Curriculum Vitae
Jessica F. Shumway, PhD
Associate Professor
Utah State University
Emma Eccles Jones College of Education and Human Services
School of Teacher Education and Leadership
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EDUCATION

PhD in Education **2016**
Utah State University, Logan, UT
Specialization in Curriculum & Instruction
Concentration in Mathematics Education & Leadership

MEd in Elementary Education **2003**
The George Washington University, Washington, DC
Teaching Certificates: Elementary Education (K-6) & English as a Second Language (K-12)

BA 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

Associate Professor **2022 – present**
Program Director, Mathematics Education Programs **2023 – present**
Assistant Professor **2016 – 2022**
School of Teacher Education and Leadership
Utah State University

Graduate Research Assistant and University Instructor **2010 - 2016**
School of Teacher Education and Leadership
Utah State University

Elementary School Teacher, Grades 3-4 **2008 - 2010**
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

AWARDS, PROFESSIONAL RECOGNITION, & COMPETITIVE PROGRAMS

2025 Researcher of the Year, School of Teacher Education & Leadership, USU
2023 Fulbright U.S. Scholar Grant Award, Fulbright Brasil
2023 Graduate Faculty Mentor of the Year Award, School of Teacher Education & Leadership, USU
2022 Undergraduate Research Mentor of the Year, School of Teacher Education & Leadership, USU
2020 Undergraduate Research Mentor of the Year, School of Teacher Education & Leadership, USU

2018 STaR Fellowship, Mathematics Education "Service, Teaching and Research" (STaR) Program, AMTE
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

RESEARCH

Research Interests

- children's mathematical thinking (number sense, spatial reasoning, problem solving)
- instructional practices and technology for fostering mathematical and computational thinking in preschool and elementary mathematics classrooms
- STEM integration, especially disciplines that support children's visual and embodied understanding of mathematics and develop children's motivation for using mathematics

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)

** Denotes graduate student co-authors*

1. **Shumway, J. F.,** Clarke-Midura, J., Lee, V. R., Silvis, D., *Welch, L. E., & *Kozlowski, J. S. (2023). Teaching coding in kindergarten: Supporting students' activity with robot coding toys. In Eds. Andrew Fluck & Therese Keane, *Teaching coding K-12*. Springer.
2. 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)

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

1. Borba, M. C., Souto, D. L. P., **Shumway, J. F.**, Silva, F. M., & Domingues, N. S. (2025). Festival of videos: Curricula developed by students and teachers. *ZDM – Mathematics Education*. https://doi.org/10.1007/s11858-025-01710-2
2. *Beck, K. E., **Shumway, J. F.,** Ocran, P., Clarke-Midura, J., & Recker, M. (2025). Expansively framing mathematics and computer science teaching with digital technology in elementary classrooms. *International Journal of Education in Mathematics, Science, and Technology (IJEMST), 13*(3), 812-829. https://doi.org/10.46328/ijemst.4862
3. Silvis, D., Clarke-Midura, J., Lee, V. R., & **Shumway, J. F.** (2025). Feeling a goodness of fit: Children establishing corporeal comfort in STEM learning. *Science Education*. https://doi.org/10.1002/sce.21968.
4. *Robillard, S. M., Lee, V. R., Clarke-Midura, J., & **Shumway, J. F.** (2024). An interaction analysis of a computer science co-design conversation of cultural relevance and its implications for design. *Journal of Research on Technology in Education*. https://doi.org/10.1080/15391523.2024.2402354.
5. *Kozlowski, J., **Shumway, J. F.,** Moyer-Packenham, P., Clarke-Midura, J., & Lee, V. (2024). Children's mathematics engagement based on their awareness of coding toy design features. *Mathematical Thinking and Learning*. DOI: 10.1080/10986065.2024.2371513

6. *Na, C., Clarke-Midura, J., **Shumway, J. F.,** van Dijk, W., & Lee, V. (2024). Validating a performance assessment of computational thinking for early childhood using item response theory. *International Journal of Child-Computer Interaction*, pre-proof online. https://doi.org/10.1016/j.ijcci.2024.100650
7. Lee, V. R., *Robillard, S., Recker, M., Clarke-Midura, J., & **Shumway, J. F.** (2024). Negotiating inherent asymmetries of co-design: A case of integrative elementary mathematics and computer science instruction. *Journal of Applied Instructional Design, 13*(1). Online.
8. *Beck, K. E., **Shumway, J. F.,** *Shehzad, U., Clarke-Midura, J., & Recker, M. (2024). Facilitating mathematics and computer science connections: A cross-curricular approach. *International Journal of Education in Mathematics, Science and Technology (IJEMST), 12*(1), 85-98. https://doi.org/10.46328/ijemst.3104
9. Clarke-Midura, J., Lee, V. R., **Shumway, J. F.,** Silvis, D., *Kozolowski, J., & **Peterson, R. (2023). Designing formative assessments of early childhood computational thinking. *Early Childhood Research Quarterly*, *65*(4th Quarter), 68-80.
10. Bundock, K., **Shumway, J. F.,** **King, J., & **Burnside, M. (2023). Teachers' actions and students' engagement behaviors during Number System Knowledge discussions: Implications for enhancing active engagement. *International Journal of Education in Mathematics, Science, and Technology, 11*(2), 506-526.
11. Silvis, D., Clarke-Midura, J., **Shumway, J. F.,** Lee, V. R., & **Lewis, S. (2022). Children caring for robots: Expanding computational thinking frameworks to include a technological ethic of care. *International Journal of Child-Computer Interaction,* 33, 100491. https://doi.org/10.1016/j.ijcci.2022.100491
12. Silvis, D., Lee, V. R., Clarke-Midura, J., & **Shumway, J. F.** (2022). The technical matters: Young children debugging (with) tangible coding toys. *Information and Learning Sciences*, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/ILS-12-2021-0109
13. *Welch, L. E., **Shumway, J. F.,** Clarke-Midura, J., & Lee, V. R. (2022). Exploring measurement through coding: Children's conceptions of a dynamic linear unit with robot coding toys. *Educational Sciences, 12*(2), 143. https://doi.org/10.3390/educsci12020143
14. **Shumway, J. F.,** *Welch, L., *Kozlowski, J., Clarke-Midura, J., & Lee, V. R. (2021). Kindergarten students' mathematics knowledge at work: The mathematics for programming robot toys. *Mathematical Thinking and Learning.* Online first. https://doi.org/10.1080/10986065.2021.1982666
15. *Welch, L. E., **Shumway, J. F.,** Clarke-Midura, J., & Lee, V. R. (2021). Using coding toys to understand equality. *Australian Primary Mathematics Classroom, 26*(3), 21-25.
16. **Shumway, J. F.**, & *Reeder, R. (2021). Characteristics of 3-year-old preschoolers' evolving mathematics knowledge: A one-year multiple-case analysis. *International Journal for Mathematics Teaching and Learning*, *22*(2), 55-74.
17. 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
18. 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
19. **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
20. *Throndsen, 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
21. *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
22. **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.
23. **Shumway, J. F.**, & ***Hoggan, J. (2019). Developing spatial structuring with Quick Images. *Teaching Children Mathematics*, *25*(5), 290-296.

24. **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.
25. *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
26. 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
27. 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.
28. **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.
29. **Player, C., & **Shumway, J. F.** (2018). Emerging number system knowledge ideas: A case study. *American Journal of Undergraduate Research*, 15(3), 23-34.
30. Baker, J. M., Moyer-Packenham, P. S., Tucker, S. I., **Shumway, J. F**., Jordan, K. E., & Gillam, R. (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.
31. **Shumway, J. F.,** & ***Pace, L. (2017). Preschool problem solvers: CGI promotes mathematical reasoning. *Teaching Children Mathematics*, *24*(2), 102-110.
32. 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
33. **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
34. **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.
35. *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.
36. 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.
37. Chedister, M. & **Shumway, J. F.** (2016). The role of questioning to develop conceptual understanding. *Wisconsin Teacher of Mathematics, 68*(2), 21-24.
38. MacDonald, B. L. & **Shumway, J. F.** (2016). Subitizing games: Assessing preschool children's number understanding. *Teaching Children Mathematics, (22)*6, 340-348.
39. 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.
40. 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.
41. **Shumway, J. F**., & ***Kyriopolous, J. (2013/2014). Mastery multiplied. *Educational Leadership, 71*(4), 73-76.
42. 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.

43. 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.
44. 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.
45. **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.
46. 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 International Conference Proceedings (Refereed)

1. Silvis, D., *Ashineh, A., Lee, B., **Shumway, J. F.,** & Clarke-Midura, J. (2025, June). Find It First, Don't Cheat, Make Your Code Useful: Norming "Novelty" in Early Childhood Computer Science. *Proceedings of the International Society of the Learning Sciences (ISLS) Annual Meeting.* Helsinki, Finland: ISLS.
2. **Shumway, J. F.,** & *Silva, F. M. (2024, July). Elementary students' digital mathematics videos: Multimodal communication and knowledge production. *Proceedings of the 15th International Congress on Mathematical Education*. Sydney, Australia: ICMI.
3. *Beck, K. E., & **Shumway, J. F.,** *Ocran, P., Clarke-Midura, J., & Recker, M. (2024, July). Expansive framing of mathematics and computer science: Supporting educators in cross-curricular teaching. *Proceedings of the 15th International Congress on Mathematical Education*. Sydney, Australia: ICMI.
4. Clarke-Midura, J., **Shumway, J. F.,** *Ashineh, A., *Zandi, A., & **Clawson, W. (2024, June). What happened to the geometry? Examining spatial and mathematical concepts in computational toys and kits for young children. In *Proceedings of the Symposium on Learning, Design and Technology*, pp. 47-56.
5. Silvis, D., Clarke-Midura, J., **Shumway, J. F.,** Lee, V. R., **Childers, K., & **Anderson, H. (2023, June). Material anchors for young children's spatial planning: Contextualizing path-program relationships. *Proceedings of the International Society of the Learning Sciences (ISLS) Annual Meeting.* Montreal, Canada: ISLS.
6. *Shehzad, U., Clarke-Midura, J., *Beck, K., **Shumway, J. F.,** & Recker, M. (2023, June). Co-designing elementary-level computer science and mathematics lessons: An Expansive Framing approach. *Proceedings of the International Society of the Learning Sciences (ISLS) Annual Meeting.* Montreal, Canada: ISLS.
7. *Robillard, S. M., Lee, V. R., Clarke-Midura, J., & **Shumway, J.** (2023, June). When is an owl more than an owl? An interaction analysis of a computer science co-design conversation on cultural relevance. *Proceedings of the International Society of the Learning Sciences (ISLS) Annual Meeting.* Montreal, Canada: ISLS.
8. Silvis, D., Clarke-Midura, J., **Shumway, J. F.,** & Lee, V. R. (2022, June). Every glass ceiling has a floor (of interaction): Studying body position as an index of social position in kindergarten classrooms. *Proceedings of the International Society of the Learning Sciences (ISLS) Annual Meeting.* Hiroshima, Japan: ISLS.
9. *Welch, L. E., Silvis, D., Clarke-Midura, J., **Shumway, J. F.**, *Kozlowski, J., & Lee, V. R. (2022, June). Assessment designs that elicit multimodal strategies: What we can learn about early childhood CT by design. *Proceedings of the International Society of the Learning Sciences (ISLS) Annual Meeting.* Hiroshima, Japan: ISLS.
10. Lee, V., Recker, M., Clarke-Midura, J., & **Shumway, J. F.** (2022, June). Design for co-design in a computer science curriculum research-practice partnership. *Proceedings of the International Society of the Learning Sciences (ISLS) Annual Meeting.* Hiroshima, Japan: ISLS.

11. 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.
12. 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.
13. *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.
14. 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.
15. **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.
16. 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.
17. 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

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.

Media (Invited)

1. **Shumway, J. F.** (2021, August 17). *Teaching Children to Count Before They Start Kindergarten Gives Them Life-Long Skills*. Story by Aley Davis, KSL TV. https://ksltv.com/470873/teaching-children-to-count-before-they-start-kindergarten-gives-them-life-long-skills/

GRANT-FUNDING FOR RESEARCH (TOTAL: $3,337,311.88)

External

***Investigating Early Elementary Students' Computational Thinking Development in Integrated Mathematics-Coding Instruction,* 2023-2027, NSF Grant # 2300357, $1,556,696.** Role: Principal Investigator. Funded by the National Science Foundation Discovery Research K-12 Program. Project goals: Investigating early elementary students' progressions of integrated mathematics and CT learning, developing integrated mathematics-coding curriculum aligned with development CT learning progressions, and designing formative assessments to provide teachers feedback on students CT learning. (with Co-PI, Jody Clarke-Midura, Instructional Technology and Learning Sciences Department, Utah State University; Co-PI, Deborah Silvis, College of Education, SUNY Cortland).

***Collaborative Research: Supporting Rural Paraprofessional Educators and their Students with Computer Science Professional Learning and Expansively Framed Curriculum,* 2020-2023, NSF Grant# 2031382, $629,951 to USU, $1,000,000 total.** Role: Co-Principal Investigator. Funded by the National Science Foundation CSforAll:RPP Medium Pre-K through 8 Strand. Project goals: Collaboratively designing curriculum with elementary mathematics teachers and computer lab paraprofessionals to highlight and integrate Computer Science (CS) concepts; co-designing learning experiences for paraprofessionals and teachers; and evaluating the dynamics and outcomes of a design-based Research-Practice Partnership. (with Lead PI Mimi Recker and Co-PI Jody Clarke-Midura, Instructional Technology and Learning Sciences Department, Utah State University; Lead 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*, 2019-2022, NSF Grant# 1842116, $1,120,807.** Role: Co-Principal Investigator. Funded by the National Science Foundation STEM+C Program. Project goals: 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. (with Lead PI, Jody Clarke-Midura, Instructional Technology and Learning Sciences Department, Utah State University; Co-PI, Victor Lee, College of Education, Stanford University).

Internal

***Coding in Kindergarten: An Exploratory Study of Coding Toys in Kindergarten Classrooms,* 2018-2019, $19,960.88.** Role: Co-Principal Investigator. Funded by Utah State University's Office of Research & Graduate Studies Research Catalyst Grant. Project goals: Developed and tested instructional activities and assessments around the use of coding toys in kindergarten classrooms; and created and piloted mathematics and computer science tasks and assessment items and conducted interviews with participants. (with PI Jody Clarke-Midura and Co-PI Victor Lee, Instructional Technology and Learning Sciences Department).

***A Number System Knowledge Instructional Treatment: Linking Quantities with Numerals to Promote Students' Number Sense Development,* 2017-2018, $9,897.00.** Role: Principal Investigator. Funded by Utah State University's Office of Research & Graduate Studies Grant-Writing Experience Through Mentorship (GEM) Grant. Project goals: 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.

PROFESSIONAL PRESENTATIONS

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

Invited and Keynote Presentations (National and International)

Shumway, J. F. (2025, June). *Playing with Mathematics, Space, and Programming Using Robot Coding Toys: How Do Children Develop Computational Thinking?* Computer Science & Computational Thinking Structured Poster Session at the 2025 DRK-12 PI Meeting, Washington, DC. (**Invited to Presenter, Early Childhood Group**)

Shumway, J. F. (2023, September). *Doing Research in the USA and in Brazil.* Presentation for Researchers, (IV SITEM), Rio Claro, Brasil. (**Invited Keynote Speaker**)

Shumway, J. F., Villarreal, M., Villa-Ochoa, J. A. (2023, September). *Meet the Speakers: Dinámica Interativa Com Os Aprentadores Internacionais.* Presentation for Researchers, (IV SITEM), Rio Claro, Brasil. (**Invited Panelist**)

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 Speaker**)

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 Speaker**)

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 Speaker**)

Shumway, J. F. (2017, May). *Young Children's Coordination of Number Sense in Solving Word Problems.* Invited Keynote 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.* Invited Keynote Presentation for K-12 Teachers, Meeting of the Wisconsin Mathematics Council, Inc., Green Lake Conference Center, Wisconsin. **(Invited Keynote Speaker)**

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 Speaker**)

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 Speaker**)

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 Speaker**)

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**)

International Presentations (Refereed)

Australasian Computing Eduction Conference (ACE)

*Bagley, E., **Shumway, J. F.,** & Edwards, J. (2022, February). *Second-Grade Students' Use of Visual Programming to Learn Multiplication: Leveraging the Concept of Iteration*. The 24th Australasian Computing Education Conference (ACE '22), Online.

Working CLIL International Colloquium (Content Language and Integrated Learning)
*Lund, C., **Shumway, J. F.,** Braden, S., *Yazidi Alaoui, A., Clarke-Midura, J., Silvis, B., & Lee, B. (2025, June). *Integrated Mathematics-Coding Tasks for Content-Based Language Instruction*. The 4th Working CLIL International Colloquium, Castelo Branco, Portugal.

North American Chapter of the International Group for Psychology of Mathematics Education (PME-NA)
*Kozlowski, J., **Shumway, J. F.,** Clarke-Midura, J., & Lee, V. (2021, October 14-17). *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.

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.

National Presentations (Refereed)

American Educational Research Association (AERA)
Shumway, J. F., *Lund, C., ***Kozlowski, J., Silvis, D., Clarke-Midura, J., & *Ashineh, A. (2025, April). *Locking-It-In and Doubling: Mediating Second-Grade Students' Activity with Multiplicative Thinking*. [Roundtable Session]. Annual Meeting of the American Educational Research Association (AERA), Denver, Colorado.

*Ashineh, A., Clarke-Midura, J., Silvis, D., **Shumway, J. F.,** ***Kozlowski, J., & *Lund, C. (2025, April). *Navigating Multiplicative Reasoning as Loops: Students' Meaning-making of Integrated Elementary Mathematics and Computer Science Lessons*. [Poster]. Annual Meeting of the American Educational Research Association (AERA), Denver, Colorado.

Silvis, D., Clarke-Midura, J., **Shumway, J. F.,** *Ashineh, A., & *Lund, C. (2025, April). *"We Had an Amazing Idea, but Then Someone Already Had It": Norming Novelty in Early Childhood Computer Science.* [Poster]. Annual Meeting of the American Educational Research Association (AERA), Denver, Colorado.

*Shehzad, U., Clarke-Midura, J., *Beck, K., **Shumway, J. F.,** & Recker, M. (2023, April 13-16). *Rethinking Integrated Computer Science Instruction: A Cross-Context and Expansive Approach in Elementary Classrooms.* [Paper Session]. Annual Meeting of the American Educational Research Association (AERA), Chicago, Illinois.

*Na, C., Clarke-Midura, J., Silvis, D., **Childers, K., **Shumway, J. F.,** & Lee, V. (2023, April 13-16). *Validating a Performance Assessment of Computational Thinking for Early Childhood Using Item Response Theory.* [Paper Session]. Annual Meeting of the American Educational Research Association (AERA), Chicago, Illinois.

Clarke-Midura, J., **Shumway, J. F.,** Silvis, D., & Lee, V. (2022, April 21-26). *Coding in Kindergarten with Screen-Free Tangible Robot Coding Toys.* [Working Group Roundtable: Computational Thinking in Early Childhood, The State of Our Burgeoning Field]. Annual Meeting of the American Educational Research Association (AERA), San Diego, California.

Silvis, D., Clarke-Midura, J., **Shumway, J. F.,** & Lee, V. (2022, April 21-26). *Leaning in to Learning: Tangible Topologies of Kindergarten Coding Activities.* [Roundtable 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. (2022, April 21-26). *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. 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.

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)

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.

*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. (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.

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.

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.

Association of Mathematics Teacher Educators (AMTE)

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.

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.

National Council of Teachers of Mathematics (NCTM)

*Beck, K., & **Shumway, J. F.** (2023, April). Geometry and coding: Introducing an interactive integrated mathematics-computer science unit. Presentation, National Council of Teachers of Mathematics Virtual Conference.

*Beck, K., & **Shumway, J. F.** (2022, September). Applying expansive framing to an integrated mathematics-computer science unit. Research Presentation, National Council of Teachers of Mathematics Research (NCTM-R) Conference, Los Angeles, California.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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 Title I Conference

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.

School Science and Mathematics Association (SSMA)

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.

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.

Society for Information Technology and Teacher Education (SITE)

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.

Society for Research in Child Development (SRCD)

Clarke-Midura, J., Silvis, D., **Shumway, J. F.**, *Na, C., & Lee, V. R. (2023, April). *Robot coding toys as a context to cultivate spatial thinking and computational thinking skills*. Poster, Society for Research in Child Development Biennial Meeting, Salt Lake City, Utah.

Silvis, D., Clarke-Midura, J., **Shumway, J. F.**, Lee, V. R., **Childers, K., & **Anderson, H. (2023, April). *Children's development of path planning strategies when sequencing directional instructions*. Poster, Society for Research in Child Development Biennial Meeting, Salt Lake City, Utah.

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.

Regional and State Presentations (Refereed)

National Council of Teachers of Mathematics (NCTM) Regional

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.

Pacific Coast Research Conference

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.

Utah Council of Teachers of Mathematics (UCTM)

Shumway, J. F., ***Sanders, B., ***Wall, B., & ***Alexander, D. (2025, January). *See, Anchor, and Frame Math with Coding*. A presentation for K-5 teachers at the Utah Council of Teachers of Mathematics (UCTM) Conference, Orem, UT.

Vela, K., Campbell, T., Frierson, M., & **Shumway, J. F.** (2025, January). *Joyful Mathematics in STEM: Research at USU.* A presentation for K-5 teachers at the Utah Council of Teachers of Mathematics (UCTM) Conference, Orem, UT.

*Welch Bond, L. E., *Beck, K., Basham, M., ***Kozlowski, J., & **Shumway, J. F.** (2023, January). *Math and Coding Connections in Elementary*. A presentation for K–5 teachers at the Utah Council of Teachers of Mathematics (UCTM) Conference, Provo, UT.

*Beck, K. E., **Shumway, J. F.,** & Clarke-Midura, J. (2022, February). *Mathematics From Scratch: Learning with Coding.* Presentation for Grades 3-5 Teachers, Utah Council of Teachers of Mathematics (UCTM) Conference, Kaysville, Utah.

*Welch, L. E., **Childers, K. E., **Shumway, J. F.,** & Clarke-Midura, J. (2022, February). *Merging Math and Programming with Coding Toys.* Presentation for Grades K-2 Teachers, Utah Council of Teachers of Mathematics (UCTM) Conference, Kaysville, Utah.

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., & ***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.

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., ***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.

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.

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.

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.

Utah Early Childhood Conference

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.

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.

Texas Council of Teachers of English Language Arts (TCTE and TAIR)

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.

Virginia: Fairfax County Teachers As Researchers, Title I Math Teacher, and Math Matters Conferences

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.

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

Mentor For Student Research Presentations (Refereed)

Research on Capitol Hill (ROCH)

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.

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.

National Conference of Undergraduate Research (NCUR)

** Childers, K. A. Mentors: **Shumway, J. F.**, Clarke-Midura, J., & Silvis, D. (2022, February). *Milestones in Computational Thinking and Mathematics Competencies in K-2*. Oral Presentation, National Conference of Undergraduate Research (virtual).

Utah Council on Undergraduate Research (UCUR)

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.

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.

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.

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.

Utah State University Fall Undergraduate Student Research Symposium (FSRS)

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, Fall Undergraduate Student Research Symposium, Logan, UT.

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 Undergraduate Student Research Symposium, Logan, UT.

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.

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.

Utah State University Student Research Symposium

*Ashineh, A. Mentors: Clarke-Midura, J. & **Shumway, J. F.** (2024, April). *Coding and Math in Elementary School: Relationships Among Mathematical, Spatial, and Computational Thinking*. Poster Presentation, Utah State University Student Research Symposium, Logan, UT.

** Childers, K. A. Mentors: **Shumway, J. F.**, Clarke-Midura, J., & Silvis, D. (2022, April). *Milestones in Computational Thinking and Mathematics Competencies in K-2.* Poster Presentation, Utah State University 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., & **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.

UNIVERSITY TEACHING

Courses Taught for EEJ College of Education and Human Services
Utah State University, Logan, Utah (2010-Present)

Undergraduate Courses

ELED 5040/5060 (previously ELED 4062/4063 and ELED 4056 and ELED 4060) - Teaching Elementary School Mathematics II: Number, Operations, & Algebraic Reasoning and Practicum for Teaching Elementary School Mathematics II
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.

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

ELED 5150 - Student Teaching Seminar & Supervision
This course constitutes six semester credit hours of student teaching at the upper elementary grade level. Student teachers need to demonstrate competency and professionalism in teaching. Students begin their transition from university student to professional teacher.

Graduate Courses

EDUC 6770 – Qualitative Methods I
Doctoral Course. Foundations of qualitative research, approaches to qualitative research, research design, methods of data collection and analysis and strategies for writing up qualitative research. Develops understanding of the purposes for and breadth of qualitative research, specific approaches in students' fields, and tools of qualitative inquiry.

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.

TEAL 7552 – Mathematics Education Learning Theory
Doctoral Course. Critical examination of the historical development of cognitive theories of mathematical learning, including the influence of selected theorists on mathematical thinking, teaching and assessment. Explores mathematical learning models, including research literature on numeracy, brain research, learning trajectories, differentiation, and equity.

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.

TEAL 7557 – Advanced Research Design in Mathematics Education & Leadership
Doctoral Course. This course prepares students for writing the dissertation proposal and presenting and defending a research proposal. Students will participate in class discussions, write extensively, develop the draft of a dissertation proposal, and present a mock dissertation proposal defense.

TEAL 6521, 6522, 6523, 6524, 6525, 6551 - Elementary Mathematics Endorsement courses: Number/Operations, Rational Numbers, Algebraic Reasoning, Geometry/Measurement, 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.

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

Course Taught for Programa de Pós-Graduação em Área Educação Matemática Instituto de Geociências e Ciências Exatas – Câmpus de Rio Claro Universidade Estadual Paulista (UNESP), Rio Claro, São Paulo, Brasil (2023)

Graduate Course
Technology in Mathematics Education
Master's/Doctoral Course. The course aims to offer opportunities to research and practice ways to creatively and effectively integrate technology with mathematics teaching and learning. This course will empower students to evaluate technology resources in terms of relevance to mathematics and meaningful engagement for students in representations and communication of mathematics. Students will also learn to analyze children's thinking as they use technology tools to learn mathematics. Technology use, research, practice, theories, and evaluation of tools in mathematics education.

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.

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. 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 for Utah State University
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

PhD Graduates/Dissertation Research Completed (33)

Chair/Major Professor

Jason Hart (PhD, Education, 2025). *Connections between learning intentions, success criteria, and metacognition: A mixed methods investigation in grades 3-5*. Doctoral dissertation defended 3/2025, TEAL, Utah State University.

Kimberly Evagelatos Beck (PhD, Education, 2024). *An expansive framing intervention and its influence on nursing students' perceptions of value for mathematics*. Doctoral dissertation defended 3/2024, TEAL, Utah State University.

Jet Warr (PhD, Education, 2024). *The coordination of multiple mathematical representations for algebraic functions in secondary mathematics textbooks: A content analysis*. Doctoral dissertation defended 12/2023, TEAL, Utah State University.
Awards: Graduate Enhancement Award (2018)

Vicki Lyons (PhD, Education, 2024). *The essential nature of students' psychological safety in advanced placement mathematical discourse.* Co-Chair with Tye Campbell. Doctoral dissertation defended 12/2023, TEAL, Utah State University.

Lise Welch Bond (PhD, Education, 2023). *Connections between mathematics and computational thinking: Kindergarten students' demonstration of mathematics knowledge in a computational thinking assessment*. Doctoral dissertation defended 12/2022, TEAL Utah State University.

Joseph Kozlowski (PhD, Education, 2022). *Kindergarten-aged children's engagement in mathematics through awareness of design features: A comparison across different coding toys*. Co-Chair with Patricia Moyer-Packenham. Doctoral dissertation defended 2/2022, TEAL, Utah State University.
Awards: TEAL Doctoral Student Researcher of the Year (2021)

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.

Committee Member

Emmett Speed (PhD, Neuroscience, 2025). *The SNARC effect in Mayan numerals: Effects of language transparency and reading direction on novel symbolic number understandin*g, Doctoral dissertation defended, 5/2025, Psychology, Utah State University.

Nicole Parker (PhD, Education, 2025). *The heart of the matter: An Action Research Case Study on co-creating observation and reflection tools to provide effective and meaningful professional development for sixth-grade mathematics.* Doctoral dissertation defended, 4/2025, TEAL, Utah State University.

Bertha Naa Dei Neequaye (PhD, Mathematical Sciences, 2025). *Self-assessment in Calculus I*. Doctoral dissertation defended 4/2025, Math and Stats, Utah State University.

Michelle Parslow (PhD, Education, 2025). *A case study of garden-based STEM curriculum on students' STEM career interests.* Doctoral dissertation defended, 3/2025, TEAL, Utah State University.

Sandra Miles (PhD, Education, 2024). *How relational instruction and caring learning environments relate to mathematics self-concept: A multilevel investigation of the High School Longitudinal Survey, 2009 Data*. Doctoral dissertation defended, 3/2024, TEAL, Utah State University.

Aubrey Rogowski (PhD, Instructional Technology and Learning Sciences, 2023). *Evaluating an integrated science, technology, engineering, and math/computational thinking professional development program for elementary level paraprofessionals*. Doctoral dissertation defended, 9/2023, ITLS, Utah State University.

Umar Shehzad (PhD, Instructional Technology and Learning Sciences, 2023). *Modeling elementary students' computer science outcomes with in-school and out-of-school factors,* Doctoral dissertation defended, 8/2023, ITLS, Utah State University.

KimberLeigh Hadfield (PhD, Education, 2023). *The impact of formative assessment cycles on students' attitudes and achievement in a large-enrollment undergraduate introductory statistics course,* Doctoral dissertation defended, 5/2023, TEAL, Utah State University.

Megan Hamilton (PhD, Instructional Technology and Learning Sciences, 2023). *Designing a rubric for evaluating curricular resources in Montana's Indian Education for All repository: A design-based research approach,* Doctoral dissertation defended, 12/2022, ITLS, Utah State University.

Melissa Jill Ashby Harmon (PhD, Education, 2022). *Relationships between school, teacher, and feature characteristics and teachers' access to features within digital curriculum resources for mathematics instruction*. Doctoral dissertation defended, 12/2022, TEAL, Utah State University.

Allison Roxburgh (PhD, Education, 2022). *How preservice teachers' awareness of design features and academic language features relates to choosing and evaluating digital math games for English language learners*. Doctoral dissertation defended, 11/2022, TEAL, Utah State University.

Amy Kinder (PhD, Education, 2022). *A mixed methods study investigating how a video club professional development relates to teachers' mindsets, beliefs, and reflections on instructional practices*. Doctoral dissertation defended, 8/2022, TEAL, Utah State University.

Kristen Rolf (PhD, Disability Disciplines, 2022). *Examining the effectiveness of explicit, systematic mathematics vocabulary instruction for students with learning difficulties and disabilities in a specialized setting*. Doctoral dissertation defended, 4/2022, SPER, Utah State University.

Danielle Divis (PhD, Education, 2022). *The role of music context in high-school students' translations among representations in algebra*. Doctoral dissertation defended, 4/2022, TEAL, Utah State University.

Carrie Bala (PhD, Education, 2022). *The influence of a values affirmation intervention on students' social, mathematical, and epistemological empowerment*. Doctoral dissertation defended, 4/2022, TEAL, Utah State University.

Angela Frabasilio (PhD, Education, 2022). *Relationships between adaptive reasoning and learner-generated drawings when middle school students talk with partners during mathematical tasks*. Doctoral dissertation defended 3/2022, TEAL, Utah State University.

Natalie Anderson (PhD, Mathematics, 2022). *The influence of a course on assessment for inservice secondary mathematics teachers*. Doctoral dissertation defended, 3/2022, Mathematics, Utah State University.

Benjamin Covington (PhD, Psychology, 2021). *Numerical cognition and autism spectrum traits in adults*. Doctoral dissertation defended, 11/2021, Psychology, Utah State University.

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.

PhD Candidates/Proposals Defended

Chair/Major Professor

Camille Lund (Doctoral Candidate). *Factors affecting mathematics teachers' instructional decision-making: An ecological systems theory multiple-case study*. Proposal defended 4/2025, TEAL, Utah State University.

Committee Member

Melissa Barker (Doctoral Candidate). *Analyzing the influence of STEM Project-Based Learning on Native American students' perceptions and career interest in STEM*. Proposal defended 5/2025, TEAL, Utah State University.

Michelle Rich (Doctoral Candidate). *A mixed methods analysis on the effect of active learning on extraneous cognitive load within undergraduate statistics courses*. Proposal defended 5/2025, TEAL, Utah State University.

Jameson Hardy (Doctoral Candidate). *Exploring how adjunct faculty in mathematics implement curriculum*. Proposal defended 3/2025, TEAL, Utah State University.

Chungsoo Na (Doctoral Candidate). *Assessing young children's computational thinking: Validation, quantification, and diagnostic approaches*. Proposal defended 9/2024, ITLS, Utah State University.

Christine Hartmann (Doctoral Candidate). *The role of response time in math anxiety,* Proposal defended, 1/12/2023, Psychology, Utah State University.

Current PhD Comprehensive Exam Committees

Chair/Major Professor

Committee Member
Patrick Ocran, passed Comprehensive Exam 2/2025, TEAL, Utah State University.

PhD Supervisory and Program Committees

Doctoral Program Advisory Chair/Major Professor
Coursework Phase
Emmanuel Onyegu – 2024-present, TEAL, Utah State University
Kathryn Clark – 2024-present, TEAL, Utah State University
Tyler Powell – 2024-present, TEAL, Utah State University

Doctoral Program Advisory Committee Member
Coursework Phase
Mark Lewis – 2024-present, TEAL, Utah State University
Hannah Wilkinson – 2025-present, Engineering, Utah State University

International Examiner for PhD Thesis

External Examiner
Sisi Lin (PhD, Education, 2025). *Enhancing early number learning: Effects of an 8-week abacus training intervention on subitising, counting, and motivation*. Doctoral dissertation defended 6/2025, Christ's College, University of Cambridge, United Kingdom.

Graduate Student Master's Projects

M.Ed. Project Committee Member
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 Committee Member
Eric Bagley (MS, Computer Science, 2021). *A computer programming intervention for second grade math students*. Master of Science thesis defended 11/23/2021, Utah State University.

Graduate Student/Postdoctoral Research and Teaching Supervision

Supervision of Funded Postdoctoral Researcher and Graduate Research Assistants

2025-present	Alireza (Sina) Zandi Funded by NSF DRK-12 grant
2025-present	Asmaa Yazidi Alaoui, ITLS, Utah State University Funded by ITLS
2024-present	Boram Lee, Ph.D. NSF-Funded Postdoctoral Researcher for SPARC-Math research project (DRK-12)
2024-present	Camille Lund, TEAL, Utah State University Funded by NSF DRK-12 grant
2023-present	Anahita Ashineh, ITLS, Utah State University Funded by NSF DRK-12 grant
2019-2023	Deborah Silvis, Ph.D. NSF-Funded Postdoctoral Researcher for Coding in Kindergarten research project Co-presenter and co-author on multiple presentations and publications
2021-2023	Kimberly Beck, TEAL, Utah State University Funded by NSF CS for All grant (2021-22) and TEAL Assistantship (2023-2024)

Presented at UCTM (2022, 2023), AERA (2023), NCTM/NCTM-R (2023), ICME-15 (2024). Co-presenter and co-author on multiple presentations and publications.

2022 Molly Basham, TEAL, Utah State University
Funded by TEAL Assistantship (Fall 2022)

2022 Katelyn Elizondo Childers, TEAL, Utah State University
Funded by NSF STEM+C grant
Presented at NCUR (2022)

2019-2022 Lise Welch, TEAL, Utah State University
Funded by NSF STEM+C grant
Presented at USU SRS (2019), SSMA (2019), AERA (2020, 2021, 2022) UCTM (2022). 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), AERA (2020, 2021), and PME-NA (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 Graduate Teaching Assistants

2025 Sehrish Jabeen, TEAL, Utah State University

2025 Emmanuel Onyegu, TEAL, Utah State University

2023 Kimberly Beck, TEAL, Utah State University

2021, 2022, 2023 Sandra Miles, TEAL, Utah State University

2022 Molly Basham, TEAL, Utah State University

2019, 2020 Rachel Reeder, TEAL, Utah State University
Presidential Award for Excellence in Math and Science Teaching (PAEMST, 2019)

2018 Joseph Kozlowski, TEAL, Utah State University
Presented at the 2019 National Council of Teachers of Math Regional Conference.

2018 Allison Roxburgh, TEAL, Utah State University
Presented at the 2019 National Council of Teachers of Math Regional Conference.

Host/Mentor for Visiting Scholars

2024-2025 Alissan Sarturato Firão, Visiting Scholar from UNESP in Rio Claro, Brazil

Undergraduate Mentoring and Research Supervision

Advisor for Undergraduate Honors or Senior Capstone Project

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

2025-current Whitney Clawson, Special Education, Utah State University

2024-current Makayla Rogers, Engineering, Utah State University

2024 Mercedes Vasquez, TEAL, Utah State University

2022 Haleigh Andersen, TEAL, Utah State University

2021-2022 Rebekah Prestwich, TEAL, Utah State University

2021-2022 Katelyn Elizondo Childers, TEAL, Utah State University
Awarded 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.

PROFESSIONAL SERVICE

International and National Service

Guest Lectures and Webinars

- Invited Webinar (2025, May 19). Invited by Dr. Eva Brooks at Aalborg University, Denmark to lead a webinar titled *Using Robot Toys to Play with Math, Space, and Coding* as part of the Computation Play Nordic Initiative webinar series in Denmark, Sweden, Norway, and Finland.
- Invited Lecture (2023, April 25). Invited by Dr. Marcelo Borba at Universidade Estadual Paulista, Rio Claro, Brasil to present *Children's Mathematical Thinking with Technology* as part of the Seminários de Matemática e Educação Matemática (Series on Mathematics Education) during a Fulbright visit to Rio Claro, Brasil.
- Invited Lecture (2023, June 20). Invited by Dr. Marcelo Borba at Universidade Estadual Paulista, Rio Claro, Brasil to present *Learning, Representing, and Communicating Mathematics with Technology in Elementary School* as part of the Seminários de Matemática e Educação Matemática (Series on Mathematics Education) during a Fulbright visit to Rio Claro, Brasil.
- Invited Workshop (2023, June). Invited by Renata Corte from the Secretaria Municipal de Educação, Rio Claro, Brasil to present *Teaching English as Another Language Through Content: Math Talk and Computer Science Challenges* as part of the municipality's English teacher professional development during a Fulbright visit to Rio Claro, Brasil.
- Invited Lecture (2022, October; 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.

Panel Member for Grant Proposals

- Panel Member (2024), reviewing grant proposal for the Swiss National Science Foundation (SNSF)
- Panel Member (2022), reviewing grant proposal for the Research on Emerging Technologies for Teaching and Learning (RETTL) program, National Science Foundation

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

Peer Reviews for Academic Journals
- Manuscript Reviewer (2025), *Instructional Science Review*
- Manuscript Reviewer (2023, 2024), *Computer Science Education*
- Manuscript Reviewer (2023), *Early Childhood Education Journal*
- Manuscript Reviewer (2022), *Education Sciences*
- Manuscript Reviewer (2022), *Mathematical Thinking and Learning*
- Manuscript Reviewer (2022), *Investigations in Mathematics Learning*
- Manuscript Reviewer (2021), *Canadian Journal of Science, Mathematics, and Technology Education*
- Manuscript Reviewer (2020), *Transactions on Computing Education*
- Manuscript Reviewer (2020), *Int'l Journal of Education in Mathematics, Science, and Technology*
- Manuscript Reviewer (2020), *Journal of Numerical Cognition*
- Manuscript Reviewer (2019), *The Mathematics Enthusiast*
- Manuscript Reviewer (2018), *International Journal of Multicultural Education*

Peer Reviews for Academic Book Chapters
- Reviewer (2022), *Teaching Coding in K-12 Schools – Research and Applications*

Peer Reviews for Practitioner Journals
- Article Reviewer (2019, 2024), *Mathematics Teacher: Learning and Teaching Pre-K-12*
- Article Reviewer (2011-2018), *Teaching Children Mathematics*

Peer Reviews for Academic Conferences (yearly reviewer for 5 – 20 proposals)
- Proposals Reviewer (2023), International Congress on Mathematics Education (ICME-15)
- Proposals Reviewer (2022, 2025), International Society of Learning Sciences (ISLS)
- Proposals Reviewer (2016-2021), American Research Educational Research Association'
- Proposals Reviewer (2021), North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA)
- Proposals Reviewer (2014-2019), National Council of Teachers of Mathematics

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

State Leadership and Service

Utah State Board of Education
- Member, Elementary Mathematics Competencies Design Team (2021-2022). Represented Utah State University at statewide meetings to define elementary mathematics teaching competencies and design a framework.
- Consultant, Pre-Kindergarten Numeracy Assessment (2018). Invited by the USBE Assessment Coordinator as a university expert to provide guidance and feedback on the mathematics portion of the state Preschool Exam. Responsibilities included reviewing exam items as they relate to mathematics education research, attending a USBE meetings, and participating in discussions about test items with teachers and USBE employees.
- Consultant, Kindergarten Mathematics Exit Exam (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.

Institutional Leadership and Service – Utah State University

USU Institutional Review Board

- Committee Member (January 2025 – present): Responsibilities include Expedited Reviews and preparation for and attendance to Convened IRB Meetings.

Search Committees

- Search Committee Chair (September - December 2022), TEAL Mathematics Education and Leadership Assistant/Associate Professor positions
- Search Committee Member (August 2021 – February 2022), Mathematics and Statistics Department Professional Practice Assistant Professor in Mathematics and Statistics Education position
- Search Committee Chair (September 2020 – February 2021), TEAL Mathematics Education and Leadership Professional Practice Assistant Professor position
- Search Committee Member (August 2019 – February 2020), Mathematics and Statistics Department Professional Practice Assistant Professor in Mathematics and Statistics Education position
- Ad Hoc Search Committee Member (December 2018 – January 2019), TEAL Mathematics Education Faculty Opportunity Hire
- Search Committee Member (December 2016 – February 2017; September 2017 – December 2017), TEAL Mathematics Education and Leadership Open Ranked Faculty Position

Department Committees

- Member, Ed.D. Exploratory Committee: Responsibilities include attending meetings 2-3 times per semester for to develop a plan for reinstating the EdD program in TEAL (January – December 2023).
- Member, TEAL Graduate Programs Advisory Committee: Responsibilities include attending monthly meetings to consider policy issues and offer recommendations for TEAL graduate programs (September 2020 – May 2021).
- Member, General Education Task Force Member: TEAL Level III Transition to New Elementary Education Program. Responsibilities include making decisions about General Education requirements for the new elementary education program (December 2017 – 2018).
- Member, TEAL Content Task Force for Level III Transition to New Elementary Education Program: Responsibilities included meeting with other content-area Level III colleagues to align the Level III methods assignments across content areas for undergraduate students' practicum field experience (August 2017 – 2018).
- Participant, Accreditation Meeting: Participated in the interview with a member of the Quality Review Team for AAQEP during the TEAL Accreditation Process (February 2019).

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)

Peer Mentoring of Colleagues for Chairing PhD Students

- Michelle Frierson (faculty member), Michelle Rich (PhD student), 2024-2025
- Tye Campbell (faculty member), Vicki Lyons (PhD student), 2023-2024
- Katherine Vela (faculty member), Michelle Parslow (PhD student) 2020-2022
- Hillary Tanck (faculty member), Kimberly Beck (PhD student) 2021-2022

Peer Observations of Teaching for Colleagues

- Michelle Freirson's TEAL 7555 Mathematics Education Current Issues & Policy, 2024
- Katherine Vela's ELED 4062 Elementary Mathematics undergraduate course, 2022, 2024
- Diana Moss's online ELED 4061 Elementary Mathematics undergraduate course, 2019

Promotion and Tenure Advisory Committees

- Katherine Vela, Assistant Professor, School of Teacher Education and Leadership, Utah State University, 2023-present (**TAC Chair**)

- Michelle Frierson, Assistant Professor, School of Teacher Education and Leadership, Utah State University, 2023-present (**TAC Chair**)
- Tye Campbell, Assistant Professor, School of Teacher Education and Leadership, Utah State University, 2023-present (**TAC Chair**)
- Sindura Kularajan, Assistant Professor, Math/Stat Education, Utah State University, 2023-present (TAC member)
- Kristin Rolf, Assistant Professor, Department of Special Education and Rehabilitation Counseling, Utah State University, 2022-present (TAC member)
- LuEttaMae (Lu) Lawrence, Assistant Professor, Instructional Technology and Learning Sciences, Utah State University, 2022-present (TAC member)
- KimberLeigh Hadfield, Senior Lecturer, Math and Statistics Department, Utah State University, 2023-2024 (PAC member)

Ombudsperson for Promotion and Tenure Advisory Committees
- Ombudsperson for the Emma Eccles Jones College of Education and Human Services, 2022-present

Other Service
- Invited by Elisa Taylor at CIDI to participate in a Zoom Teaching Listening Session to help a Zoom trainer prepare for the Zoom Summit for Utah State University, 2024

Outreach for Public and Charter Schools

Brasil
Escola Municipal Jovelina Morateli, Rio Claro, São Paulo, Brazil. *Teaching and Learning Math with Digital Technology in Brasil* (June 2023). Collaboratively designing digital technology mathematics lessons with the third-grade teacher and observing students' production of digital mathematics videos.

Utah
Logan City School District, Utah; Edith Bowen Laboratory School. *Spatial Activities and Robot Coding for Mathematics.* (January 2024 – current). Creating and implementing tasks and assessments with robot toys for first- and second-grade 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).

Logan City School District, Utah. Consulting for the Elementary Schools Curriculum Director. (September 2024 – current). Monthly meetings with the district leader, principals, and instructional coaches about essential math components for district-wide number sense routines.

Cache County School District, Utah. *Computer Science for Paraprofessionals – Cache Code Math.* (January 2021-May 2025). 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-May 2022). 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).

Hillcrest Elementary School, Logan City School District, Utah. Math Talk/Conversas de Matemáticas. (August 2021, January 2022). Invited by the principal, Spencer Holmgren, to conduct professional development about building language and number sense across the school through mathematical discussions.

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). Created and implemented 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). Created and implemented 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 AND SELF-DEVELOPMENT

Professional Memberships

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)
TODOS – TODOS: Mathematics for ALL (2021-2023)
ISLS – International Society of the Learning Sciences (2021)
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).
- Learning Portuguese: Conducted research in Brazil in 2023.
- Basic phrases and letter knowledge in Arabic: Studied Arabic at Al Akhawayn University in Ifrane, Morocco (May – August 2000).