

# Chapter 47

## Integrating Critical Pedagogy With Teaching Statistics for Social Justice

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### **ABSTRACT**

*The following chapter describes the creation and implementation of a “Content Underpinnings” course for graduate students in middle grades statistics that required students to complete a teaching for social justice lesson in a K-12 classroom. The content underpinnings course consisted of three major goals that promoted critical thought: critical race theory (CRT) and teaching for social justice (TSJ), statistical pedagogical content knowledge, and statistical content knowledge. A review of research related to each these goals is integrated with student implementation of a CRT/TSJ lesson, along with details on how this research guided the course creation and implementation. Implications and suggestions for including CRT and TSJ in mathematics are suggested as a tool to promote equity, access, and empowerment for democracy in teacher education.*

### **INTRODUCTION**

The following chapter presents findings from a statistical underpinnings course which used teaching for social justice (TSJ) as a critical component of its development, framework, and pedagogy. A major component of the course required students to teach a statistics lesson with a framework of TSJ in an actual classroom with students. The following vignette is from an actual teaching episode of students in the course.

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*Two African-American female graduate students enrolled in a master's middle grades program begin walking around a classroom full of 95% white female students in a statistics course designed for elementary teacher preparation. One seems slightly more nervous than the other to teach a statistics lesson in higher education as she paces the classroom; however, they both seem to relinquish power as they find seats with the rest of the students at desks near the side of the room. The professor in charge of the course introduces the visiting graduate students from another university who have pre-planned to teach a statistics lesson about sampling, probability, and social justice. As students complete the lesson and the two graduate students assist undergraduate elementary education students, a sense of unbalanced power and privilege permeate the classroom. Perhaps this is because of the race and gender of the student teachers or perhaps it is because of the alternate pedagogical approach to teaching statistics as students were move to group seating from a traditionally lecture style seating arrangement. As the lesson progressed, one group of white female students seemed to be antagonized by one of the graduate student's assistance during the statistical investigation as they were having difficulty making a percent from the frequencies.*

In their 2016 joint position statement, the National Council of Supervisors of Mathematics and TODOS: Mathematics for All described TSJ as a way to “transform mathematics from a gatekeeper to a gateway, democratizing participation and maximizing education advancement that equitably benefits all children rather than a select few” (NCSM & TODOS, 2016, p. 3). An important component of TSJ is students discovering and taking action to reduce injustice themselves (Gutstein, 2003). The vignette above is from a critical course assignment in the statistical underpinnings course that required students to TSJ in an actual classroom with students. This exercise was used to help students familiarize themselves with TSJ while also attending to statistical pedagogical content knowledge in the course.

Unfortunately, TSJ may often be a place of discomfort for both the teacher and student. This may be because of differing beliefs and limited experiences. There may also be a number of other reasons TSJ provides discomfort for teachers and students such as self-perception, identity, situated identity, prior experiences, administrative or parent disapproval. In this teaching episode, many of the students in the class mentioned during post surveys and during later classroom discourse that they had never had an African-American teacher before or been placed with an African-American teacher in their field settings. During the class lesson, a student from the class said, “I’ve never had a non-white student in class... we can encourage other students regardless of their demographic.” It was apparent through the graduate students’ orchestration of the TSJ lesson that students participating in the TSJ lesson lacked diverse experiences in their own classroom experiences as they related to race. Many feel that TSJ is best left only in the background and discussed outside the classroom with people who share the same skin color, social beliefs, shared visions, and privilege or lack thereof. This belief does little to help others see the reality of others’ social experiences and truths in different lines of experience and logic.

As teachers begin to TSJ, students begin to understand the different forces and establishments that guide their lives and become empowered to use mathematics and statistics as tools. Students begin to learn how mathematics and statistics may be used as weapons that may empower them to be advocates for change in their world. TSJ, a type of mathematical pedagogy, encourages students to develop their own socio-political consciousness where they begin to ask and seek solutions to problems in their own and others’ lives (Gutstein, 2003). TSJ is thus naturally always groundbreaking because injustices, discrimination, and inequity are personalized to each student, society, and time period.

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