

Jennifer M. Suh

Associate Professor of Mathematics Education
George Mason University

Curriculum Vitae

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EDUCATION

PH.D. in Education, May 2005
Specialization in Mathematics Education Leadership
George Mason University, Fairfax, Virginia

Suh, Jennifer M. (2005) *Third Graders' Mathematics Achievement and Representation Preference Using Virtual and Physical Manipulatives for Adding Fractions and Balancing Equations.*

Dissertation chair: Dr. Patricia Moyer-Packenham

Master of Teaching in Elementary Education, May 1994
University of Virginia, Charlottesville, Virginia

Bachelor of Art in Psychology, May 1994
Five Year Education Program, Certification K-8
University of Virginia, Charlottesville, Virginia

UNIVERSITY TEACHING EXPERIENCES

Associate Professor, Mathematics Education (Fall 2012- Present)

College of Education & Human Development, George Mason University, Fairfax, Virginia
Responsibilities include teaching graduate courses in Elementary Education Programs and Mathematics Education Leadership, assisting in the development and implementation of programs for students, advising students within the program, and supervising graduate students in field placements for the professional development schools as the University Supervisor.

Assistant Professor, Mathematics Education (Fall 2006-Spring 2012)

College of Education & Human Development, George Mason University, Fairfax, Virginia
Member of Mathematics Education faculty
Member of Elementary Education faculty

Academic Program Coordinator for Mathematics Education Leadership- (2014-2016)

Responsibilities include recruiting mathematics specialist candidates and designing and offering courses that align to the Mathematics Specialists Endorsement requirements. Currently, GMU's Math Education Program is the only state approved licensing program with hybrid and online course.

Director for a joint center between the College of Science and the College of Education and Human Development-COMLETE, George Mason University

<http://completemath.onmason.com/>

COMLETE: *Center for Outreach in Mathematics Professional Learning & Educational* is a mathematics partnership between George Mason University (GMU) and school divisions in Northern Virginia (Alexandria, Falls Church City, Fairfax County, Loudoun County, Manassas City and Prince William County) to provide professional development for mathematics teachers in grades K-8.

Affiliate Faculty for the Mathematics Education Center, George Mason University

The Center provides research opportunities for students interested in advanced degrees in Mathematics Education, Instructional Technology, and Educational Research. The Center's research activity serves as a laboratory where advanced graduate students enrolled in GMU programs participate in the ongoing research of the faculty. Students learn first-hand how to conduct educational research by participating in study design, instrument development, data collection, data analysis, manuscript preparation, and research presentations.

RESEARCH

Research Interests

- Enhancing professional development of prospective and in-service teachers by developing mathematics pedagogical content knowledge and confidence in teachers;
- Promoting student learning through problem based learning and mathematical proficiency;
- Developing representational fluency through mathematics tools and emerging technologies in the classroom.

Grants Funded

Principal Investigator, SPARK STEM: Integrating Scientific and Mathematical Modeling in the Elementary Grades (Co-PIs: Dr. Andrew Gilbert & Dr. Padhu Seshaiyer)

State Council for Higher Education (\$125,456.00)

Duration: 7/1/2017-9/30/18

This proposal is a STEM Teaching Initiative that aims to spark the interest of elementary students to the investigative and inquiry process of problem based learning. The project will involve 60 coaches and teachers in curriculum design of STEM PBLs that focus on scientific and mathematical modeling to solve real world problems.

Principal Investigator, IMMERSION: Integrating Mathematical Modeling, Experiential learning and Research through a Sustainable Infrastructure and an Online Network for Elementary Teachers

National Science Foundation (\$1,299,959)

Duration: 9/01/2014-8/31/2018

This proposal is a STEM-C targeted partnership between faculty from three institutions, GMU(Virginia), HMC (California) and MSU (Montana), with school divisions, Fairfax County Public Schools (FCPS - VA), Pomona Unified School District (PUSD - CA) and Bozeman Public Schools (BSD- MT). The proposed work will engage elementary (grades K-8) mathematics teachers, special educators, and teachers of students with Limited English Proficiency (LEP) to develop Mathematical modeling concepts aligned with Common Core mathematics content, classroom strategies, and student assessment standards. Targeting 80 teachers and coaches in Fairfax County Public Schools

Principal Investigator, TRANSITIONS: Transforming Mathematics Instruction Through Mathematical Modeling, Algebraic Thinking and Proportional Reasoning. Teaching

Virginia Department of Education (Total: \$711, 114) March 2015-September 2018

MSP proposal: \$243,218 (Year 1), \$246, 233 (Year 2) and \$221, 663 (Year 3).

(Co-PI: Seshaiyer and Research Associate: Frank & Baker)

This Mathematics Science Partnership is between faculty from the COMPLETE Center at George Mason University (GMU) and nine school divisions that include *seven* continuing partners Arlington County, Frederick County, Fauquier County, Loudoun County, Manassas City, Prince William County, Virginia Council for Private Education, Manassas Park and Roanoke Public Schools. Targeting 90 teachers, 30 coaches and 15 administrators each year for a total of 405 educators over the three years with an average of twelve Lesson Studies per year.

Research Faculty, Partnership for Greater Mathematics Success.

(PI, Dr. Toya Frank, Democracy Prep Charter School). August 2016. District of Columbia Office of the State Superintendent of Education. (\$47,131) Duration: 8/1/2016-9/30/2017.

Targeting twenty teachers in Kindergarten through Fifth grade.

co-Principal investigator (jointly with Dr. Seshaiyer- COS)

Developing Rational Numbers and Proportional Reasoning through Math Modeling and Performance Based Assessments: Teaching and Assessing Virginia's 2009 6-8 Mathematics Standards of Learning

Virginia Department of Education. (\$211,456) March 2014 through September 2015

co-Principal investigator (jointly with Dr. Seshaiyer- COS)

Building Number, Number Sense and Computational Fluency through Math Modeling and Performance Based Assessments: Teaching and Assessing Virginia's 2009 3-5 Mathematics Standards of Learning

Virginia Department of Education. (\$199,363) March 2014 through September 2015

co-Principal investigator (jointly with Dr. Seshaiyer- COS)

Developing Rational Numbers and Proportional Reasoning through Math Models and Performance Based Assessments: Teaching and Assessing Virginia's 6-8 Mathematics Standards of Learning

Virginia Department of Education. (\$246,696) March 2013 through September 2014

co-Principal investigator (jointly with Dr. Seshaiyer- COS)
Building Number and Number Sense through Math Models and Performance Based Assessment: Teaching and Assessing Virginia’s 2009 K-2 Mathematical Standards of Learning
 Virginia Department of Education (\$246,696) March 2013 through September 2014

Principal Investigator, ESTEEM for 21st Century Skills for Problem-based Learning
 State Council for Higher Education in VA (\$175,000) July 2013 – September 2014
 Location of Project: George Mason University1 Academic course release & 1 Summer
 This grant funded a 2013-2043 NCLB project with four districts in Virginia focused on Problem-based STEM topics in mathematics that encourage 21st century skills: 4Cs Critical thinking, Creativity, Communication and Collaboration.

co-Principal investigator (jointly with Dr. Seshaiyer COS)
VA STEM CoNNECT
 US Department of Education (\$39,852) March 1, 2013 through September 30, 2014

co-Principal investigator (jointly with Dr. Seshaiyer- COS)
Designing Assessment in the Middle Grades: Geometry and Algebraic Thinking
 Virginia Department of Education: Mathematics Science Partnership,
 VA Department of Education (\$222,040) April 2012 – September 2013

Summary Portfolio of External Funding over the Review Period

Duration	My Role	Funding	Title of Grant	Amount
2017-2018	PI	SCHEV	Spark STEM	\$125,456
2015-2018	PI	NSF	IMMERSION Integrating Mathematical Modeling	\$1,299,959
2015-2018	PI	VDOE	Transitions: Transforming Mathematics Instruction Grades 3-9	\$711,114
2013-2014	Co-PI	US DOE	VA STEM CoNNECT for High School Teachers	\$39,852
2013-2015	Co-PI	VDOE	Number Sense and Proportional Reasoning through Models	\$904,211
2012-2013	PI	SCHEV	ESTEEM for 21st Century Skills for Problem-based Learning	\$175,000
2012-2013	Co-PI	VDOE	Designing Assessment on Geometry and Spatial Reasoning	\$222,040
2016-2017	Researcher	DCPS	Partnership for Greater Mathematics Success	\$47,131
			Total from Grants 2012-2017	\$3,524,763

Grant Submitted

NSF Advancing Informal STEM Learning (AISL) GRANT Submitted: November 2017
 Role: Principal Investigator
 Title: Igniting the SPARK: Connecting Families of Underrepresented Minorities (URMs) to STEM through Wonder Conversation Tools
 Amount: \$299,999 Duration: 2 years Start: Oct. 1, 2018 - Sept. 30, 2020
 A multidisciplinary research team from the College of Education and Human Development, College of Science and College of Engineering at George Mason University and educators from

the Children's Science Center proposes using Spark STEM Family Design Challenges with Wonder Conversation Tools, which will be designed to enhance the quality of discourse and questioning between parents and children in informal STEM learning settings.

NSF: Discovery Research K12 Submitted: November 2017

Role: Co- Principal Investigator

Title: Supporting Adaptive Mathematics Instruction (SAMI)

Amount: \$ 982,199 Duration: 4 years

Start: Oct. 1, 2018 - Sept. 30, 2022

Master Teachers and the UL at Lafayette and George Mason University team will co-create an interactive curriculum, in the form of an app, that will allow grade 4 teachers to adapt their instruction of fractions in response to the needs of their students; and 2) Grade 4 teachers will use the app to design assessment, plan responsive lessons, and track student progress in a unit on fractions. Specifically, this app will focus on understanding equivalent fractions

REFEREED PUBLICATIONS

Book

Suh, J.M. & Seshaiyer, P. (2017). *Modeling Mathematical Ideas: Developing Strategic Competence in Elementary and Middle School*. Lanham, MD: Rowman & Littlefield Education Publishing Group.

Peer-Reviewed Publications

Suh, J. M., Burke, L., Britton, K., Matson, K., Ferguson, L., Jamieson, S., & Seshaiyer, P. (In Press). Every Penny Counts: Promoting Community Engagement to Engage Students in Mathematical Modeling. In R. Gutierrez & Goffney, I. (Eds.), *Annual Perspectives in Mathematics Education: Rehumanizing Mathematics for Students who are Black, Indigenous, and/or Latin@*: National Council of Teachers of Mathematics.

Suh, J. M. & Seshaiyer, P. (In Press). Co-designing and implementing PBL through Mathematical Modeling in STEM contexts. In Mahnaz, M. & N. Dabbagh (Eds). *Handbook of Problem Based Learning*. Wiley Publishing.

Suh, J.M. & Gallagher, M.A. (In Press). Preservice Teachers Decomposing Ambitious Mathematics Teaching: Video Analysis and Professional Learning Communities. In Polly, D. (Ed.) *Innovative Practices in Teacher Preparation and Graduate-Level Teacher Education Programs*. IGI Global Publishing

Suh, J.M. & Dockery, K. (In press). Inspiring teachers across the professional continuum through collaborative coaching and Lesson Study. In Nancy Gallavan & Putney, L.G. (Eds.), *ATE Yearbook Building upon Inspiration and Aspirations with Hope, Courage, and Strength in Teacher Education*.

- Gallagher, M. A.,** Parsons, S. A., Parker, A. K., Groth, L., Brown, E. L., Baker, C., & Suh, J. M. (Accepted). The importance of collaboration: Embedding courses in clinical practice. In K. Zenkov & K. Pytash (Eds.), *Critical, project-based clinical experiences in teacher preparation: Classroom interventions, teacher training and development, boundary-spanning roles, and collaborative scholarship*.
- Suh, J.M.,** Weiss, A., King, L., Fulginiti, K.& Parson, S. (2017). Implementing instructional rounds and Lesson Study to support the development of teacher candidates' Mathematics Knowledge for Teaching. In R. Flessner & D. Lecklider (Eds). *Case Studies of Clinical Preparation in Teacher Education*. (pp.145-166). Lanham, MD: Rowman & Littlefield Publishing.
- Suh, J. M.,** Birkhead, S., Baker, C., Frank, T., & Seshaiyer, P. (2017). Leveraging Coach-Facilitated Professional Development to Create Teacher Social Networks for Enhancing Professional Practice. In M. Boston & L. West (Eds.), *Annual Perspectives in Mathematics Education: Reflective and Collaborative Processes to Improve Mathematics Teaching*. (pp. 89-100). Reston, VA: National Council of Teachers of Mathematics.
- Suh, J.M.,** Matson, K. & Seshaiyer, P. (2017). Engaging Elementary Students in the Creative Process of Mathematizing Their World through Mathematical Modeling. *Education Sciences* 7(62) doi:10.3390/educsci7020062
- Suh, J.M.** (2016). Ambitious teaching: Designing practice-based assignments for integrating virtual manipulatives into mathematics lessons. In P. Moyer-Packenham (Ed.), *Mathematics Education Digital Era: International Perspectives on Teaching and Learning Mathematics with Virtual Manipulatives*. (pp. 301-321). Springer International Publishing.
- Suh, J. M.,** Sprague, D.R. & Baker, C.K. (2016). Transforming mathematics teacher knowledge in the digital age through iterative design of course-based projects. In Niess, M., Driskell, S., & Hollenbrands, K. (Eds.), *Handbook of Research on Transforming Mathematics Teacher Education in the Digital Age*, (pp. 190-214). IGI Global Publications.
- Suh, J. M., & Moyer-Packenham, P. S. (2016). How affordances and constraints of physical and virtual manipulatives support the development of procedural fluency and algorithmic thinking in mathematics. *International Journal for Research in Mathematics Education*, 6(2), 245-265.
- Brown, B. L, **Suh, J.M.,** Parsons, S. A., Parker, A. K., & Ramirez, E.M. (2015). Documenting teacher candidates' professional growth through performance assessment. *Journal of Research in Education*, 25 (1), 35-47.
- Suh, J.M.,** King, L.A., & Weiss, A. (2014). Co-Development of professional practice at a professional development school through Instructional Rounds and Lesson Study. In D. Polly, Heafner, T., Chapman, M. & Spooner, M., (Ed.), *Professional Development Schools and Transformative Partnerships*. (pp. 177-189). IGI Global Publications.

- Samaras, A. P., Karczmarczyk, D, Smith, L, Woodville, L, Harmon, L, Nasser, I., Parsons, S., Smith, T., Borne, K., Constantine, L., Roman Mendoza, E., **Suh, J.M.**, & Swanson, R. (2014). The shark in the vitrine: Experiencing our practice from the inside out with transdisciplinary lenses. *Journal of Transformative Education*, 12(4), 368-388.
- Suh, J. M.** & Seshaiyer, P. (2014). Examining teachers' understanding of the mathematical learning progression through vertical articulation during Lesson Study. *Journal of Mathematics Teacher Education*, 18(3), 2017-229.
- Suh, J. M.** & Seshaiyer, P. (2014). Developing strategic competence by teaching using the Common Core Mathematical Practices, *Annual Perspectives in Mathematics Education*, 77-87.
- Samaras, A. P. with Karczmarczyk, D, Smith, L, Woodville, L, Harmon, L, Nasser, I., Parsons, S., Smith, T., Borne, K., Constantine, L., Roman Mendoza, E., **Suh, J.M.**, & Swanson, R., (2014). A pedagogy changer: Transdisciplinary faculty self-study. *Perspectives in Education*, 32(2), 117-135.
- Suh, J.M.**, Seshaiyer, P., Moore, K., Green, M., Jewell, H., & Rice, I. (2013). Being an Environmentally Friendly Engineer. *Teaching Children Mathematics*, 20(4), 261-263.
- Moyer-Packenham, P.S., Salkind, G., Bolyard, J.J., & **Suh, J.M.** (2013) Effective choices and practices: Knowledgeable and experienced teachers' uses of manipulatives to teach mathematics, *Online Journal of Educational Research*, 2(2), 18-33.
- Smith, T. M., Seshaiyer, P., Peixoto, N., **Suh, J. M.**, Bagshaw, G., & Collins, L. K. (2013). Exploring slope with stairs & steps. *Mathematics Teaching in the Middle School*, 18(6), 370-377.
- Suh, J. M.**, & Fulginiti, K. (2012). "Situating the learning" of teaching: Implementing Lesson Study at a professional development school. *School-University Partnerships*, 5(2), 24-37.
- Suh, J. M.** & Seshaiyer, P. (2012). Modeling ten-ness using technology. *Teaching Children Mathematics*, 18(9), 574-579.
- Moyer-Packenham, P.S. & **Suh, J.M.** (2012). Learning mathematics with technology: The influence of virtual manipulatives on different achievement groups. *Journal of Computers in Mathematics and Science Teaching*, 31(1).
- Seshaiyer, P., **Suh, J.M.** & Freeman, P.W. (2011). Unlocking the locker problem through technology. *Teaching Children Mathematics*, 18(5), 322-325.
- Suh, J.M.**, Graham, S., Ferranone, T., Kopeinig, G. & Bertholet, B. (2011). Developing persistent and flexible problem solvers with a growth mindset. In D. J. Brahier, (Ed.), *Motivation and Disposition: Pathways to Learning Mathematics*, NCTM 2011 Yearbook,

169-184.

Suh, J. M. & Fulginiti, K.L. (2011). Using technology to understand rate of change. *Teaching Children Mathematics*, 18(1), 56-58.

Suh, J.M. & Fulginiti, K.L. (2010). Developing mathematical potential in underrepresented populations through problem solving, math discourse and algebraic reasoning. In B. Sriraman & K. Lee (Eds.), *The Elements of Creativity and Giftedness in Mathematics*. Sense Publication, 67-79.

Suh, J. M. & Parker, J. (2010). Developing reflective practitioners through Lesson Study with pre-service and in-service teachers. *AMTE monograph. VII. Mathematics Teaching: Putting Research into Practice at All Levels. Associations of Mathematics Teacher Educators*, 125-140.

Suh, J.M. (2010). Leveraging cognitive technology tools to expand opportunities for critical thinking on data analysis and probability in elementary classrooms. *Journal of Computers in Mathematics and Science Teaching* 29(3), 289-302.

Suh, J. M. (2010). Tech-knowledge for diverse learners [Technology Focus Issue]. *Mathematics Teaching in the Middle School in Mathematics Education*, 15(8), 440-447.

Suh, J. M., Johnston, C. & Doud, J. (2008). Enhancing mathematics learning in a technology rich environment. *Teaching Children Mathematics*, 15(4), 235-241.

Hjalmarson, M. & **Suh, J. M.** (2008). Developing mathematical pedagogical knowledge by evaluating instructional materials. *Inquiry into Mathematics Teacher Education. AMTE Monograph V*, 97-107.

Suh, J. M. & Jamieson, S. (2008). Collaborative mentoring: Establishing a mathematics teaching & learning community through Lesson Study. *NCTM's Empowering Mentors of Mathematics*, NCTM.

Suh, J. M., Johnston, C., Mills, M., & Jamieson, S. (2008). Promoting decimal number sense and representational fluency. *Mathematics Teaching in the Middle School*, 14(1), 44-50.

Suh, J. M. (2007). Developing "Algebra -'rithmetic" in the elementary grades. *Teaching Children Mathematics*, 14(4), 246- 250.

Suh, J. M. (2007). Tying it all together: Building mathematics proficiency for all students. *Teaching Children Mathematics*, 14(3), 163-169.

Saptura, C., **Suh, J. M.**, & McHaffey, G. (2007). Masterpieces to mathematics: Using art to teach fraction, decimal, and percent equivalents. *Mathematics Teaching in the Middle School*, 13(1), 24-28.

- Suh, J. M.**, & Moyer-Packenham, P. S. (2007). Developing students' representational fluency using virtual and physical algebra balances. *Journal of Computers in Mathematics and Science Teaching*, 26 (2), 155-173.
- Suh, J. M.**, Moyer, P.S., & Heo, H. J. (2005). Examining technology uses in the classroom: students developing fraction sense by using virtual manipulative concept tutorials, *Journal of Interactive Online Learning*, 3(4), 1-22.
- Heo, H. J., **Suh, J. M.**, & Moyer, P. S. (2004). Impacting student confidence: The effects of using virtual manipulatives and increasing fraction understanding. *The Journal of Educational Research in Mathematics*, 14(2), 207-219.
- Suh, J. M.**, Moyer, P. S. & Sterling, D. (2003) Junior Architect: Designing your dream clubhouse using measurement and geometry, *Teaching Children Mathematics*, 10(3), 170-179.

Refereed Conference Proceedings

- Suh, J. M.**, Matson, K., Wickstrom, M., Carlson, M., Levy, R. & Seshaiyer, P. (2017). Mapping the Learning Pathways for Early Mathematical Modeling. In Galindo, E., & Newton, J., (Eds.). Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.
- Birkhead, S., **Suh, J. M.**, & Gerasimova, D. (2017). Improving knowledge of the learning progressions. through professional learning in collaborative vertical teams. In Galindo, E., & Newton, J., (Eds.). Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.
- Suh, J. M.**, Matson, K., Williams, M. & Seshaiyer, P. (2016). Immersing elementary teachers in mathematical modeling as co-designers through Lesson Study. In M. B. Wood, E. E. Turner, M. Civil, & J. A. Eli (Eds.), Proceedings of the 38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (pp. 417-420). Tucson, AZ: The University of Arizona. ISBN 978-0-692-62876-8
- Suh, J. M.**, & Gallagher, M. (2016). Pre-Service Teachers Engaged in Team Teaching and Collective Observation Using the Mathematics Quality of Instruction. In M. B. Wood, E. E. Turner, M. Civil, & J. A. Eli (Eds.), Proceedings of the 38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (pp. 965-966). Tucson, AZ: The University of Arizona. ISBN 978-0-692-62876-8
- Baker, C., Galanti, T., **Suh, J.M.**, Seshaiyer, P. & Frank, T. (2016). Identifying Barriers to Teacher Growth in Implementing Problem Solving by Reflecting on Lesson Study. In M. B. Wood, E. E. Turner, M. Civil, & J. A. Eli (Eds.), Proceedings of the 38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics

Education (pp. 355-359). Tucson, AZ: The University of Arizona. ISBN 978-0-692-62876-8

- Suh, J.** & Seshaiyer, P. (2016). The Role of Information Technology in Engaging Elementary Students in Mathematical Modeling. In G. Chamblee & L. Langub (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2016* (pp. 2576-2583). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).
- Weiss, A., **Suh, J.**, King, L., Hargrove, D., & Gallagher, M. (2015). Assessing the use of a validated framework for observing and reflecting on mathematical teaching and learning in a professional development school. Paper published in the American Educational Research Association Online Repository, Chicago, IL.
- Seshaiyer P., Suh, J.M., & Corcoran, M. (2015). Conceptual Understanding of Proportional Reasoning via Poster Proofs in Teacher Professional Development, Paper published in the Proceedings of the 7th ICMI-East Asia Conference on Mathematics Education.
- Suh, J. M.** & Seshaiyer, P. (2014). Sequencing the mathematical learning progression through vertical articulation during Lesson Study. In Liljedahl, P., Nicol, C., Oesterle, S., & Allan, D. (Eds.). (2014). *Proceedings of the Joint Meeting of PME 38 and PME-NA 36*. Vancouver, Canada: PME.
- Suh, J. M.**, Rawding, M., Weiss, A., King, L. & Fulginiti, K. (2014). Evaluating high leverage clinical practices at a professional development school to enhance mathematics teaching and learning. Paper published in the American Educational Research Association Online Repository, Philadelphia, PA.
- Suh, J. M.**, & Seshaiyer, P. (2014). Mapping teachers' understanding of the mathematical learning progression through vertical articulation during Lesson Study. Paper published in the American Educational Research Association Online Repository, Philadelphia, PA.
- Suh, J. M.**, Peixoto, N., Seshaiyer, P., Lee, K.H. Suh, D., & Jung, Y. (2014, June). Using design thinking tools to promote innovation in engineering students. Paper presented at the Joint International Conference on Engineering Education & International Conference on Information Technology. ICEE/ICIT-June 2 - 6, 2014. Riga, Latvia
- Peixoto, N., **Suh, J. M.**, Seshaiyer, P., Lee, K.H. & Suh, D. (2014, June). An International Collaboration to Cultivate Global Innovators. Paper presented at the Joint International Conference on Engineering Education & International Conference on Information Technology. ICEE/ICIT-June 2 - 6, 2014. Riga, Latvia
- Suh, J. M.**, Fulginiti, K.L., & Weiss, A. (April, 2013). Implementing instructional rounds at professional development schools to enhance mathematics teaching practices. Paper published in the American Educational Research Association Online Repository, Vancouver, BC.

- Samaras, A. P., Smith, L., Harmon, L., Nasser, I., Smith, T., Borne, K., Parsons, S., Woodville, L., Constantine, L., Roman-Mendoza, E., **Suh, J.**, Swanson, R., & Karczmarczyk, D. (2012). Reforming in the first person plural: Explorations of a faculty self-study collaborative. In J.R. Young, L.B., Erickson & S. Pinnegar (Eds.). *Extending inquiry communities: Illuminating teacher education through self-study*. Proceedings of the Ninth International Conference on the Self-Study of Teacher Education Practices, East Sussex, England (pp. 251-255). Provo, UT: Brigham Young University
- Suh, J.M.**, Seshaiyer, P., Leong, K., Freeman, P., Corcoran, M., Meints, K., & Wills, T. (November, 2012). Fostering strategic competence for teachers through modeling rational numbers problem tasks. In Van Zoest, L. R., Lo, J.H., & Kratky, J.L.(Eds.). *Proceedings of the 34th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. (pp. 474-481). Kalamazoo, MI.
- Johnson, P. E., & **Suh, J.M.** (November, 2012). Learning to lead mathematically productive discussions. In Van Zoest, L. R., Lo, J.H., & Kratky, J.L.(Eds.). *Proceedings of the 34th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. (pp. 717-720). Kalamazoo, MI.
- Leong, K., **Suh, J. M.**, Freeman, P., Seshaiyer, P. (November, 2012). Mathematics specialists “Noticing”: Identifying the role of “Noticing” in the development of strategic competence. In Wiest, L. R., & Lamberg, T. (Eds.). *Proceedings of the 34th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*.
- Suh, J.M.** & Seshaiyer, P. (2012). Sustaining mathematics professional development partnerships: A self-study to examine the roles of school university partners. Paper presented at the annual meeting of the American Educational Research Association. Retrieved July 1, 2012, from the AERA Online Paper Repository.
- Suh, J.M.** & Fulginiti, K. (2012). Multi-tiered professional learning through Lesson Study at the PDS Sites. Paper presented at the annual meeting of the American Educational Research Association. Retrieved July 1, 2012, from the AERA Online Paper Repository.
- Suh, J.M.**, Seshaiyer, P., & Freeman, P. & Jamieson, T.S. (2011). Developing teachers' representational fluency and algebraic connections. In Wiest, L. R., & Lamberg, T. (Eds.). *Proceedings of the 33rd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. 738-746.
- Suh, J.M.** & Fulginiti, K. (2011). Using Lesson Study at a professional development school to develop reflective practitioners. Paper presented at the annual meeting of the American Educational Research Association. Retrieved July 1, 2011, from the AERA Online Paper Repository.

Suh, J. M., & Fulginiti, K. (2009). Building collective knowledge using pedagogical content tools and problem solving. *Proceedings of the International Group for the Psychology of Mathematics Education*, 5:177-184. ISBN# 972-960-243-652-3.

Suh, J. M. & Moyer, P. S. (2008). Scaffolding special needs students' learning of fraction equivalence using virtual manipulatives. *Proceedings of the International Group for the Psychology of Mathematics Education* (pp. 4-297-304). ISSN# 0771-100X.

Suh, J. M. & Moyer, P. S. (2007). The Application of dual coding theory in multi-representational virtual mathematics environments. *Proceedings of the International Group for the Psychology of Mathematics Education*. Vol 4, pp. 209-216. Seoul: PME.

Invite Book chapters

Suh, J. M. (2010). Using the unique features of virtual manipulatives to design lessons. In P.S. Moyer-Packenham (Ed.), *Teaching mathematics with virtual manipulatives*, 20-27. Rowley, VA: Didax.

Suh, J.M., Moyer-Packenham, P.S. & Bolyard, J. J. (2010) Virtual manipulatives in classroom research In P.S. Moyer-Packenham (Ed.), *Teaching mathematics with virtual manipulatives* , 26-44. Rowley, MA: Didax.

Technical Reports

Suh, J.M. & Seshaiyer, P. (2014, September). Final Report for COMPLETE: Center for Outreach in Mathematics Professional Development and Educational Technology. Richmond, VA: Virginia Department of Education.

Suh, J.M. & Seshaiyer, P. (2011, September). Final Report for IMPACT: Improving Mathematical Practices through Algebraic Connections and Technology. Richmond, VA: State Council of Higher Education.

Suh, J.M. & Seshaiyer, P. (2009, September). Final Report for ACT NOW: Algebraic Connections and Technology. Richmond, VA: State Council of Higher Education.

NATIONAL AND INTERNATIONAL* PRESENTATIONS AND WORKSHOPS

*International conferences and workshops

Suh, J. M., Matson, K., Wickstrom, M., Carlson, M., Levy, R. & Seshaiyer, P. (2017, October). Mapping the Learning Pathways for Early Mathematical Modeling. Presented at the conference for the International Group for the Psychology of Mathematics Education. Tucson, IN: Purdue University.

- Birkhead, S., **Suh, J. M.**, & Gerasimova, D. (2017, October). Improving knowledge of the learning progressions. through professional learning in collaborative vertical teams. Presented at the conference for the International Group for the Psychology of Mathematics Education. Tucson, IN: Purdue University.
- ***Suh, J. M.**, Birkhead, S. & Matson, K. (2017, September). Designing rich mathematics problem tasks. (Invited workshop) at Seoul National University, Seoul, Korea.
- ***Suh, J. M.**, Birkhead, S. & Matson, K. (2017, September). Mathematical modeling to promote 21st century Skills (Invited workshop) at Kyungnam Education, Pusan, Korea.
- Suh, J.M.**, Birkhead, S., Baker, C., Frank, T., Seshaiyer, P. (2017, April) Examining Coaching Structures that Supported Mathematics Teacher Learning. Presented at Research Conference for the National Council of Teachers of Mathematics, San Antonio, TX.
- Suh, J.M.**, & Matson, K. (April, 2017). Mobilizing Teachers as Researchers to Promote an Innovative Classroom Practice of Implementing Mathematical Modeling in the Elementary Grades. Presented at the annual meeting of the American Educational Research Association Conference, San Antonio, TX.
- Gallagher, M.A. & **Suh, J.M.** (2017, April) Learning to Notice Ambitious Mathematics Instruction Through Cycles of Structured Observation and Reflection. AERA, San Antonio, TX.
- Suh, J. M.**, Matson, K., Williams, M. & Seshaiyer, P. (2016, November). Immersing elementary teachers in mathematical modeling as co-designers through Lesson Study. Presented at the conference for the International Group for the Psychology of Mathematics Education. Tucson, AZ: The University of Arizona.
- Suh, J. M.**, & Gallagher, M. (2016, November). Pre-Service Teachers Engaged in Team Teaching and Collective Observation Using the Mathematics Quality of Instruction. Presented at the conference for the International Group for the Psychology of Mathematics Education. Tucson, AZ: The University of Arizona.
- Baker, C., Galanti, T., **Suh, J.M.**, Seshaiyer, P. & Frank, T. (2016, November). Identifying Barriers to Teacher Growth in Implementing Problem Solving by Reflecting on Lesson Study. Presented at the conference for the International Group for the Psychology of Mathematics Education. Tucson, AZ: The University of Arizona.
- Suh, J. M.**, Matson, K., Williams, M. & Seshaiyer, P. (2016, October). Implementing Math Modeling in the Elementary Grades and Beyond. Presented at the SIAM Education Conference. Philadelphia, PA.
- Gallagher, M., Parson, S. & **Suh, J.M.** (2016, April). "We Saw It!" Bridging Theory and Practice at Professional Development Schools Through Structured Observations. Presented at

the annual meeting of the American Educational Research Association Conference, Washington, DC.

King, L., Gallagher, M. & **Suh, J.M.** (2016, April). The Richness of Mathematics According to Preservice Teachers in a Professional Development School Model. Presented at the annual meeting of the American Educational Research Association Conference, Washington, DC.

Suh, J.M., Seshaiyer, P., Levy, R. & Burrough, B. (2016, February). Math Modeling in the Elementary Grades through School University Partnership. Association of Mathematics Teacher Education. Irvine, CA.

Suh, J. M., Seshaiyer, P., William, M., Gerasimova, D., King, L.A., Matson, K., & Petillo, A. (2015, November). Implementing the core teaching practices to make mathematical thinking visible using student-generated models. Presented at the annual meeting PME-NA 37. East Lansing, MI.

Weiss, A., **Suh, J.M.**, King, L., Hargrove, D., & Gallagher, M. (2015, April). Assessing the use of a validated framework for observing and reflecting on mathematical teaching and learning in a professional development school. Presented at the annual meeting of the American Educational Research Association Conference, Chicago, IL.

King, L.A. & **Suh, J.M.** (2015, March) A school-based professional learning model for teacher candidates to enrich mathematical practices with diverse learners. Presented at the annual meeting of the National Association for Professional Development Schools. Atlanta, GA.

Parker, A. K., Parsons, S. A, Groth, L. A., Sell, C., & **Suh, J.M.** (2015, January). Teacher educators' discussions and reflections on teacher candidates' video recorded lessons: Our experiences with video coding technology. Presented at the annual meeting of the Association of Teacher Educators, Phoenix, AZ.

***Suh, J. M.** & Seshaiyer, P. (2014, December). Problem Solving and Creativity in the Mathematics Classroom (Invited Keynote) at Korean National University Education, Cheongju, Korea.

***Suh, J. M.**, Peixoto, N. & Seshaiyer, P. (2014, December). Design Thinking and Creative Problem Solving for STEM students. Ten-day Workshop at Pohang Institute of Science and Technology. Pohang, Korea.

***Suh, J. M.** & Seshaiyer, P. (2014, October). Sequencing the mathematical learning progression through vertical articulation during Lesson Study. Presented at the Joint Meeting of PME 38 and PME-NA 36. Vancouver, Canada: PME.

*Moyer-Packenham, P., & **Suh, J.M.** (2014, October). Work Session on Virtual Manipulatives and Emerging Technology in Mathematics Education. In Liljedahl, P., Nicol, C., Oesterle, S., & Allan, D. (Eds.). (2014). *Proceedings of the Joint Meeting of PME 38 and PME-NA 36*. Vancouver, Canada: PME.

- *Peixoto, N., **Suh, J. M.**, Seshaiyer, P., Lee, K.H. & Suh, D. (2014, June). An International Collaboration to Cultivate Global Innovators. Paper presented at the Joint International Conference on Engineering Education & International Conference on Information Technology. ICEE/ICIT-June 2 - 6, 2014. Riga, Latvia
- ***Suh, J. M.**, Peixoto, N., Seshaiyer, P., Lee, K.H. Suh, D., & Jung, Y. (2014, June). Using Design Thinking Tools to Promote Innovation in Engineering Students. Paper presented at the Joint International Conference on Engineering Education & International Conference on Information Technology. ICEE/ICIT-June 2 - 6, 2014. Riga, Latvia
- Suh, J. M.**, Rawding, M., Weiss, A., King, L. & Fulginiti, K. (2014, April). Evaluating high leverage clinical practices at a professional development school to enhance mathematics teaching and learning. Paper presented at the annual meeting of the American Educational Research Association, Philadelphia, PA.
- Suh, J. M.**, & Seshaiyer, P. (2014, April). Mapping Teachers' Understanding of the Mathematical Learning Progression Through Vertical Articulation During Lesson Study. Paper presented at the Division K Round Tables at the annual meeting of the American Educational Research Association, Philadelphia, PA.
- Suh, J. M.**, Fulginiti, K.L., & Weiss, A. (2013, April). Implementing Instructional Rounds at Professional Development Schools to Enhance Mathematics Teaching Practices. Paper presented at the annual meeting of the American Educational Research Association. San Francisco, CA.
- Suh, J.M.**, Seshaiyer, P., Leong, K., Freeman, P., Corcoran, M., Meints, K., & Wills, T. (2012, November). *Fostering strategic competence for teachers through modeling rational numbers problem tasks*. Paper presented at the Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Kalamazoo, MI.
- Johnson, P. E., & **Suh, J.M.** (2012, November). Learning to Lead Mathematically Productive Discussions. Paper presented at the Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Kalamazoo, MI.
- Leong, K., **Suh, J. M.**, Freeman, P., Seshaiyer, P. (2012, November). Mathematics Specialists "Noticing": Identifying the Role of "Noticing" in the Development of Strategic Competence. Paper presented at the Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Kalamazoo, MI.
- ***Suh, JM.** (2012, July). *Multi-tiered Professional Development: Situating Lesson Study in a Professional Development School*. Presented at the International Congress of Mathematics Education, Seoul, Korea.
- Suh, J.M.** & Fulginiti, K.L. (2012, April). *Situated learning for teaching: Implementing Lesson Study at a Professional Development School to develop reflective practitioners*. Presenting at the American Educational Research Association, Vancouver, British Columbia, Canada.

- Parson, S., Samaras, A. Nasser, I., Smith, T. & **Suh, J.M.** (2012, April). *Scholars of Studying Teaching Collaborative (SOSTC): A Cross-Disciplinary Initiative to Improve our Practice As University Instructors*. Presenting at the American Educational Research Association, Vancouver, British Columbia, Canada.
- Parson, S., **Suh, J.M.**, Schrum, L. Burrowbridge, S.C. (2012, January). *School-University Partnerships: Enhancing Teaching and Learning in Diverse Elementary Schools*. Global Summit on Childhood, Washington, D.C.
- Suh, J.M.**, & Freeman, P. (2011, October). *The development of elementary and middle school teachers' algebraic connections through vertical articulation and Lesson Study*. Presenting Research Report in the Psychology of mathematics Education Conference Proceedings, Reno, Nevada.
- Suh, J.M.** (2011, April). *Developing Reflective Practitioners through Lesson Study at Professional Development Schools*. Presented at the American Educational Research Association, New Orleans, Louisiana.
- Suh, J.M.**, Seshaiyer, P. & Freeman, P. (2011, April). *Developing representational fluency through problem solving*. Presented at the National Council of Teachers of Mathematics, Indianapolis, Indiana.
- Suh, J.M.**, Seshaiyer, P. & Freeman, P. (2011, January). *Sustaining professional development through Lesson Study*. Presented at the Association of Mathematics Teachers Educator, Irvine, California.
- Suh, J.M.** & Baker, C. (2011, January). *Content-focused coaching with pre-service teachers through the summer lab school*. Presented at the Association of Mathematics Teachers Educator, Irvine, California.
- ***Suh, J.M.** (2009, December). *Developing mathematical potential of underrepresented groups through problem solving and algebraic reasoning*. Presented at the Joint Meeting of the Korean Mathematical Society and the American Mathematical Society in Ewha Womans University, Seoul, Korea.
- ***Suh, J.M.** (2009, July). *Building collective knowledge using pedagogical content tools and problem solving*. Paper Presented at the International Conference on Psychology of Mathematics Education (Research report), Thessaloniki, Greece.
- Suh, J.M.** (2009, April). *Developing collective teacher efficacy in a professional development school*, Paper presented at the American Educational Research Association, San Diego, California.

- Suh, J.M.** (2009, April). *Let's talk math: Engaging all learners in meaningful mathematical discourse*. Presented at the Annual Conference for the National Council for Teachers of Mathematics, Washington, DC.
- Suh, J.M.** (2008, October). *Preparing pre-service teachers to teach mathematics with Tech-knowledge*. Presented at the North American Chapter of Psychology of Mathematics Education, Lake Tahoe, Nevada.
- *Suh, J.M.** (2008, July). *Scaffolding special needs students' learning of fraction equivalence using virtual manipulatives* Paper presented at the International Conference on Psychology of Mathematics Education (Research report), Morelia, Mexico.
- Suh, J.M.** (2008, April). *I can solve it! Developing persistent flexible problem solvers*. Presented at the National Council for Teachers of Mathematics, Salt Lake City, Utah.
- Suh, J.M.** (2008, January). *Teachers building mathematics knowledge side by- side through collaborative planning*. Presented at the Association of Mathematics Teacher Educators, Tulsa, Oklahoma.
- *Suh, J.M.** (2007, July). *The application of dual coding theory in multi-representational virtual mathematics environments*. Paper presented at the International Conference on Psychology of Mathematics Education (Research report) Seoul, Korea.
- *Suh, J.M.** (2007, July). *Building mathematical knowledge for teaching using Tech-Knowledge*. Poster presented at the International Conference on Psychology of Mathematics Education, Seoul Korea.
- Suh, J.M.** (2007, June). *Modeling and investigating mathematics concepts using interactive math applets and virtual manipulatives in elementary grades*. Presented at the National Educational Computing Conference ISTE, Atlanta, Georgia.
- Suh, J.M.** (2007, April). *Third graders' mathematics achievement using virtual and physical manipulatives for adding fractions and balancing equations*. Poster presented at the American Educational Research Association (Poster presentation), Chicago, Illinois.
- Suh, J.M.** (2007, January). *Modeling mathematics concepts meaningfully using technology*. Presented at the Association of Mathematics Teacher Educators, Irvine, California.
- Suh, J. M.** (2006, October). *Algebracadabra: Demystifying algebraic reasoning for elementary grades*. Presented at the National Council for Teachers of Mathematics Regional Conference. Atlantic City, New Jersey.
- Suh, J.M.** (2006, July). *Introduction to Lesson Study*. Presented at the National Council for Teachers of Mathematics Workshop, Reston, Virginia.

Suh, J.M. (2006, March). *Third graders' achievement and representation preference using virtual and physical manipulatives in adding fractions and balancing equations in algebra*. Presented at the International Consortium for Research in science and Mathematics Education, Nassau, Bahamas.

Suh, J.M. (2006, January and February). *Implementing the algebra standard in Grades 3–5*. National Council of Teachers of Mathematics e-workshops, Reston, Virginia.

***Suh, J.M.** (2005, January). *Technology uses in the mathematics classroom: Understanding fractions using virtual manipulatives concept tutorials*. Presented at the Hawaii International Conference on Education, Honolulu, Hawaii.

Suh, J.M. (2003, April). *Junior Architect: Design your clubhouse using Measurement and Geometry*. Presented at the National Council for Teachers of Mathematics, San Antonio, Texas.

STATE PRESENTATIONS

Suh, J.M., Matson, K., Rossbach, M., Green, S., Jamieson, S. & Seshaiyer, P. (Sept., 2017). *Mathematical Modeling: Nurturing Strategic Thinkers Empowered by Math*. Presented at the Virginia Council of Mathematics Specialists Conference. Stafford, VA.

Suh, J.M., Birkhead, S., Galanti, T., Freeman, P., Gillen, L., Baker, C., Frank, T., & Seshaiyer, P. (Sept., 2017). *Coaching for Powerful Math Classrooms using Problems to Unpack the Learning Trajectories*. Presented at the Virginia Council of Mathematics Specialists Conference. Stafford, VA.

Suh, J.M., Seshaiyer, P., Freeman, P., & Gillen, L. (March, 2017). *Modeling Mathematics Ideas to Enhance Productive Disposition towards Mathematics*. Presented at the Virginia Council of Teachers of Mathematics. Harrisonburg, VA.

Suh, J. M., Baker, C.K., King,L., Galanti, T., Birkhead, S., Frank, T. & Seshaiyer, P. (June, 2016). *Differentiating PD for Mathematics Specialists through Lesson Study Collaborative Networks and Video Coaching*, Presented at the conference for the Virginia Mathematics Specialists Institute. Richmond, VA.

Suh, J. M. (2012, March). *Modeling Mathematics Ideas in the Elementary Grades*. Presented at the Virginia Council of Teachers of Mathematics, Harrisonburg, VA.

Suh, J. M. & Seshaiyer, P. (2012, January). *Building 21st Century Skills through STEM problems*. Presented at the Fairfax County Public Schools Academic Institute, Fairfax, Virginia.

- Suh, J. M.** (2010, March). *Improving Mathematical Practices through Algebraic Connections and Technology*. Presented at the Virginia Council of Teachers of Mathematics, Harrisonburg, VA.
- Suh, J. M.** (2009, January). *Building Collective Mathematical Knowledge through Pedagogical Content Tools*. Presented at the Fairfax County Public Schools Academic Institute, Fairfax, Virginia.
- Suh, J. M.** (2009, February). *Developing Teachers Algebraic Connections*. Presented at the College of Education and Human Development Research Symposium, George Mason University.
- Suh, J. M.** (2007 & 2008) Westlawn Elementary Lesson Study Professional Development School. Consultant for Professional Development for Lesson Study for Westlawn Elementary, Fairfax County Virginia.
- Suh, J. M.** (2004, August). *Developing mathematical proficiency for all students*, Presented at the Professional Development Workshop for Loudoun County Public School.
- Suh, J. M.** (2003, March). *Living in a 2 D & 3D World*. Presented at the Virginia Council for Teachers of Mathematics. Richmond, Virginia.
- Suh, J. M.** (2002, March). *SOL Concept Bridges*. Presented at the Virginia Council for Teachers of Mathematics. Manassas, Virginia.
- Suh, J. M.** (2002, March). *Math Bridges: Connecting Concepts using Physical and Virtual Manipulatives*. Presented at the Loudoun County Inservice Day. Loudoun, Virginia.

INVITED KEYNOTE and WORKSHOP

- Suh, J. M.** (Upcoming, Nov. 2017) Lead Workshop Facilitator, Breaking Barriers: Actionable approaches to reach each and every learner in mathematics, INNOV8, National Council for Teachers of Mathematics. Las Vegas, Nevada.
- Suh, J. M.** (Sept. 2017). Inspiring Creativity through Math Modeling and STEM integration: Paradigm Shift in Teaching and Learning Mathematics. Invited National Assembly. Seoul, Korea.
- Suh, J. M.**, Birkhead, S. & Matson, K. (Sept. 2017). Integrating STEM Contexts and Math Modeling to Engage in Three Dimensional Learning. Invited Workshop at Seoul National University. Seoul, Korea.
- Suh, J. M.** (July, 2017). Lead Workshop Facilitator, Supporting Students' Productive Struggle, NCTM Institute, National Council for Teachers of Mathematics, Baltimore, MD.

- Suh, J. M.** (Oct., 2016). Creating the Multiplier Effect through Teacher Research Presented at the 25th Annual Teacher Researcher Conference. Fairfax, VA.
- Suh, J.M. & Seshaiyer, P.** (Nov., 2016). Enhancing student learning through mathematical modeling. Presented at the Virginia School University Partnership Institute. Charlottesville, VA.
- Suh, J. M.** (Nov. 2016). Lead Workshop Facilitator, Engaging the Struggling Learner, INNOV8, National Council for Teachers of Mathematics. St. Louis, MO.
- Suh, J. M.** (July, 2016). Lead Workshop Facilitator, Number and Operations Institute (Pk-5), NCTM Institute, National Council for Teachers of Mathematics, July 21–23, 2016. Denver, CO.
- Suh, J. M.** (April 2016). Math Modeling to Engage Diverse Learners. Invited Workshop at Seoul National University. Seoul, Korea.
- Suh, J. M.** (July, 2015). Lead Workshop Facilitator, Connecting Numbers and Operations in the Classroom for Pre-K - Grade 5, NCTM Institute, National Council for Teachers of Mathematics. Chicago, IL.
- Suh, J. M.** (July, 2014). Lead Workshop Facilitator, Connecting Numbers and Operations in the Classroom for Pre-K - Grade 5, NCTM Institute, National Council for Teachers of Mathematics. San Diego, CA.
- Suh, J. M.** (2008, March). *Establishing Lesson Study at your school: Lesson Study Workshop*, Tisbury, Massachusetts.

AWARDS & RECOGNITIONS

Claudia Balach Teachers Award, Spring 2018

American Educational Research Association, Professional Development Schools, Special Interest Group.

“Enhancing Mathematics Teaching and Learning for Social Justice Using Mathematical Modeling: Design Research through a Professional Development School-University Partnership”
Recipient: Suh, Britton, Burke, Matson, Ferguson

Faculty Study Leave Awarded for Fall 2016

Office of Provost and Executive Vice President

Submitted in October 2015

Entitled “Creating the ‘Multiplier Effect’ for Research in Mathematics Education”

Rising Star 2015, Mason Spirit Magazine

Featured in Summer Issue of Mason Spirit as one of the newest generation of professors who stand out in their chosen field.

Teacher of Distinction Award, George Mason University (Spring, 2012)

Center for Teaching Excellence

This award recognizes outstanding faculty for their educational contributions to enhancing student learning at the university.

Finalists for the Teaching Excellence Award, George Mason University (Fall, 2011)

Center for Teaching Excellence

This award recognizes outstanding faculty for their educational contributions to enhancing student learning at the university.

Nominee for Rising Star Award, George Mason University (Spring, 2011)

Center for Teaching Excellence

Rising Star Outstanding Faculty Award (OFA) sponsored by the State Council of Higher Education in Virginia (SCHEV). The OFA program recognizes and rewards excellence in teaching, research and scholarship and public service among Virginia Institutions.

Programs That Work Award, Virginia Mathematics and Science Coalition Stuart C. Siegel Center, Virginia Commonwealth University on May 11, 2010.

Virginia Mathematics and Science Coalition recognized exemplary student and teacher educational programs in the State of Virginia that have shown evidence of a positive impact on student or teacher learning.

Graduate School of Education Ph. D. Award Spring 2005.

College of Education and Human Development, George Mason University

Fairfax County Public Schools Teacher of the Year & Washington Post's Agnes Meyer Award Nominee- Nominated for 2000-2001 school year.

TEACHING

UNIVERSITY TEACHING EXPERIENCES

Associate Professor, Mathematics Education (Fall 2012- Present)

Assistant Professor, Mathematics Education (Fall 2006-Spring 2012)

College of Education & Human Development, George Mason University, Fairfax, Virginia

- > Member of Mathematics Education faculty
- > Member of Elementary Education faculty

Responsibilities include teaching graduate courses in Elementary Education Programs and Mathematics Education Leadership, assisting in the development and implementation of programs for students, advising students within the program, and supervising graduate students

in field placements for the professional development schools. Currently, I am the dissertation chair for four doctoral students.

Academic Program Coordinator for Mathematics Education Leadership- (2014-current)

Responsibilities include recruiting mathematics specialists candidates and designing and offering courses that align to the Mathematics Specialists Endorsement requirements. Currently, GMU's Math Education Program is the only state approved licensing program with hybrid and online course.

Co-Director for a joint center between the College of Science and the College of Education and Human Development-COMLETE, George Mason University

COMLETE: *Center for Outreach in Mathematics Professional Learning & Educational* is a mathematics partnership between George Mason University (GMU) and school divisions in Northern Virginia (Alexandria, Falls Church City, Fairfax County, Loudoun County, Manassas City and Prince William County) to provide professional development for mathematics teachers in grades K-8.

Contributing Faculty for the Mathematics Education Center, George Mason University

The Center provides research opportunities for students interested in advanced degrees in Mathematics Education, Instructional Technology, and Educational Research. The Center's research activity serves as a laboratory where advanced graduate students enrolled in GMU programs participate in the ongoing research of the faculty. Students learn first-hand how to conduct educational research by participating in study design, instrument development, data collection, data analysis, manuscript preparation, and research presentations.

Courses taught in Master and Doctoral Programs

EDUC 896- Current Issues in Mathematics and STEM Education Research

The course is to introduce MEL students to contemporary issues in mathematics and STEM education; (2) to support students in critically reading research in mathematics and STEM education; and (3) to develop skills related to writing literature reviews and designing research.

EDCI 856- Mathematics Curriculum Development and Research (Doctoral Level course)

Designed to enable mathematics education leaders to evaluate and develop mathematics curriculum materials appropriate for school mathematics.

EDCI 858-Mathematics Education Research Design and Evaluation (Doctoral Level course)

Review methods of research appropriate for mathematics education settings and develop a theoretical framework and action plan for conducting a research project.

EDCI 857-Preparation and Professional Development of Mathematics Teachers (Doctoral

Level course). Examine critical components of effective professional development and design of mathematics methods courses for teachers. Students design a professional development project with evaluation measures.

EDCI 725-National and International Topics in Mathematics Education (Doctoral Level course)
Study research on mathematics teaching and learning, including current issues and trends in mathematics education leadership at the national and international levels.

EDCI 552 – Mathematics Methods for the Elementary Classroom (Pre-service teacher education). An introduction to methods for teaching all children developmentally appropriate topics in number and operations, geometry, algebra, and data analysis. Students work with manipulatives and technologies to explore mathematics, solve problems, and learn ways to teach mathematics content to children.

EDCI 666- Research in Mathematics Education (Mathematics Specialists Leader Program)
Students survey the most current research literature in mathematics education and engage in research, study, and discussion of teaching and learning mathematics in school settings.

EDCI 645-Mathematics Learning and Assessment in K-8 (Mathematics Specialists Leader Program). Focuses on mathematics curricular standards and processes and a variety strategies for assessing student understanding in mathematics.

EDCI 646- Mathematics Education Leadership for School Change
Surveys current literature and large-scale studies in mathematics education and engages students in research, study, and discussion of factors that impact teaching and learning of mathematics in school settings.

EDCI 633 -Advanced Mathematics Methods for the Elementary Classroom
Focuses on teaching all children problem solving and higher order thinking skills based on state and national mathematics standards.

EDCI 790 - Internship in Education (Pre-service teacher education)
Graduate interns are supervised in a Professional Development School placement setting that includes observations and seminar experiences

EDCI 680-Teaching Mathematics for Diverse Populations
Mathematics specialists focus on characteristics of students with diverse learning and cultural needs and how to teach mathematics content using a variety of instructional materials, assessment tools, strategies, and techniques for teaching mathematics. Emphasis on supporting the power and complexity of students' mathematical thinking.

MATH 613-Algebraic Connections and Technology in the Middle Grades (Mathematics Specialists Leader Program) The course provides opportunities for the growth of middle grades mathematics teachers understanding of algebra as a study of patterns, symbolic language, a tool for problem solving, a study of functions, as it relates to proportional reasoning, generalized arithmetic, and as a way of modeling physical situations.

MATH 610: Number Systems & Number Theory for K-8 Teachers
This course is designed to develop a comprehensive understanding of our number system and how its structure is related to computation and problem solving.

MATH 614: Rational Numbers and Proportional Reasoning

This class enhances middle school teacher knowledge of rational numbers, ratios and proportional reasoning.

Other University Teaching Experience

University Supervisor (2004-2012)

Elementary Education Program, George Mason University, Fairfax Virginia.

Supervise pre-service elementary internship at Westlawn Elementary, Fall Church, Virginia

Adjunct Professor (Fall 2004-Spring 2006)

George Mason University, Fairfax, Virginia

Adjunct Professor (2003-2004)

Marymount University Arlington, Virginia

PUBLIC SCHOOL TEACHING EXPERIENCES (10 years)

Third - Fifth Grade Mathematics Teacher, Little River Elementary School, Loudoun, Virginia

Gifted Education Teacher, Willow Springs Elementary School, Fairfax, Virginia

Multiage Elementary Teacher, Lemon Road Elementary School, Falls Church, Virginia

Korean Immersion Elementary Teacher, Seoul American Elementary School, Seoul, Korea

RESEARCH SUPERVISION

PHD Dissertation Chair

Mimi Corcoran, Mathematics Educational Leadership (completed 2017)

Alice Petillo, Mathematics Educational Leadership (completed 2016)

Theresa Wills- Mathematics Educational Leadership (completed 2015)

Wendy Schudmak-Mathematics Educational Leadership (completed 2014)

Molly Rawding- Mathematics Educational Leadership (completed 2013)

Chris Johnston- Mathematics Educational Leadership (completed 2009)

Gwenanne Salkind - Mathematics Educational Leadership (completed 2009)

Katherine Meints, Chair (in progress)

Lesley King, Chair (in progress)

Kim Leong, Chair (in progress)

PhD Dissertation Committee

Melissa Gallagher, Mathematics Educational Leadership (completed 2016)

Courtney Baker, Mathematics Educational Leadership (completed 2015)

Pam Bailey, Mathematics Educational Leadership (completed 2015)

PhD Portfolio

Sara Birkhead, Chair

Kathleen Matson, Chair

Kim Fair, Chair

Spencer Jamieson, Member
Dori Hargrove, Member
Andrea Weiss, Member
Danielle Steelman, Member
Michael Briscoe, Member
Laura C Mcconnaughey, Member

Creative Endeavors in Publication- Mathematics Curriculum Textbook Series

Bay- Williams, J., Berry, R., Caldwell, J., Champain, Z., Charles, R., Copely, J., Crown, W., Fennel, F. S., Karp, K., Murphy, S., Schielack, J., **Suh, J. M.**, & Wray, J. (2015). *enVision math2.0*. Pearson. NY. (alphabetically listed) *Program Author for the enVisionmath2.0 curriculum for grades K-6 math curriculum for Common Core to support print, blended, and 1:1 digital learning experiences.*

Family of Problems- (<http://completecenter.gmu.edu/familyofproblems.html>)
Resource created from hundreds of Lesson studies for teachers . One of the most exciting collaborative endeavors in the teaching of mathematics was developing a website called the Family of Problems. This website is a collection of co designed research lessons from previous Lesson Study where I was able to engage teachers in mini-teaching experiments. I am most excited to share this publicly with VA teachers and beyond because of my belief that teachers need to become more empowered as professionals who can be designers of instructional resources and teachers as researchers.

Video from the Association for Supervision and Curriculum Development (ASCD) and NCTM, *Meaningful Mathematics: Leading Students Toward Understanding and Application* released in 2007.

Professional Development Resources designed and published on the World Wide Web:

- Developing Video Clip Library of research lessons*
<http://completecenter.gmu.edu/middle.html>
- Developing Mathematical Proficiency - [Math Teaching Resources](#)
 - Improving Mathematical Practices through Algebraic Connections
[IMPACT MATH: Algebraic Connections and Technology](#)<http://actmath.blogspot.org:9999/>
 - Math Bridges: K-8 On-line resources for technology and mathematics (2007)
<http://mason.gmu.edu/~jsuh4/mathbridges/index.html><http://mason.gmu.edu/~jsuh4/mathbridges/index.html>
 - Junior Architects- Illumination Lesson Plans-Developed geometry and measurement lessons for NCTM's Illumination website.
<http://illuminations.nctm.org/LessonDetail.aspx?ID=L653>
 - Our Club House Curriculum development for Gifted math program
Enrichment for primary students using real life problem solving.
<http://mason.gmu.edu/~jsuh4/clubhouse/index.htm>

SERVICE

NATIONAL AND INTERNATIONAL LEADERSHIP AND SERVICE

NCATE trained reviewer (2016- current)

Serve as the CAEP program reviewers and reviewed a program report submitted by an institution, and made a judgment as to whether the program met standards and qualified for national recognition.

Appointed Representative for the Professional Development Committee for the National Council for Teachers of Mathematics (2015-2019)

Serve as a professional development committee member that will spearhead the new PD initiatives. This was an honor because I was able to work with the key mathematics educators who lead the national organization and working with NCTM's initiatives also provides me with the recognition at the National level.

Elementary Math Expert in NCTM's Classroom Resources Development Team for the National Council for Teachers of Mathematics (2015-2019)

Serve as an Elementary Mathematics Expert on the Classroom Resources Development Team of NCTM to create teaching resources that support implementation of the eight effective teaching practices in Principles to Actions. In addition, I was invited to teach the summer institute for NCTM's Number Institute.

Secretary and Treasurer for AERA's Professional Development Schools-Special Interest Group (April 2013 –April 2016) Served as a secretary and treasurer for the PDS SIG, I am working with the leadership team at AERA to disseminate the research and opportunities for collaboration among PDS research groups across school-university partnerships.

Editorial Panel for School University Partnership (2013-Present)

Working directly with the Journal Editor Kristien Zenkov to review high quality manuscript to push the PDS research agenda forward.

Curriculum Writer for Envision Mathematics Curriculum Development (2013-Present)

My contribution to the curriculum writing project is to develop meaningful Common Core State Standards (CCSS) aligned mathematics curriculum that will be used in schools.

Editorial Panel Member for the National Council of Teachers of Mathematics Journal – Teaching Children Mathematics (Service Period.August 2010-2013).

Served as an editorial panel member and a digital content editor for National Council of Teachers of Mathematics (NCTM)'s journal, Teaching Children Mathematics for three years.

Technology Department Editor for the National Council of Teachers of Mathematics Journal – Teaching Children Mathematics (Service Period. August 2010-2013).

Reviewer for Research Grants, National Science Foundation, (2010-2017)

Continue to serve as a panel member for different NSF grants and in turn learning more about grant writing, the evaluation and review process.

Illumination Advisory Group and Braining Camp Project for the National Council of Teachers of Mathematics (March, 2008-on going). Served as a member of an advisory group for the research and development of NCTM's Illumination Project and Braining Camp Project.

Reviewer for the International Group for Psychology of Mathematics Education (IGPME) (2007-present)

Reviewed submitted conference research reports and gave feedback for acceptance/rejection.

Reviewer for Association of Mathematics Teacher Educator's journal TE-MAT (2006-present).

Teacher Education Materials Project provides descriptions of professional development materials for mathematics teachers.

Instructor for National Council of Teachers of Mathematics Lesson Study Course (Summer 2006 & 2007)

Content Expert Reviewer (2007). Technology Integration in the Content Areas. Thomson Publishing

SERVICE TO COLLEGE AND UNIVERSITY

Committee Membership and Service Highlights

Promotion and Tenure committee member (2017-2019)

Ph.D. Representative, Mathematics Education Leadership (2017-2019)

Academic Program Director, Mathematics Education Leadership Program (Fall 2014-2016)

Member, Mathematics Education Leadership Program Committee (Fall 2006-present)

Recent Highlights: 2014 Math Specialists Institute, Lead Speaker for Workshop on Working with Diverse Student Populations.

Member, Elementary Teacher Preparation Program Committee (Fall 2006-present)

Recent Highlights: Organizing the 2013 Math Enrichment PDS Lab School Westlawn Elementary, Falls Church, Virginia.

Co-Chair, Tenure Track Annual Review Committee-TTARC (Fall 2015-2016)

Member, Tenure Track Annual Review Committee-TTARC (Fall 2014-2016)

Chair, Professional Development Committee –PDC (Fall 2013-2015)

Member, Professional Development Committee –PDC (Fall 2013-Spring 2014)

Provost- Charged Task Force on Textbook Affordability (Fall 2012-Spring2013)

Program Assessment Committee (Fall 2010-2012)

PHD Committee (Fall 2008-Spring 2011)

STEM Advisory Committee Inter-college committee (Spring 2011)

Professional Development Schools University Facilitators (Fall 2006-2011)
Westlawn Elementary School, FCPS, VA (2004-2011) and
Colin Powell Elementary School, FCPS, VA (2009-2010)

STATE AND LOCAL OUTREACH FOR SCHOOLS

Reviewer on the Virginia Standards of Learning Review Committee, Spring 2016

The State Math Coordinator, Michael Bolling invited me to be on a team of reviewers for the new State Math Standards that are being implemented in 2018. This work is really important because the state standards guide mathematics instruction. The work was intense as we had to review each of the grade level standards and map the learning progressions so that we ensured there was no gap in the learning path.

Organizer for the COMPLETE MATH Booth at the USA Science Engineering Festival, DC - April 2015

A creative endeavor that stemmed from working with teachers on mathematical modeling through Lesson Study was our presence at the USA SCIENCE ENGINEERING Festival in Washington DC. We had a chance to share with thousands of attendees the meaningful ways children can immerse in math modeling by solving everyday life problems using mathematics. This venue allowed us to come together as a community of math educators, teacher leaders, and elementary students to share our learning from the IMMERSION Math Modeling project. (<https://www.youtube.com/watch?v=KUguqpYO29o>)

Math4All-An Outreach Service

Mission: Creating Opportunities for All Students to Enjoy Math by Providing Service for Schools, Parents who want more for their students. Working with Pre-K educators in Arlington County Public Schools (2014-2015)

E=MC2: Enrichment in Mathematics, Computing and Creativity for Young Scholars

Math Professional Development for Preservice Elementary Teachers & Clinical Faculty in Numbers and Rational Numbers for K-8 teachers

Two week summer math camp for primary and upper elementary students identified as Young Scholars participated in a GMU sponsored summer institute/camp. July of 2011 (Westlawn ES), 2012 (Annandale ES), 2013 (Westlawn ES, Fairfax Villa), 2014 (Fairfax Villa & Providence ES) 2017, (Centreville ES)

Math Professional Development for k-8 Teachers-Numbers & Rational Numbers

Elementary/middle school teachers from 6 districts participated in a GMU sponsored VDOE funded summer institute. July 18-22, 2011 George Mason University

Math Professional Development for Elementary Teachers-Number and Number System for K-8

120 elementary teachers from 6 districts participated in a GMU sponsored VDOE funded summer institute. August 3-7, 2010- George Mason University

Math Professional Development for Middle School Teachers-Rational Numbers for k-8

90 middle school teachers from 6 districts participated in a GMU sponsored VDOE funded summer institute. August 9-13, 2010 George Mason University

Lesson Study Professional Development for Elementary & Middle School Teachers

90 middle school teachers from 5 districts participated in a GMU sponsored SCHEV funded school-based Lesson Study during the Spring of 2010 in Fairfax, Prince William, Norfolk, Petersburg and Hopewell.

Invited Presenter Advanced Academics Conference (August Sessions, 2010, 2011, 2012, 2013, 2014) *Enhancing critical thinking and algebraic reasoning among diverse learners*

Building Collective Mathematical Knowledge through Pedagogical Content Tools

Presented instructional strategies that promoted collective mathematical knowledge in a problem-based classroom.

Consultant for Professional Development for Lesson Study for DC Charter School.

E.L. Haynes District of Columbia Public Schools (Spring 2008).

Provided long term professional development for teachers in establishing a Lesson Study community.

Consultant and Instructor for Teacher Leadership Grant. Westlawn Elementary

Falls Church, Virginia (Summers 2006, 2007 & 2008).

Collaborated (in kind) on a grant for Developing Teacher Leadership for Summer Institutes. Planned and taught professional development workshop for a three week summer institute for Westlawn Elementary School in Falls Church, Virginia

Instructor for Westlawn Labschool MATH 411: Falls Church, Virginia (Summer 2008).

Taught problem solving in mathematics (in context of their own community) to rising 4-6th grade

students from a Title One Elementary School.

Lead Instructor (3-4). MATH BRIDGES II Project: Concepts and Connections in the K-8 Standards. (2002-2004). Two week course with four follow-up classes
No Child Left Behind Grant. Professional Development Program, Virginia

Dwight D. Eisenhower Professional Development Program, Virginia (\$65,347). Project goal:
Provide professional development in the use of concrete and virtual manipulatives for 60 K-8 teachers in the Loudoun County Public School System.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Educational Research Association

Association for the Psychology of Mathematics Education, North American Chapter and International member

National Council for Teachers of Mathematics

National Council for Supervisors of Mathematics

Association for Supervision and Curriculum Development

Association for Mathematics Teacher Educators

Project Websites Created to Share with the Broader Mathematics Education Community

Some of these sites are listed below:



Learn about SPARK STEM: Sparking a Sense of Wonder in STEM

<http://sparkstem.onmason.com/>



Learn about math modeling in the elementary grades

<http://completemath.onmason.com/math-modeling/>

MATH TECH- KNOWLEDGY



Learn about Bridging Tech-knowledge in

<http://mathbridges.onmason.com>

FAMILY OF PROBLEMS



Learn about our Family of Problems

<http://completemath.onmason.com/family-of-problems>

MATH HAPPENINGS



Learn about Math Happenings

<http://mathhappenings.onmason.com>