
**Rebecca McGraw
Vita**

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EDUCATION

Ph.D., Curriculum and Instruction, Mathematics Education. (2002). Indiana University, Bloomington, IN. Ph.D. thesis title: “*Facilitating Whole-Class Discussion in Secondary Mathematics Classrooms.*” Directed by Dr. Frank K. Lester, Jr.
M.Ed., Curriculum and Instruction, Mathematics Education. (1997). Indiana University, Bloomington, IN. Master’s thesis title: “*The Ways in Which Students Use The Geometer’s Sketchpad to Make, Test, and Prove Conjectures.*” Directed by Dr. Peter Kloosterman.
Grades 7-12 Mathematics and General Science Teacher Certification. (1992). Eastern Michigan University, Ypsilanti, MI.
B.S., Environmental Science. (1991). Michigan State University, East Lansing, MI.

PROFESSIONAL EXPERIENCE

Associate Professor (2008-Present). Mathematics Department, University of Arizona, Tucson, AZ.
Assistant Professor. (2002 – 2008). Mathematics Department, University of Arizona, Tucson, AZ.
Research Assistant. (1998 – 2002). Indiana University, Bloomington, IN.
Associate Instructor. (2000 – 2001). Indiana University. Bloomington, IN.
Research Consultant. (1999). Bloomington Montessori School, Bloomington, IN.
Examined the re-creation and enactment of gender roles in Montessori (grade) 1-6 classrooms. Co-investigator: Angela Allen. Funded by the Bloomington Montessori School.
Curriculum Developer. (1994 – 1998). Indiana University, Bloomington, IN.
Developed web-based instructional materials (see http://www.indiana.edu/~atmat/units/area_perimeter/area_intro.htm) and wrote learning guides and evaluation materials for two introductory, correspondence geometry courses
Mathematics Teacher. (1993 – 1997). Bloomington High School South, Bloomington, IN.

GRANTS AND CONTRACTS - CURRENT

National Science Foundation. Untangling Mathematical KnotTSS (Knowledge for Teaching Secondary School). Discovery Research, K-12. **PI Rebecca McGraw**, Co-PI Gladis Kersaint, Co-PI Saad El-Zanati, Co-PI Anderson Norton. September 1, 2008-August 31, 2011 (estimated). Total Award = \$782,666.

National Science Foundation. Arizona Master Teacher of Mathematics (AZ-MTM). Noyce Master Teacher Program. PI-Marta Civil, **Co-PI Rebecca McGraw**, Co-PI Erin Turner, Co-PI Marcy Wood. July 1, 2010 – June 30, 2015 (estimated). Total Award = \$1,805,722.

National Science Foundation. Arizona Teacher Institute (ATI) Mathematics and Science Partnership grant. PI Daniel Madden. **Co-PI Rebecca McGraw**, Co-PI William McCallum, Co-PI Erin Turner, Co-PI Margaret Schafer. September 1, 2006 – August 31, 2011 (estimated). Total Award = \$4,869,518.

GRANTS AND CONTRACTS – SUBMITTED FOR REVIEW

National Science Foundation. Arizona Teacher Education Program (ATEP) Mathematics and Science Partnership grant. **PI Rebecca McGraw**, Co-PI Bruce Johnson, Co-PI Ingrid Novodvorsky, Co-PI Jennifer Eli, Co-PI Courtney Koestler-Felton. Total Requested = \$4,979,002.

Arizona Department of Education. Tucson Unified School District Intel Math: An Arizona Mathematics and Science Partnership grant (AZ-MSP). **PI: Rebecca McGraw.** Total Requested = \$43,526.

GRANTS AND CONTRACTS - COMPLETED

National Science Foundation. Arizona Master Teacher of Mathematics (AZ-MTM). Robert Noyce Planning Grant. **PI: Rebecca McGraw.** August 1, 2009-July 31, 2010. Total Award = \$74,657.

Arizona Department of Education. Teacher Improvement through Mathematics Education 3 (TIME_{x3}). **PI: Rebecca McGraw.** October 1, 2008 – September 30, 2009. Total Award = \$64,493.

Arizona Department of Education. Teacher Improvement through Mathematics Education 2 (TIME_{x2}). **PI: Rebecca McGraw.** June 1, 2006 – May 31, 2008. Total Award = \$108,003.

Arizona Department of Education. Teacher Improvement through Mathematics Education (TIME). **PI: Rebecca McGraw.** July 1, 2006 – September 30, 2007. Total Award = \$89,224.

National Science Foundation. Center for the Mathematics Education of Latino/as (CEMELA). PI: Marta Civil. Co-PIs: Luis Moll & Virginia Horak. **CEMELA Faculty Member: Rebecca McGraw.** August 1, 2004 – July 31, 2008.

PUBLICATIONS

- McGraw, R. (2010). How teachers' actions affect what students learn in secondary school mathematics classrooms. In J. Lobato & F. K. Lester, Jr. (Eds.), *Teaching and learning mathematics: Translating research for secondary school teachers* (pp. 61-66). Reston, VA: National Council of Teachers of Mathematics.
- McGraw, R., & Rubinstein-Avila, E. (2009). Middle school immigrant students developing mathematical reasoning in Spanish and English. *Bilingual Research Journal*, 31(1/2), 147-173.
- McGraw, R., Romero, D., & Krueger, R. (2009). Facilitating whole-class discussions in diverse classrooms: Strategies for engaging all students. In A. Flores (Ed.), *Mathematics for every student: Responding to diversity, grades 9-12* (pp. 17-27). Reston, VA: National Council of Teachers of Mathematics.
- Bay-Williams, J. & McGraw, R. (2008). *Issues of implementation: Making mathematics accessible to all learners*. In Meyer, M., Langrall, C., Arbaugh, F., Webb, D., & Hoover, M. (Eds.), *A decade of middle school mathematics curriculum implementation: Lessons learned from the Show-Me Project* (pp. 125-137). Charlotte, NC: Information Age Publishing.
- McGraw, R., & Lubienski, S. T. (2007). NAEP findings related to gender: Achievement, student affect, and learning experiences. In P. Kloosterman & F. K. Lester, Jr. (Eds.), *Results and interpretations of the 2003 mathematics assessment of the National Assessment of Educational Progress* (pp. 261-287). Reston, VA: National Council of Teachers of Mathematics.
- McGraw, R., Lynch, R. K., Koc, Y., Kapusuz, A., & Brown, C. A. (2007). The multimedia case as a tool for professional development: An analysis of online and face-to-face interactions among mathematics pre-service teachers, in-service teachers, mathematicians, and mathematics teacher educators. *Journal of Mathematics Teacher Education*, 10(2), 95-121.
- Chesler, J. & McGraw, R. (2007). A special kind of misunderstanding: Mathematical relations in geometry. *Proceedings of the Twenty-Ninth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*.
- McGraw, R., & D'Ambrosio, B. (2006). Considering issues of equity through analysis of NAEP data. In C. A. Brown & L. Clark (Eds.), *Learning from NAEP: Professional development materials for mathematics teachers* (pp. 85-94). Reston, VA: National Council of Teachers of Mathematics.
- McGraw, R., & D'Ambrosio, B. (2006). The gallery walk as an activity for investigating equity-related NAEP data. In C. A. Brown & L. Clark (Eds.), *Learning from NAEP: Professional development materials for mathematics teachers (CD supplementary materials)*. Reston, VA: National Council of Teachers of Mathematics.

- McGraw, R., Lubienski, S. T., & Strutchens, M. (2006). A closer look at gender in NAEP mathematics achievement and affect data: Intersections with achievement, race and socio-economic status. *Journal for Research in Mathematics Education*, 37(2), 129-150.
- McGraw, R., Romero, D., & Krueger, R. (2006). How far up am I? The mathematics of stadium seating. *The Mathematics Teacher*, 100(4), 248-253.
- Grant, M., & McGraw, R. (2006). Collaborating to investigate and improve classroom mathematics discourse. In L. Van Zoest (Ed.), *Teachers engaged in research: Inquiry in mathematics classrooms, grades 9-12* (pp. 231-251). Reston, VA: National Council of Teachers of Mathematics.
- McGraw, R. (2006). A web-based investigation of perimeter and area relationships. *Online Journal of School Mathematics*, 4(1).
- McGraw, R., & Grant, M. (2005). Investigating mathematics with technology: Lesson structures that encourage a range of methods and solutions. In W. Masalski (Ed.), *Technology supported mathematics learning environments: 2005 Yearbook* (pp. 303-317). Reston, VA: National Council of Teachers of Mathematics.
- Lubienski, S. T., McGraw, R., & Strutchens, M. (2004). NAEP findings regarding gender: Mathematics achievement, instructional experiences and affect. In P. Kloosterman, & F. Lester (Eds.) *National Assessment of Educational Progress Mathematics Assessments 1990-2000* (pp. 305-336). Reston, VA: National Council of Teachers of Mathematics.
- Strutchens, M., Lubienski, S. T., & McGraw, R. (2004). NAEP findings regarding race, ethnicity, and socio-economic status. In P. Kloosterman, & F. Lester (Eds.) *National Assessment of Educational Progress Mathematics Assessments 1990-2000* (pp. 269-304). Reston, VA: National Council of Teachers of Mathematics.
- Arbaugh, F., Brown, C., Lynch, K., & McGraw, R. (2004). Students' ability to construct responses (1992-2000): Findings from short and extended constructed-response items. In P. Kloosterman, & F. Lester (Eds.) *National Assessment of Educational Progress Mathematics Assessments 1990-2000* (pp. 337-362). Reston, VA: National Council of Teachers of Mathematics.
- McGraw, R., Arbaugh, E. F., Lynch, R. K., & Brown, C.A. (2003). Teacher professional development as the development of communities of practice. *Proceedings of the Twenty-Seventh Annual Meeting of the International Group for the Psychology of Mathematics Education*.
- McGraw, R. (2003). Facilitating whole-class discussions in secondary mathematics classrooms. *Proceedings of the Twenty-Seventh Annual Meeting of the International Group for the Psychology of Mathematics Education*.

- Arbaugh, E. F., Brown, C. A., & McGraw, R. (2003). Researching Teacher Professional Development. *Proceedings of the Twenty-Seventh Annual Meeting of the International Group for the Psychology of Mathematics Education*.
- Brown, C. A., McGraw, R., Koc, Y., Lynch, R. K., Arbaugh, E. F. (2002). Lesson study in secondary mathematics. *Proceedings of the Twenty-Fourth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*.
- Arbaugh, E. F., Brown, C. A., & McGraw, R. (2002). The messy work of studying professional development: The conversation continues. *Proceedings of the Twenty-Fourth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*.
- Brown, C. A., Koc, Y., McGraw, R., & Lynch, K. (2002). The use of a web-based professional development forum to enhance in-service and pre-service teacher education. *Proceedings of the Thirteenth International Conference of the Society for Information Technology and Teacher Education*.
- Essex, K., Lambdin, D. V., & McGraw, R. (2002). Racing against time: Using technology to explore distance, rate, and time. *Teaching Children Mathematics*, 6, 322-326, 347.
- McGraw, R. (2000). Facilitating communication about measurement, exponents, and scientific notation. In The National Council of Teachers of Mathematics, *Illuminations: Principles and Standards for School Mathematics*.
http://illuminations.nctm.org/reflections/912/Facilitating_Communication/index.html

PRESENTATIONS

- McGraw, R., Barker, D., Kersaint, G., & Thompson, D. (accepted). *Connecting mathematical and pedagogical knowledge development in teacher preparation*. Presentation at the annual meeting of the Association of Mathematics Teacher Educators (AMTE). Irvine, CA.
- McGraw, R. & Blackburn, C. C. (accepted). *Teaching mathematics to future teachers: Connecting mathematics to aspects of teaching in university courses*. American Mathematical Society (AMS) Special Session on Mathematics and Education Reform, AMS/Mathematical Association of America (MAA) Joint Mathematics Meetings. New Orleans, LA.
- Wiest, L., & McGraw, R. (2010, April). NCTM. *Research insights into mathematics instruction for females*. Presentation at the Annual Meeting of the National Council of Teachers of Mathematics (NCTM). San Diego, CA.
- McGraw, R. (2010, January). *Connecting mathematics and pedagogy in courses for future algebra teachers*. Mathematical Association of America (MAA) Session on Preparing K--12 Teachers to Teach Algebra. Joint Mathematics Meetings. San Francisco, CA.

- McGraw, R. (2009, September). *Untangling Mathematical KnotTSS: Knowledge for Teaching Secondary School*. Invited presentation to the Faculty of Education, University of Alberta, Edmonton.
- McGraw, R. (2009, April). *Making, Testing, and Proving Mathematical Conjectures in a Computer Environment: An Examination of How Students Use The Geometer's Sketchpad*. Invited lecture to the Mathematics Department at the University of Akron. Akron, OH.
- McGraw, R. (2009, February). *Researching collaborations between mathematicians and mathematics educators: The KnotTSS project*. [Plenary panel (with J. Hamos & J. Wagner) on collaborations of mathematics educators and mathematicians]. Twelfth Conference on Research in Undergraduate Mathematics Education (RUME). Raleigh, NC.
- Rubinstein, A., & McGraw, R. (2008, March). *Middle school immigrant students developing mathematical reasoning in Spanish and English*. Paper presented at the Annual Meeting of the American Educational Research Association. New York City, NY.
- McGraw, R. (2007, November). *Mathematics education: What is it and what is being done at the University of Arizona?* Undergraduate Teaching Assistant seminar. University of Arizona.
- McGraw, R., Rubinstein-Avila, E., & Ondrus, M. (2007, April). "Esa era la tricky part ...": *Students' mathematical reasoning in a dual-language middle school classroom*. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.
- Mewborn, D. M., Grant, M., McGraw, R., Adams, B., & Sharp, J. (2007, March). *Teachers Engaged in Research: Behind the Scenes*. Plenary session at the Research Pre-session of the 2007 Annual Meeting of the National Council of Teachers of Mathematics, Atlanta, GA.
- McGraw, R. (2007, February). *Spotlight on Success: Lessons Learned from the Teacher Improvement through Mathematics Education (TIME) Project*. AZ Mathematics and Science Partnership Coordinator's Conference. Phoenix, AZ.
- McGraw, R. (2006, November). *Gender and equity in opportunity and achievement in mathematics*. An Undergraduate Teaching Assistant (UTA) seminar. University of Arizona.
- McGraw, R. (2006, October). *How Far Up Am I? The Mathematics of Stadium Seating*. Presentation at the National Council of Teachers of Mathematics Regional Conference, Phoenix, AZ.
- McGraw, R. (2006, September). *Considering Issues of Equity Through Analysis of NAEP Data*. Working session at the Learning from NAEP Facilitator's Conference, Indianapolis, IN.
- McGraw, R., & Ondrus, M. (2006, August). *The Development of Students' Mathematical Reasoning and Communication Abilities*. A Center for the Mathematics Education of Latinos/as (CEMELA) research seminar, University of Arizona.

- Lubienski, S. T., McGraw, R., Kloosterman, K., & Crockett, M. (2006, April). *The National Assessment of Educational Progress as a Tool for Examining Equity in Mathematics Education*. Panel session at the Research Pre-session of the 2006 Annual Meeting of the National Council of Teachers of Mathematics, St. Louis, MO.
- McGraw, R. (2006, January). *How High Am I? The Mathematics of Stadium Seating*. Presentation at the 2nd Annual Mathematics Education Conference of the Center for Recruitment and Retention of Mathematics Teachers, Tucson, AZ.
- McGraw, R. (2005, April). *M302B Technology-Based Lessons*. A Mathematics Education Research Colloquium, University of Arizona.
- McGraw, R. (2005, January). *Level of Cognitive Demand as a Tool for Analyzing the Quality of Mathematical Instruction*. A Center for the Mathematics Education of Latino/as (CEMELA) seminar, University of Arizona.
- McGraw, R. (2004, October). Making, Testing, and Proving Mathematical Conjectures in a Computer Environment: An Examination of How Students Use The Geometer's Sketchpad. A Mathematics Education Research Colloquium, University of Arizona.
- McGraw, R., Arbaugh, F., Lynch, K., & Van Zoest, L. (2004, April). *Studying Teacher Development through the Theoretical Lenses of Community and Identity*. Working session at the Research Pre-session of the Annual Meeting of the National Council of Teachers of Mathematics, Philadelphia, PA.
- McGraw, R. (2003, December). *Results from the Mathematics Assessment of the National Assessment of Educational Progress (NAEP)*. A Mathematics Education Research Colloquium, University of Arizona.
- McGraw, R., Koc, Y., & Brown, C. A. (2003, April). *Engaging secondary mathematics teachers in collaborative instruction: An adaptation of Japanese lesson study in the U.S.* Paper presented as part of a symposium at the Research Pre-session of the Annual Meeting of the National Council of Teachers of Mathematics, San Antonio, TX.
- McGraw, R. (2003, March). *Supporting the Development of Teaching Communities: An Adaptation of the Japanese Lesson Study Model of Teacher Professional Development*. A Mathematics Education Research Colloquium, University of Arizona.
- McGraw, R., Koc, Y., Brown, C. A., & Lynch (2002, April). *Talking about mathematics teaching: An examination of the use of a multimedia case to stimulate the conversation*. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA.
- McGraw, R. (2002, February). *Facilitating Whole-Class Discussion in Secondary Mathematics Classrooms*. A Mathematics Education Research Colloquium, University of Arizona.

- Caulfield, R., & McGraw, R. (2001, November). *Mathematical tasks in the middle school classroom*. Presentation at the Annual Conference of the Indiana Council of Teachers of Mathematics, Indianapolis, IN.
- Brown, C. A., Arbaugh, E. F., Lutz, M. P., McGraw, R. (2001, April). *Studying professional development is messy work: What are the research issues?* Working session conducted at the Research Pre-session of the Annual Meeting of the National Council of Teachers of Mathematics, Orlando, FL.
- McGraw, R. (2000, April). *Usability testing of the electronic version of the Principles and Standards*. Paper presented at the Research Pre-session of the Annual Meeting of the National Council of Teachers of Mathematics, Chicago, IL.

SERVICE

- Assistant Director of the Institute for Mathematics and Education (<http://ime.math.arizona.edu>)
- Manuscript Reviewer for *Mathematical Thinking and Learning*, *Journal of Mathematics Teacher Education*, and *Journal for Research in Mathematics Education*
- Peer Review Committee, Mathematics Department, University of Arizona, 2010-2011
- Association of Mathematics Teacher Education (AMTE) Journal Development Task Force Member, 2009-2010
- Entry Level Teaching Committee, Mathematics Department, University of Arizona, 2008-2010
- National Assessment of Educational Progress (NAEP) materials development. 2003-2006
- Mathematics Lesson Development and Implementation Team. Desert View High School, Sunnyside School District, Tucson, AZ. 2003-2005
- Curriculum Study Group. Mathematics Department, University of Arizona. 2005
- Secondary Education Program in Mathematics Workshop. University of Arizona. 2005.
- Pima County Mathematics Association. Tucson, AZ. 2005.
- College of Science Staff Awards Committee. University of Arizona. 2005.
- Grant Proposal Reviewer. Arizona Board of Regents Improving Teacher Quality General Competition. 2004-2005.
- Teacher Recruitment and Retention Center Coach. Mathematics Department, University of Arizona. 2002 – 2004.
- Show-Me Regional Associate. The Show-Me Project, University of Missouri. 2002-2003.
- Shape & Structure: Interdisciplinary Art/Geometry Project. University of Arizona. 2002-2003.

HONORS AND AWARDS

- Distinguished Early Career Teaching Award. 2006. College of Science, University of Arizona.
- Outstanding Dissertation Award. 2003. Curriculum and Instruction Department, College of Education, Indiana University.
- Linebeck Fellowship. Indiana University. 2000 – 2001.
- University Graduate School Fellowship. Indiana University. 1997 – 1999.
- Apple Award for Excellence in Teaching. Bloomington High School South, Bloomington, Indiana. 1997.

PROFESSIONAL AFFILIATIONS

- American Educational Research Association (AERA) and Special Interest Group/Research in Mathematics Education (SIG/RME)
- Association of Mathematics Teacher Educators (AMTE)
- Mathematical Association of America (MAA) and Special Interest Group on Research in Undergraduate Mathematics Education (SIGMAA RUME)
- National Council of Teachers of Mathematics (NCTM)
- Psychology of Mathematics Education – North America Chapter (PME-NA)