Chapter 43

Using Culturally Responsive Teaching and Data-Driven Instruction in Mathematics to Create Equity and Equality: Culturally Responsive Mathematics

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ABSTRACT

The diverse nature of school populations in current education requires teaching that not only considers the differences in their students, but how their own practices have an impact on a student’s ability to learn content. Traditional Eurocentric models of education are not relevant to the lives of racially culturally ethnically linguistically diverse students, thus creating barriers to learning for students who do not fit neatly into categories of Black or White. For the academic environment to be accessible for all students, classroom instruction must become culturally aligned. This may be somewhat of a challenge given that classroom teachers are ill-prepared to meet the needs of RCELD students in math education. Teachers are faced with the critical challenge of creating learning environments that bridge the gap between culture and curriculum with appropriate strategies and resources, while all the while adhering to state and federal standards. This chapter explores using culturally responsive teaching to teach mathematics.

INTRODUCTION

The recent demand for schools to respond to accountability measures, challenges school teachers to use data to guide the practices of teaching in their efforts to develop skills of racially culturally ethnically diverse (RCELD) students in today’s classrooms. Despite student achievement criteria outlined in No Child Left Behind (NCLB, 2001), achievement gaps between minority children and their peers continue to exist (Guisbond, Neill & Schaeffer, 2012), particularly persistent gaps in math achievement.

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Curriculum must consider the differences that exist among student populations (Falcon, 2009). Studies into best practices for teaching in diverse classrooms pointed to “a lack of cultural perspectives in the mathematics curriculum” (Yao, 2016, p. 1809). Classroom teachers are ill-prepared to meet the needs of RCELD students in math education. Students’ prior knowledge and background are important considerations (Ladson-Billings, 1997) that must be supported in the teaching and learning process. To meet the demands of contemporary public education, the principles of instruction need to be transformed to provide equal and equitable access to the curriculum. This is noted in the definition of culturally responsive mathematics teaching (CRMT), identifying it as a set of specific pedagogical knowledge, dispositions, and practices that privilege mathematical thinking, cultural and linguistic funds of knowledge, and issues of power and social justice in mathematics education (Turner, Drake, McDuffie, Aguirre, Bartell & Foote, 2012). In other words, teachers need to look at children not only from a mathematical viewpoint but also from a complete socio-cultural background (See Figure 1, Cultural Iceberg Model).

Figure 1. Cultural Iceberg Model
This figure has been adapted from information obtained through the research literature, including Indiana Department of Education (2011) and Mazur (2010)
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