

Chapter 9

An Emerging Methodological Approach to Anti-Racist Design and Implementation

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ABSTRACT

This chapter is about introducing critical race design (CRD), a research methodology that centers race and equity at the center of educational opportunities by design. First, the authors define design-based implementation research (DBIR) as an equity-oriented education research methodology where teaching and learning is informed by robust, iterative, evidence-based research conducted by multiple stakeholders. Next, they provide a brief overview of critical race theory in education (CRT) as a theoretical and methodological approach that aims to unpack and disrupt the structural inequities experienced by disenfranchised racial groups. They then describe how both education methodologies inform CRD, the authors' emerging anti-racist critical design methodology. Finally, they provide an example where they used CRD to design an online service-learning course that aims to situate the narratives of underrepresented STEM professionals as a curricular resource for nondominant adolescents.

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INTRODUCTION

In the United States, there is an underrepresentation of women and professionals of color in science, technology, engineering, and mathematics (STEM) careers (Tsui, 2007). With a similar underrepresentation reflected in the K-12 STEM classrooms, traditional mathematics and science instruction needs to be more accessible to nondominant students (Tate, 1997; 2001). At the postsecondary level, there have been a number of commonly used strategies to recruit and retain underrepresented young adults in STEM courses and careers including summer bridge programs, mentoring, development of research internships, college-level tutoring, career counseling, academic centers, advising, and learning centers (Tsui, 2007). Evidence of this is seen in higher and adult education when pre- and post-graduates participate in service-learning experiences as both a means for continuing their education while simultaneously influencing and engaging with the community (Gasman & Commodore, 2014; Stanton, Giles, & Cruz, 1999). The combination of open access to higher education and federally funded programs in career and technical education (CTE) have, by design, provided similar opportunities to youth and young adults seeking to pursue alternate pathways to STEM careers (Elementary and Secondary Education Act [ESEA], 1965). Similarly, the goals of CTE have been introduced to the mainstream K-12 setting through College and Career Ready Standards, more specifically in the *Common Core State Standards of Mathematics* and the *Next Generation Science Standards* (Common Core State Standards Initiative, 2010; Darling-Hammond, Wilhoit, & Pittenger, 2014).

The inclusion of College and Career Ready Standards into K-12 education settings requires educators to forefront career pathways as opposed to assuming careers are a byproduct of learning (Herrington & Daubenmire, 2016; Stage, Asturias, Cheuk, Daro, & Hampton, 2013). However, including CTE in lesson designs can be a challenge as such programs may reinforce a system of education based on advantage (Tatum, 2003) where nondominant groups are overrepresented in the lower half of the hourglass global economy (Sassen, 2001). Thus, it is imperative for educators who are committed to equity to critically develop programs for nondominant students that enable them to access better paying careers in the top half of the hourglass economy (Ladson-Billings & Tate, 1995). In the United States, where white supremacy has historically marginalized Black students and continues to disenfranchise other students of color, we argue that the design and implementation of career and technical education need to be situated in critical and transformative research paradigms.

In this chapter, we outline an emerging methodology for programmatic interventions based on the tenets of Critical Race Theory (CRT; Ladson-Billings & Tate, 1995) and the principles of Design-Based Implementation Research (DBIR; Penuel, Fishman, Cheng & Sabelli, 2011). Both educational research methodologies

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