

Curriculum Vita

Rose Mary Zbiek

2 June 2013

Background

Higher Education

Degree Major, Institution

Ph.D. Curriculum & Instruction/Mathematics Education, The Pennsylvania State University
M.S.Ed. Instruction, Bucknell University
B.S.Ed. Secondary Education/Mathematics, Indiana University of Pennsylvania

Professional License and Certificate

<u>From</u>	<u>To</u>	<u>License and Certificate</u>	<u>Granting Authority</u>
05/1983	(99 years)	Secondary Mathematics Instructional II Certificate	Commonwealth of Pennsylvania

Academic and Professional Experience

<u>Date</u>	<u>Position / Employer</u>
6/2002-present	Associate Professor then Professor of Mathematics Education and Program Coordinator for Mathematics Education, The Pennsylvania State University, University Park, PA
8/1992-6/2002	Assistant Professor then Associate Professor of Mathematics Education and Mathematics, University of Iowa, Iowa City, IA

Selected Publications and Creative Works

Books and journal issues (Served as Editor)

Zbiek, R. M. (Series Ed.) (In progress). *Essential understandings for teaching and learning mathematics* [a 16-book series]. Reston, VA: National Council of Teachers of Mathematics.
Included in this series are:

Barnett-Clarke, C., W. Fisher, R. Marks, & S. Ross. (2010). *Developing essential understanding of rational numbers for teaching mathematics in grades 3–5*. Essential Understanding Series. Reston, VA: National Council of Teachers of Mathematics.

Blanton, M., Levi, L., Crites, T. S., & Dougherty, B. J. (2011). *Developing essential understanding of algebraic thinking for teaching mathematics in grades 3–5*. Essential Understanding Series. Reston, Va.: National Council of Teachers of Mathematics.

Caldwell, J. H., Karp, K., & Bay-Williams, J. M. (2011). *Developing essential understanding of addition and subtraction for teaching mathematics in prekindergarten–*

- grade 2. Essential Understanding Series. Reston, Va.: National Council of Teachers of Mathematics.*
- Cooney, T. J., Beckmann, S., & Lloyd, G. M. (2010). *Developing essential understanding of function for teaching mathematics in grades 9–12. Essential Understanding Series. Reston, VA: National Council of Teachers of Mathematics.*
- Dougherty, B. J., Flores, A., Louis, E., & Sophian, C. (2010). *Developing essential understanding of number and numeration for teaching mathematics in prekindergarten–grade 2. Essential Understanding Series. Reston, VA: National Council of Teachers of Mathematics.*
- Ellis, A. B., Bieda, K., & Knuth, E. (2012). *Developing essential understanding of proof and proving for teaching mathematics in grades 9–12. Essential Understanding Series. Reston, Va.: National Council of Teachers of Mathematics.*
- Goldenberg, E. P., & Clements, D. A. (in editing). *Developing essential understanding of geometry for teaching mathematics in prekindergarten–grade 2. Essential Understanding Series. Reston, Va.: National Council of Teachers of Mathematics.*
- Kadar, G., & Jacobbe, T. (2013). *Developing essential understanding of statistics for teaching mathematics in grades 6–8. Essential Understanding Series. Reston, Va.: National Council of Teachers of Mathematics.*
- Lannin, J., Ellis, A. B., & Elliott, R. (2011). *Developing essential understanding of mathematical reasoning for teaching mathematics in prekindergarten–grade 8. Essential Understanding Series. Reston, Va.: National Council of Teachers of Mathematics.*
- Lehr, R., & Solvin, H. (in editing). *Developing essential understanding of geometry for teaching mathematics in grades 3–5. Essential Understanding Series. Reston, Va.: National Council of Teachers of Mathematics.*
- Lloyd, G., Herbel-Eisenmann, B., & Star, J. (2011). *Developing essential understanding of expressions, equations, and functions for teaching mathematics in grades 6–8. Essential Understanding Series. Reston, Va.: National Council of Teachers of Mathematics.*
- Lobato, J., & Ellis, A. B. (2010). *Developing essential understanding of ratios, proportions, and proportional reasoning for teaching mathematics in grades 6–8. Essential Understanding Series. Reston, VA: National Council of Teachers of Mathematics.*
- Otto, A. D., Caldwell, J., Lubinski, C. A., & Hancock, S. (2011). *Developing essential understanding of multiplication and division for teaching mathematics in grades 3–5. Essential Understanding Series. Reston, VA: National Council of Teachers of Mathematics.*
- Peck, R., Gould, R., & Miller, S. (2013) *Developing essential understanding of statistics for teaching mathematics in grades 9–12. Essential Understanding Series. Reston, Va.: National Council of Teachers of Mathematics.*
- Sinclair, N., Pimm, D., & Skelin, M. (2012). *Developing essential understanding of geometry for teaching mathematics in grades 6–8. Essential Understanding Series. Reston, Va.: National Council of Teachers of Mathematics.*
- Sinclair, N., Pimm, D., & Skelin, M. (2012). *Developing essential understanding of geometry for teaching mathematics in grades 9–12. Essential Understanding Series. Reston, Va.: National Council of Teachers of Mathematics.*
- Blume, G. W., Zbiek, R. M., & Evitts, T. (Eds.) (2010). *Focusing the mathematics curriculum. 2007-2008 yearbook of Pennsylvania Council of Teachers of Mathematics. University Park, PA: Pennsylvania Council of Teachers of Mathematics.*

- Smith, M. S., Heid, M. K., & Zbiek, R. M. (Eds.) (2006). *Learning and teaching mathematical processes. 2006 yearbook of Pennsylvania Council of Teachers of Mathematics*. University Park, PA: Pennsylvania Council of Teachers of Mathematics.
- Zbiek, R. M., Blume, G., & Smith, M. S. (Eds.) (2005). *Assessing what students understand, know, and can do in mathematics, 2003-2004 yearbook of Pennsylvania Council of Teachers of Mathematics*. University Park, PA: Pennsylvania Council of Teachers of Mathematics.
- Fey, J. T., Cuoco, A., Kieran, C., McMullin, L., & Zbiek, R. M. (Eds.) (2003). *Computer algebra systems in mathematics education*. Reston, VA: National Council of Teachers of Mathematics. [Order of co-editors is alphabetical in accord with common practice of the National Council of Teachers of Mathematics.]
- Crowley, M., & Zbiek, R. M. (Eds.) (2003, November). Problem solving focus issue of *Mathematics Teacher*. v. 96, n. 8. Co-editor.
- Zbiek, R. M., & Schoaf, E. (Eds.) (2002, November). Computer algebra system focus issue of *Mathematics Teacher*. v. 95, n. 8. Lead Co-editor.

Books

- Zbiek, R. M., Martin, W. G., & Schielack, J. (2011). *Making it happen: A guide to interpreting and implementing Common Core State Standards for Mathematics*. Reston, VA: National Council of Teachers of Mathematics.
- Kadijevich, Dj., & Zbiek, R. M. (Eds.) (2009). *Proceedings of the 6th CAME Symposium*. Megatrend University, Belgrade, Serbia.
- Beckman, S., Charles, R., Clements, D., Duckett, P., Lewandowski, S., Schielack, J., Treviño, E., & Zbiek, R. M. (2006). *Curriculum focal points for prekindergarten through grade 8 mathematics*. Reston, VA: National Council of Teachers of Mathematics. [Order of co-authors is alphabetical in accord with common practice of the National Council of Teachers of Mathematics.]
- Fey, J. T., Heid, M. K. with Good, R., Sheets, C., Blume, G., & Zbiek, R. M. (1999). *Concepts in algebra: A technological approach (2nd edition)*. 511 pp. Chicago, IL: Everyday Learning.
- Heid, M. K., Choate, J., Sheets, C., & Zbiek, R. M. (1995). *Algebra in a technological world, curriculum and evaluation standards for school mathematics*, Addenda Series, Grades 9-12, edited by Christian R. Hirsch. 168 pp. Reston, VA: National Council of Teachers of Mathematics. [Order of co-authors is alphabetical in accord with common practice of the National Council of Teachers of Mathematics.]
- Fey, J. T., Heid, M. K. with Good, R., Sheets, C., Blume, G., & Zbiek, R. M. (1995). *Concepts in algebra: A technological approach*. 511 pp. Dedham, MA: Janson Publications.
- One of multiple authors. (1991). *Computer-intensive algebra*. 683 pp. College Park, MD: The University of Maryland and The Pennsylvania State University.

Book Chapters (Refereed)

- Zbiek, R. M., & Heid, M. K. (2011). Using technology to make sense of symbols and graphs and to reason about general cases. In T. Dick and K. Hollebrands (Eds.), *Focus on reasoning and sense making: Technology* (pp. 19-31). Reston, VA: National Council of Teachers of Mathematics
- Zbiek, R. M., & Hirsch, C. R. (2008). Curriculum as core knowledge. In R. Reys and J. Dossey (Eds.), *U. S. Doctorates in Mathematics Education: Developing Stewards of the Discipline* (pp. 87-96). Washington, DC: Conference Board of the Mathematical Sciences (CBMS).
- Zbiek, R. M., & Heid, M. K. (2008). Digging deeply into intermediate algebra: Using symbols to reason and technology to connect symbols and graphs. In C. Greenes & R. N. Rubenstein (Ed.), *Algebra and Algebraic Thinking in School Mathematics, 2008 Yearbook of the National Council of Teachers of Mathematics* (pp. 247-261). Reston, VA: National Council of Teachers of Mathematics.
- Zbiek, R. M., Heid, M. K., Blume, G. W., & Dick, T. (2007). Research on technology in mathematics education: A perspective of constructs. In F. Lester (Ed.), *Second handbook of research on mathematics teaching and learning* (pp. 1169-1207). Charlotte, NC: Information Age.
- Zbiek, R. M. (2005). Using technology to show prospective teachers the “power of many points.” In W. Masalski & P. C. Elliott (Eds.), *Technology-supported mathematics learning environments, 2005 yearbook of the National Council of Teachers of Mathematics* (pp. 291-301). Reston, VA: National Council of Teachers of Mathematics.
- Hollebrands, K. F., & Zbiek, R. M. (2004). Teaching mathematics with technology: An evidence-based road map for the journey. In R. N. Rubenstein, & G. W. Bright (Eds.), *Perspectives on the teaching of mathematics, 2004 yearbook of the National Council of Teachers of Mathematics* (pp. 259-270). Reston, VA: National Council of Teachers of Mathematics.
- Heid, M. K., Zbiek, R. M. & Blume, G. W. (2004). Mathematical foundations for a functions-based approach to algebra. In R. N. Rubenstein, & G. W. Bright (Eds.), *Perspectives on the Teaching of Mathematics, 2004 yearbook of the National Council of Teachers of Mathematics* (pp. 42-55). Reston, VA: National Council of Teachers of Mathematics.
- Zbiek, R. M. (2003). Using research to inform teaching and learning with computer algebra systems. In J. T. Fey, A. Cuoco, C. Kieran, L. McMullin, & R. M. Zbiek (Eds.) *Computer algebra systems in mathematics education* (pp. 197-216). Reston, VA: National Council of Teachers of Mathematics.
- Zbiek, R. M. (2000). Abstract algebra: It can be useful for all prospective secondary school mathematics teachers. In G. W. Blume & M. K. Heid (Eds.), *Algebra across the grades, part 1, 2000 yearbook of the Pennsylvania council of teachers of mathematics* (pp. 51-58). University Park, PA: Pennsylvania Council of Teachers of Mathematics.
- Zbiek, R. M. (1993). Moving towards assessing mathematical connections in calculus and other mathematics. In G. W. Blume & M. K. Heid (Eds.), *Alternative assessment in mathematics, 1993 yearbook of the Pennsylvania council of teachers of mathematics* (pp. 1-11). University Park: Pennsylvania Council of Teachers of Mathematics.

Zbiek, R. M. (1990). Implementing the Standards: What do we have to lose? In G. W. Blume & M. K. Heid (Eds.), *Implementing new curriculum and evaluation standards, 1990 yearbook of the Pennsylvania council of teachers of mathematics* (pp. 94-98). University Park: Pennsylvania Council of Teachers of Mathematics.

Zbiek, R. M. (1989). Metacognitive skills, problem solving and the mathematics classroom. In G. W. Blume & M. K. Heid (Eds.), *New directions for mathematics instruction, 1989 yearbook of the Pennsylvania Council of Teachers of Mathematics* (pp. 29-37). University Park: Pennsylvania Council of Teachers of Mathematics.

Book Chapters (Invited)

Heid, M. K., Thomas, M., & Zbiek, R. M. (2013). How might computer algebra systems change the role of algebra in the school curriculum? In M. A. Clements, A. Bishop, C. Keitel, J. Kilpatrick, & F. Leung (Eds.) *Third international handbook of mathematics education* (pp. 20-40). Dordrecht, The Netherlands: Springer.

Zbiek, R. M., & Heid, M. K. (2012). Using computer algebra systems to develop big ideas in mathematics with connections to the Common Core State Standards for Mathematics. In C. Hirsch, G. Lappan, & B. Reys (Eds.), *Curriculum issues in an era of Common Core State Standards for Mathematics* (pp. 149-160). Reston, VA: National Council of Teachers of Mathematics

Zbiek, R. M., Reed, S., & Boone, T. (in press). Cell phone coverage area: Helping students achieve in mathematics. *Making connections: Mathematics across disciplines*. Reston, VA: National Council of Teachers of Mathematics. [Reprint of *Mathematics Teaching in the Middle School* article with extension]

Zbiek, R. M. (2010). The influence of technology on secondary school students' mathematics learning." In J. Lobato and F. K. Lester (Eds.), *Teaching and learning mathematics: Translating research for secondary school teachers* (pp. 39-44). Reston, VA: National Council of Teachers of Mathematics.

Zbiek, R. M., & Hollebrands, K. (2008). A research-informed view of the process of incorporating mathematics technology into classroom practice by inservice and prospective teachers. In M. K. Heid and G. W. Blume (Eds.), *Research on technology and the teaching and learning of mathematics: Volume 1* (pp. 287-344). Charlotte, NC: Information Age.

Zbiek, R. M. (2003). Using technology to facilitate the emergence of mathematical meaning through problem solving. In R. Charles (Ed.), *Teaching mathematics through problem solving: It's about learning mathematics* (pp. 93-104). Reston, VA: National Council of Teachers of Mathematics.

Heid, M. K., & Zbiek, R. M. (1999). A technology-intensive approach to algebra. In B. Moses (Ed.), *Algebraic thinking, grades K-12: Readings from NCTM's school-based journals and other publications* (pp. 82-89). Reston, VA: NCTM. [Reprint of the 1995 article in *Mathematics Teacher*.]

Book Chapters (Proceedings with Refereed Acceptance)

- Zbiek, R. M., & Heid, M. K. (2002). The role and nature of symbolic reasoning in secondary school and early college mathematics (discussion group). In D. Mewborn, et al. (Eds.), *Proceedings of the XXIV meeting of the international group for the psychology of mathematics education North American chapter* (pp. 215-220). Athens, GA.
- Zbiek, R. M., & Glass, B. (2001). Conjecturing and formal reasoning about functions in a dynamic environment. In G. Goodell (Ed.), *Proceedings of the twelfth annual international conference on technology in collegiate mathematics* (pp. 424-428). Reading, MA: Addison-Wesley.
- Zbiek, R. M., & Heid, M. K. (2001). Dynamic aspects of function representations. In H. Chick, K. Stacey, J. Vincent, & J. Vincent (Eds.), *Proceedings of the 12th ICMI on the future of the teaching and learning of algebra* (pp. 682-689). Melbourne, Australia: The University of Melbourne.
- Zbiek, R. M., Latterell, C., Glass, B., & Finken, T. (2000). Technology-generated examples as a means and not an end to more formal mathematical reasoning. In G. Goodell (Ed.), *Proceedings of the eleventh annual international conference on technology in collegiate mathematics* (pp. 476-480). Reading, MA: Addison-Wesley.
- Zbiek, R. M. (1999). Using dynamic geometry tools to stimulate thinking in transformation geometry. In G. Goodell (Ed.), *Proceedings of the tenth annual international conference on technology in collegiate mathematics* (pp. 516-520). Reading, MA: Addison-Wesley.
- Zbiek, R. M. (1998). Do they really use graphics/symbolic calculators, or just hold them? In G. Goodell (Ed.), *Proceedings of the ninth annual international conference on technology in collegiate mathematics* (pp. 538-542). Reading, MA: Addison-Wesley.
- Zbiek, R. M. (1998). How might technology enhance algebraic reasoning? In F. Fennell (Ed.), *Proceedings of the national symposium on the nature and role of algebra in the K-14 curriculum* (pp. 35-36). Washington, DC: Mathematical Sciences Education Board. [Invited]
- Zbiek, R. M. (1997). Prospective teachers' use of computing tools in developing mathematical models. In G. Goodell (Ed.), *Proceedings of the eighth annual international conference on technology in collegiate mathematics* (pp. 456-460). Reading, MA: Addison-Wesley.
- Heid, M. K., Blume, G., Zbiek, R. M., Edwards, B., & Washington-Myers, E. (1997). Interviewing to understand student understanding in technology-intensive environments. In G. Goodell (Ed.), *Proceedings of the eighth annual international conference on technology in collegiate mathematics* (pp. 191-195). Reading, MA: Addison-Wesley.
- Heid, M. K., Zbiek, R. M., & Blume, G. (1997). Empowering mathematics teachers in computer-intensive environments. In J. G. Harvey (Ed.), *Proceedings of the teaching mathematics with calculators: Conference on models for mathematics technology teacher education*, Mathematical Association of America Notes series (pp. 79-93). Washington, DC: Mathematical Association of America.
- Zbiek, R. M. (1996). Strategies constructed and obstacles encountered by students using TI-92s in first-year algebra. In E. Jakubowski, D. Watkins, & H. Biske (Eds.), *Proceedings of the eighteenth annual meeting, North American chapter of the international group for the psychology of mathematics education* (pp. 579-584). Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education.

- Zbiek, R. M. (1995). Her math, their math: An in-service teacher's growing understanding of mathematics and technology and her secondary school students' algebra experience. In D. Owens, M. K. Reed, & G. M. Millsaps (Eds.), *Proceedings of the seventeenth annual meeting, North American chapter of the international group for the psychology of mathematics education* (pp. 214-220). Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education. [ED 389 610]
- Zbiek, R. M. (1995). Characterization of the mathematical reasoning of prospective secondary school mathematics teachers in tool-present environments. In L. Lum (Ed.), *Proceedings of the sixth annual international conference on technology in collegiate mathematics* (pp. 393-404). Boston, MA: Addison-Wesley.
- Heid, M. K., Zbiek, R. M., & Blume, G. (1994). Case studies on empowering secondary mathematics teachers in computer-intensive environments. In D. Kirshner (Ed.), *Proceedings of the sixteenth annual meeting, North American chapter of the international group for the psychology of mathematics education* (pp. 203-209). Baton Rouge, LA: Louisiana State University.
- Zbiek, R. M. (1993). Prospective secondary mathematics teachers and mathematical models. In J. R. Becker & B. J. Pence (Eds.), *Proceedings of the fifteenth annual meeting, North American chapter of the international group for the psychology of mathematics education*, (pp. 224-230). San José, CA: San José State University.
- Heid, M. K., & Zbiek, R. M. (1993). The nature of understanding of mathematical modelling by beginning algebra students engaged in a technology-intensive conceptually based algebra course. In J. R. Becker & B. J. Pence (Eds.), *Proceedings of the fifteenth annual meeting, North American chapter of the international group for the psychology of mathematics education*, (pp. 128-134). San José, CA: San José State University.

Journal Editorials

- Zbiek, R. M. (2011). Have you read any interesting papers lately? (Editorial). *Journal for Research in Mathematics Education*, 42, 202-203.
- Blume, G. W., Heid, M. K., & Zbiek, R. M. (2010). What is the purpose of publishing papers in a mathematics education research journal? [Editorial] *Journal for Research in Mathematics Education*, 41, 210-211.
- Heid, M. K., & Zbiek, R. M. (2009). Manuscript review as scholarly work (Editorial). *Journal for Research in Mathematics Education*, 40, 474-476.

Journal Articles (Refereed)

- Zbiek, R. M., & Heid, M. K. (2009). Using computer algebra systems to develop big ideas in mathematics. *Mathematics Teacher*, 107(7), 540-544.
- Zbiek, R. M., Reed, S., & Boone, T. (2007). Cell phone coverage: Helping students achieve in mathematics. *Mathematics Teaching in the Middle School*, 12(6), 300-307.
- Zbiek, R. M., & Conner, A. (2006). Beyond motivation: Exploring mathematical modeling as a context for deepening students' understandings of curricular mathematics. *Educational Studies in Mathematics*, 63(1), 89-112.

- Zbiek, R. M., & Shimizu, J. (2005). Multiple solutions: More paths to an end or more opportunities to learn mathematics. *Mathematics Teacher*, 99(4), 279-287.
- Zbiek, R. M. (2002). Influences on mathematics teachers' transitional journeys in teaching with CAS. *The International Journal of Computer Algebra in Mathematics Education*, 9(2), 129-137.
- Heid, M. K., Blume, G., Zbiek, R. M., & Edwards, B. (1999). Factors that influence teachers learning to do interviews to understand students' mathematical understandings. *Educational Studies in Mathematics*, 37, 223-249.
- Zbiek, R. M. (1998). Algebraic reasoning with technology in the college curriculum. *The New England Mathematics Journal*, 30(2), 74-86. [Invited]
- Zbiek, R. M. (1998). Prospective teachers' use of computing tools to develop and validate functions as mathematical models. *Journal for Research in Mathematics Education*, 29(2), 184-201.
- Zbiek, R. M. (1996). Multiple connections: Integrating algebra, geometry, and calculus through functions, representations, and technology. *Mathematics Teacher*, 89(8), 628-634.
- Zbiek, R. M. (1996). The pentagon problem: Geometric reasoning with technology. *Mathematics Teacher*, 89(1), 86-90.
- Zbiek, R. M. (1995). The impact of technology, mathematical modelling, and meaning on the content, learning, and teaching of secondary school algebra: Reaction to Harvey's, Demana's, & Waits' paper. *Journal of Mathematical Behavior*, 14(1), 133-137.
- Zbiek, R. M., with Foletta, G. M. (1995). Achieving standards in a fiber optic classroom. *Leaning and Leading with Technology*, (formerly known as *The Computing Teacher*), 22(8), 25-29.
- Heid, M. K., & Zbiek, R. M. (1995). A technology-intensive approach to algebra. *Mathematics Teacher*, 88(8), 650-656.
- Zbiek, R. M., & Heid, M. K. (1990). The skateboard experiment: Math modeling for beginning algebra. *The Computing Teacher*, 18(2), 32-36.
- Zbiek, R. M. (1983). What can we say about the Duffinian numbers? *The Pentagon*, 42(2), 99-109.

Other publications and creative works

- Zbiek, R. M. (2009). Parameters in secondary school: Logistics functions. Retrieved 01 June 2009 from Texas Instruments Activities Exchange, <http://education.ti.com/educationportal/activityexchange/Activity.do?cid=US&aId=11979>.

Presentations (Since 2008)

Refereed Presentations (International and National)

Zbiek, R. M., (2013, April). Convincing arguments and proof with Core Math Tools. National Council of Teachers of Mathematics Annual Meeting and Exposition, Denver, CO.

Zbiek, R. M., Heid, M. K., & Blume, G. W. (2013, April). Teacher mathematics as floor and ceiling for classroom opportunities. Research Pre-session of the American Educational Research Association/Special Interest Group on Research on Mathematics Education and Research Advisory Council at the National Council of Teachers of Mathematics Annual Meeting and Exposition, Denver, CO.

Zbiek, R. M., Johnson, K. H., Cannon, T., Bonafini, F., & Kinol, D. (2013, April). Connecting teacher understanding of mathematics and classroom opportunities. National Council of Teachers of Mathematics Annual Meeting and Exposition, Denver, CO. Research Pre-session of the American Educational Research Association/Special Interest Group on Research on Mathematics Education and Research Advisory Council at the National Council of Teachers of Mathematics Annual Meeting and Exposition, Denver, CO.

Zbiek, R. M., Wilson, P., Viktora, S., Schrock, C., & Heid, M. K. (2013, April). Secondary professional development using classroom-based scenarios. National Council of Supervisors of Mathematics Annual Meeting, Denver, CO. [Presenters in Z-A alphabetical order.]

Zbiek, R. M. (2013, March). What purposes does technology really play on standardized tests and in classrooms? Teachers Teaching with Technology International Conference, Philadelphia, PA

Zbiek, R. M. (2013, February). Reasoning and readiness: A two-way connection between high school and college mathematics. Kentucky Center for Mathematics Annual Conference. Lexington, KY.

Zbiek, R. M. (2013, January). Putting research on technology in mathematics education to work to inform teaching and learning of algebra. Mathematics Education Colloquium, Michigan State University, East Lansing, MI.

Zbiek, R. M., Cannon, T., Johnson, K. H., Bonafini, F., & Kinol, D. (2013, January). Teaching procedures well: Observing and supporting prospective teacher development through representations, justifications, generalizations, and definitions. Association of Mathematics Teacher Educators Seventeenth Annual Meeting, Orlando, FL.

Hirsch, C. R., Hopfensperger, P. W., Martin, G. W., & Zbiek, R. M. (2013, January). Core math tools and its affordances for mathematics teacher educators and for prospective teachers. Association of Mathematics Teacher Educators Seventeenth Annual Meeting, Orlando, FL. [Presenters listed alphabetically]

Zbiek, R. M., Heid, M. K., & Blume, G. W. (2012, July). Seeing mathematics through processes and actions: Investigating teachers' mathematical knowledge and secondary school classroom opportunities for students. Paper presented at the 12th International Congress on Mathematical Education, Seoul, Korea.

- Peters, S. A., & Zbiek, R. M. (2012, April). Residual understandings: Making statistical and mathematical connections in a technology-present environment. National Council of Teachers of Mathematics 89th Annual Meeting, Philadelphia, PA.
- Zbiek, R. M., & Heid, M. K. (2012, April). Linking research and practice: A focus on reasoning and sense making with technology—Algebra chapter. National Council of Teachers of Mathematics 89th Annual Meeting, Philadelphia, PA.
- Zbiek, R. M. (2012, March). Good problems and great practices for CAS in daily lessons and high-stakes tests. National Council of Teachers of Mathematics 89th Annual Meeting, Philadelphia, PA.
- Peters, S. A., & Zbiek, R. M. (2012, February). Residual understandings: Preservice secondary mathematics teachers making statistical and mathematical connections in a technology-present environment. Association of Mathematics Teacher Educators Sixteenth Annual Meeting, Fort Worth, TX.
- Zbiek, R. M., & Heid, M. K. (2012, February). Sense making and reasoning with technology—Algebra chapter. Association of Mathematics Teacher Educators Sixteenth Annual Meeting, Fort Worth, TX.
- Heid, M. K., & Zbiek, R. M. (2011, July). Seeing opportunities for reasoning and sense making with mathematics technology. Presentation at Infusing the Classroom with Reasoning & Sense Making: An NCTM Interactive Institute on High School Mathematics. Orlando, FL.
- Zbiek, R. M., Cannon, T., & Johnson, K. (2011, April). Understanding a beginning teacher's sensitivity to students and mathematics. Paper presented at the Research Presession of the American Educational Research Association/Special Interest Group on Research on Mathematics Education and Research Advisory Council at the National Council of Teachers of Mathematics 88th Annual Meeting, Indianapolis, IN.
- Conner, A., Gleason, B., Singletary, L., Wagner, P., Smith, R. C., & Zbiek, R. M. (2011, April). Using argumentation to investigate aspects of teaching geometry. Paper presented at the 91st Annual Meeting of the American Educational Research Association, New Orleans, LA. [discussant]
- Zbiek, R. M., Heid, M. K., & Blume, G. W. (2011, January). Understanding the role of mathematics in emerging practice through balance among mathematics, sensitivity and management. Association of Mathematics Teacher Educators Fourteenth Annual Meeting, Irvine, CA.
- Peters, S. A., & Zbiek, R. M. (2011, January). Residual understandings: Preservice secondary mathematics teachers making statistical and mathematical connections in a technology-present environment. Association of Mathematics Teacher Educators Fourteenth Annual Meeting, Irvine, CA.
- Zbiek, R. M. (2010, June). Uses of CAS that support or hinder problem solving and mathematical skill development, USACAS 2010, Chicago, IL.
- Heid, M. K., & Zbiek, R. M. (2010, May). Journal for Research in Mathematics Education, Invited roundtable at the 91st Annual Meeting of the American Educational Research Association, Denver, CO.

- Zbiek, R. M., & Peters, S. A. (2010, May). Unraveling a beginning teacher's exemplary mathematical practice: A case of connections in service of mathematical challenge and sensitivity to students. Paper presented at the 91st Annual Meeting of the American Educational Research Association, Denver, CO.
- Heid, M. K., & Zbiek, R. M. (2010, April). Mathematics as sense making: Technology as a vehicle. National Council of Teachers of Mathematics 88th Annual Meeting, San Diego, CA.
- Meagher, M., Lapp, D., Zbiek, R. M., & Edwards., M. T. (2010, January). Next generation technologies and their impact on mathematics teacher education programs, Presentation at the Fourteenth Annual Conference of the Association of Mathematics Teacher Educators, Irvine, CA.
- Wilburne, J., & Zbiek, R. M. (2009, April). Stimulating problems to Nspire mathematical connections with multiple representations. National Council of Teachers of Mathematics 87th Annual Meeting, Washington, DC.
- Lee, H. S., Hollebrands, K. F., Ives, S. E., Smith, R. C., Bowers, J., Niess, M., & Zbiek, R. M. (2009, April). Technology pedagogy and content knowledge for mathematics teachers. Symposium for Research Pre-session of the American Educational Research Association/Special Interest Group on Research on Mathematics Education and Research Advisory Council at the National Council of Teachers of Mathematics 87th Annual Meeting, Washington, D. C. [Discussant]
- Zbiek, R. M., Heid, M. K., Blume, G., & Peters, S. A. (2009, April). Mathematical processes lens for prospective secondary teachers' mathematics. Work session for Research Pre-session of the American Educational Research Association/Special Interest Group on Research on Mathematics Education and Research Advisory Council at the National Council of Teachers of Mathematics 87th Annual Meeting, Washington, D. C. [Organizer, Presenter]
- Mewborn, D. S., Barnes, D., Blanton, M., Blume, G., D'Ambrosio, B. S., Heid, M. K., Herbel-Eisenmann, B., Hill, H. C., Kastberg, S., Kitchen, R. S., Shih, J., Sinclair, N., Sztajn, P., & Zbiek, R. M. (2009, April). Getting published in *Journal for Research in Mathematics Education* (JRME). Work session for Research Pre-session of the American Educational Research Association/Special Interest Group on Research on Mathematics Education and Research Advisory Council at the National Council of Teachers of Mathematics 87th Annual Meeting, Washington, D. C. [Panel participant]
- Zbiek, R. M., Kepner, Jr., H., Wilson, P., Charles, R. (2009, April). Essential Understandings book series: Professional development tools for engaging teachers with mathematics. National Council of Supervisors of Mathematics 41st Annual Conference, Washington, D. C.
- Zbiek, R. M., Peters, S. A., Boone, T. M., Johnson, K., & Foletta, G. (2009, April). Locally logical mathematics: An emerging teacher honoring both students and mathematics. Paper presented at the 90th Annual Meeting of the American Educational Research Association, San Diego, CA.
- Wilson, P., Zbiek, R. M., & Rathmell, E. (2009, February). Essential Understandings in mathematics project: A new resource for enhancing the mathematical knowledge of teachers. Association of Mathematics Teacher Educators Thirteenth Annual Meeting, Orlando, FL.

Hirsch, C., Keller, S., Martin, G., & Zbiek, R. M. (2008, January). Supporting teachers' transfer of campus learning and technology use to classroom practice with CPMP-Tools. Association of Mathematics Teacher Educators Twelfth Annual Meeting, Tulsa, OK.

Presentations (State)

- Zbiek, R. M. (2012, May). Making it happen with new core math tools. Sixth annual symposium of the Pennsylvania Association of Mathematics Teacher Educators, Shippensburg, PA. [Invited]
- Zbiek, R. M. (2011, May). Common Core Standards for Mathematics as a tool for teacher preparation. Fifth annual symposium of the Pennsylvania Association of Mathematics Teacher Educators, Shippensburg, PA. [Invited]
- Zbiek, R. M., & Arbaugh, F., Edwards, A., & Bartell, T. (2008, August). Advancing students' writing for practitioner publications. Mid-Atlantic Center for Mathematics Teaching and Learning Graduate Research Conference, State College, PA.
- Zbiek, R. M. (2008, August). The mathematical processes approach. Mid-Atlantic Center for Mathematics Teaching and Learning Graduate Research Conference, State College, PA.
- Blume, G., & Zbiek, R. M. (2008, August). The *Journal for Research in Mathematics Education* submission process. Mid-Atlantic Center for Mathematics Teaching and Learning Graduate Research Conference, State College, PA.
- Zbiek, R. M., & Blume, G. (2008, May). Publishing your work for research and practitioner audiences. Pennsylvania Association of Mathematics Teacher Educators 2nd Annual Symposium, Shippensburg, PA.

Poster or Round Table Presentations

Peters, S. A., & Zbiek, R. M. (2011, May). *Teaching statistics to prospective teachers: Residual Understandings*. Poster session presented at the United States Conference on Teaching Statistics 2011: The Next Big Thing, Cary, NC.

Other Presentations

- Zbiek, R. M. (2012, December). Learn Lab as math lab. Learning Spaces Symposium, Krause Innovation Studio, University Park, PA.
- Heid, M. K., & Zbiek, R. M. (2009, April). Technology in the content areas: Mathematics education. Presentation for visiting German Fulbright scholars, State College, PA.
- Heid, M. K., & Zbiek, R. M. (2008, March). Technology in the content areas: Mathematics education. Presentation for visiting German Fulbright scholars, University Park, PA.
- Blume, G., Heid, M. K., & Zbiek, R. M. (2008, March). Mathematical processes as a way of connecting content and practice. Brown bag presentation for Curriculum and Instruction, University Park, PA. [Presenters listed in alphabetical order]
- Zbiek, R. M. (2008, February). Publishing in the *Mathematics Teacher*. MTHED 590 session. Course Instructor: M. K. Heid.

Grants and Contracts

<u>From</u>	<u>To</u>	<u>Grant Title/Funding Institution/Role</u>
04/2007	present	Mathematical Knowledge for Teaching Secondary Mathematics/ National Science Foundation–Centers for Teaching and Learning Program/Faculty associate (research team leader; co-PI for subcontract of \$187,416)
09/2002	present	Mid-Atlantic Center for Mathematics Teaching and Learning [James T. Fey, PI]/National Science Foundation/Faculty associate (research team leader, research conference coordinator, graduate fellow advisor, graduate instructor, CTL-Net representative; co-PI for subcontract of \$3,270,099)

Teaching (Since 2008)

Courses Typically Taught

MTHED 412	Teaching Secondary School Mathematics II
MTHED 427	Technology in the Teaching and Learning of Secondary School Mathematics
MTHED 501	Foundations of Mathematics Education I: Learning
MTHED 502	Foundations of Mathematics Education II: Teaching
MTHED 527	Research on Technology in Mathematics Education

Advising (Since 2008)

Academic Advising

Yearly advising roster

Undergraduate students in Secondary Education/Mathematics:	24-34
Includes students in now defunct Mathematics/Teaching Option	
Undergraduate students in Secondary Education/Mathematics Honors:	03-05
Masters students in Secondary Mathematics Education:	01-03
Ph.D. students in Curriculum and Instruction/Mathematics Education:	03-05

Ph.D. Thesis Committees Chaired/Co-Chaired

Nomusic Nompula Morobe, Ph.D., *Lesotho pre-service teachers' understanding of function and the effect of instruction with a graphing calculator on pre-service teachers' understanding of function*, August 2000.

Brad Glass, Ph.D., *Students' reification of geometric transformations in the presence of multiple dynamically linked representations*, May 2001.

Teresa Finken, Ph.D., *Patterns of metaphor use in algebra reform curriculum classrooms*, August 2002.

Gina M. Foletta, Ph.D. *Technology and guided inquiry: Understanding of students' thinking while using a cognitive computer tool, the geometer's sketchpad, in a geometry class*, May 1994. (co-chaired)

AnnaMarie Conner, Ph.D., *Student teachers' conceptions of proof and facilitation of argumentation in secondary mathematics classrooms*, May 2007.

Susan A. Peters, Ph.D., *Developing an understanding of variation: AP statistics teachers' perceptions and recollections of critical moments*, August 2009.

Jan Green, Ph.D., *Characterizing the development of a schema for representing and solving algebra word problems by pre-algebraic students engaged in a structured diagrammatic environment*, December 2009/May 2010.

Heather Johnson, Ph.D., *Making sense of rate of change: Secondary students' reasoning about changing quantities*, August 2010

Kim H. Johnson, Ph. D., *Understanding proportional reasoning in pre-service teachers*, August 2013 (Defended 5 May 2013, Co-thesis adviser: Andrea McCloskey)

Total number of committee memberships: 22 (including 1 at Western Michigan University)

Master's Theses/Papers Advised

Chen Lui, *An exploratory study about handheld technology in mathematics classroom in China*, Anticipated August 2013

Honor Theses Advised

Jeffrey McMahon, *Problem-solving abilities among first-year undergraduate students with qualifying AP calculus exam scores*, May 2011 (Student Marshall, Mathematics Department)

Samantha Timlin, *Gender-specific differentiation of teachers' perceptions of and interactions with students*, May 2012

Nicholas Hannan, *Student perception of usefulness of web-based dynamic assessments in algebra ii developed in PowerPoint*, May 2013 (Student Marshall, Secondary Education)

Amy Twerdok, *Financial literacy: How education in financial and mathematical concepts can contribute to better saving and investment decisions among the young*, Thesis Approved November 2012/Anticipated August 2013 (Finance Major with Honors in Finance and Secondary Education Mathematics)

Kyle O'Donnell, *Applets in secondary mathematics education*, Anticipated May 2014

Honor Theses – Second Reader

Shauna R. Knarr, *Gender bias in mathematics: Tracking the progress of female students in mathematics*, Spring 2009.

Professional Service (Since 2008)

Editorships

Associate Editor, *Journal for Research in Mathematics Education*, National Council of Teachers of Mathematics, 2007-2012 [Read and evaluated more than 900 manuscripts]

Editorial Panel Chair and Series Editor, *Essential Understandings for Teaching and Learning Mathematics* [a 16-book series], National Council of Teachers of Mathematics, 2005-present.

Co-Editor, Yearbook of the Pennsylvania Council of Teachers of Mathematics, Pennsylvania Council of Teachers of Mathematics, 2003-2010

Referee and Reviewer (Publications)

Journals

Elementary School Journal, University of Chicago Press

Journal of Mathematical Behavior, Elsevier

Mathematics Teaching in the Middle School, National Council of Teachers of Mathematics

NCSM Journal of Mathematics Education Leadership, National Council of Supervisors of Mathematics

South African Journal of Science, Academy of Science of South Africa

The C.I.T.E. Journal, Association for the Advancement of Computing in Education, Member of Mathematics Review Board

Books

National Council of Teachers of Mathematics

Referee and Reviewer (Conferences and Grants)

Conference proposals

Association of Mathematics Teacher Educators

American Educational Research Association, Division K

Special Interest Group for Research in Mathematics (SIG-RME)

Grant proposals

National Science Foundation

Social Sciences and Humanities Research Council of Canada

Committees, Task Forces, and Panels

National or International

- 2013 - 2017 National Council of Teachers of Mathematics, Board of Directors [elected]
- 2012-present Association of Mathematics Teacher Educators Task Force on NCTM NCATE Draft Standards for Elementary Mathematics Specialists, Middle Grades, and Secondary Teachers: Member
- 2012 Strand Leader for the Technology strand for the November 1-4, 2012 Psychology of Mathematics Education–North American Chapter meeting
- 2011 National Council of Teachers of Mathematics Making It Happen (Common Core Response) Writing Team: Chair
- 2005-2010 Computer Algebra in Mathematics Education international organization/International Committee / International Committee Chair, 2006-2009; Program chair for CAME 6 2009 Conference in Belgrade, Serbia; Program Chair for CAME 5 2007 Conference in Pécs, Hungary; Organizer of Theme 3: Teachers and CAS at 2005 international conference

- 2009 Scientific Committee for Computer Algebra and Dynamic Geometry Systems in Mathematics Education, RISC, Castle of Hagenberg, Austria, July 11-13, 2009
- 2008 Mathematical Association of America, Co-organizer of speakers representing mathematicians at work in K-12 mathematics as part of the AMS-MAA-MER Special Session on Mathematics and Education Reform for January 2008 annual meeting, San Antonio, TX

State or Regional

- 2012 – 2013 Pennsylvania Council of Teachers of Mathematics/Executive Board (2012 Conference Committee Representative)
- 2012 Pennsylvania Council of Teachers of Mathematics/Executive Board, General Chair of 2012 Annual Meeting. October 18-19, Camp Hill, PA
- 2011 Pennsylvania Council of Teachers of Mathematics: Reception and Meals Committee Co-chair (with A. McCloskey), 2011 annual meeting at the Penn State

University

- 2012-2013 Social Science Research Institute Steering Committee, College of Education Representative
- 2011 Fall Faculty Senate

College of Education

- 1/2013-present Acting Department Head
- 2009-2012 Promotion and Tenure Committee (Co-chair, 2010-2012)
- 2009-2011 Professional Certification Coordinating Council [as SECED PIC]
- 2009 Framework to Foster Diversity Steering Committee
- 2008 Strategic Planning Steering Committee
- 2008 Search Committee for Elementary Mathematics Education Position at Penn State-Berks
- 2008 Search Committee for Elementary Mathematics Education Position at Penn State-Lehigh Valley

Department of Curriculum and Instruction

- Fall 2012 (Acting) Director of Secondary Education
- & 2007-2011 Professor-in Charge, Secondary Education
- 2007-2008 Elementary and Secondary Mathematics Education Search Committee (Chair)
- Fall 2011 Mathematics Education Program Coordinator (Fall 2011)
- & 2005-2011 Co-Professor in Charge of Mathematics Education (shared with Prof. M. Kathleen Heid)

Community

- 2013 K-12 Mathematics Review for Hollidaysburg Area School District
- 2012 Mathematics Panel, ACT, Iowa City, IA

Honors

<u>Date</u>	<u>Honor / Organization</u>
2012	Faculty Marshall, College of Education
2012	Joan and David Cotterill Leadership Enrichment Award, The Pennsylvania State University
2011	Pennsylvania Council of Teachers of Mathematics, Outstanding Contribution to Mathematics Education
2011	Committee on Institutional Cooperation–Academic Leadership Program Fellow (2011-2012)
04/19/2006	Outstanding Faculty Award/College of Education, The Pennsylvania State University
10/28/1999	Thomas Urban Award from the First in the Nation in Education (F.I.N.E.) Foundation for research influencing education (focusing on "Prospective Teachers' Use of Computing Tools to Develop and Validate Functions as Mathematical Models" in <i>Journal for Research in Mathematics Education</i>) / F.I.N.E. Foundation
07/1996	Nominated by the University of Iowa as its institutional representative and selected for the Class of '96 of the Project Kaleidoscope (PKAL) Faculty for the 21st Century Network (F21) / University of Iowa
03/1990	Kozak Memorial Fellowship for Leadership, Research, and Service / The Pennsylvania State University Chapter of Phi Delta Kappa
04/1983	Original mathematics paper presented at 1983 Kappa Mu Epsilon biennial convention awarded second place nationally, April 1983 / Kappa Mu Epsilon