Research Foci and Funding Across My Career: Key Projects and Turning Points....

Amy Roth McDuffie, Professor of Mathematics Education
mcduffie@wsu.edu
My work: I teach and conduct research with prospective and practicing teachers, focusing on the professional development of teachers in mathematics education.

Specifically, I investigate supports and barriers to teachers’ learning in and from practice with attention to teachers’ use of curriculum resources and equitable pedagogies.

I also research university practices that support or impede the process of becoming a teacher, including structural factors (e.g., institutionalized racism).
Promoting Mathematical Discourse through Children’s Literature

ABSTRACT. In this case study I examine the reflective practices of two elementary pre-service teachers during their student teaching internship. I extend current views of reflective practice to create a framework for a ‘deliberate practitioner’. With this framework, I investigate the pre-service teachers’ thinking with regard to reflective processes and how they use their pedagogical content knowledge in their practices. My findings indicate that the pre-service teachers use their pedagogical content knowledge in anticipating problematic events, and in reflecting on problematic events in instruction. However, limits in pedagogical content knowledge and lack of confidence impede the pre-service teachers’ reflection while in the act of teaching. They were more likely to reflect on their practices outside of the act of teaching. Implications for teacher educators and pre-service teachers are discussed.

KEY WORDS: mathematics education, pedagogical content knowledge, reflective practice, student teaching, teacher education

With the emergence of recent reforms in education in the United States (e.g., National Council of Teachers of Mathematics [NCTM], 1989, 1991, 2000), researchers and educators have re-examined teaching by moving away from a technical model of teaching by prescribed methods to one that regards it as a complex, demanding practice. Two separate but compatible perspectives have made substantial contributions as to how we view teaching, and correspondingly, how we approach teacher education. First, viewing teachers as reflective practitioners has underscored the problem solving nature of teaching (McIntyre, Byrd & Foxx, 1996; Russell & Munby, 1991; Schön, 1983, 1987; Valli, 1992; Zeichner, 1993). Consequently, the focus of many teacher education programs is on the development of reflective practitioners (Christensen, 1996). This focus is consistent with a constructivist perspective for teaching and learning that is the basis of many teacher education programs (e.g., McIntyre, Byrd & Foxx, 1996). Second, the conceptualizing of pedagogical content knowledge (Grossman, 1990; Shulman, 1986, 1987) as a unique type of knowledge for teaching has helped researchers, teachers, and teacher educators gain an understanding of the knowledge base that teachers need for successful practice.
NSF Project 1: Teachers Empowered to Advance Change in Mathematics (TEACHMath) [www.teachmath.info](http://www.teachmath.info), 2010-2016 (work started in 2009, 2006?)

Funded by the National Science Foundation #1228034

Collaborators: Corey Drake (Michigan State University), Erin Turner (University of Arizona), Julia Aguirre (UW Tacoma), Tonya Bartell (MSU), & Mary Foote (Queens College CUNY)

RAs: Cathy Bolson, Angela Witters
NSF Project 2: Developing Principles for Mathematics Curriculum Design and Use in the Common Core Era, 2012-2018 (work started in 2010)

Funded by the National Science Foundation, DRL 749573, DRL 1222359

Collaborators: Jeff Choppin (University of Rochester), Corey Drake (Michigan State University), & Jon Davis (Western Michigan University)

RAs: Margarita V. Magana, Jennifer Brown
NSF Project 3: Mathematical Modeling with Cultural and Community Contexts (M2C3), 2016-2020, spin-off from TEACHMath

https://sites.google.com/prod/qc.cuny.edu/m2c3/home

Project Overview

Mathematical Modeling With Cultural and Community Contexts (M2C3) is a project focused on teaching and learning mathematical modeling in diverse elementary classrooms.

Project Personnel

M2C3 brings together PIs who are extending their work in the TeachMath Project to focus on supporting elementary teachers in using cultural and community contexts in mathematical modeling tasks. They are joined by a team of other key personnel and graduate students.

People at Work (Gallery)

Photos of participants in M2C3 professional development sessions as well as working in classrooms.

Collaborators: Erin Turner (University of Arizona), Julia Aguirre (UW Tacoma), & Mary Foote (Queens College CUNY)
RA: Candace Chappelle
NSF Project 4: Applicant Information, Selection, & STEM Teacher Retention and Effectiveness, 2020-2025, work started 2019

Collaborators: Dave Slavit (WSU), Dan Goldhaber (UW & American Institute of Research), Roderick Theobald (UW), & Jennifer Decgaube-Berkas (Central Washington University).

RAs: Nicole Griggs, Melissa Pearcy, Candace Chappelle

Funded by the National Science Foundation. DUE 1950030

https://www.telc.us/noyce
Project aims to develop and validate two quantitative measures of Curricular Reasoning in order to improve middle level mathematics teaching and learning:
- a teacher survey, and
- an observation protocol.
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Questions, Comments, & Discussion...

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