

**Sarah B. Bush**  
**Bellarmino University**  
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## **EDUCATION**

- 2011            Doctor of Philosophy, Curriculum and Instruction – Mathematics Education  
University of Louisville
- Dissertation Title: *Analyzing Common Algebra-Related Misconceptions and Errors of Middle School Students*
- 2008            Master of Education  
Indiana Wesleyan University
- 2005            Bachelor of Science in Secondary Mathematics Education  
Indiana University Southeast

## **PROFESSIONAL EXPERIENCE**

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

2015-present    Assistant Dean/Associate 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
- Oversaw a 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-present    Associate Professor, Mathematics Education (Tenured)

- Served as PI of a MSP grant, focused on interdisciplinary STEAM research
- Maintained an active research and practice-based agenda in mathematics education and STEM/STEAM education
- Served as a leader in mathematics education 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**

#### **Books**

**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.

#### **Peer Reviewed/Refereed Publications**

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

\*Cox, R., Hunter, K., Cook, K. L., & **Bush, S. B.** (in-press). Teaching STEAM through a problem-based paleontology exploration. *Science and Children*.

**Bush, S. B.**, Karp, K. S., \*Cox, R., Cook, K. L., \*Albanese, J., & Karp, M. (in-press). Design thinking framework: Shaping powerful mathematics. *Mathematics Teaching in the Middle School*.

**Bush, S. B.**, Karp, K., \*Lenz, T., & Nadler, J. (in-press). Venn diagrams “intersect” art and math. *Teaching Children Mathematics*.

Hunter, K., \*Cox, R., **Bush, S. B.**, Cook, K. L., & Jamner, J. (in-press). A paleontology investigation: “Unearthing” the mathematics. *Teaching Children Mathematics*.

- Roy, G. J., **Bush, S. B.**, Hodges, T. E., & Safi, F. (in-press). Supporting whole class mathematics discussions: Expectations matter. *Mathematics Teaching in the Middle School*.
- Cook, K. L., **Bush, S. B.**, & \*Cox, R. (in-press). From STEM to STEAM: Incorporating the arts in roller coaster engineering. *Science and Children*.
- Saderholm, J., Ronau, R. N., Rakes, C. R., **Bush, S. B.**, & Mohr-Schroeder, M. (2016). 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*. 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.
- 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
- Cook, K., **Bush, S. B.**, & Cox, R. (2015). Engineering encounters: Creating a prosthetic hand. *Science and Children*. 53(4), pp 65-71.
- 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. (pp. 656-662). East Lansing, MI.
- 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/>
- 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.
- 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.
- 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, 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.

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.

**Bush, S.** (2010). Unfolding the solution of linear systems. *Mathematics Teacher*. 104(2), 160.

### **Invited Publications/Works**

**Bush, S. B., & Karp, K. S.** (in-press). Hunger games: What are the chances? Adapted from an article in *Mathematics Teaching in the Middle School*, in D. Theissen (Ed.) *Exploring Mathematics through Literature*. Reston, VA: National Council of Teachers of Mathematics.

**Bush, S. B., Karp, K. S., Popelka, E., & Miller Bennett, V.** (in-press). What's on your plate? Thinking proportionally. Adapted from an article in *Mathematics Teaching in the Middle School*, in S. McMillen (Ed.) *Integrating Mathematics*. 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. pp. 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**

### Peer Reviewed or Refereed International/National

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 to be given at the National Council of Teachers of Mathematics 2017 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 to be 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 to be 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 or Refereed Regional

**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 or Refereed Local/State

**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.

### Invited International/National/Regional

**Bush, S. B.**, Karp, K., & Nadler, J. (2016, November). *Want to Authentically Engage Students? Use Artwork!* 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*. 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*. 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*. 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*. 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*. Workshop presentation given at the NCTM High School Interactive Institute – Engaging Students in Learning: Mathematical Practices and Process Standards. Washington, DC.

### **Grants**

Externally Funded Grants (\$395,952 funded, \$3,000,000 pending)

Full STEAM Ahead: Preparing Elementary Teachers to Implement Best-Practices in Integrated STEAM Instruction. (2015-2017). Mathematics Science Partnership (MSP).

**Bush, S. B. (PI)** & Cook, K. (PI) \$395,952 (funded)

The PrimeD Framework: Advancing Teacher Professional Development and Preparation using a Common Conceptual Framework. (2017-2021). National Science Foundation (DRK-12). Rakes, C. (PI), **Bush, S. B. (Co-PI)**, Mohr-Schroeder (Co-PI), Saderholm, J. (Co-PI) & Stites, M. (Co-PI). \$3,000,000 (pending)

### Other External Grant Research Contributions

STEM Pride: Partnering with Research and Industry to Develop (STEM) Educator through Informal Learning Experiences (University of Kentucky) (2017-2022). National Science Foundation (ISUE). \$2,700,000. Role: **External Evaluator** (pending)

Florida Center for Research in Science, Technology, Engineering, and Mathematics (FCR-STEM) Professional Development Program (Florida State University). (2014). Mathematics Science Partnership (MSP). \$50,000 (for evaluation) **Role: External Evaluator**

Geometry Assessments for Secondary Teachers (GAST) (University of Louisville). (2013-2014). National Science Foundation. \$11,500 (as University Partner) Role: **University Partner**

University Grants – Internal (\$3,000 funded)

A Closer Look at STEAM Education: A Systematic Review of Literature. (2015). Faculty Development Fellowship Summer Award. **Bush, S. B. (PI)**. \$3,000 (funded)

Grants (written while a middle grades mathematics teacher) (\$32,420 funded)

Horseshoe Foundation Grant (2011). Horseshoe Foundation of Floyd County: Technology (SMARTboard) Grant for Sixth Grade Classrooms, \$16,000, **Bush, S. B. (Co-PI)** (funded)

Great Classroom Teacher Grant (2011). New Albany-Floyd County Education Foundation: SmartPAL Classroom Set, \$187, **Bush, S. B. (PI)** (funded)

Horseshoe Foundation Grant (2010). Horseshoe Foundation of Floyd County: Technology (SMARTboard) Grant for Mathematics Department, \$16,000, **Bush, S. B. (PI)** (funded)

Great Classroom Teacher Grant (2010). New Albany-Floyd County Education Foundation: Mathematics-Related Children’s Literature Books, \$233, **Bush, S. B. (PI)** (funded)

## **SERVICE TO THE PROFESSION**

### **National**

Association of Mathematics Teacher Educators (AMTE)

- Program Committee, Association of Mathematics Teacher Educators (AMTE), Annual Conference (2012-2015)
- Proposal Reviewer, Association of Mathematics Teacher Educators, Annual Conference (2012-2015)

National Council of Teachers of Mathematics (NCTM)

- Program Development Group (PDG) Committee, National Council of Teachers of Mathematics (NCTM). Serve as mentor to Program Chairpersons of NCTM Regional Meetings. (2017-2020)
- Design Team, Grades 6-8 Expert and Leader, Supporting Student’s Productive Struggle Summer Professional Development Institute, National Council of Teacher of Mathematics (2017-present)
- Program Committee Chairperson, National Council of Teachers of Mathematics (NCTM), Annual Meeting, San Antonio, TX: 2017 (2015-2017)
- Program Committee Member, National Council of Teachers of Mathematics (NCTM), Annual Meeting, San Francisco, CA: 2016 (2014-2016)

- Algebra Readiness Institute Facilitator, National Council of Teachers of Mathematics (NCTM), Served as seventh grade facilitator, delivering both content and practice based workshops (2014, 2015, 2016)
- Educational Materials Committee (EMC) Member, National Council of Teachers of Mathematics (NCTM) (2013-2016)
- Program Chairperson, National Council of Teachers of Mathematics, Regional Meeting, Louisville, KY: 2013 (2011-2013)
- High School Institute Facilitator, Algebra, National Council of Teachers of Mathematics (NCTM) (2013)
- Manuscript Reviewer, *Teaching Children Mathematics*, National Council of Teachers of Mathematics (2013-present)
- Manuscript Reviewer, *Mathematics Teaching in the Middle School*, National Council of Teachers of Mathematics (2009 – present)

### **Regional/State/Local**

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

- Past-President, Greater Louisville Council of Teachers of Mathematics (2015-present)
- 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-Present)

#### 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-present) (Elementary Mathematics)

## **Bellarmino School of Education & University Service**

Committee Member, Director of Field Placement Search (2016)

SACS Liaison (2015-present)

CAEP Coordinator (2015-present)

Assessment and Accreditation Committee Chair (2015-present)

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

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-present)

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-present)

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-present)

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

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

Committee Member, Undergraduate Programs (2011-Present)

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 Partnerships**

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

Partnership with the Kentucky Science Center, Kentucky Center for the Performing Arts, and Speed Art Museum to support pre-service and in-service teachers on STEAM Initiatives – both formal and informal learning (2015-present)

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

Partnership with Richard Cox, an elementary teacher in Bullitt County Schools. Mr. Cox teaches in a STEAM lab, we have developed a partnership with him to engage pre-service teachers in unique and innovative field experiences. (2013-present)

Partnership with Fairdale Elementary School. 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 (2012)

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

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

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

### **PROFESSIONAL DEVELOPMENT/ CONSULTING**

Curriculum Development/Professional Development contract work 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-present)

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-present)

Consultant/Curriculum Work/Professional Developments 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-present)

Consultant/Curriculum Work/Professional Developments 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 Developments 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**

Bellarmino University President's Pursuit of Excellence Campus-Wide Annual "Bellie" Award (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 (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; 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**

American Association for Colleges of Teacher Education  
American Education Research Association  
Association of Mathematics Teacher Educators  
Association of Middle Level Education  
Greater Louisville Council of Teachers of Mathematics  
Kentucky Association for Colleges of Teacher Education  
National Council of Teachers of Mathematics  
North American Chapter of the International Group for the Psychology of Mathematics Education

## **DOCTORAL STUDENTS**

Richard Cox, Focus on STEAM Education, Bellarmine University (chair)  
Christine Brookbank, Focus on Teacher Professional Development, Johns Hopkins University (committee member)

## **COURSES TAUGHT**

### Bellarmino University (2011-present)

Best Practices in Integrated STEAM Instruction II (OPED 681) (2017-present)  
Best Practices in Integrated STEAM Instruction (OPED 680) (2016-present)  
Elementary Mathematics Methods (EDUC 336) (2011-present)  
Middle Mathematics Methods (EDUC 336) (2011-present)  
Teaching Mathematics in the Middle School (MAT 580) (2011-present)  
Teaching Mathematics in the Secondary School (MAT 582) (2011-present)  
Teaching Math in the Elementary School (MAT 555) (2014-Present)  
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) (*HYBRID*)

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)