


# Advancing Equity-Based Mathematics Teaching in the Primary Grades: The Case of Two Clinical Practice Experiences

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## ABSTRACT

Using the lens of Gutiérrez's framework for equity-based teaching, this study examines how two clinical practice experiences supported elementary education teacher candidates' development of mathematics pedagogies. Findings indicate that clinical experiences with teachers who demonstrate equity-based practices were associated with candidates' confidence to implement equity-based teaching. Further, in classrooms that did not promote equity-based teaching candidates were still able to implement equity-based practices when teaching small groups of students. Implications include the need for teacher educators with specific content expertise to form partnerships and clinical practice experiences with schools to ensure that equity-based practices are present.

## KEYWORDS

Clinical Practice, Elementary Education, Mathematics Education, Teacher Education

## INTRODUCTION

In mathematics education the idea of equity-based teaching has been advanced by scholars and national organizations (e.g., Chao, Murray, & Gutiérrez, 2015; Gutiérrez, 2009, 2012; National Council of Teachers of Mathematics, 2014). The rationale for this is two-fold. First, emphasizing equity-based teaching attends to the systematic marginalization and prejudice against specific ethnicities in past and current times. Second, it attends to the data nationwide in the United States about the opportunity gap between ethnicities on large-scale assessments (Institute of Educational Sciences [IES], 2009, 2011). In the U.S. Department of Education (2013) report on Equity and Excellence the authors wrote:

While some young Americans—most of them white and affluent—are getting a truly world-class education, those who attend schools in high poverty neighborhoods are getting an education that more closely approximates school in developing nations. In reading, for example, although U. S. children in low-poverty schools rank at the top of the world, those in our highest-poverty schools are performing on a par with children in the world's lowest- achieving countries. With the highest poverty rate in the developed world, amplified by the inadequate education received by many children in low-income schools, the United States is threatening its own future.

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Additionally, a large-scale analysis of data from the National Assessment of Educational Progress (NAEP) found that while the gap on the assessment between students who identify as white and black had narrowed from 1990 to 2015 the gap was still substantial. Further, the gap between students who identify as white and Hispanic were substantial in all grades (Musu-Gillette et al., 2017).

In terms of the systematic marginalization of specific ethnicities phrases such as *education debt* (Ladson-Billings, 2006) have been put forth in the literature to describe the system prejudices against specific populations, specifically students who identify as African-American (Delpit, 2012). Phrases such as culturally relevant pedagogy (Ladson-Billings, 1995), culturally sustaining pedagogy (Paris & Alim, 2017), and equity-based practices (Chao et al., 2015) reflect to bring to light effective teacher actions that aim to meet the needs of learners by taking into account students' cultural assets and strengths, and design instruction that builds off these characteristics (Delpit, 2012). While culturally relevant pedagogy aims to make content and relevant to students with various cultural backgrounds, culturally sustaining pedagogy aims to sustain multiple cultures in classrooms through intentional teacher practices.

This article focuses on mathematics teaching and learning in elementary grades (Kindergarten through Fifth Grade) by providing a synthesis of equity-based practices in mathematics. The article then includes two descriptive examples of how clinical practice experiences can help or hinder the work of preparing teacher candidates to demonstrate cultural competence through the use of equitable mathematics teaching practices that are culturally sustaining.

## Equity-Based Mathematics

As stated above there is a dire need for elementary mathematics teachers to demonstrate equity-based practices. Equity-based mathematics has been written about by many scholars in the field and defined clearly. In an NCTM Policy Statement, Chao et al. (2014, p. 1) described equity-based mathematics teaching as:

*practices that take into account the way(s) mathematics education perpetuates oppressive norms and therefore actively seeks to erase them, so that all students can participate meaningfully in mathematics learning and create their own mathematical knowledge.*

The goal according to Chao et al. (2014) is for students to be able to meaningfully engage in mathematics learning and form their understanding and knowledge of mathematics. Rooted in a constructivist paradigm (Vygotsky, 1978) there is an explicit emphasis on minimizing the harmful and historic impact of oppression to various populations and providing students with opportunities to control their own learning and sense making about mathematics.

In terms of how this gets accomplished a few recommendations have been made. The authors of an NCTM Equity Position Statement (2014, p. 2) wrote:

*Achieving access and equity requires that all stakeholders— ensure that all students have access to a challenging mathematics curriculum, taught by skilled and effective teachers who differentiate instruction as needed; monitor student progress and make needed accommodations; and offer remediation or additional challenges when appropriate.*

These recommendations align to the seminal work of Gutiérrez (2009), who identified four dimensions to address equity in mathematics teaching and learning: access, achievement, identity, and power. Table 1 describes these dimensions.

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