

Preparing Instruments of Inequity or Agents of Change: Teaching Mathematics Methods for Social Justice

The Abstract

This project began as a collaborative review of the article *Access to Mathematics: "A Possessive Investment in Whiteness"* (Battey, 2013). In the article, Battey highlighted the systemic marginalization of students of color in mathematics education by "analyzing national data to calculate the wage-earning differential attributable to differences in mathematics coursework by ethnic/racial groups across three time points: 1982, 1992, and 2004" (p. 332). He exposed the "differential access to mathematics" found within the data is connected with projected economic stratification based on race. We agreed that the data and analysis could serve as powerful material in a methods course to develop awareness and agency regarding issues of equity for PSTs. As critical mathematics educators, we designed a social justice mathematics methods learning module that combined findings from the article, our analysis of updated data, and relevant mathematical content and practice standards. The learning module was enacted with approximately 80 PSTs at two public universities: Lehman College and The University of Mississippi. Data from engagement in the module as well as associated reflections on the role of mathematics teachers as instruments of inequity or agents of change were collected and are currently being analyzed from four mathematics methods courses (two at Lehman and two at The University of Mississippi).

The Perspective

We take the socio-political perspective in our approach to teaching elementary mathematics methods and understand that teaching mathematics is a political act and notions of mathematics neutrality need to be challenged. Mathematics teacher educators (MTEs) are uniquely positioned to support PSTs in pushing against mathematics education's "long history of giving access to students differentially, particularly based on the ideological construction of race" (Battey, 2013, p. 332). Martin (2013) asks "how can we more effectively partner with teachers to uncover and understand the external forces that position them in ways where their teaching and classroom practice are put in service to larger political projects and ideologies?" (p. 328). The work of Picower (2013) provides insight into this question by providing evidence that learning experiences focused on exposing students to critical issues can create awareness of such issues.

The Questions

What is the role of MTEs in developing PSTs' **awareness & agency regarding issues of equity** in the math classroom?
What is the effect of a **social justice learning module** on PSTs' beliefs & understandings of equity in the math classroom?

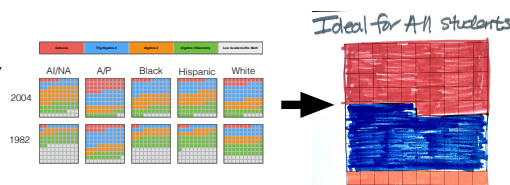
Part One: Picturing Inequity

Data from *Access to Mathematics: "A Possessive Investment in Whiteness"* (Battey, 2013) used by PSTs in a group worthy task on proportionality

Part Two: A Vision of Equity

Given Gutierrez's definition of equity, PSTs create a justified vision of an equitable future.

The Module



Part Three: Teachers Matter

Connecting the MatHistory of PSTs with the revealed data and the research on the impact of teachers on their students.

Part Four: What Now?

PSTs are provided with resources to teach with, for, and about social justice in their future classrooms.

The Methods

Setting	4 Math Methods sections
Participants	78 Pre-Service Teachers, 3 Teacher/Researchers
Data	Recorded Class Sessions, PST Work, Interviews, MTEBI
Analysis	Quantitative Analysis of MTEBI to guide Qualitative Analysis

The (Preliminary) Findings

About PSTs

While PSTs recognize the impact of particular teachers in their own mathematical history, they don't recognize their potential impact on their future students. PSTs struggle with 'translating' numeric data into context. PSTs do not initially envision themselves as mathematicians.

About MTEs

This work is hard. We continue to think about integrating meaningful mathematics and critical content in the module. Teaching how to teach with, for, and about social justice through pedagogy that is with, for and about social justice is complex. Multiple iterations of teaching the module are improving our work.

The Next Steps...

The results from this study will provide empirical evidence that will measure the extent to which participation with an equity-focused mathematics methods learning module impacts elementary prospective teachers' beliefs about issues of equity in mathematics teaching and learning. We intend to develop a network of like minded MTEs some of which may be recruited as collaborators for an edited book of social justice mathematics lessons designed specifically for MTEs aimed to influence their PSTs to be agents of change.