

CURRICULUM VITAE
Margret A. Hjalmarson
<http://hjalmarson.onmason.com>

ACADEMIC PREPARATION:

Purdue University	2000-2004	Ph.D. Mathematics Education Dissertation: Designing presentation tools: A window into teacher practice.
Purdue University	1998-2000	M.S. Mathematics
Mount Holyoke College	1996-1998	B.A. Mathematics Graduated cum laude with honors
Cottey College	1994-1996	A.A./A.S. Liberal Arts

PROFESSIONAL EXPERIENCE:

Program Director, National Science Foundation, September 2014-Present

Division of Research on Learning in Formal & Informal Settings

Education & Human Resources Directorate

- Responsible for proposal review and award monitoring for proposals in the EHR Core Research, Innovations in Technology Experiences for Students and Teachers, Discovery Research PreK-12, and STEM+Computing Partnerships programs
- Managed portfolio of over \$10 million in awards related to mathematics education and engineering education at the K-12 and undergraduate levels in formal and informal educational settings
- Engaged in outreach and communication with principal investigators, institutions, and other stakeholders related to policy and practice in STEM education research and development

Associate Professor, George Mason University, August 2010-Present

Assistant Professor, George Mason University, August 2004-July 2010

College of Education & Human Development

- Program Coordinator, Mathematics Education Leadership (2008-present)
- Director, Mathematics Education Center (2008-present)
- Member of Mathematics Education Leadership faculty
- Member of Secondary Education faculty (2004-2008)

Post-Doctoral Researcher, Purdue University, February 2004 – July 2004

NSF-funded Small Group Mathematical Modeling Project for Improved Gender Equity in Engineering, Department of Engineering Education

- Developed curriculum and conducted research on mathematics foundational to small group, real-world, problem-solving activities in engineering

Graduate Research Assistant, Purdue University, 2000 – 2003

Mathematical Modeling Project for Improved Gender Equity in Engineering

Twenty-first Century Conceptual Tools Center, School of Education

- Collaborated with engineering and education faculty on large-scale, NSF-funded gender-equity initiative
- Head of interdisciplinary task design group including graduate students and faculty in engineering and education
- Designed and evaluated curriculum materials for freshman engineering course in mathematical technological tools.
- Organized mathematics teacher development activities

Visiting Fellow, Spring-Summer 2003

Queensland University of Technology, Brisbane, Australia

Curriculum and Instruction Graduate Teaching Assistant, 2000 – 2002

Department of Curriculum and Instruction, Purdue University

Mathematics Graduate Teaching Assistant, 1998 - 2000

Department of Mathematics, Purdue University

RESEARCH AND SCHOLARSHIP:

(Publications are arranged chronologically by type)

Peer-reviewed Journal Articles:

- Hjalmarson, M. A. (in press). Learning to teach math specialists in a synchronous online course: A Self-study. *Journal for Mathematics Teacher Education*.
- Diefes-Dux, H. A., Hjalmarson, M. A., & Zawojewski, J. (2013). Student team solutions to an open-ended mathematical modeling problem: Gaining insights for educational improvement, *Journal of Engineering Education*, 102(1), 179-216.
- Smith, T. M. & Hjalmarson, M. A. (2013). Eliciting and developing teachers' conceptions of random processes in a probability and statistics course. *Mathematics Thinking and Learning*, 15(1), 58-82.
- Diefes-Dux, H. A., Zawojewski, J. S., Hjalmarson, M. A., & Cardella, M. E. (2012). A framework for analyzing feedback in a formative assessment system for mathematical modeling problems, *Journal of Engineering Education*, 101(2), 375-404.
- Hjalmarson, M. A., Moore, T. J., and delMas, R. (2011). Statistical analysis when the data is an image: Eliciting student thinking about sampling and variability, *Statistics Education Research Journal*, 10(1), 15-34.
- Diefes-Dux, H. A., Zawojewski, J. S., & Hjalmarson, M. A. (2010). Designing research-based evaluation tools for open-ended problems. *International Journal of Engineering Education*, 26(4), 807-819.
- Moore, T. J. & Hjalmarson, M. A. (2010). Developing measures of roughness: Using problem solving as a method to document student thinking. *International Journal of Engineering Education*, 26(4), 820-830.
- Hjalmarson, M. (2008). Mathematics curriculum systems: Models for analysis of curricular innovation and development, *Peabody Journal for Education*, 83(4), 592-610.

- Hjalmarson, M., & Diefes-Dux, H. (2008). Teacher as designer: A framework for teacher analysis of mathematical model-eliciting activities. *Interdisciplinary Journal of Problem-based Learning*, 2(1), 57-78.
- Hjalmarson, M. (2007). Engineering students designing a statistical procedure. *Journal of Mathematical Behavior*, 26(2), 178-188.
- Diefes-Dux, H. A., Hjalmarson, M., Bowman, K., & Zawojewski, J. S. (2006). Quantifying aluminum crystal size part 1: The model-eliciting activity. *Journal of STEM Education*, 7(1&2), 51-63.
- Hjalmarson, M. A., Diefes-Dux, H. A., Bowman, K., & Zawojewski, J. S. (2006). Quantifying aluminum crystal size part 2: The model-development sequence. *Journal of STEM Education*, 7(1&2), 64-73.
- Lesh, R., Doerr, H. M., Carmona, G., & Hjalmarson, M. (2003). Beyond constructivism. *Mathematical Thinking and Learning*, 5(2,3), 211-234.

Peer-Reviewed Monographs:

- Hjalmarson, M. & Suh, J. (2008). Developing mathematical pedagogical knowledge by evaluating instructional materials. In F. Arbaugh & M. Taylor (Eds.), *Association for Mathematics Teacher Education monograph V: Inquiry into mathematics teacher education* (pp. 97-108). San Diego, CA: AMTE.

Invited Book Chapters & Proceedings Chapters:

- Hjalmarson, M. (2014). STEM Education 2025: A vision for knowledge and teaching K-16. *Developing a bold vision for STEM teaching and learning to prepare students for success in 2025*. Washington, DC: American Institutes for Research.
- Hjalmarson, M. (2013). Principles for design-based teacher learning and development. In L. Carmona (Ed.), *First International Symposium for Campus Viviente Proceedings*. San Antonio: University of San Antonio.
- Frazier, W. M., Fox, R. K., & Hjalmarson, M. A. (2012). STEM disciplines and world languages: Influences from an international teacher exchange. In B. Shaklee & S. Baily (Eds.), *Internationalizing teacher education in the United States* (pp. 175-204). Lanham, MD: Rowman & Littlefield Publishers.
- Diefes-Dux, H., Hjalmarson, M. A., Miller, T., & Lesh, R. (2008). Model-eliciting activities for engineering education. In J. S. Zawojewski, H. Diefes-Dux, & K. Bowman (Eds.), *Models and modeling in engineering education: Designing experiences for all students* (pp. 17-36). Rotterdam, The Netherlands: SensePublishers.
- Hjalmarson, M. A. (2008). Learning from students' responses to MEAs. In J. S. Zawojewski, H. Diefes-Dux, & K. Bowman (Eds.), *Models and modeling in engineering education: Designing experiences for all students* (pp. 173-186). Rotterdam, The Netherlands: SensePublishers.
- Hjalmarson, M. A., Diefes-Dux, H., & Moore, T. J. (2008). Designing model development sequences for engineering. In J. S. Zawojewski, H. Diefes-Dux, & K. Bowman (Eds.), *Models and modeling in engineering education: Designing experiences for all students* (pp. 37-54). Rotterdam, The Netherlands: SensePublishers.

- Hjalmarson, M., & Lesh, R. (2008a). Engineering and design research: Intersections for education research and design. In A. E. Kelly, R. Lesh, & J. Baek (Eds.), *Handbook of design research methods in education: Innovations in science, technology, engineering and mathematics learning and teaching* (pp. 96-110). New York: Routledge.
- Hjalmarson, M., & Lesh, R. (2008b). Engineering, systems, products, and processes for innovation. In L. English (Ed.), *Handbook of international research in mathematics education 2nd Ed* (pp. 520-534). New York: Routledge.
- Wood, T., Hjalmarson, M. A., & Williams, G. (2008). Learning to design in small group mathematical modeling. In J. S. Zawojewski, H. Diefes-Dux, & K. Bowman (Eds.), *Models and modeling in engineering education: Designing experiences for all students* (pp. 187-212). Rotterdam, The Netherlands: SensePublishers.
- Zawojewski, J. S., Hjalmarson, M. A., Bowman, K. J., & Lesh, R. (2008). A modeling perspective on learning and teaching in engineering education. In J. S. Zawojewski, H. Diefes-Dux, & K. Bowman (Eds.), *Models and modeling in engineering education: Designing experiences for all students* (pp. 1-16). Rotterdam, The Netherlands: SensePublishers.
- Zawojewski, J. S., Chamberlin, M., Hjalmarson, M. A., & Lewis, C. (2008). Designing design studies for professional development in mathematics education: Studying teachers' interpretive systems. In A. E. Kelly, R. Lesh, & J. Baek (Eds.), *Handbook of design research methods in education: Innovations in science, technology, engineering and mathematics learning and teaching* (pp. 219-245). New York: Routledge.
- Hjalmarson, M., Cardella, M., & Adams, M. (2007). The role of iterative cycles in engineering problem solving. In R. Lesh, E. Hamilton, & J. Kaput (Eds.), *Foundations for the future in mathematics education* (pp.409-430). Mahwah, NJ: Lawrence Erlbaum.
- Martin, F. G., Hjalmarson, M. A., & Wankat, P. C. (2007). When the model is a program. In R. Lesh, E. Hamilton & J. Kaput (Eds.), *Foundations for the future in mathematics education* (pp. 395-408). Mahwah, NJ: Lawrence Erlbaum.
- Lesh, R., Lester, F. K., & Hjalmarson, M. (2003). A models and modeling perspective on metacognitive functioning in everyday situations where mathematical constructs need to be developed. In R. A. Lesh & H. M. Doerr (Eds.), *Beyond constructivism: Models & modeling perspectives on mathematics problem solving, learning & teaching* (pp. 383-404). Hillsdale, NJ: Lawrence Erlbaum Associates.

Book Reviews:

- Hjalmarson, M. A. (2007). The learning of mathematics: Sixty-ninth yearbook. *Mathematics Teacher*, 101(5), 397.

Refereed Proceedings:

- Hjalmarson, M. A. & Nelson, J. K. (2015, June). Faculty development groups for interactive teaching. *Proceedings of the 2015 ASEE Annual Conference. Seattle, WA.*
- Hjalmarson, M. A., Nelson, J. K., & Lorie, C. (2015, June). Teaching as a design process: A framework for design-based research in engineering education. *Proceedings of the 2015 ASEE Annual Conference. Seattle, WA.*

- Nelson, J. K. & Hjalmarson, M. A. (2015, June). Faculty autonomy in teaching development groups. *Proceedings of the 2015 ASEE Annual Conference*. Seattle, WA.
- Hargrove, D., Jamieson, S., & Hjalmarson, M. (2014, July). Elementary teachers' development of high cognitive demand tasks. In Liljedahl, P., Nicol, C., Oesterle, S., & Allan, D. (Eds.), *Proceedings of the 38th Conference of the International Group for the Psychology of Mathematics Education and the 36th Conference of the North American Chapter of the Psychology of Mathematics Education*. Vancouver, Canada: PME.
- Hjalmarson, M. & Kelly, A. E. (2014, July). Pathways through post-secondary maths. In Liljedahl, P., Nicol, C., Oesterle, S., & Allan, D. (Eds.), *Proceedings of the 38th Conference of the International Group for the Psychology of Mathematics Education and the 36th Conference of the North American Chapter of the Psychology of Mathematics Education*. Vancouver, Canada: PME.
- Hjalmarson, M. & Nelson, J. K. (2014, June). Creating small interactive teaching groups. *Proceedings of the 2014 ASEE Annual Conference*. Indianapolis, IN.
- Hjalmarson, M., Bolyard, J., Suh, J., Bailey, P., Whitenack, J., Moyer-Packenham, P. (2013, November). Mathematics specialists: A new role in schools. In M. V. Martinez & A. Castro Superfine (Eds.), *Proceedings of the Thirty-Fifth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Chicago, IL.
- Hjalmarson, M. A., Nelson, J. K., Huettel, L., Padgett, W., Wage, K. E., Buck, J. R. (2013, June). Developing Interactive Teaching Strategies for Electrical Engineering Faculty. *Proceedings of the 2013 ASEE Annual Conference*. Atlanta, GA.
- Nelson, J. K. & Hjalmarson, M. A. (2013, May). Students' understanding of convolution. *2013 IEEE International Conference on Acoustics, Speech and Signal Processing*. Vancouver, BC.
- Nelson, J. K., & Hjalmarson, M. A. (2011, June). Linking students' interest in electrical engineering to conceptual understanding. *Proceedings of the 2011 ASEE Annual Conference*. Vancouver, B.C.
- Nelson, J. K. & Hjalmarson, M. A. (2011, January). Using in-class assessment to inform signals and systems instruction. *Proceedings of the IEEE Signal Processing Education Workshop*. Sedona, AZ.
- Wage, K.E., Buck, J. R., Hjalmarson, M. A., & Nelson, J. K. (2011, January). Signals and systems assessment: Comparison of responses to multiple choice conceptual questions and open-ended final exam problems. *Proceedings of the IEEE Signal Processing Education Workshop*. Sedona, AZ.
- Nelson, J. K., Hjalmarson, M. A., Wage, K. E., & Buck, J. R. (2010, October). Students' interpretation of the importance and difficult of concepts in signals and systems. *Proceedings of the IEEE Frontiers in Education Conference*, Washington, DC.
- Nelson, J. & Hjalmarson, M. (2009, June). Students' understanding of sequence and series as applied in electrical engineering. *Proceedings of the American Society for Engineering Education Conference*. Austin, TX. Retrieved from <http://www.asee.org/conferences/paper-search-form.cfm>.
- Diefes-Dux, H., Verleger, M., Zawojewski, J., & Hjalmarson, M. (2009, June). Multidimensional tool for assessing student-team solutions to model-eliciting activities. *Proceedings of the American Society for Engineering Education Conference*. Austin, TX. Retrieved from <http://www.asee.org/conferences/paper-search-form.cfm>.

- Buck, J. R., Wage, K. E., & Hjalmarson, M. A. (2009, January). Item response analysis of the continuous-time signals and systems concept inventory. *Proceedings of the IEEE Digital Signal Processing Workshop and Fifth IEEE Signal Processing Education Workshop* (pp. 726 – 730). Marco Island, FL. Retrieved from <http://ieeexplore.ieee.org/servlet/opac?punumber=4782947>.
- Buck, J. R., Wage, K. E., Hjalmarson, M. A., & Nelson, J. K. (2007, October). Comparing student understanding of signals and systems using a concept inventory, a traditional exam and interviews. *Proceedings of the Frontiers in Education Conference* (pp. S1G-1 - S1G-6). Milwaukee, WI. Retrieved from <http://ieeexplore.ieee.org>.
- Hjalmarson, M. (2006, November). The role of challenging mathematics content: Teacher content courses in MSP. In S. Alatorre, J. L. Cortina, M. Sáiz, and A. Méndez (Eds) *Proceedings of the 28th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 783-789). Merida, Mexico.
- Wage, K., Buck, J., & Hjalmarson, M. (2006, October). The signals and systems concept inventory. In D. Deeds & B. Callen (Eds.), *Proceedings of the National STEM Assessment Conference* (pp. 307-313). Washington. D.C.
- Wage, K. W., Buck, J. R., & Hjalmarson, M. A. (2006, September). Analyzing misconceptions using the signals and systems concept inventory and student interviews. *Proceedings of the IEEE Twelfth Digital Signal Processing Workshop and Fourth IEEE Signal Processing Education Workshop* (pp. 123 – 128). Teton National Park, WY. Retrieved from <http://ieeexplore.ieee.org>.
- Hjalmarson, M. (2005, October). Purposes for mathematics curriculum: Pre-service teachers' perspectives. In Lloyd, G. M., Wilson, M., Wilkins, J. L. M., & Behm, S. L. (Eds.), *Proceedings of 27th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Roanoke, VA. Retrieved from <http://convention2.allacademic.com>.
- Diefes-Dux, H., Follman, D., Zawojewski, J., Capobianco, B., & Hjalmarson, M. (2004, June). Model eliciting activities: An in-class approach to improving persistence and retention of women in engineering. *Proceedings of the Conference for the American Society of Engineering Education*. Salt Lake City, UT. Retrieved from <http://www.asee.org/conferences/paper-search-form.cfm>.
- Hjalmarson, M. A. (2003, July). Designing a discussion: Teacher as designer. In L. Bragg, C. Campbell, G. Herbert, & J. Mousley (Eds.), *Proceedings of the twenty-sixth annual meeting of the Mathematics Education Research Group of Australasia* (pp. 429-435). Geelong, Australia.
- Hjalmarson, M. A. (2002, October). Technology and middle school student response to model-eliciting activities: A case study. In D. S. Mewborn, P. Sztajn, D. Y. White, H. G. Wiegel, R. L. Bryant, & K. Nooney (Eds.), *Proceedings of the 24th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 841-850). Athens, GA.
- Hjalmarson, M. A. (2001, October). A modeling perspective on metacognition in everyday problem-solving situations. In B. Speiser, C. A. Maher, & C. Walter, *Proceedings of twenty-third annual meeting of the Association for the Psychology of Mathematics Education – North American Chapter* (pp. 177-186). Snowbird, UT.

Invited Talks

- Hjalmarson, M. (2009, February). Understanding of graphs and functions in electrical engineering. Invited presentation at the James J. Kaput Center for Innovation in Mathematics Education, University of Massachusetts Dartmouth. Dartmouth, MA.
- Hjalmarson, M. (2006, November). Models and modeling theory. Invited presentation at National Changhua University of Education. Changhua, Taiwan.

Conference Workshops

- Baek, J., Kelly, A., Lesh, R., VanDenAkker, Jan., Lobato, J., Banann-Ritland, B., Hjalmarson, M., Carmona, G., & Nieveen, N. (2009). Design research methods in STEM education. Professional development workshop at the American Educational Research Association Conference, San Diego, CA.
- Buck, J. R., Wage, K. E., & Hjalmarson, M. A. (2008). Workshop – The Signals and Systems Concept Inventory. Frontiers in Education Conference. Milwaukee, WI.

Presentations:

- Baker, C., Hjalmarson, M., Reybold, E., & Suh, J. M. (2015, April). The impact of beliefs and background on mathematical problem solving. Paper presented at the Annual Meeting of American Educational Research Association, Chicago, IL.
- Ward-Parsons, A., Hjalmarson, M., Evmenova, A., & Samaras, A. (2014, April). Self-study of online teaching in education: Multiple contexts and strategies for peer interaction online. Paper presented at the Annual Meeting of American Educational Research Association, Philadelphia, PA.
- Baker, C., Hjalmarson, M., & Reybold, E. (2013). The impact of beliefs and background on a first-year teacher's problem-solving instruction. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.
- Hjalmarson, M., Suh, J., Bailey, P., & Woods, B. (2013). Deepening vertical connections: K-8 mathematics learning for teacher leaders. Presentation at Virginia Council for Teachers of Mathematics Conference, Virginia Beach, VA.
- Hjalmarson, M., Suh, J., Bailey, P., & Woods, B. (2013). Deepening vertical connections by focusing on mathematical Learning across grades K-8. Presentation at Virginia Mathematics Specialists Conference, Culpeper, VA.
- Hjalmarson, M. A. & Nelson, J. K. (2012). A content-driven collaboration model for engineering faculty development. Paper presented at the Annual Meeting of the American Educational Research Association. Vancouver, British Columbia.
- Smith, T. M. & Hjalmarson, M. A. (2012). Probability for K-8 mathematics specialists. Paper presented at the 16th Annual Conference of the Association for Mathematics Teacher Educators. Fort Worth, TX.
- Smith, T. M. & Hjalmarson, M. A. (2011). "Random" thoughts about probability and statistics: The development of K-8 mathematics specialists' understandings. Paper presented at the 15th Annual Conference of the Association for Mathematics Teacher Educators. Irvine, CA.

- Baek, J., Hjalmarson, M., & Bannan-Ritland, B. (2008). Design research on a diet: A methodological framework called design assessment. Paper presented at the American Educational Research Association. New York, NY.
- Hjalmarson, M., Buck, J. R., & Wage, K.A. (2008). Translating information from graphs into graphs: Signals processing. Paper presented at Eleventh Annual Conference on Research in Undergraduate Mathematics Education. San Diego, CA.
- Hjalmarson, M. (2007). Finding the challenge in mathematics curricula. Paper presented at the Annual Meeting of the American Educational Research Association. Chicago, Illinois.
- Baek, J. Y., Xia, Q., Peters, E. E., Martinez, P., Bannan-Ritland, B., & Hjalmarson, M. A. (2007). Design research on the means of support for teaching and learning geological observation. Paper presented at the National Association for Research in Science Teaching Annual International Conference. New Orleans, LA.
- Hjalmarson, M. (2006). Engineering as bridge for undergraduate and K-12 curriculum. Paper presented at Ninth Annual Conference on Research in Undergraduate Mathematics Education. Piscataway, NJ.
- Hjalmarson, M. (2005a). Statistical sampling from a digital image. Presentation at Meetings of Research for Undergraduate Mathematics Education. Phoenix, AZ.
- Hjalmarson, M. (2005b). Teacher as tool designer: Tool design as a view into teacher practice. Paper presented at the Annual Meeting of the American Educational Research Association. Montreal, Canada.
- Hjalmarson, M. A. (2005c). What is learned about engineering students' mathematical modeling? Paper presented at the Annual Meeting of the American Educational Research Association, Montreal.
- Chamberlin, S., Chamberlin, M., Hjalmarson, M., & Lesh, R. (2003, November). Interdisciplinary problem solving in the 21st century with model-eliciting activities. Presentation at the fiftieth annual conference for the National Association for Gifted Children. Indianapolis, IN.
- Hjalmarson, M., Diefes-Dux, H., Lesh, R. (2003, October). Data analysis in context by first-year engineering students. Presentation at seventh annual Conference on Research in Undergraduate Mathematics Education. Scottsdale, AZ.
- Lesh, R., Carmona, G., Doerr, H., English, L., Hjalmarson, M., & Lamon, S. (2003, July). Models and modeling. Discussion group at the twenty-seventh annual meeting for the International Group for the Psychology of Mathematics Education. Honolulu, HI.
- Carmona, G., Heger, M. & Hjalmarson, M. (2000, November). Developing thought-revealing activities. Presentation at annual meeting for Indiana Council of Teacher's of Mathematics. Indianapolis, IN.
- Hjalmarson, M. & Gummer, E. (2000, October). Model-development sequences: Puppy genetics and StarLogo©. Poster session at twenty-third annual meeting of the Association for the Psychology of Mathematics Education North American Chapter. Tucson, AZ
- Gummer, E. & Hjalmarson, M. (2000, March). Model-development sequences: Puppy genetics and StarLogo©. Teaching, Learning and Technology Poster Session, Purdue University. West Lafayette, IN.
- Hjalmarson, M. (1998, January). Non-edge-to-edge tilings by regular polygons. Undergraduate poster session at Annual Joint Meetings of the American Mathematical Society and the Mathematical Association of America. Baltimore, MD.

Hjalmarson, M. (1998, April). Non-edge-to-edge tilings by regular polygons. Presentation at Hudson River Undergraduate Mathematics Conference. Schenectady, NY.

GRANTS AND CONTRACTS

Principal Investigator, “Designing Teaching: Scaling up the SIMPLE Design Framework for Interactive Teaching Development”, \$572,190, Grant No. 1347675, National Science Foundation, WIDER Program, Division of Undergraduate Education, 12/01/2013-11/30/2016, Jill Nelson & Cody Edwards (Co-Principal Investigators)

Co-Principal Investigator, “Research Initiation Grant: Student-directed Differentiated Learning in College-level Engineering Education”, \$149,952, Grant No. 1441794, Division of Engineering Education & Centers, 09/01/2014-08/31/2016, Vasiliki Ikonomidou (Principal Investigator).

Co-Principal Investigator, “Planning Conferences on Longitudinal Study Analysis of High School Algebra and College Mathematics”, \$163,187, Grant No. 1104899, National Science Foundation, Research and Evaluation in Engineering and Science Education, Division of Research on Learning, 12/2010-11/2012, Anthony Kelly (Principal Investigator)

Co-Principal Investigator, “Encouraging Innovative Pedagogy through Long-Term Faculty Development Teams”, \$148,971, Grant No. 1037683, National Science Foundation, Engineering Education Centers, 09/2010-08/2012, Jill Nelson (Principal Investigator).

Principal Investigator, “Linking Interest and Conceptual Knowledge in Electrical Engineering”, \$88,321, Grant No. 0835919, National Science Foundation, Engineering Education Centers, 09/2008-09/2011, Jill Nelson (Co-Principal Investigator)

Co-Principal Investigator, “Collaborative Proposal: The Signals and Systems Concept Inventory”, \$153,904.00, Grant No. 0512686, National Science Foundation, Course Curriculum and Laboratory Improvement – Assessing Student Achievement, 09/2005-10/2010, Kathleen Wage (Principal Investigator), John Buck (Co-Principal Investigator)

Senior Staff, National Science Foundation Math and Science Partnership Program Evaluation (Contract No. 0456995, Math and Science Partnership Program, Patricia Moyer-Packenham (Principal Investigator))

- Investigate challenging mathematics content, course and curriculum development in large-scale grant program
- Examine engineering education initiatives across the NSF Math and Science Partnership Program

WORKSHOPS AND CONSULTING

Consultant, “Collaborative Research: Improving Engineering Students' Learning Strategies Through Models and Modeling” (NSF # 0717801, University of Pittsburgh). Advise on the

development of modeling activities for multiple engineering institutions to assess student learning in multiple engineering competencies.

Consultant, “GenSing Project,” National Institute of Education, Singapore. Design assessments and assist with teacher development related to generative algebra activities for middle school students using networked graphing calculators.

Consultant, “Assessing and Evaluating Student Work on Modeling Activities Embedded in a First-Year Engineering Problem Solving Course” (NSF #0535678, Purdue University, 2006-2008). Aiding in the development of principles for assessment of design-based, problem solving activities for a first-year engineering course in the Department of Engineering Education.

Workshop, “Models and Modeling Principles and Activities”. Workshop presented at National Changhua University of Education in Taiwan to elementary and middle school teachers.

COURSES TAUGHT

Ph.D. Program in Mathematics Education Leadership (2004-Present)

EDCI 855: Mathematics Education Research on Teaching and Learning

EDCI 856: Mathematics Education Curriculum Design and Evaluation

EDCI 857: Preparation and Professional Development of Mathematics Teachers

EDCI 726: State and Local Leadership Issues in Mathematics Education

EDCI 725: National and International Issues in Mathematics Education

Master’s Program for Mathematics Specialist Leaders (2004-Present)

EDCI 644: Learning and Assessment in Mathematics Education

EDCI 645: Curriculum Development in Mathematics Education

EDCI 646: School Change in Mathematics

EDCI 666: Research in Mathematics Teaching

MATH 612: Probability and Statistics for K-8 Teachers

MATH 613: Algebra for K-8 Teachers

EDLE 791: Internship in Education Leadership (Math Education version)

Master’s Program in Secondary Education (2004-2009)

EDCI 572: Methods of Teaching Secondary Mathematics

EDCI 672: Advanced Methods of Teaching Secondary Mathematics

SERVICE

External Service

Staff Member, Virginia Math & Science Coalition

Panel & Individual Proposal Reviewer, National Science Foundation

NCTM Program Report Reviewer, National Council for Accreditation of Teacher Education (2012, 2013)

Manuscript Reviewer

- *Advances in Engineering Education*
- *Contemporary Issues in Technology and Mathematics Teacher Education*
- *Journal of Engineering Education*
- *Journal of Mathematics Teacher Education*
- *Journal of Mathematical Behavior*
- *Journal for Research in Mathematics Education*
- *Mathematical Thinking and Learning*
- *Mathematics Teacher*

Reviewer, Japan Fulbright Memorial Teacher Fund Program (2007, 2008, 2010, 2013)

Virginia Secretary of Education Math Standards of Learning Working Group (2013)

Virginia Mathematics Standards of Learning Review Panel (August, 2008)

NCATE-Virginia licensure review (May, 2009)

George Mason University

Faculty Senate Member for CEHD (2010-2012)

Faculty Salary Equity Committee (Member, 2010-2012; Chair, 2013-Present)

Graduate School of Education

Mathematics Education Leadership Program (2004 – present)

- Academic Program Coordinator (July 2008-present)
- Attend state-level meetings of Virginia Mathematics Specialists (October 2004, March 2005)
- Led creation of hybrid course offerings for Mathematics Specialist program
- Assisted with development and promotion of newly designed Mathematics Specialist Leader Master's degree including mathematics course syllabi.
- Member of portfolio committees for students enrolled in Mathematics Education Leadership doctoral program as well as other programs

Secondary Education Program (2004-2009)

- Advised at least 50 students in master's degree program in secondary mathematics
- Developed programs, assessments, and curriculum for secondary mathematics education specifically and in support of other disciplines in secondary education

Program Assessment Committee for Graduate School of Education (2004-present)

Faculty Evaluation Committee (2012-2014)

E-Learning Committee (2012-present)

Search Committee, Elementary Mathematics Education position (2005-06)

Search Committee, Secondary Education Program Coordinator (2006-07)

Search Committee, Secondary English Education position (2007-08)

Search Committee Chair, Secondary Mathematics Education position (2008-09, 2012-2013)

Search Committee, Learning Technologies and Design Research (2012-2013)

Invited presenter to EDUC 805: Doctoral Seminar (Spring 2005, Spring 2006)

AWARDS AND FELLOWSHIPS

- 2013-2014, George Mason University Leadership Legacy Program
- 2009 Frontiers in Engineering Education Participant (National Academy of Engineering)
- 2006 Honorable Mention – Best Paper Award, Conference for Research in Undergraduate Mathematics Education
- Purdue Research Foundation Dissertation Fellowship
- Sigma Xi Scientific Society, Mount Holyoke College

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- American Educational Research Association
- American Society for Engineering Education
- Association for Mathematics Teacher Educators
- National Council for Teachers of Mathematics

DOCTORAL STUDENTS (arranged chronologically)

Committee Chair

John Baek (2007, Instructional Technology)
Catherine Scott (2009, Mathematics Education)
Linda Gantz (2010, Mathematics Education)
Faye Obenschain (2010, Mathematics Education)
Patricia Kridler (2012, Mathematics Education)
Pamela Bailey (2013, Mathematics Education)
Venkata Patnam (2013, Mathematics Education)
Courtney Baker (2014, Mathematics Education)
Bradley Rankin (2014, Mathematics Education)
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