate course on Early Childhood Mathematics Education.

INSTITUTIONAL LEADERSHIP & SERVICE – UTAH STATE UNIVERSITY

Search Committee Member (August 2021 – present)

Mathematics and Statistics Department Professional Practice Assistant Professor in Mathematics and Statistics Education position. Responsibilities include ranking potential candidates, conducting phone interviews, check references, and participating in campus visit activities and interviews.

Member, TEAL Graduate Programs Advisory Committee (September 2020 – May 2021)

Responsibilities include attending monthly meetings to consider policy issues and offer recommendations for TEAL graduate programs.

Chair, Search Committee (September 2020 – February 2021)

TEAL Mathematics Education and Leadership Professional Practice Assistant Professor Position. Responsibilities included coordinating the activities of the committee including ranking potential candidates, conducting phone interviews, checking references, and coordinating campus visit activities and interviews. Concluded a successful search.

Search Committee Member (August 2019 – February 2020)

Mathematics and Statistics Department Professional Practice Assistant Professor in Mathematics and Statistics Education position. Responsibilities include ranking potential candidates, conducting phone interviews, check references, and participating in campus visit activities and interviews.

Peer Observations of Teaching for Colleagues (May 2019)

Conducted a peer evaluation for Dr. Diana Moss's online ELED 4061 course. Used a rubric and guidelines to evaluate her syllabus, course organization, course content, and online teaching.

Accreditation Meeting (February 12, 2019)

Participated in the interview with member of the Quality Review Team for AAQEP during the TEAL Accreditation Process.

Ad Hoc Search Committee Member (December 2018 – January 2019)

TEAL Mathematics Education Faculty Opportunity Hire. Responsibilities include participating in campus visit presentations and the mathematics education faculty interview.

General Education Task Force Member (December 2017 – 2018)

TEAL Level III Transition to New Elementary Education Program. Responsibilities include making decisions about General Education requirements for the new elementary education program.

Search Committee Member (December 2016 – February 2017; September 2017 – December 2017)

TEAL Mathematics Education and Leadership Open Ranked Faculty Position. Responsibilities include ranking potential candidates, conducting phone interviews, check references, and participating in campus visit activities and interviews.

Content Task Force Member (August 2017 – 2018)

TEAL Level III Transition to New Elementary Education Program. Responsibilities include meeting with other content-area Level III colleagues to align the Level III methods assignments across content areas for undergraduate students' practicum field experience.

Guest Lectures

Guest Lecture, TEAL 7551 Mathematics Education Research Foundations (for Patricia Moyer-Packenham) (2017, May)

Guest Lecture, ELED 4060 Teaching Mathematics and Practicum (for Beth MacDonald) (2016, October)

STATE LEADERSHIP & SERVICE

Utah

Consultant, Utah State Board of Education (October 2018)

Invited by the Utah State Board of Education (USBE) Assessment Coordinator as a university expert to provide guidance and feedback on the mathematics portion of the state Preschool Exam. Responsibilities include reviewing exam items as they relate to mathematics education research, attending one USBE meetings during 2018, and participating in discussions about test items with teachers and USBE employees.

Consultant, Utah State Board of Education (January 2017 – May 2017)

Invited by the Utah State Board of Education (USBE) Educational Coordinator as a university expert to provide guidance and feedback on the mathematics portion of the state Kindergarten Exit Exam. Responsibilities include reviewing exam items as they relate to mathematics education research, attending four USBE meetings during 2017, and participating in discussions about test items with teachers and USBE employees.

STATE SERVICE – OUTREACH FOR PUBLIC SCHOOLS

Utah

Cache County School District, Utah. *Computer Science for Paraprofessionals – Cache Code Math*. (January 2021-current). Collaboratively designing integrated mathematics and computer science curricula for fifth-grade classrooms.

Cache County School District, Utah; Logan City School District, Utah; Edith Bowen Laboratory School; Morningside School. *Coding in Kindergarten*. (August 2019-current). Creating and implementing tasks and assessments with robot toys for kindergarten students as part of a school-based research project for developing activities for improving students' computational thinking, problem solving, and mathematical reasoning (including number sense and spatial thinking).

Morningside School, Logan City School District, and Dolores Doré Eccles Center for Early Care and Education, Logan, Utah. *Coding in Kindergarten*. (September 2018 – May 2019). Created and implemented tasks and assessments with robot toys for kindergarten students as part of a school-based research project for developing activities for improving students' computational thinking, problem solving, and mathematical reasoning (including number sense and spatial thinking).

Dolores Doré Eccles Center for Early Care and Education, Logan, Utah. *Mathematics Learning in Preschool*. (October 2018 – February 2019). Invited by the Executive Director Lisa Boyce, Director of Programs Danielle Egan, and Preschool Teachers to conduct a professional development about using Cognitively Guided Instruction and Learning Trajectories in the preschool classrooms. Meet with teacher teams monthly and coach teachers individually. Assess children and teach lessons for children ages 18 months to 5 years old.

Cache County School District, Smithfield, Utah. *Starting the Year with Number Sense Routines*. (August 13, 2018). Invited by the Principal, John Anderson, to create and implement a half-day professional development workshop for K-6 teachers at Birch Creek Elementary.

Cache, Logan, and Charter Schools, Utah. *Number Sense Routines Professional Development*. (August 1-2, 2018). Conducted a workshop for 6 coaches (train the trainers) and a workshop for over 50 K-6 teachers in Cache valley on number sense routines for elementary mathematics.

Logan City School District, Logan, Utah. *A Number System Knowledge Instructional Treatment*. (September 2017 – February 2018). Create and implement professional development for 2nd grade teachers about mathematics warm-ups as part of a school-based research project for developing teaching episodes geared toward improving students' number sense.

Edith Bowen Laboratory School, Logan, Utah. *A Number System Knowledge Instructional Treatment*. (September 2017 – February 2018). Create and implement professional development for 2nd grade teachers about mathematics warm-ups as part of a school-based research project for developing teaching episodes geared toward improving students' number sense.

Dolores Doré Eccles Center for Early Care and Education, Logan, Utah. *Preschoolers' Evolving Mathematics Knowledge*. (August 2016 – December 2017). Invited by the Executive Director, Lisa Boyce, and Preschool Teachers to conduct a professional development about using Cognitively Guided Instruction in the preschool classrooms. Meet with teacher teams monthly and coach teachers individually. Assess children as part of an ongoing research project about preschoolers' evolving mathematical knowledge from ages 2-4.

Edith Bowen Laboratory School, Logan, Utah. *Developing Numerals-Linked-To-Quantities Routines*. (January – May 2017). Taught 2nd grade mathematics warm-ups as part of a school-based research project for developing teaching episodes geared toward improving students' number sense.

GreenWood Charter School, Harrisville, Utah. *Building Number Sense Across GreenWood: Number Composition*. (December 2016). Invited by the School Director, Jessie Kidd, to conduct professional development about building number sense across the school, focused on one big idea.

GreenWood Charter School, Harrisville, Utah. *GreenWood Early Grove: Developing Students' Number Sense*. (May 2016). Invited by the School Director, Jessie Kidd, to conduct professional development about instructional strategies for building young students' number sense.

Weber School District, Ogden, Utah. *Mentoring and Implementation Session – Numbers & Operations Course*. (2016, May). Provided 90 minutes of professional development for 20 teachers at the school (with Patricia Moyer-Packenham, Sheri Heiter, Kady Schneiter, and Jennifer Boyer-Thurgood).

Wilson Elementary School, Logan City School District, Logan, Utah. *Examining a Counting-Focused Instructional Treatment*. (September – December 2015). Taught 2nd grade mathematics warm-ups as part of a school-based research project for developing teaching episodes geared toward improving students' number sense.

Dolores Doré Eccles Center for Early Care and Education, Logan, Utah. *Preschool Mathematics: Solving Problems*. (August 2015). Invited by the Preschool Director, Janet Wahlquist, and Preschool Teachers to conduct a professional development session about using story problems in the preschool classroom.

Dolores Doré Eccles Center for Early Care and Education, Logan, Utah. *Developing Preschoolers' Number Sense*. (April 2014). Invited by the Preschool Director, Maegan Lokteff, to conduct a professional development session for preschool teachers about number sense learning trajectories.

Edith Bowen Laboratory School, Logan, Utah. *Understanding Number!* (March 2014). Invited by the Assistant Principal, Julie Moeller, to conduct a workshop on instructional strategies for helping students develop deeper understandings of whole numbers and fractions.

Logan City School District, Logan, Utah. *Developing Math Elementary Math Teacher Leaders Through a Video Project*. (May 2013 – May 2014). Conducted workshops including video analyses of instructional strategies, article study, and reflective discussions throughout the year for a group of mathematics teacher leaders.

Edith Bowen Laboratory School, Logan, Utah. *A Lesson-Study Partnership*. (May 2012 – December 2013). Led a partnership between the Utah State University Math Methods Instructors and the Edith Bowen Second-Grade Teachers to facilitate preservice teacher learning through an adapted lesson study approach.

Bridger Elementary School, Logan City School District, Logan, Utah. *Developing Counting Routines*. (March 2013). Taught 2nd grade mathematics warm-ups as part of a school-based research project for developing teaching episodes geared toward improving students' number sense.

Edith Bowen Laboratory School, Logan, Utah. *Math Story Problems: Problem Types, Strategies, and Students' Thinking*. (March 2013). Invited by the principal, Dan Johnson, to lead a PLC session for the faculty on CCSSM problem situations and choosing numbers based on students' work. Presented with Andrea Bostwick, Marianne Christian, and Katie Anderson.

Logan City School District, Logan, Utah. *District Elementary Math Training: Math Tasks and Routines* (January 2013). Invited by district math coach, Barbara Child, and math leadership team to lead a professional development session with Grades 1 – 5 teachers on implementing instructional methods for building students' number sense.

Edith Bowen Laboratory School, Logan, Utah. *Science Kits Workshop: Integrating Mathematics and Science*. (September 2012). Invited by Dr. Kimberly Lott to serve as a mathematics teacher resource for Kindergarten, Grade 1, and Grade 2 teachers during their "Integrating Mathematics and Science" session.

Bridger Elementary School, Logan City Schools, Logan, Utah. *Lunch & Learning: Building Number Sense with Counting Around the Circle*. (January 2012). Invited by the principal, David Long, and math coach, Barbara Child, to lead an instructional strategies professional development session with Kindergarten – Grade 5 teachers.

Edith Bowen Laboratory School, Logan, Utah. *Focused Professional Development: Using Counting Routines to Develop 4th and 5th Grade Students' Number Sense*. (October 2011 – November 2011). Lead instructor for a four-session workshop for the two Grade 5 teachers to use counting routines as a means for developing students' number sense.

Nibley Elementary School, Cache County Public Schools, Logan, Utah. *Grades 3-4 Fractions and Virtual Manipulatives Mathematics Project*. (January 2011 – February 2011). Taught third- and fourth-grade mathematics during a fraction unit as part of a school-based research project on the uses of virtual manipulatives.

Ellis Elementary, Logan City Schools, Logan, Utah. *Grades 3-4 Fractions and Virtual Manipulatives Mathematics Project*. (March 2011 – April 2011). Taught third- and fourth-grade mathematics during a fraction unit as part of a school-based research project on the uses of virtual manipulatives.

Nebraska

Kearney Public Schools, Kearney, Nebraska. *Developing Students' Number Sense*. (June 2013 – 2016). Hired by district superintendent, Dick Meyer, and learning coach, Julie Everett, to provide consulting services for a three-year professional development focus on mathematics teaching and learning. Planned embedded, sustained professional development for elementary teachers, provided Skype presentations, and conducted on-site workshops each year.

Virginia

Bailey's Elementary School for the Arts and Sciences, Fairfax County Public Schools, Falls Church, VA. *Bailey's Math Collaborative Course*. (2007-2008). Developed and implemented a 40-hour course involving analyzing student work, facilitating discussion about assigned course readings and pedagogical math content concepts, and lesson study. Developed and taught the course with mathematics coach Mimi Granados.

Bailey's Elementary School for the Arts and Sciences, Fairfax County Public Schools, Falls Church, VA. *Instructional Assistant Professional Development Series*. (2006-2008). Initiated, developed, and implemented the first school-based professional development for 12 Instructional Assistants at Bailey's Elementary. 6 sessions over the course of a school year.

Bailey's Elementary School for the Arts and Sciences, Fairfax County Public Schools, Falls Church, VA. *Family Math Workshops*. (2007-2008). Designed, coordinated, and co-implemented a series of workshops for Bailey's Elementary families to learn more about how we teach math and how to help their children at home (6 sessions over the course of a school year). Also planned and conducted math workshops for Head Start parents in conjunction with the Head Start district coordinators (4 sessions).

Bailey's Elementary School for the Arts and Sciences, Fairfax County Public Schools, Falls Church, VA. Numerous Grade-level Team Workshops and Turn-Around Training for Bailey's Elementary educators including Mathematics Reasoning Assessments pilot and focus groups, Cognitively Guided Instruction trainings, Juanita Copley Early Childhood Math trainings for Pre-K and Kindergarten Teachers, *Everyday Mathematics* trainings, How to Use *Investigations* trainings, Lesson Study, and Teacher As Reader Study Groups on *Young Mathematicians At Work* by Fosnot & Dolk. (2005-2008).

Fairfax County Public Schools, Falls Church, VA. *Everyday Mathematics and the Math Workshop*. Provided trainings for schools in Fairfax County for teachers new to the curriculum: Sunrise Valley Elementary (2006), Hunters Woods Elementary (August 13, 14, & 15, 2007), and Bailey's Elementary (August 2007).

Texas

Bluebonnet Elementary, Round Rock Independent School District, Round Rock, TX. Created and conducted Guided Reading Workshop for K-2nd grade teachers. (February 2005). Presented overview of guided reading based on current research, facilitated group discussions, and assisted grade-level teams in creating lesson plans.

Bluebonnet Elementary, Round Rock Independent School District, Round Rock, TX. Appointed by principal to implement Embedded Staff Development district initiative. (2004-05) Designed and managed our campus program, which empowered teachers to guide their learning plans and promoted teacher collaboration for student success.

Round Rock Independent School District. *Baldrige Continuous Improvement*. (2004-05). Served as a district trainer and co-presented Baldrige training and continuous improvement systems.

CONTINUOUS LEARNING & SELF-DEVELOPMENT

PROFESSIONAL MEMBERSHIPS

TODOS – TODOS: Mathematics for ALL (since 2021)
ISLS – International Society of the Learning Sciences (since 2021)
AERA - American Educational Research Association (since 2011)
NCTM - National Council of Teachers of Mathematics (since 2005)
UCTM - Utah Council of Teachers of Mathematics (since 2010)
AMTE - Association of Mathematics Teacher Educators (2011-2013, 2018-2019)
SSMA - School Science and Mathematics Association (2019-2020)
MCLS - Mathematical Cognition and Learning Society (2016-2017)

LANGUAGES

Native speaker in English

Proficient in Spanish: Studied Spanish Language and Literature at The George Washington University (1998-2002) and at Universidad Autónoma de Madrid, Spain (Fall 2000). Further developed and improved my oral communication in Spanish at Instituto Chac-Mool in Cuernavaca, Mexico (June 2008).

Basic phrases and letter knowledge in Arabic: Studied Arabic at Al Akhawayn University in Ifrane, Morocco (May – August 2000).