What Do Secondary Preservice Teachers Need to Learn?

Where Can They Learn?

Carol E. Malloy
University of North Carolina at Chapel Hill
cmalloy@email.unc.edu

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Agenda

- What do secondary preservice teachers need to learn about equitable instruction?
  - MIDDLE Research findings on instructional strategies and dispositions
- What do secondary preservice teachers need to learn and Where can they learn?
  - MAT Program for Secondary Mathematics preservice teachers

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Two Data Analyses

Instructional strategies and dispositions of teachers of successful in helping (1) all middle school and (2) African American students gain conceptual understanding

MIDDLE Research Project

University of North Carolina-Chapel Hill – NSF Grant REC 0125868

Mathematics Teaching, Learning, and Liberation in African American Contexts, Danny Martin, Editor

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Data

- Data collected from MIDDLE that relevant to this study include
  - instructional observations
  - teacher interviews
  - student conceptual understanding items

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Common Instructional Practices

- Inquiry-based instruction and discussion
- Varied approaches
- Challenge and justification
- Accommodation of instruction based on student learning preferences

- Use of context in instruction
- Assessment methods beyond testing and asking questions
- Learning communities that value independence and interdependence

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Common Dispositions

- Caring
- Valued motivation, involvement, effort, respectful behavior, responsibility
- Valued independence with interdependence
- Valued different student learning styles
- Generally mirrored research dispositions for teachers African American students

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Secondary Mathematics Program

The components of STEP require students to

(a) reconsider personal knowledge and experiences,

(b) locate teaching within the culture of the school and community,

(c) analyze students learning opportunities,

(d) understand students' understanding, and (e) construct reconstructionist pedagogy

From Cochran-Smith, Color Blindness and Basket Making are Not the Answers: Confronting Dilemmas of Race, Culture, and Language Diversity in Teacher Education, *AERJ* (1995).

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Reconsider Personal Knowledge and Experiences—Mathematics Autobiography

- The purpose of this assignment was to have students think about their experiences, both disadvantaged and privileged as a student.
- Autobiographies included topics about the mathematics life of my students
- The most important question they had to address was: Does the context of your life make a difference in how you learned mathematics?

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Locating Teaching within the Culture of the School and Community

Students were required to

- Observe and help their mentor teachers

- complete specific activities related to the culture of the school and community.

As a result of these activities, students understood the school and community culture and values prior to their student teaching.

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Analyze Students' Learning Opportunities

Grayson and Miller (1985) GESA framework for equitable instruction which included areas of instructional disparities and interactions that can mediate the disparities.

Areas of Disparity and Interactions

- Instructional Contact: Response Opportunities and Acknowledgement
- Grouping and Organization: Wait Time and Physical Closeness
- Classroom Management: Touching and Reproof
- Enhancing Self-Esteem: Probing and Listening
- Evaluation of Students Performance: Higher Level Questioning and Analytical Feedback

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Analyze Students' Learning Opportunities

Carpenter and Lehrer's (1999) conceptions of understanding:

- Students should construct relationships,
- extend and apply mathematical knowledge,
- reflect about experiences,
- articulate what they know, and make the mathematical knowledge their own

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Analyze Students' Learning Opportunities

Students read, analyzed, and critiqued

- instructional cases from their methods texts and other sources,
- videos of classrooms in teaching situations and learning situations, and
- their practica classrooms for students' opportunities to learn mathematics.

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Understand Students' Understanding

Major work that students complete in the areas of equity and diversity.

Students are required to

- research and present papers on the teaching and learning of students based on varied types of diversity including language, ethnicity and race, sexual preference, physical, emotional, and cognitive.

- read and critique research on teaching and learning including the research in the previous section which includes researched and observed strategies for ensuring equity in mathematics and appropriate teaching strategies for teaching for understanding.

- interview and work with a student who has problems learning.

We also invite a high school group of students into our class from a majority African American school to work together on mathematics to shape democracy and promote social justice.

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Construct Reconstructionist Pedagogy through Portfolios

Principles

- Candidates possess the necessary content knowledge to support and enhance student development and learning.
- Candidates possess the necessary professional knowledge to support and enhance student development and learning, including meeting student needs across physical, social, psychological, and intellectual contexts. Candidates incorporate a variety of strategies, such as technology, to enhance student learning.
- Candidates possess the necessary knowledge and skills to conduct and interpret appropriate assessments.
- Candidates view and conduct themselves as professionals, providing leadership in their chosen field, including effective communication and collaboration with students and stakeholders.

Dispositions

- Candidates will exhibit behavior that demonstrates a belief that all individuals can develop, learn, and make positive contributions to society.
- Candidates will exhibit behavior that demonstrates a belief that continuous inquiry and reflection can improve professional practice.

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