

**Sarah B. Bush**  
**University of Central Florida**  
**College of Community Innovation and Education**  
**School of Teacher Education**  
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**CV AT-A-GLANCE**

- Ph.D. in Curriculum and Instruction, Mathematics Education (2011). University of Louisville
- 4.8+ Million in externally **Funded Projects** (from MSP, NASA, and NSF) since 2015
- 9 **Books** published or in-press since 2013
- 80 **Peer-Reviewed Publications** (72 journal, 5 chapter, 3 proceeding) published or in-press since 2010
- 100+ **Presentations** Internationally, Nationally, Regionally and Statewide since 2011
- National Council of Teachers of Mathematics (NCTM) **Board of Directors** (2019-2022)
- 10 **NCTM Leadership & Committee Appointments**, including 2017 Annual Program Chair
- **Administrative Experience** as an Associate Dean
- Association of Mathematics Teacher Educators 2018 **Early Career Award** Recipient
- Associate Editor *Electronic Journal for Research in Science and Mathematics Education* (2020-2022)

**EDUCATION**

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|------|---|
| 2011 | Doctor of Philosophy, Curriculum and Instruction – Mathematics Education<br>University of Louisville<br><br>Dissertation Title: <i>Analyzing Common Algebra-Related Misconceptions and Errors of Middle School Students</i> (more than 9,000 downloads as of 08/2020) |
| 2008 | Master of Education<br>Indiana Wesleyan University  |
| 2005 | Bachelor of Science in Secondary Mathematics Education<br>Indiana University Southeast  |

## **PROFESSIONAL EXPERIENCE**

### **University of Central Florida – College of Community Innovation and Education (previously College of Education and Human Performance)**

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

- Program Coordinator of Mathematics Education track of Ph.D. in Education
- PI of NSF Grant PrimeD for Mathematics Teacher Preparation
- Co-PI of NASA grant STEM Satellites and NSF grant STEM Tablecraft
- Active research agenda in STE(A)M education and mathematics education
- Mathematics education leadership and service at the national level
- Chair and member of dissertations and mentor of graduate student research
- Course instructor of mathematics education courses primarily for in-service teachers
- Affiliate UCF Lockheed Martin Academy faculty member

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

2015-2017 Associate Dean (previously Assistant Dean)

- Maintained administrative operations (e.g. hiring, faculty, staff, curriculum, etc.)
- Engaged and collaborated with department chairs and program directors on all matters including program and curricular changes and innovations
- 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 college
- Led transformational revamping of the school-wide assessment system and continuous improvement cycle
- 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 STEAM instruction grounded in mathematics and science content and practices
- Maintained active 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. candidate with STEAM focus

2011-2015 Assistant Professor, Mathematics Education

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

### Highland Hills Middle School (Grades 5-8, Public)

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.

\*Singleton, T., \*Edelen, D., \*Kebreab, L., \*Greer, M., \*Caton, J., \*Brewer, J., **Bush, S. B.**, & Mohr-Schroeder, M. (accepted August 11, 2020). Integrated STEM learning: Ensuring access in virtual settings. *The Elementary STEM Journal*.

Huinker, D., **Bush, S. B.**, & Graham, K. J. (accepted July 27, 2020). Catalyzing change in school mathematics: Creating the opportunities our students deserve. *Mathematics Teacher: Learning and Teaching PK-12*.

\*Edelen, D., & **Bush, S. B.** (accepted March 27, 2020). Moving towards inclusiveness in STEM with culturally responsive teaching. *Kappa Delta Pi Record*.

\*Edelen, D., \*Simpson, H., & **Bush, S. B.** (accepted April 9, 2019). Insulating tiny homes: An empathetic STEAM investigation. *Science and Children*.

\*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.

Rakes, C. R., Ronau, R. N., **Bush, S. B.**, Driskell, S. O., Niess, M. L., & Pugalee, D. (Available Online First June 2020, upcoming November 2020 issue). Mathematics achievement and orientation: A systematic review and meta-analysis of education technology. *Educational Research Review*. 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>
- 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 5<sup>th</sup> 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>
- Maiorca, C., Roberts, T., Jackson, C., **Bush, S. B.**, Delaney, A., Mohr-Schroeder, M., & Yao, Soledad. (2020). Informal learning environments and impact on interest in STEM careers. *International Journal of Science and Mathematics Education*. First Online: <https://doi.org/10.1007/s10763-019-10038-9>
- \*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 Revise and Resubmit/Under Revision/Under Review/Ready for Submission**

- Jackson, C., Mohr-Schroeder, M. J., **Bush, S. B.**, Maiorca, C., Roberts, T., Yost, C., Fowler, A. (under revise and resubmit). Equity-oriented conceptual framework for STEM literacy.
- \*Caton, J., **Bush, S. B.**, Taub, M., Vasquez, E., Parsons, C., \*Diaz, M, \*Swihart, R., \*Anderson, K., & \*Nass, K. L. (under revision). The challenges of integrating VR in the classroom.
- Taub, M., Vasquez, E., **Bush, S. B.**, Parsons, C. A., \*Diaz, M., \*Anderson, K., \*Caton, J., \*Swihart, R. & \*Nass, K. L. (under revision). Examining middle school students' gameplay actions and perceived ease of use with a virtual reality chemistry game.
- Bush, S. B.**, Huinker, D., & Graham, K. J. (under review). A commitment to dismantling inequitable structures in PK-12 mathematics: Four systemic shifts essential to catalyzing change.
- \*Edelen, D., & **Bush, S. B.** (under review). A cross-cultural approach to communication in the mathematics classroom and beyond.
- \*Edelen, D., **Bush, S. B.**, & Andreasen, J. (under review). Systems of authority in elementary mathematics: A micro-ethnographic investigation of student solution paths.
- \*Desai, S., **Bush, S. B.**, Safi, F. (under review). Mathematical representations in the teaching and learning of geometry.



- \*Kebreab, L., **Bush, S. B.**, & Jackson, C. (under review). The role of intersectionality in mathematics education: Leveraging students' strengths and striving for excellence.
- \*Greer, M., \*Brewer, J., \*Caton, J., \*Edelen, D., \*Singleton, T., \*Kebreab, L., **Bush, S. B.**, & Mohr-Schroeder, M. (ready for submission). Implementing universal design for learning in virtual STEM environments.

### **Peer Reviewed/Refereed International Conference Proceedings**

- 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 41<sup>st</sup> 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 37<sup>th</sup> 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 33<sup>rd</sup> 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 **lead writer and task force chair** of this book, which is an official position of the council.)

### **Books**

- Dougherty, B. J., **Bush, S. B.**, & Karp, K. S. (October 2020 release). *The math pact: Achieving instructional coherence within and across grades, high school*. Thousand Oaks, CA: Corwin and Reston, VA: National Council of Teachers of Mathematics.

- Bush, S. B.,** Karp, K. S., & Dougherty, B. J. (October 2020 release). *The math pact: Achieving instructional coherence within and across grades, middle school*. Thousand Oaks, CA: Corwin and Reston, VA: National Council of Teachers of Mathematics.
- Karp, K. S., Dougherty, B. J., & **Bush, S. B.** (October 2020 release). *The math pact: Achieving instructional coherence within and across grades, elementary school*. 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.

## Book Chapters

- Mohr-Schroeder, M., **Bush, S. B.,** Maiorca, C., & Nickels, M. (2020). Moving toward an equity-based approach for STEM literacy. C. Johnson, M. J. Mohr-Schroeder, T. Moore, & L. English (Eds.), *Handbook of Research on STEM Education* (1<sup>st</sup> 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.

## Editorships

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. Acceptance rate approximately 20%.

## Invited Publications/Works

Karp, K. S., **Bush, S. B.**, & Dougherty, B. J. (in-press). The math pact: A commitment to instructional coherence. Ear to the Ground Department. *Mathematics Teacher: Learning and Teaching PK-12*.

\*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/](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/](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

- Bush, S. B.** & Jackson, C. (2020, November). *Catalyzing change in middle school mathematics: Engaging in the four key recommendations*. Invited presentation to be given at Regional Meeting of the National Council of Teachers of Mathematics. Tampa, FL.
- 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 to be given at Regional Meeting of the National Council of Teachers of Mathematics. Tampa, FL.
- Bush, S. B.**, Milou, E., & Roy, G. J. (2020, October). *Catalyzing change in middle school mathematics: Implementing equitable instruction and developing deep mathematical understanding*. Invited presentation to be given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. St. Louis, MO. (Conference Cancelled)
- Karp, K. S., **Bush, S. B.**, & Dougherty, B. J. (2020, October). *Building student success through developing a mathematics whole school agreement*. Invited presentation to be given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. St. Louis, MO. (Conference Cancelled)
- 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 9<sup>th</sup> 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 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 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 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 8<sup>th</sup> 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 8<sup>th</sup> 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

- Bush, S. B.**, Milou, E., & Roy, G. J. (2021, April). *Catalyzing change in middle school: Implementing equitable instruction and developing deep mathematical understanding*. Presentation to be given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. St. Louis, MO.
- Karp, K., **Bush, S. B.**, & Dougherty, B. (2021, April). *Building student success through developing a mathematics whole school agreement*. Presentation to be given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. St. Louis, MO.
- \*Edelen, D. & **Bush, S. B.** (2021, April). *A STEAM exploration of tiny homes: A mathematics-rich inquiry*. Presentation to be given at the Annual Meeting and Exposition of the National Council of Teachers of Mathematics. St. Louis, MO.
- Maiorca, C., Roberts, T., Jackson, C., **Bush, S. B.**, Mohr-Schroeder, M. (2020, November). *Raising STEM career awareness through informal STEM*. Presentation to be given at the Annual Meeting of the School Science and Mathematics Association (SSMA). Minneapolis, MN. (Conference Cancelled with Session Moved Virtual)
- \*Cox, R. & **Bush, S. B.** (2020, April). *One little spark! Igniting imagination in elementary mathematics through STEAM*. Presentation 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 41<sup>st</sup> 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 8<sup>th</sup> 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.
- 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.**, & Pugalee, D. (2018, April). *Education technology, achievement and orientation: A metaanalysis.* Research Report 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 13<sup>th</sup> 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 37<sup>th</sup> 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 33<sup>rd</sup> 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 to 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

- \*Edelen, D., **Bush, S. B.**, & \*Simpson, H. (2020, June). *A STEAM exploration of tiny homes: A mathematics-rich inquiry*. Presentation 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 to be 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. Somersville, 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 (\$4,804,757 funded as PI or Co-PI)

*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), Safi, F. (UCF Co-PI), Amick, L. (UK Co-PI), Fisher, M. (UK Co-PI), & Viera, J. (BC Co-PI). \$2,975,413. (UCF portion = \$968,578, Bush 50% effort). (funded, ongoing)

*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 = \$44,645, Bush 33% effort). (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 = \$458,579, Bush 35% effort) (funded, ongoing)

*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. (Bush 50% effort) (funded, completed)

#### External Funding Near Submission (~\$3,000,000 to be pending as PI or Co-PI)

*Empowering STEM teachers with earned doctorates: A UCF-OCPS Noyce program for K-8 teachers of mathematics.* (2021-2026). National Science Foundation (NSF): Noyce Track 3. **Bush, S. B. (PI)**, Dixon, J. K. (Co-PI), Brooks, L. (Co-PI), Butler, M. (Co-PI), & Moore, B. Estimated \$1,500,000. (Bush 25% effort). (submission due August 25, 2020)

*Collaborative research: Developing and Testing Innovations: STEM within: Cultivating positive identities through anti-racist and anti-gendered virtual integrated STEM experiences.* (2021-2024). National Science Foundation (NSF): Innovative Technology Experiences for Students and Teachers (ITEST). Jackson, C. (Overall PI), Mohr-Schroeder, M. (UK PI), **Bush, S. B. (UCF PI)**, Ivy, J (BU PI), Maiorca, C. (UC-LB PI), Roberts, T. (BG PI), & Burton, M. (AU PI). Estimated \$1,500,000. (UCF portion = \$163,732, Bush 100% effort). (submission due August 14, 2020)

#### Other External Grant Research Contributions

*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.** (funded).

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

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

## Other External Grant Research Contributions Under Review

*BCSER, IID: Probing at the interpretation, implementation, and assessment of multiple literacies in science education by K-12 teachers in the United States.* Submitted to the National Science Foundation (NSF) EHR Core Research: Building Capacity in STEM Education Research. Christopher Randles (PI). University of Central Florida. Role: **Formal Project Mentor** (under review)

## Internal University Grants and Funds (\$76,000 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 (P<sup>3</sup>) 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 Activity**

### Webinars, Media, and Appearances

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.** (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). 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.

### 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)

- Member, Board of Directors (Elected). (2019-2022)
  - Lead Writer and 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 (2020-current)
  - Board Liaison (and active member), NCTM Publishing Committee (2019-current)
  - Board Liaison, *Mathematics Teacher: Learning and Teaching PK-12 Journal* (2019-current)
  - Member, NCTM Conference Advisory Group (internal board task force) (2019-current)
  - 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 Proposal Reviewer, *Corwin Press*. (2019)
- 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)
- 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-present)
- 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, *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)
- Textbook Reviewer, *McGraw Hill Middle School Series*. (2018)

## **Regional/State/Local**

### Florida Department of Education (FL DOE)

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

### 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

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

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-present)

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

### School and Department Level Service

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

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)

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

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

Member, Lockheed Martin Academy Faculty, 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

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)

### **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)

## **K-12 Service and External Partnerships**

Orange County Public Schools (2020-current). Partnership with mathematics and curriculum leadership to prepare NSF Noyce grant proposal.

Code Orlando (2019). Oversaw 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).

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**

Professional Development Facilitator for the National Council of Teachers of Mathematics (2012-current)

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**

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. <https://amte.net/node/2609> (national award given to one person annually who is within their first 10 years as a 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

### 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**

Idaho State University  
University of Missouri – St. Louis  
University of Pittsburg

## **POSTDOCTORAL FELLOW SUPERVISION**

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

## **DOCTORAL DISSERTATION COMMITTEES**

Shahabeddin Abbaspour Tazehkand (current), Mathematics Education (title TBD), University of Central Florida (committee member)

Jennifer Caton (current), Mathematics Education (title TBD), University of Central Florida (committee member)

Regina McCurdy (current), Science Education (title TBD), University of Central Florida (committee member)

Jeffrey Golubchick (current), Professional Development (title TBD), 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**

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

Daniel Edelen, served as my graduate research assistant, University of Central Florida (Fall 2017 – Summer 2020)

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)

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**

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**

University of Central Florida (2017-present)

Research Cluster Seminar (IDS 7938) (upcoming spring 2021-present)

Directed Research (MAE 6918) (summer 2020-present)

Internship in Mathematics Education (MAE 7945) (summer 2020-present)

Seminar in Research in Mathematics Education (MAE 7795) (fall 2019-present)

Research Seminar in Education (IDS 7500) (2019-present)

Current Methods in Elementary School Mathematics (MAE 6318) (2019-present)  
Elementary Education Internship (EDE 6946) (2019)  
Teaching Mathematics and Science Using Reform-Based Practices (IDS 6937) (2018-present)  
Quality Teaching Practices (in Mathematics and Science Education) (EDG 6329) (2018)  
Reforming Curriculum in Mathematics and Science Education (IDS 6939) (2017-present)

Bellarmino University (2011-2017)

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

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 LISCENSURES**

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

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