

Sarah B. Bush
Professor, K-12 STEM Education
Lockheed Martin Eminent Scholar Chair
School of Teacher Education
College of Community Innovation and Education
University of Central Florida
Email: Sarah.Bush@ucf.edu

CV AT-A-GLANCE

- Ph.D. in Curriculum and Instruction, Mathematics Education (2011). University of Louisville
- Current appointment as the **Lockheed Martin Eminent Scholar Chair** since 2023
- **Director of the Lockheed Martin/UCF Mathematics & Science Academy** since 2023
- **PI of NSF Noyce Track 3 *Empowering STEM Teachers with Earned Doctorates*** since 2021
- **UCF PI of NSF IUSE Collaborative *Transforming Undergraduate Math Teacher Prep*** since 2020
- 6.3+ Million in externally **Funded Projects** (from NSF, NASA, and MSP) since 2015
- 13 **Books** published or in-press since 2013
- 110+ **Peer-Reviewed Publications** published or in-press since 2010
- 175+ **Presentations** Internationally, Nationally, Regionally and Statewide since 2011
- National Council of Teachers of Mathematics (NCTM) **Board of Directors** (2019-2022)
- **Task Force Chair/Lead Writer**, NCTM *Catalyzing Change in Middle School Mathematics* Policy Book
- 11 **NCTM Leadership & Committee Appointments**, including 2017 Annual Program Chair
- **Administrative Experience** as an Associate Dean, Academy Director, and PhD Program Coordinator
- School Science and Mathematics 2021 **Award for Excellence in Integrating Science and Mathematics**
- Initiated and cultivated numerous **external partnerships (K-12, industry, non-profit)** since 2011
- Experienced **STEM Ed PD provider** (1000+ hours), **teacher** (19 years), **mentor** (700+ mentees)

EDUCATION

2011 Doctor of Philosophy, Curriculum and Instruction – Mathematics Education
University of Louisville

Dissertation Title: *Analyzing Common Algebra-Related Misconceptions and Errors of Middle School Students* (nearly 13,000 downloads since 2015)
Committee Chair: Dr. Karen S. Karp

2008 Master of Education
Indiana Wesleyan University

2005 Bachelor of Science in Secondary Mathematics Education
Indiana University Southeast

PROFESSIONAL EXPERIENCE

University of Central Florida – College of Community Innovation and Education

2023-present Lockheed Martin Eminent Scholar Chair &
Director, Lockheed Martin/UCF Mathematics and Science Academy

- Honor and embody emphasis Lockheed Martin/UCF Mathematics and Science Academy (K-12) has on serving high-need diverse communities and students with disabilities
- Oversee \$3.5M Endowment (across multiple accounts) from Lockheed Martin Corporation supporting mathematics and science K-8 teacher leaders and 6-12 career changers through tuition support and enhancement grants
- Support students' success through communication and collaboration with Lockheed Martin/UCF Mathematics and Science Academy affiliate full-time faculty, part-time faculty, and graduate college and departmental staff
- Support and mentor STEM education faculty
- Supervise Lockheed Martin/UCF Mathematics and Science Academy staff
- Foster, nurture, and extend partnerships and relationships with K-12 school districts, industry, non-profit, across UCF, and within the college for endeavors related to STEM
- Cultivate and nurture partnership with Orange County Public Schools which has resulted in 11 cohorts matriculating through the K-8 Mathematics and Science Master of Education program since 2018
- Collaborate with Advancement & Partnerships/UCF Foundation on communication with, development opportunities, and reporting related to endowments and publicizing the work to the Lockheed Martin Corporation
- Create and foster a climate of inclusion, excellence, and transformation related to graduate and undergraduate programs, teaching, and scholarship in STEM education
- Provide leadership to K-8 Mathematics and Science Master of Education program supporting program coordinator, faculty, and students
- Provide leadership to the Transition to Mathematics and Science Teaching (T-MAST) program (for career changers in our Master of Arts in Teaching) supporting program coordinator, faculty, and students

2021-present Professor, K-12 STEM Education (Tenured)

- Program Coordinator of Mathematics Education track of Ph.D. in Education
- PI of NSF Noyce Grant – *Empowering STEM Teachers with Earned Doctorates* in partnership our College of Sciences, Orange County Public Schools (8th largest district in the country) and City Year Orlando (non-profit partner)
- PI (for UCF) of NSF IUSE Grant PrimeD for Mathematics Teacher Preparation which is a collaborative across four institutions
- Co-developed/implemented K-8 Mathematics Education Specialization in EdD in C & I
- Co-PI of Advanced Air Mobility NSF Law and Science Conference Grant
- Highly productive research agenda in STE(A)M education and mathematics education

- Dedicated mathematics and STEM education leadership and service at the national level
- Dissertation committee chair and member for more than 25 doctoral students
- Course developer and instructor of mathematics/STEM education courses
- Lockheed Martin/UCF Mathematics and Science Academy Affiliate faculty member

2017-2021 Associate Professor, K-12 STEM Education (Tenured)

- Program Coordinator of Mathematics Education track of Ph.D. in Education
- PI of NSF Noyce Grant – *Empowering STEM Teachers with Earned Doctorates* in partnership our College of Sciences, Orange County Public Schools (8th largest district in the country) and City Year Orlando (non-profit partner)
- PI (for UCF) of NSF IUSE Grant PrimeD for Mathematics Teacher Preparation which is a collaborative across four institutions
- Co-PI of NASA grant STEM Satellites and NSF grant STEM Tablecraft
- Highly productive research agenda in STE(A)M education and mathematics education
- Dedicated mathematics and STEM education leadership and service at the national level
- Mentor of graduate student research in K-8 Mathematics and Science Master’s
- Dissertation committee chair and member for numerous doctoral students
- Course instructor of mathematics/STEM education courses primarily at the graduate level
- Lockheed Martin/UCF Mathematics and Science Academy Affiliate faculty member

Bellarmino University - Annsley Frazier Thornton School of Education (AFTSE)

2015-2017 Associate Dean (previously Assistant Dean)

- Led transformational revamping of the school-wide assessment system and continuous improvement cycle across 63 programs
- Engaged community partners including our partner districts as we worked towards equitable and high-quality outcomes in our programs
- Engaged and collaborated with department chairs and program directors on all matters including program and curricular changes and innovations
- Maintained administrative operations (e.g., hiring, faculty mentoring, staff evaluation and mentoring, curriculum coherence, etc.)
- Served as the accreditation leader, including serving as the CAEP Coordinator, as well as the accreditation coordinator for state (Kentucky Education Professional Standards Board) and SACSCOC regional accreditation for the School of Education
- Worked collaboratively with Dean and department chairs on strategic planning
- Addressed confidential issues related to faculty, staff, and students
- Supervised professional and support staff
- Ensured compliance on policies and procedures with both internal and external entities

2015-2017 Associate Professor, Mathematics Education (Tenure granted December 2014)

- Served as PI of Mathematics Science Partnership (MSP) grant, focused on transdisciplinary problem-based STEAM instruction grounded in mathematics and science content and practices with the largest school district in Kentucky
- Highly productive research and practice-based agenda in mathematics education and STE(A)M education
- Served mathematics education community at the national, regional, and local level through professional leadership and service roles
- Advised middle-level undergraduate candidates
- Advised Ph.D. candidates with STEAM focus

2011-2015 Assistant Professor, Mathematics Education

- Taught elementary, middle, and secondary undergraduate/MAT mathematics methods
- Taught teacher leadership courses in graduate programs
- Supervised middle and secondary mathematics student teachers (interns)
- Advised middle-level undergraduate candidates

Highland Hills Middle School (Indiana) (Grades 5-8, Public, Fringe Rural)

2009-2011 Taught Eighth Grade Mathematics (Eighth Grade, Algebra I, Geometry)
2008-2009 Taught Seventh Grade Mathematics (Seventh Grade)
2007-2008 Taught Eighth Grade Mathematics (Inclusion Class, Eighth Grade, Algebra I)
2005-2007 Taught Seventh Grade Mathematics (Inclusion Class, Seventh Grade, Pre-Alg.)
2007-2009 Taught Summer School: Jump Start to Algebra Enrichment Program
2005-2006 Taught Summer School: Fifth and Sixth Grade Intervention Program

SCHOLARSHIP

Peer Reviewed/Refereed Publications

* Denotes current or past student as co-author (undergraduate, graduate or doctoral)

Note. First author is listed first.

Karp, K. S., Dougherty, B., & **Bush, S. B.** (in-press). From rules that expire to mathematics journey aspired. *Mathematics Teacher: Learning and Teaching PK-12*.

*Edelen, D., **Bush, S. B.**, & Andreasen, J. B. (in-press). Authority and positionings in elementary mathematics: An interactional ethnographic approach. *Language, Culture and Social Interaction*.

- Cook, K. L., Ivy, J., Maiorca, C., Tripp, O., Burton, M., Jackson, C., **Bush, S. B.**, Mohr-Schroeder, M., *Edelen, D., Schroeder, C., & Roberts, T. (2024). STEM rocks research collective: Building and sustaining a collaborative, equity-focused scholarly community. *Education Sciences*, *14*(9), 947. <https://doi.org/10.3390/educsci14090947>
- Saderholm, J., Ronau, R. N., Rakes, C. R., **Bush, S. B.**, & Mohr-Schroeder, M. J. (2024). Introducing the PrimeD framework: Teacher practice and professional development through Shulman's view of professionalism. *Education Sciences*, *14*(9), 1032. <https://doi.org/10.3390/educsci14091032>
- *Schmidt, A., Rakes, C. R., **Bush, S. B.**, Ronau, R. N., *Soni, S., Fisher, M., Amick, L., Viera, J., & Safi, F. (2024). Mathematics discourse in secondary teacher candidates' lessons: A mixed methods analysis. *Education Sciences*, *14*(12), 1286. <https://doi.org/10.3390/educsci14121286>
- Bush, S. B.**, Huinker, D., & Graham, K. (2024). Four systemic shifts essential to dismantling inequitable structures. *Mathematics Teacher: Learning and Teaching PK-12*, *117*(4), 262-267. Doi: <https://doi.org/10.5951/MTLT.2023.0287> (Front and Center Article)
- *Edelen, D., Cook, K. L., Tripp, L. O., Jackson, C., **Bush, S. B.**, Mohr-Schroeder, M. J., Schroeder, D. C., Roberts, T., Maiorca, C., Ivy, J., Burton, M., & Perrin, A. (2024). "No, this is not my Boyfriend's Computer": Elevating the voices of youth in STEM education research leveraging photo elicitation. *Journal for STEM Education Research*. Doi: <https://doi.org/10.1007/s41979-024-00118-z>
- Bush, S. B.**, *Edelen, D., Roberts, T., Maiorca, C., Ivy, J. T., Cook, K. L., Tripp, L. O., Burton, M., Alameh, S., Jackson, C., Mohr-Schroeder, M. J., Schroeder, D. C., *McCurdy, R. P., & Cox Jr., R. (2024). Humanistic STE(A)M instruction through empathy: Leveraging design thinking to improve society. *Pedagogies: An International Journal*, *19*(1), 60-79, Doi: 10.1080/1554480X.2022.2147937
- *Edelen, D., **Bush, S. B.**, Skukauskaite, A., Karp, K. S., Robert, S., & Safi, F. (2023). The social construction of authorities: An interactional ethnographic examination of positional legitimacy. *Linguistics and Education*. <https://doi.org/10.1016/j.linged.2023.101177>
- *Edelen, D., *Cox, R., **Bush, S. B.**, & Cook, K. (2023). Centering students in transdisciplinary STEAM using positioning theory. *Electronic Journal for Research in Science and Mathematics Education*. *26*(4), 111-129.
- Rakes, C. R., Saderholm, J., **Bush, S. B.**, Mohr-Schroeder, M. J., Ronau, R. N., & Stites, M. L. (2022). Structuring teacher preparation through a professional development framework. *International Journal of Research in Science and Engineering*, *10*(12), 194-208. <https://ijres.org/papers/Volume-10/Issue-12/1012194208.pdf>
- *Desai, S., Safi, F., **Bush, S. B.**, Wilkerson T., Andreasen, J., & Orey, D. C. (2022). Ethnomodeling: Extending mathematical modeling research in teacher education. *Investigations in Mathematics Learning*, *14*(4), 305-319. doi: 10.1080/19477503.2022.2139092

- *Schmidt, A., *Rutledge, T., *Fulton, T., & **Bush, S. B.** (2022). Mathematical discussions: Revealing biases. *Mathematics Teacher: Learning and Teaching PK-12*, 115(12), 850-858. Doi: <https://doi.org/10.5951/MTLT.2021.0316> (Front and Center Article)
- *Rutledge, T., *Fulton, T., *Schmidt, A., **Bush, S. B.**, & Dixon, J. K. (2022). Equitable mathematics through social-emotional learning and culturally responsive teaching. *Kappa Delta Pi Record*, 58(1), 55-61. Doi: 10.1080/00228958.2022.2147608
- Ivy, J., Mohr-Schroeder, M., Roberts, T., **Bush, S. B.**, Jackson, C., Burton, M., *Edelen, D., & Maiorca, C. (2022). Discursive practices and the digital divide. *Kappa Delta Pi Record*, 58(1), 68-72. Doi: 10.1080/00228958.2022.2135651
- Safi, F., **Bush, S. B.**, & *Desai, S. (2022) Gerrymandering: When equivalent is not equal. *Mathematics Teacher: Learning and Teaching PK-12*, 115(6), 444-451. doi: <https://doi.org/10.5951/MTLT.2021.0339>. Reprint from original article which appeared in *Mathematics Teaching in the Middle School Mathematics* in 2018, 24(2).
- *Edelen, D., **Bush, S. B.**, *Schmidt, A., *Fulton, T., *Kebreab, L., & *Rutledge, T. (2022). Untangling classroom positionings: An instrumental case unpacking positioning theory in mathematics education. *Investigations in Mathematics Learning*. <https://doi.org/10.1080/19477503.2022.2038470>
- Rakes, C. R., Stites, M. L., Ronau, R. N., **Bush, S. B.**, Fisher, M. H., Safi, F., *Desai, S., *Schmidt, A., Andreasen, J. B., Saderholm, J., Amick, L., Mohr-Schroeder, M., & Viera, J. (2022). Teaching mathematics with technology: TPACK and effective teaching practices. *Education Sciences*, 12(133), 1-16. Doi: <https://doi.org/10.3390/educsci12020133>
- Karp, K., **Bush, S. B.**, & Dougherty, B. (2022) 13 rules that expire. *Mathematics Teacher: Learning and Teaching PK-12*, 115(2), 156-163. doi: <https://doi.org/10.5951/MTLT.2021.0285>. Reprint from original article which appeared in *Teaching Children Mathematics* in 2014, 21(1).
- *Desai, S., **Bush, S. B.**, Safi, F. (2022). Mathematical representations in the teaching and learning of geometry. *Electronic Journal for Research in Science and Mathematics Education*, 25(4), 6-22.
- *Kebreab, L., **Bush, S. B.**, & Jackson, C. (2021). Leveraging Student Identities to Develop Pedagogical Fluency. *Mathematics Teacher: Learning and Teaching PK-12*, 114(12), 948-955. doi: <https://doi.org/10.5951/MTLT.2020.0355>
- *Edelen, D., *Schmidt, A., *Cox, R., & **Bush, S. B.** (2021). A closer examination into elementary students' mathematics discourse: The role of language games. *For the Learning of Mathematics*, 41(3), 14-16.
- Choi, N., **Bush, S. B.**, Woo, H., Hunter, A. E., & Truitt, T. (2021). Linking TIMSS 2007 mathematics attitude items to expectancy-value theory: Implications for school counselors and educators. *Journal of Asia Pacific Counseling*, 11(2), 91-107. doi: 10.18401/2021.11.2.6

- Jackson, C., Mohr-Schroeder, M. J., **Bush, S. B.**, Maiorca, C., Roberts, T., Yost, C., Fowler, A. (2021). Equity-oriented conceptual framework for K-12 STEM literacy. *International Journal of STEM Education*, 8(38), 1-16. doi: <https://doi.org/10.1186/s40594-021-00294-z>
- *Edelen, D., & **Bush, S. B.** (2021). Moving towards inclusiveness in STEM with culturally responsive teaching. *Kappa Delta Pi Record*, 57(3), 115-119. doi: <https://doi.org/10.1080/00228958.2021.1935178>
- *Edelen, D., *Simpson, H., & **Bush, S. B.** (2021). Insulating tiny homes: An empathetic STEAM investigation. *Science and Children*, 58(4), 31-35. Culturally Responsive Teaching Special Issue.
- Maiorca, C., Roberts, T., Jackson, C., **Bush, S. B.**, Delaney, A., Mohr-Schroeder, M., & Yao, Soledad. (2021). Informal learning environments and impact on interest in STEM careers. *International Journal of Science and Mathematics Education*. 19, 45-64. Doi: <https://doi.org/10.1007/s10763-019-10038-9>
- *Fulton, T., *Edelen, D., *Kebreab, L., *Greer, M., *Caton, J., *Brewer, J., **Bush, S. B.**, & Mohr-Schroeder, M. (2020). Integrative virtual STEM: Ensuring access in distance learning. *The Elementary STEM Journal*, 25(2), 22-25.
- Huinker, D., **Bush, S. B.**, & Graham, K. J. (2020). Catalyzing change in school mathematics: Creating the opportunities our students deserve. *Mathematics Teacher: Learning and Teaching PK-12*, 113(10), 780-790.
- *Edelen, D., & **Bush, S. B.** (2020). A cross-cultural approach to communication in the mathematics classroom and beyond. *Southeastern Regional Association of Teacher Educators Journal*, 29(2), 1-8.
- Rakes, C. R., Ronau, R. N., **Bush, S. B.**, Driskell, S. O., Niess, M. L., & Pugalee, D. (2020). Mathematics achievement and orientation: A systematic review and meta-analysis of education technology. *Educational Research Review*, 30. doi: <https://doi.org/10.1016/j.edurev.2020.100337>
- Bush, S. B.**, Cook, K. L., *Edelen, D., & *Cox, R. (2020). Elementary students' STEAM perceptions: Extending frames of reference through transformative learning experiences. *Elementary School Journal*, 120(4), 692-714. doi: <https://doi.org/10.1086/708642>
- *McCurdy, R. P., Nickels, M., & **Bush, S. B.** (2020). Problem-based design thinking tasks: Engaging student empathy in STEM. *Electronic Journal for Research in Science & Mathematics Education*, 24(2), 22-55.
- Bush, S. B.**, Mohr-Schroeder, M., Cook, K. L., Rakes, C. R., Ronau, R. N., & Saderholm, J. (2020). Structuring integrated STEM education professional development. *Electronic Journal for Research in Science & Mathematics Education*, 24(1), 26-55.
- *Doyle, H. D., **Bush, S. B.**, Nickels, M., & Taylor, M. S. (2020). Implementing number talks: A journey of a 5th grade teacher. *Dimensions in Mathematics*, 40(1), 5-9.

- Cook, K. L., **Bush, S. B.**, *Cox, R., & *Edelen, D. (2020). Development of elementary teachers' STEAM planning practices. *School Science and Mathematics, 120*(4), 197-208. doi: <https://doi.org/10.1111/ssm.12400>
- *Edelen, D., **Bush, S. B.**, *Simpson, H., Cook, K. L., & *Abassian, A. (2020). Moving towards shared realities through empathy in mathematical modeling: An ecological systems theory approach. *School Science and Mathematics, 120*(3), 144-152. doi: <https://doi.org/10.1111/ssm.12395>
- *Abassian, A., Safi, F., **Bush, S. B.**, & Bostic, J. (2020). Five different perspectives on mathematical modeling in mathematics education. *Investigations in Mathematics Learning, 12*(1), 53-65. doi: 10.1080/19477503.2019.1595360
- Ivy, J., **Bush, S. B.**, & Dougherty, B. J. (2020). Stacking the deck: Reversibility and reasoning. *Mathematics Teacher: Learning and Teaching PK-12, 113*(1), 65-68.
- *Edelen, D., *Simpson, H., & **Bush, S. B.** (2020). A STEAM exploration of tiny homes. *Mathematics Teacher: Learning and Teaching PK-12, 113*(1), 25-32.
- *Cole, A., Nickels, M., **Bush, S. B.**, & Taylor, M. S. (2019). Bears and tigers: A scratch exploration! *The Elementary STEM Journal, 24*, 12-15.
- *Edelen, D., **Bush, S. B.**, & Nickels, M. (2019). Transcending boundaries: Elevating towards empathy in STEM with a robotics inquiry. *Science and Children, 55*(1), 44-50.
- Karp, K., **Bush, S. B.**, & Dougherty, B. (2019) 13 rules that expire. *The Best of Teaching Children Mathematics, Mathematics Teaching in the Middle School, and Mathematics Teacher on Questions, Discourse, and Evidence. Issue 1*. Reprint from original article which appeared in *Teaching Children Mathematics* in 2014, *21*(1).
- *Tandlich, G., **Bush, S. B.**, & Nickels, M. (2019). Implementing engineering design tasks in middle grades mathematics. *Dimensions in Mathematics, 39*(1), 15-21.
- *Edelen, D., **Bush, S. B.**, Cook, K. L., & *Cox, R. (2019). The power of building empathy in STEAM! *The Elementary STEM Journal, 23*(4), 10-13.
- Karp, K. S., **Bush, S. B.**, & Dougherty, B. J. (2019). Avoiding the ineffective keyword strategy. *Teaching Children Mathematics, 25*(7), 428-435.
- *Ough, M. & **Bush, S. B.** (2019). Diving into 3D Technology. *AMLE Newsletter*. March Issue.
- Bush, S. B.** (2019). NCTM's catalyzing change in high school mathematics: Our role in the middle. *Mathematics Teaching in the Middle School, 24*(5), 290-294.
- *Kelley, T., Nickels, M., **Bush, S. B.**, Taylor, M. S., & Cullen, C. (2019). Robotics in mathematics: Engaging students in perimeter. *The Elementary STEM Journal, 23*(3), 10-13.
- *Edelen, D., **Bush, S. B.**, & Nickels, M. (2019). Crossing the Amazon river: An interdisciplinary STEM adventure. *Science and Children, 56*(6), 30-36.

- *Cox, R., Hunter, K., Cook, K. L., & **Bush, S. B.** (2019). Problem-based paleontology: A STEAM exploration for fourth graders, *Science and Children*, 56(5), 42-48.
- Nickels, M., **Bush, S. B.**, *Fralish, B., Karp, K., Taylor, M. S., Bush, S., & Karp, J. (2018). Computer programming: Algorithm for mathematics exploration! *The Elementary STEM Journal*, 23(2), 14-17.
- Bush, S. B.** & Cook, K. L. (2018). K-12 STEM and STEAM education in the United States: Vision and best practices. *Teachers College Record*. Record Number: 22533.
- Safi, F., **Bush, S. B.**, & *Desai, S. (2018). Gerrymandering: When equivalent is not equal! *Mathematics Teaching in the Middle School*, 24(2), 82-89.
- Roberts, O. T., Jackson, C., Mohr-Schroeder, M. J., **Bush, S. B.**, Maiorca, C., Cavalcanti, M., Schroeder, D. C., Delaney, A., Putman, L., & Cremeans, C. (2018). Students' perceptions of STEM learning after participating in a summer informal learning experience. *International Journal of STEM Education*, 5(35), 1-14. doi: 10.1186/s40594-018-0133-4
- Bush, S. B.**, Karp, K. S., & Cohan, K. (2018). Using children's literature to explore "rich" representations and purposeful tools in mathematics. *AMLE Magazine*, 6(4), 21-24.
- *Owen, K. D., *Kaiser, L. J., **Bush, S. B.**, & Cook, K. L. (2018). A STEAM investigation: Making giant strides. *Teaching Children Mathematics*, 25(2), 122-125.
- Saderholm, J. C., Ronau, R. N., Mohr-Schroeder, M. J., Rakes, C. & **Bush, S. B.** (2018). How to promote effective professional development in your district. *American School Board Journal*. August 2018, online.
- *Kaiser, L., *Owen, K., Cook, K. L., & **Bush, S. B.** (2018). The giant problem: Using design thinking to explore thermal conductivity. *Science and Children*, 55(8), 71-75.
- Bush, S. B.**, Cook, K. L., Ronau, R. N., Rakes, C. R., Mohr-Schroeder, M. J., & Saderholm, J. (2018). A highly structured collaborative STEAM program: Enacting a professional development framework. *Journal of Research in STEM Education*, 2(2), 106-125.
- Cook, K. L. & **Bush, S. B.** (2018). Design thinking in integrated STEAM learning: Surveying the landscape and exploring exemplars in elementary grades. *School Science and Mathematics*, 118(3-4), 93-103. doi: 10.1111/ssm.12268.
- Mohr-Schroeder, M., **Bush, S. B.**, & Jackson, C. (2018). K12 STEM education: Why does it matter and where are we now? *Teachers College Record*. ID Number: 22288.
- Bush, S. B.**, Karp, K. S., *Cox, R., Cook, K. L., *Albanese, J., & Karp, M. (2018). Design thinking framework: Shaping powerful mathematics. *Mathematics Teaching in the Middle School*, 23(4), e1 – e5.
- Bush, S. B.**, *Albanese, J., Karp, K. S., & Karp, M. (2017). An architecture design project: "Building" understanding. *Mathematics Teaching in the Middle School*, 23(3), 162-169.
- Roy, G. J., **Bush, S. B.**, Hodges, T. E., & Safi, F. (2017). Supporting whole class mathematics discussions: Expectations matter. *Mathematics Teaching in the Middle School*, 23(2), 98-105.

- Dougherty, B. J., **Bush, S. B.**, & Karp, K. S. (2017). Circumventing high school rules that expire! *Mathematics Teacher*, *111*(2), 134-138.
- Rakes, C. R., **Bush, S. B.**, Ronau, R. N., Mohr-Schroeder, M., & Saderholm, J. (2017). Making teacher PD effective using the PrimeD framework. *New England Mathematics Journal*, *XLX*(1), 52-62.
- Bush, S. B.**, Karp, K., *Lentz, T., & Nadler, J. (2017). Venn diagrams “intersect” art and math. *Teaching Children Mathematics*, *23*(7), 414-421.
- Hunter, K., *Cox, R., **Bush, S. B.**, Cook, K. L., & Jamner, J. (2017). A paleontology investigation: “Unearthing” the mathematics. *Teaching Children Mathematics*, *23*(7), 438-441.
- Cook, K. L., **Bush, S. B.**, & *Cox, R. (2017). Engineering encounters: From STEM to STEAM. *Science and Children*, *54*(6), 86-93.
- Saderholm, J., Ronau, R. N., Rakes, C. R., **Bush, S. B.**, & Mohr-Schroeder, M. (2017). The critical role of a well-articulated conceptual framework to guide professional development: An evaluation of a state-wide two-week program for mathematics and science teachers. *Professional Development in Education*, *43*(5), 789-818. doi: 10.1080/19415257.2016.1251485
- Bush, S. B.**, & Cook, K. L. (2016). Constructing authentic and meaningful STEAM experiences through university, school, and community partnerships. *Journal of STEM Teacher Education*, *51*(1), 57-69.
- Bush, S. B.**, Karp, K., & Nadler, J., & *Gibbons, M. (2016). Exploring proportional reasoning using artwork. *Mathematics Teaching in the Middle School*, *22*(4), 216-225.
- Cook, K. L., **Bush, S. B.**, & Karp, K. (2016). Clarifying confusing science rules, vocabulary, & diagrams. *The American Biology Teacher*, *78*(8), 676-678.
- Karp, K., **Bush, S. B.**, & Dougherty, B. (2016). Establishing a mathematics whole school agreement. *Teaching Children Mathematics*, *23*(2), 69-71.
- Bush, S. B.**, *Albanese, J., & Karp, K. (2016). What’s in a name – an age? *Mathematics Teaching in the Middle School*, *22*(1), 28-37.
- Bush, S. B.**, *Cox, R., & Cook, K. L. (2016). Building a prosthetic hand: Math matters. *Teaching Children Mathematics*, *23*(2), 110-114.
- Cook, K., **Bush, S. B.**, & *Cox, R. (2015). Engineering encounters: Creating a prosthetic hand. *Science and Children*, *53*(4), 65-71.
- Karp, K., **Bush, S. B.**, & Dougherty, B. (2015). 12 math rules that expire in the middle grades. *Mathematics Teaching in the Middle School*, *21*(4), 208-215. NCTM Blog: <http://www.nctm.org/12rules/>
- Publication in response: Yagi, S. & Venenciano, L. (2017). Math “Rules” prompt reflection on teachers’ identity. *Mathematics Teaching in the Middle School*, *22*(9), 555-557.
- Bush, S. B.**, Karp, K., & Nadler, J. (2015). Artist? Mathematician? Developing both enhances learning. *Teaching Children Mathematics*, *2*(2), 61-63.

- Bush, S. B.**, *Gibbons, K., Karp, K., & Dillon, F. (2015). Epidemics, exponential functions, and modeling. *Mathematics Teaching in the Middle School*, 21(2), 90-97.
- Cook, K. L., & **Bush, S. B.** (2015). Structuring a science-mathematics partnership to support preservice teachers' data analysis and interpretation skills. *Journal of Science College Teaching*, 44(5), 46-52.
- Bush, S. B.**, Dinkins, E., & Cook, K. (2015). Connecting young adult literature, literacy, and STEM. *AMLE Magazine*, 2(9), 14-16.
- Ronau, R. N., Rakes, C. R., Niess, M. L., **Bush, S. B.**, Driskell, S., & Pugalee, D. (2015). Quality of mathematics education technology literature. *Journal of Multidisciplinary Evaluation*, 11(24), 12-36.
- Bush, S. B.**, Karp, K., *Albanese, J., & Dillon, F. (2014). The oldest person you've known. *Mathematics Teaching in the Middle School*, 20(4), 278-285.
- Ronau, R., Rakes, C., **Bush, S. B.**, Driskell, S., Niess, M., & Pugalee, D. (2014). A survey of mathematics education technology dissertation scope and quality: 1968-2009. *American Education Research Journal*, 51(5), 974-1006. doi:10.3102/0002831214531813.
- Bush, S. B.**, Karp, K. S., *Lentz, T., & Nadler, J. (2014). Community partnerships: Pathway to meaningful mathematics, *Teaching Children Mathematics*. 21(3), 170-176.
- Karp, K., **Bush, S. B.**, & Dougherty, B. (2014) 13 rules that expire. *Teaching Children Mathematics*, 21(1), 18-25. NCTM Blog: <http://www.nctm.org/Publications/Teaching-Children-Mathematics/Blog/13-Rules-That-Expire/>
**** Selected as Editorial Pick of the Year**
- Hunter, A., **Bush, S. B.**, & Karp, K. (2014). Systematic interventions: Teaching ratios. *Mathematics Teaching in the Middle School*, 19(6), 360-367.
- Bush, S. B.**, & Karp, K. (2013). Prerequisite algebra skills and associated misconceptions of middle grade students: A review. *Journal of Mathematical Behavior*, 32(3), 613-632.
- Bush, S. B.**, Karp, K. S., Popelka, E., Miller-Bennett, V., & Nadler, J. (2013). Framing measurement: An art gallery installation. *Mathematics Teaching in the Middle School*, 18(8), 474-483.
- Thomas, K., **Bush, S. B.**, & Bucalos, A. (2012). Can it be fixed? The challenge of remediating problem dispositions and lessons learned. *AILACTE Journal*, IX(1), 34-48.
- Bush, S. B.**, Karp, K. S., Popelka, E., & Miller Bennett, V. (2012). What's on your plate? Thinking proportionally. *Mathematics Teaching in the Middle School*, 18(2), 100-109.
- Bush, S. B.**, Brown, E.T., & Washburn, S. (2012). Technology, translations, and treasure hunts. *Middle Ground*, 15(4), 20-21.
- Bush, S. B.**, & Karp, K. S. (2012). Hunger games: What are the chances? *Mathematics Teaching in the Middle School*, 17(7), 426-435.
****Selected as Editorial Pick of the Year**
- Bush, S. B.**, McGatha, M., & Bay-Williams, J. (2012) Invest in financial literacy! *Mathematics Teaching in the Middle School*, 17(6), 358-365.
- Bush, S.** (2010). Unfolding the solution of linear systems. *Mathematics Teacher*, 104(2), 160.

Peer Reviewed/Refereed Journal Articles Under Review

- Burton, M., Schroeder, C., Roberts, T., Maiorca, C., Ivy, J., Jackson, C., **Bush, S. B.**, Mohr-Schroeder, M., & *Edelen, D. (under review). Artificial and intelligent: Supporting purposeful questioning in AI.
- Bush, S. B.**, Dixon, J., Brooks, L., Moore, B., Boston, M., *Rutledge, T., Butler, M., & *Maldonado, A. (under review). A two-pronged approach to empower mathematics teachers as leaders.
- Cook, K., Cox, R., *Edelen, D., & **Bush, S. B.** (under review). Student perspectives in STEAM education.
- *Schmidt, A., **Bush, S. B.**, Karp, K. S., Boote, D., Dixon, J. K., & Safi, F. (under review). A content analysis of US K-5 state-level mathematics standards: Superficial divergence with substantive convergence.
- *Schmidt, A., **Bush, S. B.**, Karp, K. S., Boote, D., Dixon, J. K., & Safi, F. (under review). *15 years later: Revisiting K-5 mathematics standards.*
- *Fulton, T., *Schmidt, A., *Rutledge, T., & **Bush, S. B.** (under revision). Confronting biases: Tools for strengths-based instruction.
- *Desai, S., Safi, F., **Bush, S. B.**, Wilkerson, T., Andreasen, J., & Orey, D. C. (under revision). Proposing a re-imagined synthesized ethnomodeling (ARISE) framework.
- *Edelen, D., **Bush, S. B.**, Karp, K., Skukauskaitė, A., Safi, F., & Roberts, S. (under review). Making visible epistemic authority: A microethnographic examination of children's authority relationships in early elementary mathematics.
- *Edelen D., **Bush, S. B.**, Skukauskaitė, A., Karp, K., Roberts, S. K., Safi, F. (under review). Authority, autonomy, and agency in mathematics education research: A systematic review of conceptualizations.
- *Santana, P. V., **Bush, S. B.**, Boote, D., & Safi, F. (under revision). Exploring pre-service teachers' collective mathematical identity through small group collaborations.
- *Desai, S., Wilkerson, T., **Bush, S. B.**, Safi, F., Andreasen, J., & Orey, D. (under review). Ethnomodeling: A vehicle for catalyzing change in mathematics teacher preparation.
- Karp, K. S., **Bush, S. B.**, & Dougherty, B. (under review). From rules that expire to meaningful representations/generalizations.

Peer Reviewed/Refereed International Conference Proceedings

- *Edelen, D., **Bush, S. B.**, Karp, K., & Safi, F. (2024). Co-constructed "help" in a first-grade classroom: A linguistic investigation of children's language games. *Proceedings of the 15th International Congress on Mathematics Education*. Sydney, Australia.

- *Kebreab, L., **Bush, S. B.**, & Hahs-Vaughn (2024). Using mathematics identity to explore group differences in high school mathematics achievement. *Proceedings of the 15th International Congress on Mathematics Education*. Sydney, Australia.
- *Kebreab, L., **Bush, S. B.**, Hahs-Vaughn, D., Safi, F., Andreasen, J., & Jackson, C. (2023). Establishing a mathematical belongingness construct: Exploratory factor analysis of NCES's high school longitudinal study 2009. *Proceedings of the 45th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Reno, NV.
- *Desai, S., Safi, F., **Bush, S. B.**, Andreasen, J., Wilkerson, T., & Orey, D. C. (2022). Engaging Prospective Secondary Teachers in Geometry-Focused Ethnomodeling Explorations. In A. Lischka, Dyer, E. B., Jones, R. S., Lovett, J. N., Strayer, J., & Drown, S. (Eds.), *Proceedings of the 44th Annual Meeting of The North American Chapter of the International Group for the Psychology of Mathematics Education*. Nashville, TN. 1164-1173.
- Roberts, T., Jackson, C., Mohr-Schroeder, M., **Bush, S. B.**, Maiorca, C., & Delaney, A. (2019). Exploring applications of school mathematics: Students' perceptions of informal learning experiences. *Brief research report to be published in the proceedings for the 41st Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education*. St. Louis, MO, 1515-1519.
- Driskell, S., **Bush, S. B.**, Ronau, R., Niess, M., Pugalee, D., & Rakes, C. (2015). Research in Mathematics Educational Technology: Trends in Professional Development Over 40 Years of Research. *Paper published in conference proceedings for the 37th Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education*. East Lansing, MI, 656-662.
- Driskell, S., Ronau, R., Rakes, C., **Bush, S. B.**, Niess, M., & Pugalee, D. (2011). Research in mathematics instructional technology: Current trends and future demands. *Paper published in conference proceedings for the 33rd Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Reno, NV, 373-380.

National Policy Books

- National Council of Teachers of Mathematics. (2020). *Catalyzing Change in Middle Mathematics: Initiating Critical Conversations*. Reston, VA: NCTM. (I was the **task force chair and lead writer** of this book, which is an official position of the council.)

Books

- Bush, S. B., & Cook, K. L.** (2024). *Step into STEAM: Your standards-based action plan for deepening mathematics and science learning. Second Edition.* Thousand Oaks, CA: Corwin
- Jackson, C., Cook, K. L., **Bush, S. B.**, Mohr-Schroeder, M. J., Maiorca, C., & Roberts, T. (2024). *Simplifying STEM, grades 6-12: Four equitable practices to inspire meaningful learning.* Thousand Oaks, CA: Corwin
- Jackson, C., Roberts, T., Maiorca, C., Cook, K. L., **Bush, S. B.**, Mohr-Schroeder, M. J. (2024). *Simplifying STEM, grades PreK-5: Four equitable practices to inspire meaningful learning.* Thousand Oaks, CA: Corwin
- Dougherty, B. J., **Bush, S. B.**, & Karp, K. S. (2021). *The math pact, high school: Achieving instructional coherence within and across grades.* Thousand Oaks, CA: Corwin and Reston, VA: National Council of Teachers of Mathematics.
- Bush, S. B.**, Karp, K. S., & Dougherty, B. J. (2021). *The math pact, middle school: Achieving instructional coherence within and across grades.* Thousand Oaks, CA: Corwin and Reston, VA: National Council of Teachers of Mathematics.
- Karp, K. S., Dougherty, B. J., & **Bush, S. B.** (2021). *The math pact, elementary: Achieving instructional coherence within and across grades.* Thousand Oaks, CA: Corwin and Reston, VA: National Council of Teachers of Mathematics.
- Bush, S. B.**, & Cook, K. L. (2019). *Step into STEAM: Your standards-based action plan for deepening mathematics and science learning.* Thousand Oaks, CA: Corwin and Reston, VA: National Council of Teachers of Mathematics.
- Bush, S. B.**, Karp, K. S., & Dillon, F. (2015). *Discovering lessons for the common core state standards in grades 9-12.* Reston, VA: National Council of Teachers of Mathematics.
- Bay-Williams, J. M., **Bush, S. B.**, Peters, S. A., & McGatha, M. B. (2015). *On the money: Mathematics activities to build financial literacy grades 6-8.* Reston, VA: National Council of Teachers of Mathematics.
- Bush, S. B.**, & Karp, K. S. (2015). *Discovering lessons for the common core state standards in grades K-5.* Reston, VA: National Council of Teachers of Mathematics.
- Bush, S. B.**, & Karp, K. S. (2014). *Discovering lessons for the common core state standards in grades 6-8.* Reston, VA: National Council of Teachers of Mathematics.

Edited Books

- Graham, K. J., Berry III, R. Q., **Bush, S. B.**, & Huinker, D. (2023). *Success stories from catalyzing change.* Reston, VA: National Council of Teachers of Mathematics.

Book Chapters

- Huinker, D., **Bush, S. B.**, Graham, K. J., & Berry III, R. Q. (2023). Four key recommendations from catalyzing change. In K. J. Graham, R. Q. Berry III, S. B. Bush, & D. M. Huinker (Eds.), *Success Stories from Catalyzing Change*. (pp. 5-14), Reston, VA: National Council of Teachers of Mathematics.
- Berry III, R. Q., **Bush, S. B.**, & Huinker, D. & Graham, K. J. (2023). The power of stories. In K. J. Graham, R. Q. Berry III, S. B. Bush, & D. M. Huinker (Eds.), *Success Stories from Catalyzing Change*. (pp. 1-4), Reston, VA: National Council of Teachers of Mathematics.
- Mohr-Schroeder, M., **Bush, S. B.**, Maiorca, C., & Nickels, M. (2020). Moving toward an equity-based approach for STEM literacy. In C. Johnson, M. J. Mohr-Schroeder, T. Moore, & L. English (Eds.), *Handbook of Research on STEM Education* (1st edition.) (pp. 29-38), *New York, NY*: Routledge.
- Bush, S. B.** (2019). National reports on STEM education: What are the implications for K-12? In A. Sahin & M. Mohr-Schroeder (Eds.), *STEM Education 2.0 Myths and Truths: What has K-12 STEM Education Research Taught Us?* (pp. 72-90). Koninklijke Brill NV, Leiden: The Netherlands.
- Bush, S. B.** & Cook, K. L. (2019). Structuring STEAM inquiries: Lessons learned from practice. In M. S. Khine & S. Areepattamannil (Eds.), *STEAM Education: Theory and Practice*. (pp. 19-35). Cham, Switzerland: Springer Nature Switzerland.
- Driskell, S. O., **Bush, S. B.**, Ronau, R. N., Niess, M. L., Rakes, C. R., & Pugalee, D. (2016). Mathematics education technology professional development: Changes over several decades. In M. L. Niess, S. O. Driskell, & K. F. Hollebrands (Eds.), *Handbook of research on transforming mathematics teacher education in the digital age*. (pp. 107-136). Hershey, PA: IGI Global.
- Bush, S. B.**, Driskell, S., Niess, M., Pugalee, D., Rakes, C., & Ronau, R. (2015). The impact of digital technologies in mathematics pre-service teacher preparation over four decades. In H. Gillow-Wiles & M. Niess. *Handbook of Research on Teacher Education in the Digital Age*. (pp. 1-27). Hershey, PA: IGI Global.

K-12 Core Curriculum

- Bush, S.**, Fetter, A., Gojak, L., Jackson, C., Rivera, G., Roy, G., SanGiovanni, J., Seeley, C., Shah, R., Tobey, C., & Zike, D. (alpha order) (to be published in 2026). *California Reveal Math (McGraw Hill K12), Grades 6-8, California Edition*. Program author for development of student editions, teacher editions, professional development videos, and supplemental resources.
- Bush, S.**, Fetter, A., Gojak, L., Jackson, C., Rivera, G., Roy, G., SanGiovanni, J., Seeley, C., Shah, R., Tobey, C., & Zike, D. (alpha order) (2025). *Reveal Math (McGraw Hill K12), Grades 6-8, National Program*. Program author for development of student editions, teacher editions, professional development videos, and supplemental resources.

Editorships

- 2024 – 2027 **Editorial Board**, *Investigations in Mathematics Learning*. The official research journal of the Research Council on Mathematics Learning.
- 2020 – 2022 **Associate Editor**, *Electronic Journal for Research in Science & Mathematics Education*. International research journal, flagship journal for the International Consortium for Research in Science and Mathematics Education.

Invited Publications/Works

- Bush, S. B.** (2024). 3 reasons why authentic learning is indispensable in math education. Invited blog post published by McGraw Hill K-12 on Medium. <https://medium.com/inspired-ideas-prek-12/3-reasons-why-authentic-learning-is-indispensable-in-math-education-7a41eb6376bb>
- Bush, S. B.** (2024). Exploring our world of math: Empowering and inspiring students with authentic learning. Invited White Paper published by McGraw Hill K-12 for Reveal Math. <https://www.mheducation.com/unitas/school/explore/sites/reveal-math/white-paper-math-authentic-learning.pdf>
- Roberts, T., Jackson, C., Mohr-Schroeder, M. J., Maiorca, C., **Bush, S. B.**, & Cook, K. (2024). Disrupting the STEM status quo with equity-focused integrated STEM practices (ISPs). Editorial published in *School Science and Mathematics*, 124(3), 143-145. Doi: <https://doi.org/10.1111/ssm.12665>
- Bush, S. B.** & Cook, K. L. (2024). Three helpful tips for meaningful STEM integration during science or mathematics instructional time. Invited blog post published in Corwin Connect.
- Bush, S. B.** (2023). Students need their mathematics teachers to collaborate. Here's why. Invited blog post published by McGraw Hill K-12 on Medium. <https://medium.com/inspired-ideas-prek-12/students-need-their-math-teachers-to-collaborate-heres-why-a608abcd21f4>
- Bush, S. B.**, Brooks, L. A., Dixon, J. K., *Rutledge, T., Butler, M. B., & Moore, B. (2022, May 26). Elevating voices, catalyzing change: A partnership approach to supporting K-8 mathematics teacher leaders. *American Association for the Advancement of Science (AAAS) Advancing Research & Innovation in the STEM Education of Preservice Teachers in High-Need School Districts (ARISE)*. <https://aaas-arise.org/2022/05/26/elevating-voices-catalyzing-change-a-partnership-approach-to-supporting-k-8-mathematics-teacher-leaders/>

- Bush, S. B.** (2021). Article introduction for 8 teaching moves supporting equitable participation. From the Archives Department. *Mathematics Teacher: Learning and Teaching PK-12*, 114(8), 644-645.
- Karp, K. S., **Bush, S. B.**, & Dougherty, B. J. (2020). The math pact: A commitment to instructional coherence. Ear to the Ground Department. *Mathematics Teacher: Learning and Teaching PK-12*, 113(11), e60-e62.
- *Edelen, D., **Bush, S. B.**, Abassian, A., Cook, K. L., & *Simpson, H. (2020). Using mathematical modeling to bridge unshared realities through empathy. *School Science and Mathematics Research to Practice Companion Article*, e4-e6.
- Bush, S. B.**, & Cook, K. (2019). STEAM learning experiences – Thinking beyond a makerspace. Invited blog post published in Corwin Connect.
- Cook, K., & **Bush, S. B.** (2019). STEAM education for each and every student. Invited blog post published in Corwin Connect. Retrieved at: <https://corwin-connect.com/2019/06/steam-education-for-each-and-every-student/>
- Bush, S. B.**, Karp, K. S., Popelka, E., & Miller Bennett, V. (2018). What’s on your plate? Thinking proportionally. Adapted from an article in *Mathematics Teaching in the Middle School*, in S. McMillen (Ed.). *Integrating Mathematics Across the K-6 Curriculum*. Reston, VA: National Council of Teachers of Mathematics.
- Bush, S. B.** (2018). Five simple recommendations for new faculty members. Invited feature article as 2018 Early Career Award recipient. *Association of Mathematics Teacher Educators Newsletter*.
- Cook, K. L., **Bush, S. B.**, & *Cox, R. (2018). Establishing a STEAM learning environment, Partnering for successful STEAM teaching and learning, Administrator checklist for supporting STEAM, and STEAM video. *Association for Supervision and Curriculum Development (ASCD) myTeachSource® online professional development platform*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Bush, S. B.**, & Karp, K. S. (2017). Hunger games: What are the chances? Adapted from an article in *Mathematics Teaching in the Middle School*, in D. Theissen (Ed.). *Exploring Math through Literature K-8*. Reston, VA: National Council of Teachers of Mathematics.
- Cook, K., **Bush, S. B.**, & *Cox, R. (2016). Engineering encounters: Creating a prosthetic hand. Reprinted from an article in *Science and Children*, in L. Froschauer (Ed.). *Bringing STEM to the Elementary Classroom*. Arlington, VA: National Science Teacher Association Press, 229-236.
- Karp, K. S., **Bush, S. B.**, & Dougherty, B. (2015). 12 math rules that expire in the middle grades. *Mathematics Teaching in the Middle School Blogarithm: Standards in the Middle Grades*. <http://www.nctm.org/12rules/>
- *Gibbons, K., & **Bush, S. B.** (2015). Advocating for algebra tiles. *Mathematics Teaching in the Middle School Blogarithm: Standards in the Middle Grades*. <http://www.nctm.org/Publications/Mathematics-Teaching-in-Middle-School/Blog/Advocating-for-Algebra-Tiles/>

- *Albanese, J., & **Bush, S. B.** (2015). Data analysis and statistics: “Extending the oldest person you’ve known” *Mathematics Teaching in the Middle School Blogarithm: Standards in the Middle Grades*. http://www.nctm.org/Publications/Mathematics-Teaching-in-Middle-School/Blog/Data-Analysis-and-Statistics_-Extending-%E2%80%9CThe-Oldest-Person-You_ve-Known%E2%80%9D/
- *Albanese, J., & **Bush, S. B.** (2015). The flipped classroom: An avenue for student-centered learning. *Mathematics Teaching in the Middle School Blogarithm: Standards in the Middle Grades*. http://www.nctm.org/Publications/Mathematics-Teaching-in-Middle-School/Blog/The-Flipped-Classroom_-An-Avenue-for-Student-Centered-Learning/
- *Gibbons, K., & **Bush, S. B.** (2015). Cooperative group work in the middle school math classroom. *Mathematics Teaching in the Middle School Blogarithm: Standards in the Middle Grades*. <http://www.nctm.org/Publications/Mathematics-Teaching-in-Middle-School/Blog/Cooperative-Group-Work-in-the-Middle-School-Math-Classroom/>
- Karp, K. S., **Bush, S. B.**, & Dougherty, B. (2014). 13 rules that expire! *Teaching Children Mathematics Blog*. <http://www.nctm.org/Publications/Teaching-Children-Mathematics/Blog/13-Rules-That-Expire/>
- Bush, S. B.**, & Karp, K. S. (2013). Hunger games: What are the chances? Adapted from an article in *Mathematics Teaching in the Middle School*, in M. Coffey & H. Sherard (Eds.). *Real World Math*. Reston, VA: National Council of Teachers of Mathematics.
- Bush, S. B.**, Karp, K. S., Popelka, E., & Miller Bennett, V. (2013). What’s on your plate? Thinking proportionally. Adapted from an article in *Mathematics Teaching in the Middle School*, in M. Coffey & H. Sherard (Eds.). *Real World Math*. Reston, VA: National Council of Teachers of Mathematics.
- Bush, S. B.**, McGatha, M. B., & Bay-Williams, J. M. (2013). Pay now, or pay later? Adapted from an article in *Mathematics Teaching in the Middle School*, in M. Coffey & H. Sherard (Eds.). *Real World Math*. Reston, VA: National Council of Teachers of Mathematics.
- Barnes Foundation (2012). *Crossing Boundaries*. (Karp, K. & **Bush, S. B.** contributed two pages of curriculum materials for integrating mathematics with art.). Philadelphia, PA: Barnes Foundation.
- Ronau, R., Rakes, C., **Bush, S. B.**, Driskell, S., Niess, M., & Pugalee, D. (2011). Research brief: Using calculators for teaching and learning mathematics. *National Council of Teachers of Mathematics Research Brief*. Reston, VA: National Council of Teachers of Mathematics.

Presentations

Keynote, Featured, Spotlight and other Invited Presentations

- Jackson, C., **Bush, S. B.**, & Cook, K. L. (2024, November). *Integrated STEM Practices (final title to be determined)*. Invited presentation given at the International Technology and Engineering Educators Association Inaugural Fall Virtual STEM Conference. (Virtual)

- Bush, S. B.** & Karp, K. S. (2024, September). *The math pact: A team approach to supporting all students (secondary)*. Invited half-day pre-conference workshop presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Chicago, IL.
- Karp, K. S. & **Bush, S. B.** (2024, September). *The math pact: A team approach to supporting all students (elementary)*. Invited half-day pre-conference workshop presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Chicago, IL.
- Bush, S. B.** (2024, April). *Becoming a STEM system disruptor: Advocating for inclusive and equitable approaches*. Plenary speaker presentation to be given at the 2024 International Consortium for Research in Science and Mathematics Education Annual Conference. (Virtual)
- Karp, K., Dougherty, B., & **Bush, S. B.** (2023, November). *The math pact: Working with pre-service and in-service teachers to ensure high-quality and equitable mathematics learning experiences for all students*. Invited presentation given at the 2023 AMTE Virtual Institute. (Virtual)
- Karp, K. S., Dougherty, B., & **Bush, S. B.** (2023, October). *The math pact: A team approach to supporting all students, elementary*. Invited half-day pre-conference workshop presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Washington, DC.
- Dougherty, B., & **Bush, S. B.**, Karp, K. S. (2023, October). *The math pact: A team approach to supporting all students, secondary*. Invited half-day pre-conference workshop presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Washington, DC.
- Bush, S. B.** (2023, June). *The math pact: Adopting and embracing a team approach to support all students*. Invited keynote presentation given at the Annual Meeting of the Florida Association of Mathematics Supervisors. Orlando, FL.
- Bush, S. B.** & Dougherty, B. (2023, March). *The math pact: A team approach to supporting all students*. Keynote presentation given at the Kentucky Center for Mathematics Annual Conference. Lexington, KY.
- Bush, S. B.** (2023, March). A closer look: The mathematics whole-school agreement components of the math pact. Invited presentation given at the Kentucky Center for Mathematics Annual Conference. Lexington, KY.
- Karp, K. S., Dougherty, B., & **Bush, S. B.** (2022, September). *The math pact: A team approach to supporting all students, elementary*. Invited half-day pre-conference workshop presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Los Angeles, CA.

- Dougherty, B., & **Bush, S. B.**, Karp, K. S. (2022, September). *The math pact: A team approach to supporting all students, secondary*. Invited half-day pre-conference workshop presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Los Angeles, CA.
- Graham, K., Berry III, R. Q., **Bush, S. B.**, & Huinker, D. (2022, September). *Success stories for catalyzing change in school mathematics*. Invited presentation to be given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Los Angeles, CA.
- Bush, S. B.**, Jackson, C., Roy, G. (2022, September). *Catalyzing change: Broadening the purposes of learning mathematics in middle school*. Invited presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Los Angeles, CA.
- Bush, S. B.**, Karp, K. S., & Dougherty, B. J. (2022, September). *The math pact: A Team Approach to Supporting All Students*. Featured presentation given at the annual meeting of the Arizona Association of Teachers of Mathematics. Phoenix, AZ. (Virtual Presentation)
- Bush, S. B.**, Karp, K. S., & Dougherty, B. J. (2022, June). *The math pact: A Team Approach to Supporting All Students*. Featured presentation given at the annual meeting of the Florida Council of Teachers of Mathematics. St. Petersburg, FL.
- Karp, K. S., **Bush, S. B.**, & Dougherty, B. J. (2021, October). *To change your practice you have to practice change: Reaching school-wide coherence with a mathematics whole school agreement*. Keynote presentation given at the Ohio Council of Teachers of Mathematics Annual Conference. (Presented Virtually)
- Bush, S. B.** & Roy, G. J. (2021, September). *Catalyzing change: Broaden the purposes of learning mathematics in middle school*. Invited presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Atlanta, GA. (moved to November 2021 NCTM Fall Virtual)
- Bush, S. B.** & Jackson, C. (2021, May). *Catalyzing change through joy, wonder, and beauty: Broadening the purposes of learning mathematics in middle school*. Featured presentation given at the Wisconsin Mathematics Council Virtual Annual Conference. (Presented Virtually)
- Bush, S. B.** & Jackson, C. (2021, April). *Catalyzing change in middle school mathematics*. Invited full day pre-conference workshop given at the Annual Meeting of the National Council of Teachers of Mathematics. St. Louis, MO. (Presented at the NCTM Virtual Annual Meeting, due to COVID-19)
- Bush, S. B.**, Milou, E., & Roy, G. J. (2021, April). *Catalyzing change in middle school mathematics: Implementing equitable instruction and developing deep mathematical understanding*. Invited presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. St. Louis, MO. (Presented at the NCTM Virtual Annual Meeting, due to COVID-19)

- Karp, K. S., **Bush, S. B.**, & Dougherty, B. J. (2021, April). *Building student success through developing a mathematics whole school agreement*. Invited presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. St. Louis, MO. (Presented at the NCTM Virtual Annual Meeting, due to COVID-19)
- Wilkerson, T., Berry III., R. Q., & **Bush, S. B.** (2021, April). *Catalyzing change in school mathematics: Engaging in critical conversations and planning actionable steps*. Keynote half-day workshop given at the Kansas Council of Teachers of Mathematics Annual Meeting. (Presented Virtually)
- Karp, K. S., **Bush, S. B.**, & Dougherty, B. J. (2021, March). *The math pact: Committing to a mathematics whole school agreement*. Keynote presentation given at the Bowling Green Council of Teachers of Mathematics monthly meeting, an NCTM Affiliate. (Presented Virtually)
- Bush, S. B.** & Jackson, C. (2020, November). *Catalyzing change in middle school mathematics*. Invited 2-day pre-conference workshop given at Regional Meeting of the National Council of Teachers of Mathematics. Tampa, FL. (Presented at the NCTM Fall Virtual Conference, due to COVID-19)
- Bush, S. B.** & Jackson, C. (2020, November). *Catalyzing change in middle school mathematics: Engaging in the four key recommendations*. Featured presentation given at Regional Meeting of the National Council of Teachers of Mathematics. Tampa, FL. (Presented at the NCTM Fall Virtual Conference, due to COVID-19)
- Karp, K. S., **Bush, S. B.**, & Dougherty, B. J. (2020, November). *The mathematics whole school agreement: Aligning across and within grades to build students' success*. Invited presentation given at Regional Meeting of the National Council of Teachers of Mathematics. Tampa, FL. (Presented at the NCTM Fall Virtual Conference, due to COVID-19)
- Barnes, D. & **Bush, S. B.** (2020, July). *Mathematics and integrative STEM: Models, measuring, and ratios through the solar system*. Invited NCTM partner presentation to be given at the 9th Annual STEM Expo and Forum hosted by the National Science Teaching Association (NSTA). Louisville, KY. (Conference Cancelled with Session Moved Virtual)
- Bush, S. B.**, Jackson, C., Roy, G. J., & Milou, E. (2020, May). *Catalyzing change in middle school mathematics: Implementing critical conversations centered on the 4 key recommendations*. Invited virtual presentation given for the National Council of Teachers of Mathematics 100 days of Professional Learning.
- Barnes, D., Kobett, B., Shih, J., **Bush, S. B.** & Teague, D. (2020, April). *Using math to make sense of our world: Pandemics, viruses, and our actions*. Invited virtual presentation given for the National Council of Teachers of Mathematics 100 days of Professional Learning.
- Bush, S. B.** & Milou, E. (2020, April). *Catalyzing change in middle school mathematics: Implementing equitable instruction and developing deep mathematical understanding*. Invited presentation was to be given at the Centennial Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Chicago, IL. (conference cancelled)

- Karp, K. S., **Bush, S. B.**, & Dougherty, B. J. (2020, April). *Can the whole school agree? Terms? Notation? Rules? Models?* Invited presentation was to be given at the Annual Meeting of the National Council of Supervisors of Mathematics. Chicago, IL. (conference cancelled)
- Bush, S. B.**, *Edelen, D., & *Cox, R. (2020, April). *Creating mathematics-rich STEAM learning opportunities for each and every student!* Invited presentation was to be given at the Centennial Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Chicago, IL. (conference cancelled)
- Safi, F., **Bush, S. B.**, & *Desai, S. (2019, September). *Empowering students: Understanding the mathematics of gerrymandering – When equivalent is NOT equal.* Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Boston, MA.
- Bush, S. B.** (2019, July). *NCTM Session: Bring the “M” in STEM to life! Considerations, challenges, and opportunities!* Invited presentation given at the 8th Annual STEM Expo and Forum hosted by the National Science Teachers Association (NSTA). San Francisco, CA.
- Cook, K. L. & **Bush, S. B.** (2019, July). *The giant problem: Using design thinking to explore thermal conductivity.* Invited elementary STEM showcase presentation given at the 8th Annual STEM Expo and Forum hosted by the National Science Teachers Association (NSTA). San Francisco, CA.
- Bush, S. B.** (2019, April). *Doing right by the “M” in STE(A)M!* Featured IGNITE presentation given at the Annual Meeting of the National Council of Teachers of Mathematics. San Diego, CA.
- Karp, K. S., **Bush, S. B.**, & Dougherty, B. (2019, April). *The whole school agreement: Aligning across and within grades to build student success.* Invited presentation given at the Annual Meeting of the National Council of Teachers of Mathematics. San Diego, CA.
- Karp, K. S., **Bush, S. B.**, & Dougherty, B. (2019, April). *Avoiding the ineffective keyword strategy!* Spotlight presentation given at the Annual Meeting of the National Council of Supervisors of Mathematics. San Diego, CA.
- Bush, S. B.** (2019, February). *Authentic STEAM instruction to support and challenge each and every learner.* Featured presentation given at the Annual Meeting of the Association of Mathematics Teacher Educators. Orlando, FL. Early Career Award Presentation.
- Bush, S. B.** (2018, October). *Authentic STEAM instruction to support and challenge each and every learner.* Invited presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Hartford, CT.
- Bush, S. B.** (2018, September). *STEM and YOU! Challenges, considerations, and opportunities!* Keynote presentation given at McDaniel College. Westminster, MD.
- Karp, K. S. & **Bush, S. B.** (2018, July). *Breaking the mathematics rules and cleaning up your language.* Featured presentation given at the Sixth Annual College- and Career-Readiness Standards Networking Conference hosted by the Southern Regional Education Board (SREB). Orlando, FL.

- Karp, K. S., **Bush, S. B.**, & Dougherty, B. (2018, April). *The whole school agreement: Aligning across and within grades to build student success*. Spotlight presentation given at the National Council of Supervisors of Mathematics Annual Conference. Washington, DC.
- Bush, S. B.** & Cook, K. L. (2018, February). *Authentic STEAM instruction to support and challenge each and every learner*. Featured presentation given at the Pennsylvania Department of Education Annual Conference. Hershey, PA.
- Cook, K. L. & **Bush, S. B.** (2018, February). *A structured and collaborative STEAM program: Operationalizing a professional development framework*. Featured presentation given at the Pennsylvania Department of Education Annual Conference. Hershey, PA.
- Bush, S. B.** (2018, February). *Authentically and meaningfully integrating the “M” in STE(A)M: The mathematics matters!* Invited presentation given at the Winter National Meeting of the Council of Chief State School Officers (CCSSO) Mathematics State Collaborative on Assessment and Student Standards (SCASS). Miami, FL.
- Feder, M., Honey, J., Hemingway, A., & **Bush, S. B.** (2018, February). *What does STEM look like around the nation?* Featured panel presentation given at the Winter National Meeting of the Council of Chief State School Officers (CCSSO) Mathematics State Collaborative on Assessment and Student Standards (SCASS). Miami, FL.
- Cook, K. L., **Bush, S. B.**, & *Cox, R. (2017, July). *Elementary STEM showcase: Science and children engineering encounters*. Invited elementary STEM showcase presentation given at the NSTA Annual STEM Forum & Expo. Orlando, FL.
- Cook, K. L., **Bush, S. B.**, & *Cox, R. (2017, July). *Elementary STEM showcase, science and children STEM compendia: Bringing STEM to the elementary classroom*. Invited elementary STEM showcase presentation given at the NSTA Annual STEM Forum & Expo. Orlando, FL.
- Cook, K. L., & **Bush, S. B.** (2017, May). *Full STEAM ahead: PD model for best practices in STEAM*. Mathematics Science Partnership (MSP) featured presentation given at the STEM for ALL showcase sponsored by the National Science Foundation (NSF). Online Conference.
- Bush, S. B.**, Karp, K., & Nadler, J. (2016, November). *Want to authentically engage students? Use artwork!* Invited presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Philadelphia, PA.
- Karp, K. S., **Bush, S. B.**, & Nadler, J. (2016, November). *Mathematics + art = Enhanced student thinking and discourse*. Invited presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Philadelphia, PA.
- Cook, K. L., **Bush, S. B.**, & *Cox, R. (2016, July). *Elementary STEM showcase, science and children STEM compendia: Bringing STEM to the elementary classroom*. Invited elementary STEM showcase presentation given at the NSTA Annual STEM Forum & Expo. Denver, CO.
- Dillon, F., Karp, K. S., **Bush, S. B.**, & Taylor, M. (2015, April). *Principles to actions: Using rich tasks*. Invited informal presentation given at the Networking Lounge at the Annual Meeting of the National Council of Teachers of Mathematics. Boston, MA.

Bush, S. B. (2013, August). *Systems of linear equations and functions: Making sense of problems*. Invited workshop presentation given at the NCTM High School Interactive Institute – Engaging Students in Learning: Mathematical Practices and Process Standards. Washington, DC.

Bush, S. B. (2013, August). *Slope, expressions and equations, and systems: Justifying, critiquing, and precision*. Invited workshop presentation given at the NCTM High School Interactive Institute – Engaging Students in Learning: Mathematical Practices and Process Standards. Washington, DC.

Peer Reviewed/Refereed International/National

Mohr-Schroeder, M., Jackson, C., **Bush, S. B.**, Roberts, T., Maiorca, C., Ivy, J., Burton, M., & Schroeder, C. (2025, February). *Promoting equity and inclusion in mathematics P-20 classrooms through the use of integrated STEM practices*. Presentation given at the 2025 Association of Mathematics Teacher Educators Annual Conference. Reno, NV. (unable to attend but still listed on presentation)

Safi, F., Abassian, A., **Bush, S. B.**, Placido, L., & Karimi, M. (2025, February). *Supporting prospective and practicing teachers through a shared leadership model leveraging a NIC structure*. Presentation given at the 2025 Association of Mathematics Teacher Educators Annual Conference. Reno, NV. (unable to attend but still listed on presentation)

Bush, S. B. & *Maldonado, A. (2024, November). *Catalyzing the courage to lead: Mathematics classroom teachers as leaders*. Presentation given at the 2024 School Science and Mathematics Association Annual Convention. Knoxville, TN.

*Edelen, D., & **Bush, S. B.** (2024, November). *Children’s co-constructed authority relationships*. Presentation given at the 2024 School Science and Mathematics Association Annual Convention. Knoxville, TN.

Jackson, C., Mohr-Schroeder, M., Cook, K., **Bush, S. B.**, Maiorca, C., & Roberts, T. (2024, November). *Simplifying STEM: Four equitable practices to inspire meaningful learning*. Presentation given at the 2024 School Science and Mathematics Association Annual Convention. Knoxville, TN.

Bush, S. B., Dixon, J., Brooks, L., Moore, B., & Boston, M. (2024, September). *Catalyzing the courage to lead: Mathematics classroom teachers as leaders*. Presentation given at the Research Conference of the National Council of Teachers of Mathematics. Chicago, IL.

Bush, S. B. & Karp, K. S. (2024, September). *Out with the old (rules that expire), IN with the new (meaningful representations & generalizations)!* Presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Chicago, IL.

- Bush, S. B.** & Karp, K. S. (2024, September). *Out with the old (rules that expire), IN with the new (meaningful representations & generalizations)!* Presentation given at the 56th National Council of Supervisors of Mathematics Annual Conference. Chicago, IL.
- *Edelen, D., **Bush, S. B.**, & Karp, K. S. (2024, July). Co-constructed “help” in a first-grade classroom: A linguistic investigation of children’s language games. *Poster presentation given at the 15th International Congress on Mathematics Education.* Sydney, Australia.
- *Kebreab, L., **Bush, S. B.**, & Hahs-Vaughn (2024, July). Using mathematics identity to explore group differences in high school mathematics achievement. *Presentation given at the 15th International Congress on Mathematics Education.* Sydney, Australia.
- *Desai, S., Safi, F., **Bush, S. B.**, & Wilkerson, T. (2024, February). *Ethnomodeling: Embodying the recommendations from NCTM’s Catalyzing Change in teacher preparation programs.* Presentation given at the Annual Conference of the Association of Mathematics Teacher Educators. Orlando, FL.
- Maiorca, C., Burton, M., Ivy, J., Roberts, T., Jackson, C., **Bush, S. B.**, Schroeder, C., & Mohr-Schroeder, M. (2024, February). *Developing mathematics lessons and assessments with chatbots for learning in teacher education: Innovations and challenges.* Presentation given at the Annual Conference of the Association of Mathematics Teacher Educators. Orlando, FL. [National Technology Leadership Initiative Award Session]
- *Schmidt, A., **Bush, S. B.**, & Karp, K. S. (2024, February). Are current K-5 state mathematics standards really the common core in disguise? Presentation given at the Annual Conference of the Association of Mathematics Teacher Educators. Orlando, FL.
- Karp, K. S., **Bush, S. B.**, & Dougherty, B. J. (2023, October). *The math pact: Building a whole school agreement.* Presentation given at the 55th National Council of Supervisors of Mathematics Annual Conference. Washington, DC.
- *Desai, S., Safi, F., Wilkerson, T., & **Bush, S. B.** (2023, October), *Ethnomodeling as a vehicle for catalyzing change in teacher education.* Presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Washington, DC.
- Jackson, C., Roy, G. J., & **Bush, S. B.** (2023, October). *Catalyzing change in middle school by broadening the purposes of learning mathematics.* Presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Washington, DC.
- Bush, S. B.**, Amick, L., Mohr-Schroeder, M., Safi, F., & *Schmidt, A., (2023, October). *Leveraging networked improvement communities as a pathway for collaborative practitioner inquiry.* Presentation given at the 2023 Annual Convention for School Science and Mathematics Association. Colorado Springs, CO.
- *Edelen, D., Cook, K. L., Tripp, L. O., Jackson, C., **Bush, S. B.**, Mohr Schroeder, M., Schroeder, D. C., Roberts, T., Maiorca, C., Ivy, J., Burton, M., Cox Jr., R., & Perrin, A. (2023, October). *Participant centered research in STEM education using photo elicitation and photovoice.* Presentation given at the School Science and Mathematics Association Annual Convention. Colorado Springs, CO.

- Jackson, C., Mohr Schroeder, M., Cook, K. L., **Bush, S.**, Roberts, T., & Maiorca, C. (2023, October). *Implementing the integrated STEM practices in the classroom*. Presentation given at the School Science and Mathematics Association Annual Convention. Colorado Springs, CO.
- Schroeder, D. C., Maiorca, C., & **Bush, S. B.** (2023, October). *Teacher dispositions to support underrepresented scholars in STEM*. Presentation given at the School Science and Mathematics Association Annual Convention. Colorado Springs, CO.
- *Edelen, D., **Bush, S. B.**, & Cook, K. L. (2023, October). *Centering students in transdisciplinary STEAM using positioning theory*. Presentation given at the School Science and Mathematics Association Annual Convention. Colorado Springs, CO.
- *Wiggan, S., *Diaz-Reyes, Y., *Pimentel, L., Brooks, L. A., & **Bush, S. B.** (2023, June). *Three pathways to mathematics teacher leadership*. Presentation given at the Annual National Science Foundation Noyce Summit. Washington, DC.
- Amick, L., Jasien, L., **Bush, S. B.**, Mohr-Schroeder, M. J., & Stites, M. (2023, February). *Collaborative practitioner inquiry as a source of career long professional learning*. Presentation given at the Annual Conference of the Association of Mathematics Teacher Educators. New Orleans, LA.
- Bush, S. B.**, *Rutledge, T., Boston, M. (2023, February). *Embracing a partnership approach to supporting K-8 mathematics teacher leaders to catalyze change*. Presentation given at the Annual Conference of the Association of Mathematics Teacher Educators. New Orleans, LA.
- *Edelen, D., & **Bush, S. B.**, (2022, October). *The social construction of "help": A microethnographic investigation in a first-grade classroom*. Presentation given at the School Science and Mathematics Association Annual Convention. Missoula, MT.
- Roberts, T., Maiorca, C., Jackson, C., Mohr-Schroeder, M. J., **Bush, S. B.**, & Cook, K. (2022, October). *Integrated STEM as problem-solving practices*. Presentation given at the School Science and Mathematics Association Annual Convention. Missoula, MT.
- *Edelen, D., Schroeder, D. C., Roberts, T., Maiorca, C., Ivy, J. T., Cook, K. L., Tripp, L. O., Burton, M., Alameh, S., Jackson, C., **Bush, S. B.**, & Mohr-Schroeder, M. J. (2022, October). *Belonging, becoming, and stem identity development: A photo elicitation investigation*. Presentation given at the School Science and Mathematics Association Annual Convention. Missoula, MT.
- *Schmidt, A., **Bush, S. B.**, Amick, L., & Mohr-Schroeder, M. (2022, October). *Nuanced factors contributing to mathematical discourse facilitated by secondary teacher candidates*. Presentation given at the School Science and Mathematics Association Annual Convention. Missoula, MT.

- *Fulton, T., *Edelen, D., **Bush, S.B.**, *Schmidt, A., *Kebreab, L., & *Rutledge, T. (2022, March). *Untangling classroom positioning in mathematics education: Examining the key shifts of teachers' discourse and interaction*. Presentation given at the International Consortium for Research in Science and Mathematics Education. Virtual.
- *Desai, S., **Bush, S. B.**, & Safi, F. (2022, March). *Mathematical representations in the teaching and learning of geometry in the United States*. Presentation given at the International Consortium for Research in Science and Mathematics Education. Virtual.
- *Edelen, D., *Schmidt, A., Cox, R., & **Bush, S. B.** (2022, March). *Language games in elementary students' mathematics discourse: Understanding socially constructed language and teaching implications*. Presentation given at the International Consortium for Research in Science and Mathematics Education. Virtual.
- Brooks, L. A., **Bush, S. B.**, Dixon, J. K., Butler, M. B., Moore, B. E., *Rutledge, T. (March, 2022) *Empowering K-8 mathematics teachers to catalyze change*. Presentation given at the International Consortium for Research in Science and Mathematics Education.
- *Edelen, D., **Bush, S. B.**, & Andreasen, J. B. (2022, February). *Systems of authority in elementary mathematics: The teacher's role in how students complete mathematical tasks*. Presentation to be given at the Association of Mathematics Teacher Educators Annual Conference. Las Vegas, NV.
- Safi, F., Andreasen, J., **Bush, S. B.**, *Desai, S., *Schmidt, A., Amick, L., Rakes, C., *Abbaspour Tazehkand, S. (2022, February). *De-siloing prospective teachers' experiences in secondary methods courses*. Presentation to be given at the Association of Mathematics Teacher Educators Annual Conference. Las Vegas, NV.
- Bush, S. B.**, *Edelen, D., Roberts, T., Maiorca, C., Ivy, J. T., Cook, K. L., Tripp, L. O. Burton, M., Alameh, S., Jackson, C., Mohr-Schroeder, M. J., Schroeder, D. C., *McCurdy, R. P., & Cox Jr., R. (2021, October). *The role of empathy in integrated STE(A)M instruction*. Presentation given at the School Science and Mathematics Association Annual Convention. Virtual.
- *Edelen, D. & **Bush, S. B.** (2021, October). *An ethnographic investigation of authority systems in elementary mathematics classrooms*. Presentation given at the School Science and Mathematics Association Annual Convention. Virtual.
- Bush, S. B.**, Cook, K. L., *Edelen, D., & Cox, R. (2021, October). *Elementary students' STEAM perceptions*. Presentation given at the School Science and Mathematics Association Annual Convention. Virtual.
- Jackson, C., Mohr-Schroeder, M., **Bush, S. B.**, Maiorca, C., & Roberts, T. (2021, October). *Equity-oriented STEM literacy conceptual framework*. Presentation given at the School Science and Mathematics Association Annual Convention. Virtual.
- Karp, K. S., **Bush, S. B.**, & Dougherty, B. J. (2021, September). *Mathematics whole school agreement: Build cohesion*. Presentation to be given at the Annual Meeting of the National Council of Teachers of Mathematics. Atlanta, GA. (conference cancelled)

- *Edelen, D. & **Bush, S. B.** (2021, September). Equalizing student status by addressing power differentials and increasing agency in mathematics. Presentation to be given at the Annual Meeting of the National Council of Teachers of Mathematics. Atlanta, GA. (moved to November 2021 NCTM Fall Virtual)
- *Edelen, D., **Bush, S. B.**, & Andreasen, J. B. (2021, April). *Authority systems in elementary mathematics*. Paper presented at the annual meeting of the American Education Research Association. Orlando, FL. (Presented Virtually Due to COVID-19).
- *Edelen, D. & **Bush, S. B.** (2021, April). *A STEAM exploration of tiny homes: A mathematics-rich inquiry*. Presentation given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. St. Louis, MO. (Presented Virtually Due to COVID-19)
- Rakes, C. R., Ronau, R. N., Mohr-Schroeder, M. J., **Bush, S. B.**, & Saderholm, J. (2021, February). *The PrimeD framework in mathematics teacher preparation: Networked improvement communities and plan-do-study-act*. Presentation given at the 2021 Virtual Association of Mathematics Teacher Educators Annual Conference.
- *Edelen, D., **Bush, S. B.**, *Cox, R. (2020, November). *Building student empathy through mathematical discoveries in STEAM*. Presentation given at National Council of Teachers of Mathematics 2020 Fall Virtual Conference.
- Maiorca, C., Roberts, T., Jackson, C., **Bush, S. B.**, Mohr-Schroeder, M. (2020, November). *Raising STEM career awareness through informal STEM*. Presentation given at the Annual Meeting of the School Science and Mathematics Association (SSMA). Minneapolis, MN. (Presented Virtually)
- *Cox, R. & **Bush, S. B.** (2020, April). *One little spark! Igniting imagination in elementary mathematics through STEAM*. Presentation was to be given at the Centennial Annual Meeting and Exposition of the National Council of Teachers of Mathematics. Chicago, IL. (conference cancelled)
- Cook, K. L., **Bush, S. B.**, *Cox, R., & *Edelen, D. (2020, January). *Development of elementary teachers' STEAM planning practices*. Paper presentation given at the International Association for Science Teacher Education conference. San Antonio, TX.
- Roberts, T., Jackson, C., Mohr-Schroeder, M., **Bush, S. B.**, Maiorca, C., & Delaney, A. (2019, November). *Exploring applications of school mathematics: Students' perceptions of informal learning experiences*. Presentation given at the 41st Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education. St. Louis, MO.
- Bush, S. B.** & Cook, K. (2019, October). *Step into STEAM: Reaching each and every student!* Presentation given at the 2019 Schools of the Future Conference. Honolulu, HI.
- Cook, K. & **Bush, S. B.** (2019, July). *Teaching STEAM through a problem-based paleontology exploration*. Presentation given at the 8th Annual STEM Expo and Forum hosted by NSTA. San Francisco, CA.

- *McCurdy, R., Nickels, M., & **Bush, S. B.** (2019, April). *Problem-based design-thinking tasks: A third space pathway to engage student interest in STEM*. Paper presented at the American Education Research Association (AERA) Annual Meeting. Toronto, Canada.
- Bush, S. B.** & Cook, K. L. (2019, April). *Authentic STEAM instruction to support and challenge each and every learner*. Presentation given at the Annual Meeting of the National Council of Supervisors of Mathematics. San Diego, CA.
- Safi, F., **Bush, S. B.**, & *Desai, S. (2019, April). *Empower student understanding of gerrymandering: When equivalent is NOT equal!* Presentation given at the Annual Meeting of the National Council of Teachers of Mathematics. San Diego, CA.
- Rakes, C. R., **Bush, S. B.**, Mohr-Schroeder, M., Ronau, R. N., & Stites, M. (2019, February). *Paradigm shifts in mathematics methods courses*. Presentation given at the Annual Meeting of the Association of Mathematics Teacher Educators. Orlando, FL. (name not listed in program book due to two presentation limit)
- Nickels, M., **Bush, S. B.**, Safi, F., *Singleton, T., & *Guzman, E. (2019, February). *Racial/cultural identity consciousness and mathematics education: Community autoethnography*. Presentation given at the Annual Meeting of the Association of Mathematics Teacher Educators. Orlando, FL. (name not listed in program book due to two presentation limit)
- *Doyle, H., **Bush, S. B.**, & Nickels, M. (2019, February). *An examination of the effectiveness of number talks for improving fluency in upper elementary students*. Presentation given at the Annual Meeting of the Association of Mathematics Teacher Educators. Orlando, FL.
- Bush, S. B.**, Cook, K., *Edelen, D., & *Cox, R. (2019, January). *Elementary students' perceptions of STEAM learning*. Paper presentation given at the International Association for Science Teacher Education conference. Savannah, GA.
- Cook, K., **Bush, S. B.**, Mohr-Schroeder, M., Rakes, C., Ronau, R., & Saderholm, J. (2019, January). *Highly-structured integrated STEM professional development: Challenges and insights gained from a cross-case analysis*. Roundtable presentation given at the International Association for Science Teacher Education conference. Savannah, GA.
- *Cox, R., Cook, K., & **Bush, S. B.** (2019, January). *Fresh thinking for students through STEAM*. Paper presentation given at the Association for Science Teacher Education conference, Savannah, GA.
- Bush, S. B.**, Cook, K. L., & *Cox, R. (2018, April). *Authentically and meaningfully integrating the "M" in STEAM: The mathematics matters!* Presentation given at the Annual Meeting of the National Council of Teachers of Mathematics. Washington, DC.
- Dougherty, B., Karp, K. S., & **Bush, S. B.** (2018, April). *Whole school agreements: Avoiding rules that expire*. Presentation given at the Annual Meeting of the National Council of Teachers of Mathematics. Washington, DC.
- Rakes, C. R., Ronau, R. N., **Bush, S. B.**, & Pugalee, D. (2018, April). *Education technology, achievement and orientation: A metaanalysis*. Research Report presentation given at the Annual NCTM Research Conference. Washington, DC.

- Ronau, R. N., **Bush, S. B.**, Rakes, C. R., Mohr-Schroeder, M., Cook, K., & Saderholm, J. (2018, April). *PrimeD: A framework to guide PD, embed evaluation, and structure research*. Research Symposium presentation given at the Annual NCTM Research Conference. Washington, DC.
- Rakes, C. R., Ronau, R. N., **Bush, S. B.**, & Mohr-Schroeder, M. (2018, February). *Using the PrimeD framework to understand, guide, and assess secondary mathematics teacher education*. Presentation given at the Annual Association of Mathematics Teacher Educators Conference. Houston, TX.
- Cook, K. L., Rakes, C. R., Saderholm, J., **Bush, S. B.**, Mohr-Schroeder, M., & Ronau, R. (2018, January). *PrimeD: A professional development framework to build partnerships and empower teachers*. Presentation given at the Association of Science Teacher Educators International Conference. Baltimore, MD.
- Cook, K. L., **Bush, S. B.**, Saderholm, J., Rakes, C. R., Ronau, R. N., & Mohr-Schroeder, M. (2018, January). *A structured and collaborative STEAM program: Operationalizing a professional development framework*. Presentation given at the Association of Science Teacher Educators International Conference. Baltimore, MD.
- Bush, S. B.**, Cook, K. L., & *Cox, R. (2017, July). *Math matters: A closer look at the “M” in STEAM*. Presentation given at the NSTA Annual STEM Forum & Expo. Orlando, FL.
- Ronau, R. N., Rakes, C. R., **Bush, S. B.**, Mohr-Schroeder, M., Saderholm, J., & Cook, K. L. (2017, April). *PrimeD: A PD framework to build partnerships and empower teachers*. Presentation given at the National Council of Teachers of Mathematics Research Conference. San Antonio, TX.
- Rakes, C. R., Ronau, R. N., **Bush, S. B.**, Mohr-Schroeder, M., & Saderholm, J. (2017, February). *Professional development: Research, implementation, and evaluation (PrimeD) framework implications for mathematics teacher professional development*. Presentation given at the Annual Meeting of the Association of Mathematics Teacher Educators. Orlando, FL.
- Karp, K. S., & **Bush, S. B.** (2017, February). *After the class: Building scholarly endeavors with former preservice candidates to foster teacher leadership*. Presentation given at the Annual Meeting of the Association of Mathematics Teacher Educators. Orlando, FL.
- Cook, K. L., & **Bush, S. B.** (2016, July). *Structuring an interdisciplinary STEM unit to support students’ data analysis and interpretation skills*. Presentation given at the NSTA Annual STEM Forum & Expo. Denver, CO.
- Ronau, R. N., Rakes, C. R., & **Bush, S. B.** (2016, July). *Mathematics education research quality results applied to professional development evaluation and research frameworks*. Presentation given at the 13th International Congress on Mathematics Education. Hamburg, Germany.
- Bush, S. B.**, Karp, K. S., & Dougherty, B. (2016, April). *Avoiding middle grades rules that expire!* Presentation given at the Annual Meeting of the National Council of Teachers of Mathematics. San Francisco, CA.

- Rakes, C. R., Ronau, R. N., Saderholm, J., **Bush, S. B.**, & Mohr-Schroeder, M. (2016, April). *The critical role of a well-articulated, coherent design in professional development: An evaluation of a state-wide two-week program for mathematics and science teachers*. Paper presented at the annual meeting of the American Education Research Association. Washington, DC.
- Driskell, S., **Bush, S. B.**, Ronau, R., Niess, M., Pugalee, D., & Rakes, C. (2016, January). *A proposed mathematics education professional development process framework and research framework*. Presentation given at the Annual Meeting of the Association of Mathematics Teacher Educators. Irvine, CA.
- Driskell, S., **Bush, S. B.**, Ronau, R., Niess, M., Pugalee, D., & Rakes, C. (2015, November). *Research in mathematics educational technology: Trends in professional development over 40 years of research*. Presentation given at the 37th Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education. East Lansing, MI.
- Bush, S. B.**, Karp, K. S., & Dillon, F. (2015, April). *Exploring exponential growth through epidemics*. Presentation given at the Annual Meeting of the National Council of Teachers of Mathematics. Boston, MA.
- Bush, S. B.**, Driskell, S. O., Rakes, C. R., & Ronau, R. (2015, February). *Technology inclusion in mathematics teacher preparation: Four decades of research*. Presentation given at the Annual Meeting of the Association of Mathematics Teacher Educators. Orlando, FL.
- Bush, S. B.**, Karp, K. S., & Dougherty, B. J. (2014, April). *Avoiding rules that expire!* Presentation given at the Annual Meeting of the National Council of Teachers of Mathematics. New Orleans, LA.
- Martinie, S., Peters, S., & **Bush, S. B.** (2014, April). *Investing time in financial literacy when teaching the CCSS*. Presentation given at the Annual Meeting of the National Council of Teachers of Mathematics. New Orleans, LA.
- Ronau, R. N., Rakes, C. R., **Bush, S. B.**, Driskell, S. O., Niess, M. L., & Pugalee, D. (2014, April). *A survey of mathematics education technology dissertation scope and quality: 1968-2009*. Paper presented at the annual meeting of the American Education Research Association. Philadelphia, PA.
- Driskell, S., **Bush, S. B.**, Rakes, C. R., Niess, M., Pugalee, D., & Ronau, R. (2014, February). *Professional development shifts in mathematics education technology*. Presentation given at the Annual Meeting of the Association of Mathematics Teacher Educators. Irvine, CA.
- Ronau, R. N., Rakes, C. R., **Bush, S. B.**, Driskell, S. O., Niess, M. L., & Pugalee, D. (2013, November). *A survey of mathematics education technology dissertation scope and quality: 1968-2009*. Paper presented at the Annual Meeting of the North American Chapter of the International Group of the Psychology of Mathematics Education, Chicago, IL.
- Bush, S. B.** & Karp, K. S. (2013, April). *The hunger games: What are the chances?* Presentation given at the Annual Meeting of the National Council of Teachers of Mathematics. Denver, CO.

- Ronau, R., Rakes, C., & **Bush, S. B.** (2012, April). *Using research in mathematics educational technology to inform classroom teaching*. Presentation given at the Annual Meeting of the National Council of Teachers of Mathematics. Philadelphia, PA.
- Bush, S. B.**, & English-Hunter, A. (2012, April). *Analyzing middle school students' algebra-related misconceptions and errors*. Presentation given at the Annual Meeting of the National Council of Teachers of Mathematics. Philadelphia, PA.
- Rakes, C., Ronau, R., **Bush, S. B.**, Driskell, S., Niess, M., & Pugalee, D. (2012, January). *A structured inquiry of research in mathematics educational technology: Findings and implications*. Presentation given at the Annual Meeting of the Association of Mathematics Teachers Educators. Fort Worth, TX.
- Popelka, L., & **Bush, S. B.** (2011, November). *Developing your interdisciplinary murder mystery*. Presentation given at the Annual Meeting of the National Middle School Association. Louisville, KY.
- Driskell, S., Ronau, R., Rakes, C., **Bush, S. B.**, Niess, M., & Pugalee, D. (2011, October). *Research in mathematics instructional technology: Current trends and future demands*. Presentation given at the 33rd Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education. Reno, NV.
- Choi, N., **Bush, S. B.**, English, A., & Truitt, T. (2011, April). *Factorial validity of the scores from the TIMSS 2007 mathematics attitude scale*. Presentation given at the Annual Meeting of the American Education Research Association. New Orleans, LA.
- Higgins, R., English, A., & **Bush, S. B.** (2011, April). *Geometry and the real world – Budget math trips*. Presentation given at the Annual Meeting of the National Council of Teachers of Mathematics. Indianapolis, IN.
- Rakes, C., Ronau, R., Driskell, S., Niess, M., Pugalee, D., & **Bush, S. B.** (2011, January). *Research in mathematics instructional technology: Current trends and future demands*. Presentation given at the Annual Meeting of the Association of Mathematics Teacher Educators. Irvine, CA.

Peer Reviewed/Refereed Regional

- Bush, S. B.** (2019, September). *Step into STEAM: Creating mathematics-rich STEAM learning opportunities for each and every student*. Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Boston, MA.
- Nickels, M., **Bush, S. B.**, & Karp, K. S. (2018, November). *Coding mathematics: A computer programming exploration*. Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Kansas City, MO.
- Bush, S. B.**, Karp, K., & Dougherty, B. (2017, November). *Breaking the rules (expiring ones that is) and cleaning up your language!* Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Chicago, IL.

- Bush, S. B.,** Cook, K., & *Cox, R. (2017, November). *Authentically and meaningfully integrating the “M” in STEAM: The mathematics matters!* Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Chicago, IL.
- Bush, S. B.,** Karp, K., & Dougherty, B. (2017, October). *Breaking the rules (expiring ones that is) and cleaning up your language!* Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Orlando, FL.
- Nickels, M., Cullen, C., & **Bush, S. B.** (2017, October). *STEM satellites: A mobile mathematics and science initiative for Orlando children’s hospitals.* Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Orlando, FL.
- Bush, S. B.,** Cook, K., & *Cox, R. (2017, October). *Authentically and meaningfully integrating the “M” in STEAM: The mathematics matters!* Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Orlando, FL.
- Bush, S. B.,** Karp, K., & Nadler, J. (2014, October). *Classrooms + museums = Artful mathematics.* Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Indianapolis, IN.
- Bush, S. B.,** *Albanese, J., & Dillon, F. (2014, October). *How old is the oldest person you’ve known?* Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Indianapolis, IN.
- Bush, S. B.,** Karp, K., & Nadler, J. (2012, November). *Math + art = Deep learning.* Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. Chicago, IL.
- Bush, S. B.,** & English-Hunter, A. (2011, October). *Analyzing middle school students’ algebra-related misconceptions and errors.* Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. St. Louis, MO.
- English-Hunter, A., & **Bush, S. B.** (2011, October). *Technology, transformations, 2D animation, and treasures- making geometry come alive!* Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. St. Louis, MO.
- Bush, S. B.** (2010, October). *Dollars and sense! Developing financially literate students.* Presentation given at the Regional Meeting of the National Council of Teachers of Mathematics. New Orleans, LA.

Peer Reviewed/Refereed State/Local

- Bush, S. B.** & Dougherty, B. J. (2023, June). *The math pact: Adopting and embracing a team approach to supporting all students.* Presentation given at the annual meeting of the Florida Council of Teachers of Mathematics. Orlando, FL.
- Bush, S. B.,** Karp, K. S., & Dougherty, B. J. (2020, October). *The math pact: Committing to a mathematics whole school agreement.* Presentation given at the annual meeting of the Florida Council of Teachers of Mathematics. Orlando, FL. (Conference Moved Virtual Due to Covid-19)

- *Edelen, D. & **Bush, S. B.** (2020, October). *Increasing student agency through equalizing statuses in the classroom*. Presentation given at the annual meeting of the Florida Council of Teachers of Mathematics. Orlando, FL. (Conference Moved Virtual Due to Covid-19)
- *Edelen, D., **Bush, S. B.**, & *Simpson, H. (2020, June). *A STEAM exploration of tiny homes: A mathematics-rich inquiry*. Presentation was to be given at the 2020 Florida STEAMposium hosted by the Florida Department of Education. Melbourne, FL. (conference cancelled)
- *Edelen, D. & **Bush, S. B.** (2020, March). *A STEAM exploration of tiny homes for the homeless*. Presentation given at the Annual Meeting of the Florida Engineering Education Conference (FEEC). University of Central Florida, Orlando, FL.
- Bush, S. B.** (2018, October). *Authentic STEAM instruction to support and challenge each and every learner*. Presentation given at the Annual Meeting of the Florida Council of Teachers of Mathematics. Daytona Beach, FL.
- Safi, F., **Bush, S. B.**, & *Desai, S. (2018, October). *Gerrymandering: When equivalent is NOT equal*. Presentation given at the Annual Meeting of the Florida Council of Teachers of Mathematics. Daytona Beach, FL.
- Bush, S. B.**, & English, A. (2010, October). *Technology, transformations, and treasures*. Presentation given at the Annual Meeting of the Kentucky Council of Teachers of Mathematics. Summersville, KY.
- English, A., & **Bush, S. B.** (2010, October). *Implementing a technologically efficient middle school response to intervention (RTI) program*. Presentation given at the Annual Meeting of the Kentucky Council of Teachers of Mathematics. Somersville, KY.
- Bush, S. B.**, & English, A. (2009, October). *Dollars and sense! Developing financially literate students*. Presentation given at the Annual Meeting of the Kentucky Council of Teachers of Mathematics. Bourbon, KY.

Grants

Externally Funded Grants (\$6,314,150 funded as PI or Co-PI)

Empowering STEM teachers with earned doctorates: A UCF-OCPS Noyce program for elementary and middle school mathematics teachers. (2021-2026). Award ID: 2050606. National Science Foundation (NSF): Noyce Track 3. **Bush, S. B. (PI)**, Dixon, J. K. (Co-PI), Brooks, L. (Co-PI), Butler, M. (Co-PI through 2021), & Moore, B (Co-PI). \$1,459,394. (funded, ongoing)

Collaborative research: Transforming undergraduate mathematics teacher preparation programs using the Professional Development: Research, Implementation, and Evaluation framework. (2020-2024). National Science Foundation (NSF): Improving Undergraduate STEM Education (IUSE). Award ID: 2013266. Rakes, C. (Overall PI), **Bush, S. B. (UCF PI)**, Mohr-Schroeder, M. J. (UK PI), Saderholm, J. C. (BC PI), Stites, M. (UMBC Co-PI), Andreasen, J. (UCF Co-PI, 2020-2022), Safi, F. (UCF Co-PI), Abassian, A. (UCF Co-PI, 2022-current), Amick, L. (UK Co-PI), Fisher, M. (UK Co-PI), & Viera, J. (BC Co-PI). \$2,975,413. (UCF portion of grant = \$968,578) (funded, ongoing)

Conference: Advanced air mobility: Will low lift or ground a new era of human transportation? (2022-2023). Award ID: 2232225. National Science Foundation (NSF): Law & Science. Ravich, T. M. (PI), **Bush, S. B. (co-PI)**, & Campbell, L. O. \$49,999. (funded, completed)

Tablecraft: A next generation, introductory STEM learning platform. (2019). National Science Foundation (NSF): Small Business Innovation Research (SBIR) Phase 1. Award ID: 1913907. Bailey, G (PI), Vasquez, E. (Co-PI), **Bush, S. B. (Co-PI)**, & Taub, M. (Co-PI). \$224,997. (UCF portion of grant = \$44,645) (funded, completed)

STEM satellites: A mobile mathematics and science initiative for Orlando metropolitan area children's hospitals. Federal National Aeronautics and Space Administration (NASA). (2016-2021). Award ID: CP4SMPVC+, #NNX16AM34G. Newman, J. (PI), Lanman, B. (Co-PI), Nickels, M. (Co-PI and UCF PI), Cullen, C. (Co-Pi), & **Bush, S. B. (UCF Co-Pi 2017-2021)**. \$1,208,395. (UCF Portion of grant = \$458,579) (funded, completed)

Full STEAM ahead: Preparing elementary teachers to implement best-practices in integrated STEAM instruction. (2015-2017). Mathematics Science Partnership (MSP) – federal funding with state flow-through, Award ID: #S366B150018. **Bush, S. B. (PI)** & Cook, K. (PI) \$395,952. (funded, completed)

Other External Grant Research Contributions

Teachers' interpretation, implementation, and assessment of chemistry information literacy in K-12 students (2022-2024). Award ID: 2225185. National Science Foundation (NSF) EHR Core Research: Building Capacity in STEM Education (ECR:BCSER, IID, Capacity Building). Award ID: 2225185. Christopher Randles (PI). University of Central Florida. \$341,230. Role: **Formal Project Mentor** (funded, ongoing)

Teacher quality partnerships: Downtown experience. Enhancing quality in teacher preparation in mathematics through partnerships. (2019-current). U.S. Department of Education. Little, M. (PI) and Hahs-Vaughn, D. (Co-PI). University of Central Florida. \$3,000,000. **Role: Technical Working Group in Mathematics (2019)**. (funded).

Florida State Center for Research in Science, Technology, Engineering, and Mathematics (FCR-STEM), *summer institutes*. Mathematics Science Partnership (MSP) Federal Grant. Razzouk, R. (PI). Multi-Million Dollar Grant. Florida State University. **Role: External Evaluator (2014)**. (funded)

Geometry assessments for secondary teachers (GAST). (2008-2014). National Science Foundation. \$3,153,856. Bush, B. (PI). University of Louisville. **Role: University Partner (2013-2014)**. (funded)

Internal University Grants and Funds (\$76,776 funded)

College of Graduate Studies funding to promote Mathematics Education Graduate Programs at the Association of Mathematics Teacher Educators Conference hosted in Orlando. (2019). University of Central Florida. \$776.00. (funded).

UCF Preeminent Postdoctoral Program (P³) Award to fund postdoctoral scholar for two years on NASA grant. (2017-2019). Nickels, M. L. (PI) & **Bush, S. B. (Co-PI)**. University of Central Florida. \$63,000. (funded).

Transdisciplinary STEM education for graduate student and university partnership recruitment and engagement. (2017-2018). Faculty COACHE Innovation Award. Office of Faculty Excellence. Nickels, M. L. & **Bush, S. B. (PIs)**. University of Central Florida. \$10,000. (funded)

A closer look at STEAM education: A systematic review of literature. (2015). Faculty Development Fellowship Summer Award. **Bush, S. B. (PI)**. Bellarmine University. \$3,000. (funded)

Other Scholarly Recognition and Activity

Press Releases, Webinars, Media, and Appearances (project team names listed for news stories)

Bush, S. B., Dixon, J., Brooks, L. A., & Moore, B. (2024). Inaugural CCIE Uplift magazine story featuring 5 of our Noyce Fellows. Story titled *Taught to Lead*.

Bush, S. B. (2024). Invited guest on podcast episode 12.8, Practical Access podcast hosted by Drs. Lisa Dieker and Rebecca Hines. Episode titled *Empowering Inclusive Math Education: Strategies for Equity and Engagement*.

Bush, S. B. & Kutsyruba, B. (2024). Invited guest on podcast episode 3.7, Teacher To Teacher podcast by host Carol Pelletier Radford in partnership with Corwin Press. Episode titled *Be the Wave*.

Bush, S. B. (among colleagues). (2024). Influential researchers at UCF contribute to impacts in field, U.S. news global rankings. UCF Today story where my research was featured for CCIE education faculty earning No. 2 in nation and No. 4 in the world rankings for the percentage of highly cited papers.

Bush, S. B. (among colleagues). (2024). Solving the shortage. UCF Pegasus Magazine Featured Story in the Spring 2024 Issue. Two projects I lead/direct, our NSF Noyce and the Lockheed Martin/UCF Mathematics and Science Academy were featured in the focus on “The Teacher Retention Business.”

Bush, S. B. (2024, June). Invited podcast episode 3.8 on Math Chat, by the Rhode Island Tiered Intervention in Math Education, from the American Institutes for Research (AIR). Episode interview on developing a Math Pact/Mathematics Whole School Agreement across districts and schools.

- Ivy, J., Maiorca, C., Burton, M., Cook, K., Mohr-Schroeder, M., **Bush, S.** (2024, April). AI-powered math education: What math teacher educators need to know [webinar]. Invited webinar. Association of Mathematics Teacher Educators (AMTE).
- Ravich, T., **Bush, S. B.**, & Campbell, L. (2023). Advanced air mobility conference takes flight at UCF. UCF Today Research Story covering our NSF Conference Grant.
- Bush, S. B.** (2023). Invited podcast episode titled “Feeling Valued Matters for Teachers and Students” focused on my work on the NCTM Board, serving as task force chair and writing team lead for Catalyzing Change in Middle School Mathematics, and our Noyce Track 3 grant. Teaching Math Teaching Podcast, episode 85.
- *Desai, S., **Bush, S. B.**, & Safi, F. (2022). Invited podcast episode on article *Mathematical representations in the teaching and learning of geometry: A review of the literature from the United States*. Sam Otten Math Ed Podcast, episode 2204.
- Bush, S. B.**, Dixon, J., Brooks, L., Butler, M., & Moore, B. (2021). UCF professors awarded NSF grant to empower Orange County K-8 mathematics teachers. UCF Today Research Story covering our NSF Noyce grant.
- Bush, S. B.** (2021). UCF Research focuses on transforming teacher and leadership preparation for K-12 mathematics teachers. I was the featured CCIE researcher in the UCF Annual Research Report, feature article focused on my NSF Noyce and NSF IUSE grants. My doctoral student was also featured as the CCIE student researcher in this annual report.
- Bush, S. B.** & Jackson, C. (2021). A look at mathematics: PreK-12 and Postsecondary. Represented NCTM as part of a larger panel for the Charles A. Dana Center Launch Years Math Organizations Leadership Network.
- Karp, K. S., Dougherty, B., & **Bush, S. B.** (2021). Building math coherence in your school. Invited podcast, episode 30 on Kids Talk Math, hosted by Desiree Harrison.
- Karp, K. S., **Bush, S. B.**, Dougherty, B., & Kreisberg, H. (2021). Start your fall math instruction strong by working collaboratively: Implementing a mathematics whole school agreement and partnering with families. Corwin Webinar Series.
- Bush, S. B.**, Karp, K. S., & Dougherty, B. J. (2021). Start your school year right: How middle school teachers can build a mathematics whole-school agreement. NCTM Professional Development Webinar.
- Karp, K. S., Dougherty, B. J., & **Bush, S. B.** (2021). Start your school year right: How elementary school teachers can build a mathematics whole-school agreement. NCTM Professional Development Webinar.
- Wilkerson, T., Huinker, D., **Bush, S. B.**, & Berry III, R. Q. (2020). Catalyzing change in mathematics education: Transforming challenges into opportunities. Panel format. *Education Week (EdWeek) webinar* given on May 26, 2020.

- Bush, S. B.,** Safi, F., & Andreasen, J. (2020). Future STEM teachers will shape their own preparation program. College of Community Innovation and Education Story on our NSF Improving Undergraduate STEM Education (IUSE) grant.
- Bush, S. B.** (2020). STEAM learning at home: 5 tips for teachers and families! Florida Department of Education (FL DOE) webinar given on April 14, 2020.
- Bush, S. B.** (2020). Rightfully positioning mathematics in integrated STE(A)M instruction. *Global Mathematics Department Webinar* given on February 25, 2020.
- Bush, S. B.** (2019). Invited podcast episode on Step into STEAM: An interview with Sarah Bush. *Make Math Moments That Matter Podcast*.
- Bush, S. B.** (2019). Featured in *Business Briefing: People on the Move*. Orlando Sentinel.
- Cook, K. L. & **Bush, S. B.** (2017). *JCPS students show off intellectual skills at STEAM Maker Faire*. WDRB News. Louisville, KY. Retrieved at <http://www.wdrb.com/story/35215522/jcps- students-show-off-intellectual-skills-at-steam-maker-faire>
- Bush, S. B.,** Cook, K. L., Owen, K., & Kaiser, L. (2016). *STEAM in our community*. Dawne Gee Show. Wave TV. Louisville, KY. (active link no longer available)

Twitter Chats and Infinity Bar Facilitations

- Bush, S. B.** (2019, May). *Step into STEAM: Your standards-based action plan for deepening mathematics and science learning*. Corwin Connects Twitter Chat.
- Bush, S. B.,** Karp, K. S., & Dougherty, B. (2018, May). *Rules that expire/whole school agreement*. Infinity bar facilitator at NCTM regional conference. Kansas City, MO.
- Bush, S. B.** (2018, October). *Equity and STEAM education*. Infinity bar facilitator at NCTM regional conference. Hartford, CT.
- Bush, S. B.,** *Albanese, J., Karp, K. S., & Karp, M. (2017, November). *An architecture design project: "Building" understanding*. Twitter math chat on article published in *Mathematics Teaching in the Middle School*.
- Karp, K., **Bush, S. B.,** & Dougherty, B. (2016). *13 rules that expire*. Twitter math chat on article published in *Teaching Children Mathematics*.

LEADERSHIP AND SERVICE TO THE PROFESSION

National

Association of Mathematics Teacher Educators (AMTE)

- Associate Vice-President for Local Arrangements, Local Arrangements Committee Co-Chair (Registration), Association of Mathematics Teacher Educators (AMTE), Annual Conference (2018-2019)
- Program Committee, Association of Mathematics Teacher Educators (AMTE), Annual Conference (2012-2015)
- Proposal Reviewer, Association of Mathematics Teacher Educators, Annual Conference (2012-2015)

National Council of Teachers of Mathematics (NCTM)

- Program Committee Member, Research Track, NCTM 2025 Annual Meeting, Atlanta, GA. (2024-2025)
- Mentor, NCTM Speaker Diversity Program (2024)
- Member, Board of Directors (Elected). (2019-2022)
 - Lead Writer and Task Force Chair, NCTM's *Catalyzing Change in Middle School Mathematics: Initiating Critical Conversations* (book official position of the council). Primary and supplementary materials include:
 - Book: *Catalyzing Change in Middle School Mathematics: Initiating Critical Conversations*
 - Resource Guide
 - Contributions to Executive Summary
 - Book Study Guide
 - Development of Pre-Conference Workshop Materials
 - Development of Presentations for Annual and Regional Conferences
 - Development of Presentations for Webinars
 - Social Media Videos
 - Interviews
 - Contributions to Infographic
 - Executive Committee (internally elected by the board) (2020-current)
 - Board Liaison (and active member), NCTM Publishing Committee (2019-current)
 - Board Liaison, *Mathematics Teacher: Learning and Teaching PK-12* Journal (2019-current)
 - Chair, NCTM Conference Advisory Group (internal board task force) (2021-current)

- Member, NCTM Conference Advisory Group (internal board task force) (2019-2021)
- Advocacy for NCTM on the Hill (2019-current)
- Integrated STEM Initiatives (2019-current)
- Program Development Group (PDG) Committee. Serve as mentor to program chairpersons of NCTM Regional Meetings. (2017-2019)
- ShadowCon Live Tweeter. (2018)
- NCTM Journal Consolidation Task Force Member. (2017-2018)
- Design Team Grades 6-8 Expert and Leader, Supporting Student's Productive Struggle NCTM Summer Professional Development Institute. (2017)
- Program Committee Chairperson, NCTM 2017 Annual Meeting, San Antonio, TX. (2015-2017)
- Program Committee Member, NCTM 2016 Annual Meeting, San Francisco, CA. (2014-2016)
- NCTM Algebra Readiness Institute Facilitator. Served as seventh grade facilitator, delivering both content and practice-based workshops. (2014-2016)
- NCTM Educational Materials Committee (EMC) Member. (2013-2016)
- Program Chairperson, NCTM 2013 Regional Meeting, Louisville, KY. (2011-2013)
- NCTM High School Institute Facilitator, Algebra. (2013)

Additional National Service as Grant, Book, Manuscript, Policy and Position Documents, and Conference Proposal Reviewer

- Book Endorsement, *Bloomsbury Press*. (2024)
- Book Endorsements, *Solution Tree Press*. (2019, 2023)
- Book Endorsements, *Corwin Press*. (2019, 2020, 2024)
- Book Proposal Reviewer, *Corwin Press*. (2019, 2024)
- Book Reviewer, *Catalyzing Change in Early Childhood and Elementary Mathematics: Initiating Critical Conversations*, *National Council of Teachers of Mathematics*. (2019)
- Book Reviewer, *Corwin Press*. (2019, 2024)
- Book Reviewer, *Solution Tree Press*. (2016)
- Conference Proposal Reviewer, *North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA)*. (2019)
- Conference Proposal Reviewer, *NCTM Atlanta Annual*. (2020)
- Conference Proposal Reviewer, *NCTM Research Conference*. (2017-present)
- Grant Proposal Reviewer, *National Science Foundation (NSF)*, Review Panel Member. (2019-2020)
- Joint Statement Reviewer, *National Council of Teachers of Mathematics and National Council of Supervisors of Mathematics*, Joint Statement. (2020)
- Manuscript Reviewer, *Learning, Culture, and Social Interaction* (2024-present)

- Manuscript Reviewer, *School Science and Mathematics Special Issue 2* (2024)
- Manuscript Reviewer, *School Science and Mathematics Special Issue 1* (2024)
- Manuscript Reviewer, *Investigations in Mathematics Learning Special Issue on M within Integrated STEM* (2021)
- Manuscript Reviewer, *International Journal of STEM Education*. (2020-present)
- Manuscript Reviewer, *Mathematics Teacher: Learning and Teaching PK-12* (NCTM). (2019-present)
- Manuscript Reviewer, *Investigations in Mathematics Learning*. (2018-present)
- Manuscript Reviewer, *Journal of Research in Mathematics Education* (NCTM). (2017-present)
- Manuscript Reviewer, *Journal of Mathematical Behavior*. (2016-present)
- Manuscript Reviewer, *Action in Teacher Education*. (2015-2018)
- Manuscript Reviewer, *Teaching Children Mathematics* (NCTM). (2013-2019)
- Manuscript Reviewer, *Mathematics Teaching in the Middle School* (NCTM). (2009 – 2019)
- Policy Report Reviewer, Rand Corporation, Report: Florida K-12 Mathematics Teachers' Credentials and Preparation (2022)
- Textbook Reviewer, *McGraw Hill Middle School Series*. (2018, 2021)

Regional/State/Local

Florida Department of Education (FL DOE)

- Partnership with FL DOE department of STEAM on integrated STEAM initiatives (2020-2021)

Greater Louisville Council of Teachers of Mathematics (GLCTM – NCTM Affiliate)

- Past-President, Greater Louisville Council of Teachers of Mathematics (2015-2017)
- President, Greater Louisville Council of Teachers of Mathematics (2013-2015)
- President-Elect, Greater Louisville Council of Teachers of Mathematics (2011-2013)
- Membership Co-Chair, Greater Louisville Council of Teachers of Mathematics (2010-2017)

Indiana Department of Education (IDOE)

- Indiana Department of Education Educator Learning Link Ambassador (2011)
- IMAST (Standardized Assessment) Cut Score Setting Committee, Indiana Department of Education (2010)

Kentucky Education Professional Standards Board (EPSB)

- Member, CAEP Partnership Agreement Task Force, Kentucky Department of Education (2015-2016)
- Participant, Kentucky Association of Colleges of Teacher Education Grant for transitioning to CAEP (2015)
- Panel Member, Revised Middle School Mathematics Praxis Cut Score Setting, ETS (2013)

Kentucky Department of Education (KDE)

- Selection Committee Member, Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST) (2016) (Elementary Mathematics)

University of Central Florida

University and College Level Service

Committee Member, CCIE Associate Dean for Research Search Committee, University of Central Florida (2024-present)

Committee Member, UCF Scholarship of Teaching and Learning Committee (2024)

Committee Member, CCIE Research Incentive Award Committee (2023-present)

Committee Member, CCIE Strategic Planning Implementation Committee, Goal 3 (2023-2024)

Committee Member, CCIE Dean Search Committee, University of Central Florida (2021-2022)

Committee Member, UCF Faculty and Staff Benefits Committee (2021-present)

Committee Member, CCIE Instructor and Lecturer Promotion Committee (2021-2023)

CCIE RAST Fall Panel Speaker (2021)

CCIE RAST Office of Research Spring e-LED talks speaker (2021)

UCF Athletics STEAM Day, STE Planning Team Co-Lead, University of Central Florida (2020-2021)

Committee Member (Interim), Graduate Curriculum Committee, University of Central Florida (Spring 2020)

Panel member for Faculty Excellence New Women Faculty mentoring and networking community, University of Central Florida (Spring 2020)

Host, ADVANCE Florida Network Women in STEM Scholars (AFN-WISS). Hosted and mentored post-doctoral scholar, Heidi Cian, from Florida International University. University of Central Florida (2019-2020)

Committee Member, Professor and School of Teacher Education Director Search Committee, College of Community Innovation and Education (2018-2019)

Committee Member, Research Committee, College of Community Innovation and Education (alternate 2018-2019, regular 2019-2021)

UCF Partner, Orlando Promise Neighborhoods Team, College of Community Innovation and Education (2017-2018)

School and Department Level Service

Affiliate Faculty (and co-developer of specialization) for K-8 Mathematics Education Specialization of EdD in Curriculum and Instruction (2020-present)

Committee Chair, Lecturer of Mathematics Education Search Committee, School of Teacher Education (2022-2023)

Graduate Curriculum Committee, School of Teacher Education (2019-2021)

Program Coordinator, Mathematics Education Track of the Ph.D. in Education, School of Teacher Education (2018-present)

Annual Evaluation Standards and Procedures (AESP) Review and Revision Committee, School of Teacher Education (2018-2019, 2021)

Promotion and Tenure Committee, School of Teacher Education (2017-present)

Member, Secondary Education Program, School of Teacher Education – Secondary Education. (2017-present)

Affiliate Faculty, Lockheed Martin Academy, School of Teacher Education (2017-present)

Member, Mathematics Education Track of the Ph.D. in Education, School of Teacher Education (2017-2018)

Faculty Lead, Recruitment of Potential TOPS Hire (not hired), School of Teacher Education (2018)

Additional Professional Learning, Certifications, and Designations

Permanent credential to create and teach Mixed Mode and Web modality courses (2021-present)

Permanent credential to create and teach Video modality courses. (2020-present)

Quality Blended Course Designation for IDS 6939 (2021-2026)

Completion of Essentials of Online Teaching (EOT), University of Central Florida (2020)

Course Shepard, EDG 6329: Quality Teaching Practices, School of Teacher Education (2017-2018)

STE(A)M Course Sequence Development, UCF COACHE Innovation Award, School of Teacher Education (2018)

Women's Leadership Mentoring Community, University of Central Florida (2018)

Certified in ADL 5000, University of Central Florida (2018)

Graduate Faculty Status, College of Community Innovation and Education (2017-present)

Program Development: Virtual Synchronous K-8 Mathematics Ed. Specialization in EdD C & I

Spent significant time in Summer 2020 and Fall 2020 co-developing with colleagues a new specialization in K-8 Mathematics Education for the EdD in Curriculum and Instruction. We worked collaboratively to create a course sequence, standards alignment for approximately 6 new courses, syllabi creation, and so forth. This specialization was launched with the NSF Noyce cohort of 15 doctoral students. I serve as PI for this grant.

Bellarmino University and School of Education Service

Committee Member, Assessment and Accreditation Analyst Search (2017)

Committee Member, Director of Field Placement Search (2016)

SACSCOC Liaison for School of Education (2015-2017)

CAEP Coordinator for University (2015-2017)

Committee Chair, Assessment and Accreditation Committee (2015-2017)

AIMS, PEDS, and Title II Report Coordinator (2015-2017)

Committee Chair, Dean's Administrative Assistant Search (2015)

Committee Chair, LiveText Coordinator/Data Manager Search (2015)

Committee Member, Secretary of Outreach Programs Search (2015)

STEAM Center Initiatives Co-Developer/Co-Founder (2014-2017)

Committee Chair, Assistant Professor of Teacher Leadership Search (2015)

Presenter, Teaching and Learning – In Harmony with the Brain Conference (2014)

Interim Certification Officer (summer, fall 2014)

Committee Member, Dorothy Day Faculty Engaged Scholars (2013-2014)

Student Conduct Officer (2013-2017)

Presenter, Spotlight Sessions: Don't Want to Perish? Get Published! (2013, March and October)

Committee Member, Assistant/Associate Professor of Educational Research and Statistics Search (2013)

Committee Member, Common Curriculum Vita Task Force (2013)

Kentucky Senate Bill 1 Coordinator (2012-2014)

Committee Member, Master of Arts in Education Program (2012-2017)

Committee Member, Lesson Plan and Standards Based Unit of Study (2012-2013)

Committee Member, Master of Art in Teaching Program (2011-2017)

Committee Member, Undergraduate Programs (2011-2017)

Committee Member, NCATE Exhibit Room and Building Readiness (2012)

Committee Member, Assistant Professor of Science Education Search (2012)

Committee Member, National Council for Accreditation of Teacher Education Standard Five (2011-2012)

Committee Member, Mentoring Plan (2011)

Community Service and External Partnerships (industry, non-profit, school district, etc.)

Oversee Endowments gifted from the Lockheed Martin Corporation related to Lockheed Martin/UCF Mathematics and Science Academy Programs, which supports teachers from Orange County Public Schools and Surrounding Districts (2023-present).

Orange County Public Schools (2023-current). Partnership related to Lockheed Martin/UCF Mathematics and Science Academy related to K-8 Mathematics and Science Master's Program.

Orange County Public Schools (2020-current). Ongoing partnership with mathematics and curriculum leadership on the NSF funded UCF-OCPS Noyce Track 3 Program, *Empowering STEM Teachers with Earned Doctorates*.

City Year Orlando (2020-current). Partnership with City Year Orlando. They are the non-profit partner on our NSF Funded Noyce Track 3 Grant, *Empowering STEM Teachers with Earned Doctorates*.

Orange County Public Schools (2022-current). Partnership for Chris Randles' NSF grant. I serve as the formal mentor on this grant.

Code Orlando (2019-2021). Oversee group of graduate students who coordinated a STEM design challenge for Code Orlando visit to UCF campus.

UCP Bailes Elementary Schools (2019). Exploratory partnership related to STEAM initiatives.

Expert advisor to high school student in Lake County, FL for Advanced Placement capstone research project (2019).

Chief Council State School Officers Mathematics SCASS (2018). Partnership and advisement on the "M" in STEM coordinated by senior program associate.

Partnership with Richard Cox, elementary teacher and instructional coach in Bullitt County Schools. Partnership has included engaging pre-service teachers in unique and innovative field experiences in his STEAM lab and partnership on MSP grant project and more (2013-2019).

Partnership with the Barnes Foundation in Philadelphia related to mathematics/art/STEAM (2016-2018).

Numeracy Advisory Committee for Greater Clark County School District (2016-2017).

Kentucky Science Center (2015-2017). Partnership to support pre-service and in-service teachers on STEAM initiatives – both formal and informal learning. Partner on MSP grant project.

Kentucky Center for Performing Arts (2015-2017). Partnership to support pre-service and in-service teachers on STEAM initiatives – both formal and informal learning. Partner on MSP grant project.

Speed Art Museum (2015-2017). Partnership to support pre-service and in-service teachers on STEAM initiatives – both formal and informal learning. Partner on MSP grant project.

Advised Holy Cross High School mathematics department regarding their mathematics curriculum and the Common Core State Standards for Mathematics (2013).

Partnership with Fairdale Elementary School (2012). Students in the first grade came to Bellarmine for "College for a Day". Worked with first grade teacher to plan this event in which approximately 100 first grade students attended my elementary mathematics methods courses for math stations.

Partnership with Fairdale High School (2011-2012). Efforts to have undergraduate pre-service teachers assist with mathematics and language arts interventions as part of their field experience.

Strategic Planning Task Force, New Albany-Floyd County Schools (2011)

Leadership Academy, New Albany-Floyd County Schools (2011)

PROFESSIONAL DEVELOPMENT (CONSULTING)

STEM Education Expert Consultant for Atrium Health Foundation in Charlotte and their STEM Innovation Lab @ The Pearl (2024-present). Ongoing professional development program. Middle Grades Focused.

STEM Education Expert Consultant for Five Star Technology Solutions (in part for partnership through the Indiana Department of Education) (2023-2024). Year-long professional development program. Grades 4-8 instructional coaches and administrators.

Various professional development related to our Mathematics Whole School Agreement/ Rules that Expire/The Math Pact (2015-current)

Professional Development Facilitator for the National Council of Teachers of Mathematics (2012-current). Sample programs:

- Developer and Facilitator of Pre-Conference Half and Full Day Workshop (2020-present)
- Developer and Facilitator for Productive Struggle Summer Institute (2017)
- Developer and Facilitator for New York City Algebra for All Program (2017)
- Facilitator for Algebra Readiness Summer Institute (Middle School) (2014-2016)
- Facilitator for High School Summer Institute (High School) (2013)

Professional Development for Pinellas County Public Schools. (2018)

Professional Development for Jefferson County Public Schools as PI of MSP grant Full STEAM Ahead: Preparing Elementary Teachers to Implement Best-Practices in Integrated STEAM Instruction. Responsible for 130 hours of professional development. (2015-2017)

Curriculum Development/Professional Development for the New York City (NYC) Department of Education on behalf of the National Council of Teachers of Mathematics. NYC Algebra for All Initiative. (2016-2018)

Curriculum Work/Professional Development for K-8 teachers related to interdisciplinary instruction (mathematics and art) and the Common Core State Standards for Mathematics. The Barnes Foundation. Funded by Smith, Glaxo, Kline (2014-2016)

Consultant/Curriculum Work/Professional Development for Transition to Common Core State Standards for Mathematics (Content Standards and Standards for Mathematical Practice), Grades 5-8, New Albany-Floyd County Schools. (2011-2016)

Consultant/Curriculum Work/Professional Development for Transition to Common Core State Standards for Mathematics (Content Standards and Standards for Mathematical Practice), Grades K-4, New Albany-Floyd County Schools. (2012-2014)

Consultant/Curriculum Work/Professional Development for Transition to Common Core State Standards for Mathematics (Content Standards and Standards for Mathematical Practice), Grades 9-12, New Albany-Floyd County Schools. (2012-2014)

AWARDS AND HONORS

Nominee for the Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM), which is administered by NSF and awarded by The White House Office of Science and Technology Policy (2024)

Honored at UCF's fourth Faculty Authors' Celebration (2024)

Council of the Great City Schools (CGCS) Dr. Shirley S. Schwartz Urban Education Impact Award (This was awarded to the UCF College of Community Innovation and Education (CCIE) and Orange County Public Schools (OCPS). (I am listing as the Noyce grant is one of three partnerships between the CCIE & OCPS that comprised the urban teacher pipeline.) (2022)

UCF College of Community Innovation and Education (CCIE) Research Course Release Grant (RCRG) for Spring 2023 (2022)

UCF Office of Research's Associate Professor Mentoring Award, Mentee: Nicole Damico (2022)

Article (Gerrymandering: When Equivalent is not Equal!) reprinted as part of NCTM's "From the Archives," chosen by leaders in mathematics education. Reprint from original article which appeared in *Mathematics Teaching in the Middle School* in 2018. (2022)

UCF Scholarship of Teaching and Learning Award (SoTL) (2022)

UCF Research Incentive Award (RIA) (2022)

Article (13 Rules that Expire!) reprinted as part of NCTM's "From the Archives," chosen by leaders in mathematics education. Reprint from original article which appeared in *Teaching Children Mathematics* in 2014. (2022)

UCF Excellence in Graduate Teaching Award, University-Wide Awardee (2022)

UCF Excellence in Graduate Teaching Award, College of Community Innovation and Education College-Level Awardee (2022)

Honored at UCF's third Faculty Authors' Celebration (2022)

CCIE Featured Faculty and #1 Published CCIE Faculty in UCF's Office of Research 2020-2021 Annual Report (2021)

UCF Office of Research's Associate Professor Mentoring Award, Mentee: Tim Ravich (project successfully funded by NSF) (2021)

School Science and Mathematics Association (SSMA) Award for Excellence in Integrating Science and Mathematics (2021)

UCF Excellence in Research Award, College of Community Innovation and Education college-level awardee (2021)

UCF Women's History Month Honoree (2020)

Honored at UCF's second Faculty Authors' Celebration (2020)

Article (13 Rules that Expire!) featured in *The Best of Teaching Children Mathematics, Mathematics Teaching in the Middle School, and Mathematics Teacher on Questions, Discourse, and Evidence. Issue 1*. Reprint from original article which appeared in *Teaching Children Mathematics* in 2014. (2019)

Finalist for the ASTE John C. Park National Technology Leadership Initiative Fellowship Award for co-authored paper: *Fresh Thinking for Students Through STEAM*. (2019)

Finalist for NCTM's Linking Research to Practice Outstanding Publication Award for article in *Mathematics Teaching in the Middle School: Mathematics Discussions: Expectations Matter*. (2018)

Association of Mathematics Teacher Educators (AMTE) Annual Early Career Award Recipient (nationally awarded to one person annually within their first 10 years as faculty member). (2018)

UCF Travel Award for Recognition of Faculty Excellence (TARFE). (2018)

UCF Faculty COACHE Innovation Award. (2017)

Bellarmino University President's Pursuit of Excellence Campus-Wide Annual "Bellie" Award (given to one employee of the university per year by the President). (2016)

NCTM Editorial Pick of the Year for Manuscript titled: 13 Rules that Expire! Published in *Teaching Children Mathematics*. (2015)

Faculty Development Fellowship Award, Bellarmine University. (2015-2016)

Annual Presidential Merit Award, Bellarmine University. (2014)

Dean's Excellence in Service Annual Award, Annsley Frazier Thornton School of Education. (2013)

Annual Presidential Merit Award, Bellarmine University. (2013)

Helen Cunningham Educator Award for Excellence in Teaching Mathematics, Greater Louisville Council of Teachers of Mathematics. (2013)

Dean's Excellence in Scholarship Annual Award, Annsley Frazier Thornton School of Education. (2012)

NCTM Editorial Pick of the Year for Manuscript titled: Hunger Games: What are the Chances? published in *Mathematics Teaching in the Middle School*. (2012)

John Richard Binford Memorial Award for Outstanding Doctoral Student (University-Wide), University of Louisville. (2011)

Samuels Fellowship, University of Louisville. (2011 fall, summer, spring)

Samuels Fellowship, University of Louisville. (2010, fall, summer, spring)

Tribute to Excellence Annual Award, Highland Hills Middle School. (2010)

Education Scholarship Award, University of Louisville. (2009 fall)

Full Scholarship Award, University of Louisville. (2009 summer)

AFFILIATIONS

Current

Association of Mathematics Teacher Educators

Florida Council of Teachers of Mathematics

National Council of Supervisors of Mathematics

National Council of Teachers of Mathematics

National Science Teachers Association

Research Council on Mathematics Learning

School Science and Mathematics Association

Past

American Association for Colleges of Teacher Education

American Education Research Association

Association of Middle Level Education

Greater Louisville Council of Teachers of Mathematics

Kentucky Association for Colleges of Teacher Education

North American Chapter of the International Group for the Psychology of Mathematics Education

EXTERNAL REVIEW FOR PROMOTION AND TENURE

Baylor University (Full)

George Mason University (Tenure and Promotion)

Idaho State University (Full)

Northwest Missouri (Full)

University of Kentucky (Full)

University of Missouri – St. Louis (Tenure and Promotion)

University of Montana (Full)

University of Pittsburgh (Full)

University of North Florida (Tenure and Promotion)

University of South Carolina (Full)

University of Texas at San Antonio (Full)

POSTDOCTORAL FELLOW SUPERVISION

Dr. Matthew S. Taylor, NASA Grant (co-supervised, 2017-2019)

DOCTORAL DISSERTATION COMMITTEES

Jacob Brewer (2024), *Predicting Post-School Outcomes of Transition Aged Students With High Incident Disabilities*, University of Central Florida (committee member)

Deborah Blakeslee (2024), *A Case Study on the Impact of Intermediate Elementary Teachers' Pedagogical Content Knowledge and Expectancy Beliefs of Students on Scaffolding Practices in Mathematics Intervention*, University of Central Florida (committee member)

Kayla Blankenship (2024), *Mindful Approaches, Transforming Hearts: Cultivating Elementary Students' Positive Mathematics Identity Development Through an Equity-Based Morning Mathematics Club*, University of Central Florida (chair)

Diane Dellibovi (2024), *Ethnography of the Self-Determination of Students with Disabilities When Participating in High-Level Mathematics Tasks in an Inclusive Classroom*, University of Central Florida (chair)

Yeidi Diaz Reyes (2024), *A Content Analysis of the Mathematics Curriculum Progression for Sixth Through Eighth Grade Students Before Taking Algebra and Geometry*, University of Central Florida (committee member)

Lori Hart (2024), *Exploring the Challenges of First Grade Students' Non-Exit from Mathematics Intervention: A Comparative Analysis of Mathematics Instruction During Intervention and Best Practices*, University of Central Florida (committee member)

Julia Keith (2024), *The Role of Mathematics Anxiety on the Cognition and Metacognition of Middle School Algebra 1 Students During Cognitively Demanding Tasks*, University of Central Florida (chair)

Sarah Lumpkin (2024), *A Case Study Examining the Implementation of the Multi-Tiered Systems of Support Process in Grades 3-5 for Mathematics Intervention*, University of Central Florida (committee member)

Nisha Phillip-Malahoo (2024), *Lesson Study as a Catalyst for Integrating Conceptual and Procedural Components in Fraction-Based Mathematics Tasks: An Elementary School Case Study*, University of Central Florida (committee member)

Kelly Penny (2024), *A Critical Discursive Analysis of the Effects of Confidence Chats on the Mathematics Identities and Positioning of Students with Disabilities During Mathematics Discourse*, University of Central Florida (committee member)

Laura Pimentel (2024), *An Ethnographic Study on How Mandated Curriculum Influences Mathematics Instruction at a State-Supervised School*, University of Central Florida (committee member)

Maria Porras (2024), *Impacts of Professional Development on Elementary Mathematics Teachers' Implementation of Cognitively Demanding Tasks*, University of Central Florida (committee member)

Abigail Ruiz (2024), *Exploring Contextually Relevant, Cognitively Demanding Mathematics Tasks: A Critical Ethnographic Inquiry of the Instructional Practices and Beliefs of Elementary Teachers Who Serve Economically Disadvantaged Students*, University of Central Florida (committee member)

Joslyn Vilabrera (2024), *Exploring Mathematics Teachers' Understanding and Implementation of Effective Questioning as a Pedagogical Tool*, University of Central Florida (chair)

Shane Wiggan (2024), *A Narrative Inquiry on Lived Experiences That Support Recruitment and Retention of Black Male Mathematics Teachers*, University of Central Florida (chair)

Tandrea Fulton (2023), *Mathematics Education, Black Female Perspective Teachers' Mathematical Identity: Narratives of Their Experiences*, University of Central Florida (chair)

Treshonda Rutledge (2023), *Mathematics Education, An Exploration of K-8 Classroom-Based Mathematics Teacher Leader Development*, University of Central Florida (committee member)

Ashley Schmidt (2023), *An Examination of a Decade of K-5 Mathematics Standards in the United States*, University of Central Florida (chair)

Paula Santana De Tice (2022), *Mathematics Education, Exploring Preservice Teachers' Development of Collective Mathematics Identity Through Community Building*, University of Central Florida (chair)

Lybrya Kebreab (2022), *Mathematics Education, Investigating the relationship between high school students' mathematical sense of belonging and high school and postsecondary course completion*, University of Central Florida (chair)

Molly Greer (2022), *Exceptional Education, Investigating the intersection of teachers' mathematical anxiety according to experience and instructional grade level*, University of Central Florida (committee member)

Siddhi Desai (2022), *Mathematics Education, Impact of ethnomodeling Explorations on secondary mathematics pre-service teachers' perceptions of teaching and learning geometry: A multi-case study*, University of Central Florida (committee member)

Shahabeddin Abbaspour Tazehkand (2022), *Mathematics Education, Supporting secondary teachers' proof and justification of calculus concepts through the intentional use of dynamic technology*, University of Central Florida (committee member)

Daniel Edelen (2022), *Authority in elementary mathematics: An interactional ethnographic approach to classroom-based positionings*, University of Central Florida (chair)

Jennifer Caton (2021), *Small group instruction in mathematics: The instructional quality assessment toolkit as a guide in professional development*, University of Central Florida (committee member)

Regina McCurdy (2021), *Male students of color in STEM through the lens of intersectionality: A transformative mixed-method exploration of their science identities, relevant science learning experiences, and decisions to pursue science professions*, University of Central Florida (committee member)

Jeffrey Golubchick (2021), *The role of teachers' inquiry-oriented pedagogical content knowledge in students' mathematics performance*, Johns Hopkins University (outside committee member)

Aviva B. Moore (2020), *Increasing learning coach involvement to support cultivating student engagement in K-12 online classrooms*, Johns Hopkins University (outside committee member)

Richard Cox, Jr. (2020), *Star stuff: Romantic understanding of elementary science and mathematics through imaginative STEAM learning*, Bellarmine University (committee member)

Brianna Kurtz (2019), *The aftermath: A culturally responsive mathematical intervention to aid students affected by natural disasters*, University of Central Florida (co-chair)

Kirk Sawyer (2019), *Evaluating pedagogical methods that influence homework assignment completion*, University of Central Florida (committee member)

Aline Abassian (2018), *A case study exploring the relationship between model-eliciting activities and prospective secondary teachers' mathematical knowledge for teaching algebra topics*, University of Central Florida (committee member)

Christine Brookbank (2017), *The teacher's role in fostering self-regulated learners: A professional development model*, Johns Hopkins University (outside committee member)

ADDITIONAL DOCTORAL RESEARCH FORMAL MENTORING

Luisa Placido, graduate research assistant, NSF IUSE grant, University of Central Florida (Summer 2023-present)

Angel Maldonado, graduate research assistant, NSF Noyce grant, University of Central Florida (Summer 2023-present)

Jackie Karastamatis, graduate research assistant, NSF IUSE grant, University of Central Florida (Summer 2022-present)

Tandrea Fulton, served as research mentor for internship course, Ms. Fulton contributed to the NSF IUSE grant for the semester, University of Central Florida (Summer 2022)

Treshonda Rutledge, graduate research assistant, NSF Noyce grant, University of Central Florida (Fall 2021- Summer 2023)

Ashley Schmidt, graduate research assistant, NSF IUSE grant, University of Central Florida (Fall 2020- May 2023)

Siddhi Desai, graduate research assistant, NSF IUSE grant, University of Central Florida (Fall 2020 – Summer 2022)

Daniel Edelen, served as graduate research assistant, University of Central Florida (Fall 2017 – Summer 2021)

Tandrea Fulton, served as research mentor in mathematics education as part of UCF's Summer Mentoring Fellowship for incoming doctoral students, University of Central Florida (Summer 2020)

Jacob Brewer, served as research mentor in STE(A)M education for exceptional education independent research course, University of Central Florida (Summer 2020)

Molly Greer, served as research mentor in mathematics education for exceptional education independent research course, University of Central Florida (Summer 2020)

MASTERS THESIS COMMITTEES

Bethany Fralish (2019), *Pre-service teacher perceptions on the education of children with critical illness and preparation to teach mathematics to children with critical illness*. University of Central Florida (committee member)

MASTERS CAPSTONE (MANUSCRIPT SUBMISSION) ADVISEMENT

Nicolette Bowden (2018), *Perceptions of Mathematics in Virtual School for Children with Critical Illness*, University of Central Florida (co-advisor)

Michelle Burroughs (2018), Considering Student Choice in a Mathematics Classroom, University of Central Florida (advisor) – published in *AMLE Newsletter*

Andrea Cole (2018), An Exploration of Scratch in Elementary Science Education, University of Central Florida (co-advisor) – published in *The Elementary STEM Journal*

Heather Doyle (2018), An Examination of the Effectiveness of Number Talks for Improving Fluency in Upper Elementary Students, University of Central Florida (advisor) – published in *Dimensions in Mathematics*

Daniel Edelen (2018), Crossing the Amazon River: An Interdisciplinary STEM Adventure, University of Central Florida (advisor) – published in *Science and Children*

Adam Finkle (2018), Robotics in Elementary Education, University of Central Florida (co-advisor) – published in *The New Teacher Advocate*

Annamarie Greller (2018), One School’s Journey to Implement a Mathematics Whole School Agreement, University of Central Florida (advisor)

Evelyn Guzman (2018), Young Female Latinas in Mathematics, University of Central Florida (co-advisor)

Emily Hernandez (2018), The Power of Tailored Mathematics: Boosting Academic Growth through Personal Interests, University of Central Florida (advisor)

Tabetha Kelley (2018), Robotics in Mathematics: Three Perimeter Tasks, University of Central Florida (co-advisor) – published in *The Elementary STEM Journal*

Regina McCurdy (2018), Problem-Based Design Thinking Tasks: A Third Space Pathway to Engage Student Interest in STEM, University of Central Florida (co-advisor) – published in *The Electronic Journal for Research in Science and Mathematics Education*

Michele Ough (2018), 3D Technology: A Tool to Develop Proportional Reasoning!, University of Central Florida (advisor) – published in *AMLE Newsletter*

Lynnette Sanchez (2018), The Power of Mathematics Classroom Discourse: Look Who’s Talking!, University of Central Florida (co-advisor)

Heather Simpson (2018), The Role of High Stakes Testing on Teaching Science in the Elementary Grades, University of Central Florida (advisor)

Tandrea Singleton (2018), Black Males and Racial/Cultural Identity Consciousness, University of Central Florida (co-advisor)

Jennifer Smith (2018), RTI in Middle School Mathematics: A Closer Look at Tier 2 Instruction, University of Central Florida (advisor)

Melissa Szentmiklosi (2018), Examining Middle School Girls Experiences and Perceptions of STEM Through a Transdisciplinary STEM Task, University of Central Florida (advisor)

Gabrielle Tandlich (2018), *Engineering Design Tasks in Middle School Mathematics: Increasing Motivation, Learning, and Empathy*, University of Central Florida (advisor) – published in *Dimensions in Mathematics*

MASTERS CAPSTONE (POSTER PRESENTATION) MENTORSHIP

Shelby Gonzalez Florin, Maribel Garcia Santos, & Audry Ortiz Martin (2021), *Gender Bias in Mathematics Children’s Literature*, University of Central Florida (mentor)

Abigail Ruiz, Bianca Fletcher, & Kira Judah (2021), *Increasing Student Engagement with Manipulatives Ratios and Proportions*, University of Central Florida (mentor)

Devin Thornton (2021), *Incorporating Students’ Interest into Addition and Subtraction Word Problems*, University of Central Florida (mentor)

Katie Hodges (2021), *STEM Sacks*, University of Central Florida (mentor)

Jessica Davis (2020), *Number Talks, Emergent Bilinguals*, University of Central Florida (mentor)

Heather Vickers (2020), *Numberless Word Problems*, University of Central Florida (mentor)

Ashlie O’Dour (2019), *Cognitive Demand of Mathematics Tasks*, University of Central Florida (mentor)

UNDERGRADUATE THESIS COMMITTEES

Elizabeth Bello (2018), *Elementary Education*, University of Central Florida (committee member)

COURSES TAUGHT

**Virtual Synchronous/Web (VL), Mixed Mode (M), and Face-to-Face (P)*

University of Central Florida (2017-present)

Dissertation in Practice (EDG 7987) (spring 2024-present) (VL)

Research Seminar in Education (IDS 7500) (2023) (taught as proposal class) (VL, P)

Policies, Practices, and Structures in Mathematics Ed (MAE 7805) (fall 2021-present) (VL)

Dissertation Elementary Education (EDE 7980) (summer 2021-present) (P)

Research Cluster Seminar (IDS 7938) (spring 2021-present) (P)
Directed Research (MAE 6918) (summer 2020-present) (VL)
Internship in Mathematics Education (MAE 7945) (summer 2020-present) (VL, P)
Dissertation Mathematics Education (MAE 7980) (fall 2019-present) (P)
Seminar in Research in Mathematics Education (MAE 7795) (fall 2019-present) (VL, P)
Research Seminar in Education (IDS 7500) (2019-present) (VL, P)
Current Methods in Elementary School Mathematics (MAE 6318) (2019-present) (P)
Elementary Education Internship (EDE 6946) (2019) (P)
Teaching Math and Science Using Reform-Based Practices (IDS 6937) (2018-present) (M)
Quality Teaching Practices (in Mathematics and Science Education) (EDG 6329) (2018) (P)
Reforming Curriculum in Mathematics and Science Education (IDS 6939) (2017-present) (M)

Bellarmino University (2011-2017)

Best Practices in Integrated STEAM Instruction II (OPED 681) (2017) (P)
Best Practices in Integrated STEAM Instruction I (OPED 680) (2016) (P)
Elementary Mathematics Methods (EDUC 336) (2011-2016) (P)
Middle Mathematics Methods (EDUC 336) (2011-2015) (P)
Teaching Mathematics in the Middle School (MAT 580) (2011-2015) (P)
Teaching Mathematics in the Secondary School (MAT 582) (2011-2015) (P)
Teaching Math in the Elementary School (MAT 555) (2014-2015) (P)
Technology in the K-12 Mathematics Classroom (EDUG 640) (2012) (M)
Professional Development for Teacher Leadership (EDUG 640) (2014-2015) (M)
Professional Development for Teacher Leadership (EDUG 641) (2014-2015) (M)
Improvement through Assessment, Evaluation and Data (EDUG 670) (2014) (M)
Teacher Leadership to Improve Student Achievement (EDUG 671) (2012-2013) (M)
Supervisor of Middle School Mathematics Student Teachers (2011-2013) (P)
Supervisor of Secondary Mathematics Student Teachers (2011-2013) (P)
Supervisor of Middle School Mathematics Junior Field Experience (2012) (P)

University of Louisville (while a doctoral candidate) (2009-2011)

Elementary Mathematics Methods (EDTP 604), *Co-taught* (2010)

Summer Portfolio Institute Leader (EDAP 611) (2010)

- Taught a graduate level course for teachers in developing curriculum and planning that integrates mathematics, writing, science, and technology
- Engaged teachers in developing critical thinking for students in elementary and middle grades

PROFESSIONAL LICENSURES

Indiana Teacher License in Mathematics 5-12 (2005-present)

Indiana Teacher License in Economics 5-12 (2005-present)