MIDDLE SCHOOL MATHEMATICS PLACEMENT AND (IN)EQUALITY: BEYOND THE VISIBLE SCHOOL CURRICULUM

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ABSTRACT

In urban public school districts that enroll a significant population of students of color, structural barriers should be removed so students can take advantage of the full offerings within any particular district. The literature shows that low socioeconomic students and students of color are disproportionately placed in less demanding courses because they are viewed as not having adequate preparation for taking more advanced mathematics courses in middle school.

The study utilized an explanatory-sequential social justice design to collect data relevant to structures, processes, and discourses surrounding middle school mathematics placement. This mixed method research compares data from three schools providing richly descriptive qualitative data and specific quantitative data of the curricular system collected through interviews, document reviews, and enrollment data in three middle schools. The analysis from a critical race lens describes a curricular system of placement where structures and processes maintain an inequality of opportunity to learn for students of color. The analysis of placement findings show that students of color are significantly impacted by how standardized test results are used as a criterion and as a discourse for placement.

TABLE OF CONTENTS

ACKNOWLEDGMENTS iii
ABSTRACT v
TABLE OF CONTENTS vi
LIST OF TABLES xii
LIST OF FIGURES xiii
CHAPTER 1: MATH AND RACE 1
California's K-12 Math Policy Context 4
Racial Categories and an Explanation of Inequality 5
Policy Focus on Access to Algebra 6
Purpose of the Study: Investigate Race in Math Placement 9
Research Questions 11
Significance of the Study 12
Summary 13
CHAPTER 2: LITERATURE REVIEW 15
Historical and Modern Constructions of Chicana/o and Latina/o Inferiority 15
Segregation as Un Estilo de Educación: Mexicans, Language and Boundaries 16
Cloak of pedagogy: *Romo v. Laird* (1925) 16
Language: *Independent School District v. Salvatierra* (1930) 17
Americanization: *Alvarez v. Lemon Grove School District* (1931) 18
Segregating California Mexicans: *Mendez v. Westminster* (1946) 18
California, schools, and segregation. 20
Recent effort and failure to end segregation 21

Tracking as de facto segregation..... 22

Within-school tracking: *Santamaria v. Dallas ISD* (2006) 23

California's Math Policy Landscape..... 24

Algebra for all at grade 8. 25

Algebra readiness for all by grade 8 27

Equitable placement for all at grade 9 27

Outcomes and Access in Math Education 28

Factors as outcomes: Fixed and intractable 29

Challenging and changing the narrative. 31

Standardized Testing as Un Estilo Científico: Race, Objectivity, and Racial Hierarchy..... 34

Testing and Tracking: *Hobson v. Hansen* (1967). 34

Inferiority paradigm. 36

Social science research and race. 37

Race in Educational Research..... 40

History..... 40

Education. 41

Racism as normal. 42

Social construction of race. 42

Colorblindness. 43

Meritocracy. 43

Critique of CRT. 44

A CRT perspective and analysis of SB 359. 45

Critical Race Curriculum 48

Summary 49

CHAPTER 3: METHODOLOGY 52

Research Questions 52

Research Design 53

Research Setting 56

Case Selection 57

Data Collection 58

Quantitative data. 59

Qualitative data. 60

Data Analysis 60

Role of Researcher, Critical Race Theory, and Methodology 62

Validity and Trustworthiness 63

Researcher Positionality and Critical Race Theory (CRT) 64

Definition of Terms 68

Summary 69

CHAPTER 4: RESEARCH FINDINGS 71

Research Questions 72

Research Question 1: Math Courses as a Curricular Structure 72
District curricular structure 73
District curricular process 76
District enrollment data in math courses 77
Middle school enrollment by math course 77
Seventh grade math sections 78
Research Question 2: An Intersection of Criteria and Structure 79
Research Question 3: Principal Perspectives on Data, Access, and Options 82
Curricular process at Amistad: Tiered-placement and trial 84
Curricular process at Anderson: Open communication 87
Curricular process at Raincross: Open-voice 89
Research Question 4: Dilemmas and Remedies 92
Opportunities and challenges using data at Amistad 92
Data are key 95
Structural (in)equality and access at Anderson 95
Advocacy is key 97
Role models and shifting the culture at Raincross 98
Options are key 101
Eligibility Criteria and Specialty Schools 102
Criteria as negotiable and other competing placement discourses 104

A final dilemma: Students know 107

A CRT Analysis: Searching for Certainty and Fairness 108

Summary 110

CHAPTER 5: AN UNAPOLOGETIC LENS ON THE CURRICULAR SYSTEM 111

The Dominant Narrative 112

Disservice 113

Discounts and premiums 115

Race, Schools, and Math Courses: Structural Inequality 116

Conclusions 121

Race, Assessment Criteria, and Math Courses: Process Inequality 121

Race, SBA, and accelerated math at Amistad 123

Race, SBA, and accelerated math at Anderson 124

Race, SBA, and accelerated math at Raincross. 124

Additional conclusions 125

Math Courses, Pathways, and Discourse: Structural Inequality 126

Course Inequality in 7th grade: A structure of discounts and premiums. 126

Race and Code Words: A Discourse of Power 130

A CRT lens on eligibility criteria 131

A CRT lens on school quality. 133

A CRT lens on student quality. 135

Conclusion. 138

A CRT lens on placement processes 139

Students vs. Objectivity. 140

Objectivity and course quality 144

Unequal is unequal 146

Good students vs. Bad students 148

Concluding Comments 149

Implications for Future Research 150

Implications for Policy and Practice 151

REFERENCES 154
APPENDIX A 173
APPENDIX B 174
APPENDIX C 176
APPENDIX D 177
APPENDIX E 178

LIST OF TABLES

Table 2.1 Tenets of Critical Race Theory …….……42

Table 3.1 Demographics of Middle Schools……..57

Table 4.1 Number of Content Standards in Each Course …….……74

Table 4.2 District Percent Enrollment by Course and Grade …….…..……..77

Table 4.3 Middle School Percent Enrollment by Course and Grade …….……...78

Table 4.4 Number of Sections by Course and Grade for Semester 1 …….……..79

Table 4.5 District Enrollment in Accelerated Based on Gr. 6 SBA …….……80

Table 4.6 Number and Percent of Gr. 6 Students in Gr. 7 Accelerated Math …….…….80

Table 4.7 Percent of Each Gr. 6 SBA Level in Gr. 7 Accelerated Math Course ……..…82

Table 4.8 Percent of Students at Each SBA Math Level for 5th and 7th Grades at a Specialty School …….....104

Table 5.1 School Demographics: Low-Income and Race/Ethnicity.……..…..117

Table 5.2 Middle School Students of Color, Low-Income, and # of Accelerated Math Sections.……...……118

Table 5.3 Percent of Accelerated Math Classes that are White and/or High SES.…...…119

Table 5.4 Race/Ethnicity Make-Up of each 7th Grade Course in Each Middle School...120

Table 5.5 Course Placement and Gr. 6 SBA.……...……122

Table 5.6 Amistad Enrollment in Gr. 7 Accelerated Based on Gr. 6 SBA.……...…..123

Table 5.7 Anderson Enrollment in Gr. 7 Accelerated Based on Gr. 6 SBA.……...124

Table 5.8 Raincross Enrollment in Gr. 7 accelerated Based on Gr. 6 SBA ...…….125

Table 5.9 District SBA Levels and Race/Ethnicity ……131

Table 5.10 Race/Ethnicity of Students Eligible for a Specialty School …….132

LIST OF FIGURES

Figure 1. Explanatory-sequential social justice design …….54

Figure 2. Flowchart of middle school courses ……..75

Figure 3. Flowchart of middle school accelerated pathway into high school ……...75

Figure 4. Flowchart of middle school regular pathway into high school …….76

CHAPTER 1: MATH AND RACE

School (de)segregation and school (in)equality go hand in hand. These two features of US schooling were central to the first school desegregation lawsuit brought forth by the Mexican American community in *Salvatierra v. Independent School District* of 1930 (Valencia, 2008) and to the controversial *Brown* decision of 1954 (Bell, 1980). They are also significant in today's schooling system because many schools are more segregated today than when *Brown* was decided (Orfield & Ee, 2014). Although the *Brown* decision is widely acknowledged as a win for racial justice, Bell (2005) argues that the law of desegregation is "dead and beyond resuscitation" (p. 1053). In seventy years' time, the Supreme Court has dismantled nearly all court-ordered desegregation mandates across the country. In California, the desegregation orders were abandoned in cities like Los Angeles (Orfield & Ee, 2014), San Francisco (Orfield, 2009), and San Jose (Valencia, 2008). The Supreme Court orders nullified attempts by local districts to dismantle all forms of segregation, whether de facto or de jure. As a result, dramatic increases in high concentrations of segregated schools for students of color can be linked to these Supreme Court decisions (Orfield, 2009).

At the center of the calls to end segregated schools are the dynamics between racial equality and school quality. Schools that enroll predominantly Black, Latina/o and other non-White students continue to be framed as lower quality compared to schools of majority White and Asian students (Orfield & Ee, 2014; Valencia, 2011). Lower quality schools are mainly characterized as poor performing schools without reference to the accumulated "educational debt" (Ladson-Billings, 2006) from having under-qualified teachers, depleted facilities, overcrowded classrooms, or being significantly underfunded

(Kozol, 1991; Valencia, 2011). These conditions have a direct effect on quality and a school's ability to offer college track pathways that would particularly benefit students who attend highly segregated schools (Oakes, 1985; Burciaga, Perez Huber, & Solorzano, 2010; Klugman, 2013). Without acknowledging the differences in school conditions, policymakers and others are susceptible to reinforcing deficit-ideologies by linking racially segregated schools with lower school quality (Valencia, 2010).

Orfield and Ee's (2014) study from the Civil Rights Project at UCLA reveals a drastic reversal of desegregation in California post-*Brown*. In 1968, 12% of Latinas/os attended schools that were more than 90% non-white. By 2011, this number increased to 45%. By the end of the 2012-13 school year, a *typical* Latina/o student attends a school that is nearly 16% White and 84% non-White, and more than 50% of Latinas/os attend highly segregated schools (Orfield & Ee, 2014).

Policy makers and researchers continue to make calls for action on behalf of students who continue to be underserved by the educational system. Most recently, these calls for action have centered on Latina/o students (The Campaign for College Opportunity, 2015). In California, some policy reports situate the economic prosperity of the state as dependent on the educational success and well-being of the Latina/o community and other communities of color (Johnson, Cook, & Cuellar Mejia, 2017, The Campaign for College Opportunity, 2015). The prosperity of the state is then framed as a matter of addressing and closing the proverbial *achievement gap* between Latinas/os and Whites or Latinas/os and Asians.

While the calls for a better and more equitable education system are warranted, portraying the Latina/o community and other communities of color as having to *catch-up*

leaves deficit ideologies about students and their communities in place and unchallenged (Valencia, 2010). Thus, a call to close the achievement gap has deeper implications than only calling for equality of resources and facilities that are necessary and minimal.

In California, the ongoing focus on the achievement gap is coupled with the need to respond to Latinas/os as the fastest growing and largest racial/ethnic student group (United States Department of Education, 2016). This urgency is then placed onto the educational system to reform its system in ways to better meet the needs of Latina/o students (The Campaign for College Opportunity, 2015). Misplaced calls to improve the educational system for Chicanas/os and other Latinas/os ignores the historical, political, social and economic process of marginalization which continues to underserve Latina/o students (Gandara & Contreras, 2009; Solorzano & Yosso, 2000; Valencia, 2010; Valenzuela, 1999; Yosso, 2006). This process is rooted in over 100 years of overt racism in education (San Miguel, 2013; Valencia, 2008) and a post-Civil Rights transformation to what Bonilla-Silva (2014) calls a colorblind racism.

Educational systems are intimately tied to their larger political, economic, and social contexts. In California, highly segregated communities of color must contend with a legacy of racism in political, economic, and social ways (Kozol, 1991; Ladson-Billings, 2006; Orfield, 2009; Valencia, 2008). School systems, too, must contend with their own legacy of oppression and marginalization of students of color (e.g. responses to desegregation court orders). One way to frame this legacy of racism in education is to "challenge the presence of racism in policies intended to remedy racism" (Yosso, Parker, Solorzano & Lynn, 2004, p. 19).

California's K-12 Math Policy Context

In California, the K-12 educational system has experienced another iteration of educational reform through changes in the accountability frameworks (California Department of Education, nd). Embedded in these changes were the adoption of new content standards in mathematics and English language arts. These new standards, coupled with a new assessment system, were designed to measure readiness in college and career for all students. Similar to the previous accountability framework, mathematics continues to have a significant place in the policy and accountability context.

In California, K-12 mathematics policies have significantly shaped how mathematics education is structured and implemented in the state (EdSource, 2009). These policies are significant because seemingly intractable gaps in student outcomes, especially for students of color and students from low-income families, raise questions about equity in mathematics education in California (EdSource, 2009). Those questions have been and continue to be addressed by efforts in research (EdSource, 2009; The National Mathematics Advisory Panel, 2008). However, a lack of progress by students of color or those living in poverty is framed by other scholars who argue that the field would be better served by addressing issues related to race, racism, and/or equity (Battey & Leyva, 2016; Brayboy, Castagno, & Maughan, 2007; Gutierrez, 2002; Martin, 2009).

One of the indicators for readiness in college and career is a grade-level summative assessment administered by the California Assessment of Student Performance and Progress (CAASPP). The summative assessments in mathematics are

administered in grades 3 through 8 and grade 11. The most recent results show that African Americans and Latinas/os score at low levels. In 2016, 18% and 24% of African-American and Latina/o students, respectively, met or exceeded standards on the mathematics summative assessment compared to 53% of the White students and 72% of the Asian American students (California Department of Education, 2016). Data on students living in poverty was similar. On the 2016 CAASPP, 23% of students living in poverty met or exceeded mathematics standards compared to 58% of students who are not living in poverty (California Department of Education, 2016).

Algebra has been an important content domain within California's assessment and accountability measures for school effectiveness (EdSource, 2009). Since the late 1990's, California has used assessments and accountability measures to require increased access to algebra for students in middle and high school (EdSource, 2009). The most recent iteration of the algebra focus lies within the Common Core State Standards in Mathematics (CCSS-M) (California Department of Education, 2015). The adoption of the CCSS-M was intended, in part, to increase achievement and provide access to algebraic concepts prior to high school (California Department of Education, 2015).

Racial Categories and an Explanation of Inequality

Educational attainment of categorized student groups has been analyzed from multiple perspectives, including the fields of mathematics education, critical race theory, and sociology (Covarrubias, 2011; Lubienski & Gutierrez, 2008; Kozol, 1991; Oakes, 2005; Valencia, 2011; Yosso, 2006). The most recent research shows that Latina/o educational attainment remains near the bottom at every significant level of public education (Burciaga et al., 2010). For example, Covarrubias (2011) shows that

Chicanas/os attain the lowest rates of completion at every significant level of education among the Latina/o demographic and among other racialized groups, namely African Americans, Asians, and Native Americans. Assumptions and definitions determine what and how data frame the mathematics achievement of students of color.

Lubienski and Bowen (2000) found minimal evidence of issues related to equity or race in 3,000 mainstream mathematics research articles published between 1982 and 1998. Within this dataset, 112 could be identified for issues related to equity and of these, 32 were found in U.S. mathematics education journals. Within these articles, most are concerned with the student achievement of students based on a category of race/ethnicity. However, Martin (2009) argues that many of these articles fail to directly address issues related to race, racism, or equity, especially how these concepts impact the descriptions of educational experiences of all students. One of the critiques of these equity themed studies is that in order to close achievement gaps for all students, regardless of race, students should have *equal* opportunities in and out of school. The question then often becomes "What inequalities are the source of these achievement gaps?" This study reinterpreted gaps by investigating educational practices that shape students' experiences of schooling and make achievement gaps more intractable.

Policy Focus on Access to Algebra

Stein, Heath Kaufman, Sherman, and Hillen (2011) explain that a critical feature of efforts to increase the significance of algebra within state educational policy is a conception of greater access and equity for all students. Within mathematics education research, algebra is generally considered the gateway to post-secondary opportunities (Adelman, 2006), the pathway to future employment (Gaertner, Kim,

DesJardins, & Larsen McClarty, 2014), and a critical equity and civil rights issue (Moses & Cobb, 2002). However, Stein et al. (2011) point out that differential access to algebra rests on two indicators: levels of preparedness and/or subjective placement factors. All of these considerations have been used to frame the educational mathematics policies in California (EdSource, 2009).

Changes in the policy environment are closely tied to a focus on algebra access within the research (Domina, McEachin, Penner, & Penner, 2015; EdSource, 2009; Finkelstein, Fong, Tiffany-Morales, Shields, & Huang, 2012; Kurlaender, Reardon, & Jackson, 2008; Liang, Heckman, & Abedi, 2012; Waterman, 2010). Within the broad study of algebra access is more specific research focus on mathematics placement. Math placement focuses on issues related to access and preparedness as the *defining features* of equity (Stein et al., 2011). For example, California passed SB 359, or the California Mathematics Placement Act of 2015, to improve access to higher level math courses in response to a study that shows how varying placement issues affect students course taking in high school, especially for students of color (Waterman, 2010). The California Mathematics Placement Act (2015) frames equity as removing barriers to higher level mathematics courses in high school for *successful* students and especially for students of color. Improving access to these courses, however, is implemented by districts in varying and highly deficient ways.

In a policy implementation report about the early implementation of The California Mathematics Placement Act, Gao and Adan (2016) found that districts "expressed concerns that low-income and/or minority students may be further disadvantaged because they may not have home support or cannot afford a tutor, making

it difficult to learn outside of school settings" (Gao & Adan, 2016, p. 11). Thus, the responsibility of persistence or attainment of higher levels of mathematics is placed back on students of color and their communities in order to meet the qualifications that determine placement into higher levels of mathematics courses in high school. This discourse is an example when policies "reinforce structural inequities" such as responsibility for adequate preparation on students and families because "the people and their ideologies around learning mathematics have not changed" (Diversity in Mathematics Education Center for Learning and Teaching [DiME], 2007, p. 425). The unchanged ideologies are then reified within the policies themselves, such as requiring objective measures of learning for access to algebra (a structural barrier) without changing the differential opportunities for students to learn those requirements.

Educational policies and research often evoke what are seen as colorblind frameworks, which are then used in policy-making, teacher education, and future research. This cycle of policy and research findings then narrates issues about access, beliefs about math ability, and assumptions about content hierarchies through a combination of standardized testing and criteria for course access. This is a call to pivot, because the "*objective findings* [emphasis added] … are designed to maintain racial hierarchies and socially construct African American, Latin(a)/o, and Native American students as less than ideal learners" (Martin, 2009, p. 324).

A pivot is necessary because implications drawn by researchers from limited views of race have material effects on students' educational opportunities in and out of school (Carter & Welner, 2013). These notions are used in today's educational scholarship, directly or indirectly, by comparing achievement

gaps, graduation rates, or persistence along the educational pipeline between whites and non-whites, thus implying that such differences are inherently and inextricably given (Allen, Suh, Gonzalez, & Yang, 2008). A focus on race cannot be discounted in the everyday lives of those who are categorized as non-white (Bonilla-Silva, 2014; Ladson-Billings & Tate, 1995). As evidenced by the studies above, many other studies neglect the historical, political, and social process that shapes race, which then impacts educational experiences, systems, and outcomes for all students, and especially for those labeled as non-White.

Purpose of the Study: Investigate Race in Math Placement

Course sequences and placement continue to be key features of research in mathematics education. First, to a greater extent than in other traditional disciplines, mathematics is believed to develop understanding cumulatively and through mastery of progressively more complex concepts (The National Mathematics Advisory Panel, 2008). Second, California continues to create and adapt educational policy specific to mathematics content and sequences (EdSource, 2009). For example, Fong and Finkelstein (2014) explain how the standards that comprised much of the 1997 version of Algebra I have been redistributed to the current grade 7 and grade 8 courses. Because a few standards similar to the 1997 Algebra I course have been shifted down to the current grade 7 course, the grade 8 mathematics course has expanded in level and amount of content (Fong & Finkelstein, 2014). Shifting algebra content to grade seven will have significant consequences to course taking patterns, student placement, and achievement through middle school and beyond, particularly for non-white students.

Policy research is conducted to investigate how local and state policies impact the structural nature of mathematics programs, their impact on students, including racial groups, and the challenges schools face when implementing these policies. However, Gillborn (2013) argues that fewer studies examine how policies are shaped by ideologies about race and racism. He suggests that educational policy analysis must challenge the "taken-for-granted traditional view of policy as an incremental process moving toward greater justice and inclusion" (p. 130). When school system responses to the policy environment affect dominant ideologies explicitly or implicitly, analysis of educational policies and implementation strategies are called for. Yosso et al. (2004) add, “We must challenge the presence of racism in policies intended to remedy racism” (p. 19).

In an effort to challenge the suggestions that student outcomes are dependent on fixed notions of race or other socially constructed category, scholars suggest that gaps in student outcomes are a result of a historical, political, and social processes that label students of color as inferior (Au, 2016; Carter & Goodwin, 1994; Gandara & Contreras, 2009; Ladson-Billings, 2006; San Miguel & Donato, 2010; Torres-Rouff, 2012; Valencia, 2008). Using mainstream frameworks and methods to describe new educational policies for improvement will not yield dramatically different insights or results. Therefore, this study challenged the traditional frame of mathematics policy research and reporting in California by investigating the implementation of mathematics placement policies to describe how the dimensions of race, access, and power intersect with the narrative of equity in mathematics education and affect local interpretations and outcomes.

Research Questions

In order to situate this research in relation to current research and better understand the dimensions of structural racism embedded in a middle school mathematics placement policy, the following overarching question and related sub questions are explored: How does the curricular system's a) structure, b) processes, c) criteria, and d) discourses influence placement of students entering 7th grade? Sub-questions address different parts of the curricular system:

1. How is 7th grade mathematics structured in LSUSD?
2. How are key placement criteria expressed in the curricular structure?
3. How do middle school principals place students into 7th grade accelerated math courses?
4. How do middle school principals identify and resolve dilemmas embedded in the curricular structure for their students?
5. How does centering race and using a critical race curriculum reveal inequality within a curricular system?

The research questions were framed within the concepts of power in a sociopolitical turn in mathematics education (Gutierrez, 2013), defined in critical race theory of education of Ladson-Billings and Tate (1995), and critical race curriculum of Yosso (2002). In addition, it was my intention to understand how objective academic measures, framed through colorblind, meritocratic, and neutral discourse, shaped dominant institutional practices and policies for students of color and access to a high-status mathematics pathway beginning in middle school.

Significance of the Study

Solorzano and Yosso (2000) recommend, “In order to understand the chronic failure of the educational system for our Chicana/o students, we need to understand the ideologies that have made it possible” (p. 56). This is critically important, since the public attributes low achievement of Chicanas/os to the students themselves, their families, their communities, and/or their culture (Valencia, 2011; Yosso, 2006); without accounting for the unequal conditions they face while attending segregated, overcrowded, under resourced, and underfunded public schools (Valencia, 2011; Yosso, 2006).

Gutiérrez (2013) emphasizes "We are also at a time when not attending to identity and power means we are at best fooling ourselves about future prospects and at worst likely to ensure that mathematics education will be unable to realize its full potential for the 21st century" (p. 38). This research study builds from research and methodologies that challenge educational structures, practices and discourses of power from a sociopolitical turn (Gutierrez, 2013; Martin, 2009; Yosso, 2002), and uses theoretical frameworks from critical race theory (Delgado & Stefancic, 2012; Ladson-Billings & Tate, 1995; Solorzano & Yosso, 2000; Yosso, 2002).

This research adds to add to a research base that critically unpacks the multiple layers of structural inequality that limits opportunities for Latinas/os to succeed in a system bounded by dominant meritocratic views of mathematics ability. The significance of gaining access to a high-status mathematics pathway affects all aspects of a students’ educational identity – expectations, persistence, and achievement – and has reciprocal impact on access to all pathways in mathematics, science, technology, higher education, and careers.

Summary

Educational systems are intimately tied to their larger political, economic, and social contexts. These contexts have shaped the educational policies and research within mathematics education. In California, access to and achievement in mathematics continues to be a critical feature of its educational system. Math research of California's educational policies continues to be a dynamic site for educational research because of the role it plays in shaping the educational experience of students, especially for students of color. However, misplaced calls to improve the educational system for Chicanas/os and other Latinas/os, ignore the historical, political, social and economic process of marginalization that continues to underserve communities of color. This study investigated the seemingly intractable math achievement outcomes of Latinas/os by understanding the placement ideologies that have made it happen.

The literature review is organized to highlight a sociopolitical turn in mathematics education. The literature review presents critical court cases in education that were specific to Chicanas/os, Latinas/os or other students of color. The court cases highlight the historical and institutional legacy of inequitable schooling practices for Chicanas/os, Latinas/os, and other students of color. The court cases are followed by a brief overview of the inferiority paradigm connected to standardized testing.

The review also includes pertinent math policy research. The research selected is specific to California mathematics policy research, especially as it relates to access to content or placement. The research provides a lens to understand how policy research is studied and how it is not, especially when policies attempted to address issues of inequity or inequality. The final section of the literature review outlines the theoretical framework

used in this study. The main concepts used in this study are common to a critical race theory in education.

Chapter 3 describes the overall research design and methods. This case study leverages the strengths of a mixed methods design to investigate the multiple layers of math placement using various sources of qualitative and quantitative data. I also employ an explanatory-sequential social justice design in this study to collect, analyze, and interpret the data. This type of design is an example of a critical methodology that challenges majoritarian stories framed by dominant ideologies and interrogates the contextual and structural aspects of the system with a commitment to social justice. If the results reveal intractable patterns of inequality, then a call for change is made on behalf of all students, especially for students of color. This outcome-orientation is informed by the tenets of critical race theory in education.

Chapters 4 and 5 present the findings and analyses. Chapter 4 is organized by the research questions posed. The research questions are answered with the pertinent qualitative and quantitative data. Finally, the findings are analyzed and summarized through a critical race lens to provide policy recommendations.

CHAPTER 2: LITERATURE REVIEW

This review of the literature begins with a history of policies addressing racism and achievement gaps in California, then a description of frameworks from critical race theory of education and critical race curriculum theories to advocate for a sociopolitical turn in mathematics education (Gutierrez, 2013), to use frameworks from critical race theory of education, and critical race curriculum theories. Court cases highlight institutional resistance to an equitable schooling system for students of color and an inferiority paradigm maintaining a status quo that frames and limits educational opportunities for students of color.

A second area of the research is related to the sociocultural and educational significance of access to specific mathematics content. Access to content is determined by the placement and achievement of students in prior mathematics courses. The studies were selected because of their emphasis on how race is operationalized in research using various methods and statistical analyses. The review ends by explaining why this study is important to the current literature, especially as it relates to how decision-makers implement federal, state, and local educational policies.

Historical and Modern Constructions of Chicana/o and Latina/o Inferiority

It has been over 60 years since *Brown* (1954) whereby the Supreme Court decision directed an end to *de jure* segregation in U.S. schools. Although the decision is widely acknowledged as a win for racial justice, its success is rarely attributed in connection with early Mexican-American school segregation litigation in the Southwest (San Miguel, 2013; Valencia, 2008). This chapter includes seminal court cases in education with a focus on cases brought forth by or for the Chicana/o community. The

court cases provide a way to understand how racism in education has a *changing sameness* (Bonilla-Silva, 2014), where Latinas/os, historically and contemporarily, are continuously marginalized within schools or from educational opportunities that have impacts on their lives. Within the court cases are ways in which testing was used to place Latinas/os and other students of color as inferior in the educational system. Central to many of these cases is understanding what counts as *proficient*, *does not meet standard*, or *gifted* through standardized testing. These labels mask inequality through anti-racism rhetoric and colorblind language in educational settings in lieu of acknowledging race (Au, 2016).

Segregation as Un Estilo de Educación: Mexicans, Language and Boundaries

California has a history of segregating Mexicans beginning in the early years of its statehood (Torres-Rouff, 2012). Although California was no different in institutionalizing Jim Crow segregation in educational settings, they were unique in the fact that non-White students were often segregated to the *Mexican* school (Valencia, 2008). According to Valencia (2008), the Mexican American community challenged the educational practice of segregating Mexican American students on the grounds of language or academic deficiency. This section examines several of these legal challenges.

Cloak of pedagogy: Romo v. Laird (1925). Romo v. Laird (1925) is the first documented Mexican-American initiated lawsuit (Valencia, 2008). Adolfo Romo sued the Tempe school district on the grounds that the teachers employed at the school his children attended did not have comparable qualifications to teach as the teachers at other schools in the district. Tucson school district argued that they were within the state law

for segregating Mexican American students for instructional reasons. The presiding judge however, ruled in favor of the plaintiffs because teacher quality was not the same as at the other schools. Despite this favorable ruling, Romo did not have much influence across Arizona or other jurisdictions because it was not a class action lawsuit (Valencia, 2008). Furthermore, the Tempe school district would resolve the issue by only hiring certified teachers at the school that Romo's children attended. Romo is significant because it shows how local school districts used the "cloak of pedagogy – separation on language grounds – to isolate Mexican American [children] from White children" (p. 15). As evidenced by the cases that follow, this practice and rationale would be used repeatedly, however, "at its core" it was "racialized segregation" (Valencia, 2008, p. 15).

Language: *Independent School District v. Salvatierra* (1930). The first documented challenge to *de facto* segregation in Texas is *Independent School District v. Salvatierra* (1930) (Valencia, 2008). The judge ruled that it was illegal to segregate Mexicans in Texas public schools on the basis of language deficiency because Mexicans were considered White, albeit other-White (*Independent School District v. Salvatierra*, 1930). On appeal, the Texas Court of Civil Appeals would overturn this ruling on the grounds that Mexican Americans were segregated for educational reasons. It was held that the school district was within its power to address the language needs of the students through segregation (*Independent School District v. Salvatierra*, 1930). The *Salvatierra* decision was problematic for Mexican-American students in contesting *de facto* segregation and inequitable opportunities to learn because the state court of Texas established a discourse and legal basis for "language as a problem" (Stritikus & English,

2010, p. 403), rather than the educational system that Mexicans and other students of color were subjected to as the problem.

Americanization: *Alvarez v. Lemon Grove School District* (1931). Historically, the *Alvarez* case is significant for two reasons. It represents the first time a community won a school desegregation case, and it was won on behalf of the Mexican American community. The Mexican American community brought this case forward to challenge segregation of their children on claims that their children needed "Americanization," "basic instruction due to academic deficiencies," and "English language development" (Valencia, 2008, p. 20). Ultimately, the court ruled that the School Board had no statutory right to segregate Mexican American children and had to provide the same level of instruction as their White peers (Valencia, 2008). Despite this significant ruling, the case did not set any precedent for similar desegregation cases in California or the Southwest because it was considered a local issue (Alvarez, 1986).

Segregating California Mexicans: *Mendez v. Westminster* (1946). In general, the *Mendez* case is considered the most significant litigated case for Mexicans and other Latinas/os across the U.S. The *Mendez* case contested the segregation of students based on their national origin or perceived language needs (Valencia, 2008). This case is significant for three main reasons: (1) it challenged the perceived language needs of Mexicans (Valencia, 2008); (2) it was decided in federal district court, as opposed to state court, and (3) it primarily questioned the legal bases of segregation through the Equal Protection clause of the Fourteenth Amendment rather than through questioning due process (Valencia, 2008).

In *Mendez*, the plaintiffs argued that Mexican-origin students were being segregated to the Mexican school regardless of where they lived within the district. In addition, the plaintiffs reasoned that segregation of Mexican students did not fall "under the color of law" (Valencia, 2008, p. 25) because Mexicans were not of Indian, Chinese, Japanese or Mongolian ancestry as proscribed by educational regulation during this time (Mendez v. Westminster, 1946). The Defense held that the school districts were not segregating Mexicans based on race or nationality but rather for the educational benefit of providing specialized instruction for non-assimilated, non-English speaking students (Valencia, 2008). Ultimately, the presiding judge ruled in favor of the plaintiffs, thereby establishing that Mexicans were denied due process and equal protection of the Fourteenth Amendment (Contreras & Valverde, 1994).

The decision, however, had a minimal impact because it was limited to Mexican students who resided within predominantly White school boundaries, and it did not define school boundary lines (Orfield & Ee, 2014). Defining school boundary lines was critical because California was becoming highly segregated through remapping of school boundaries and discriminatory housing practices (Orfield & Ee, 2014).

In California, remapping school boundaries was a common practice to address the increasing changes in demographics. For example, in Pasadena, the local school board created "neutral zones" that allowed white families within those zones to transfer their children to "whiter" schools (Orfield & Ee, 2014). Questionable housing patterns and school boundary remapping made Los Angeles the focus of desegregation in the late 1970's.

In 1976, the school board of Los Angeles Unified School District ordered its schools to desegregate because 113 elementary schools were 99-100% non-white and another 70 elementary schools were more than 80% non-white (Orfield & Ee, 2014). In an attempt to rescind this mandate, the voters passed Proposition 1 in 1979. Proposition 1 prohibited court-ordered busing unless districts were found *intentionally* segregating students. In order to counter the racist housing system (Orfield & Ee, 2014), school districts sought to balance racial demographics in new ways.

California, schools, and segregation. Orfield and Ee's (2014) study from the Civil Rights Project at UCLA reveals a drastic reversal of desegregation efforts in California. In 1968, 12% of Latinas/os attended schools that were more than 90% non-white. By 2011, this number increased to 45%. By the end of the 2012-13 school year, a typical Latina/o student attends a school that is nearly 16% White and 84% non-White, and still more than 50% attend highly segregated schools (Orfield & Ee, 2014). The segregation of students of color is problematic because the schools attended by high concentrations of students of color continue to be framed as lower quality compared to schools attended by whites and Asians (Orfield & Ee, 2014).

Lower quality schools are at the center of why students of color have contested school segregation. Lower quality schools are often characterized as having under-qualified teachers, depleted facilities, overcrowded classrooms, or being significantly underfunded (Valencia, 2011). This has a direct effect on a school's ability to offer a broader array of courses, particularly college track pathways that offer students access to higher education from highly segregated schools (Oakes, 2005; Burciaga et al., 2010; Klugman, 2013).

Recent effort and failure to end segregation. In the 2007 case *Parents Involved in Community Schools v. Seattle School District No. 1*(Parents), the Supreme Court struck down voluntary efforts of desegregation in Seattle, Washington and Louisville, Kentucky. The desegregation plans proposed by both communities considered race as a determining factor for school placement and racial balance (*Parents*, 2007). The appellants, on behalf of White students, argued they were unfairly denied their first choice of schools because their enrollment would have created an imbalance (*Parents*, 2007). The attorneys for the White students claimed that their equal protection rights were violated. The Chief Justice concurred, thereby ignoring the historical and social context in which the decision in *Brown* was made.

Similar to Los Angeles, Seattle was not impacted by the *Brown* decision because of the effects of housing segregation within the city. In the Brief to Respondents, the attorneys noted that 75% of the students of color lived in the Southern section and 67% of the White students lived in the Northern section (*Parents*, 2006, p. 1). In the southern section, nine elementary schools were more than 90% non-white and two-thirds were more than 70% non-white compared to the northern section, where students of color were 50% or more at only two elementary schools. A major distinction from Los Angeles was Seattle voluntarily designed desegregation plans in order to balance the racial make-up of its highly rated high schools rather than rely on the residential address of the student.

Chief Justice Roberts wrote the majority opinion in which he recalled the *Brown* decision and stated, “Simply because the school districts may seek a worthy goal does not mean they are free to discriminate on the basis of race to achieve it, or that their racial classifications should be subject to less exacting scrutiny” (*Parents*, 2007, p.

36). Thus, the Chief Justice wrote, "the way to stop discrimination on the basis of race is to stop discriminating on the basis of race." (*Parents*, 2007, p. 41). In dissent, Justice Breyer wrote:

> The plurality is wrong to do so. The last half-century has witnessed great strides toward racial equality, but we have *not yet* [italics added] realized the promise of *Brown*. To validate the plans under review is to threaten the promise of *Brown*. The plurality's position, I fear, would break that promise. This is a decision that the Court and the Nation will come to regret. (*Parents*, 2007, p. 68)

Parents shows that some communities continue to fight to implement desegregation while others continue to challenge the practices that happen within school walls.

Tracking as de facto segregation. Oakes' (1985) study is regarded as one of the most prominent studies to cover within-school tracking in secondary schools. Her study is significant to the overall literature review because standardized tests were routinely used to rationalize the practice of placement that are used in tracking policies and practices.

Oakes' (1985) study was conducted on 25 middle and high schools with over 13,000 students. The middle schools generally operated a high and low tracking system. Across the 12 middle schools, 11 tracked their students for math, 10 tracked for English and 6 tracked for science and social studies each. White students represented a little less than 50% of the student population and Blacks, Mexicans and Asians represented the majority of the non-white student population. Within these middle schools, on average, White students represented 62% and 29% of the high and low tracks, respectively (Oakes, 1985). Conversely, students of color represented 38% and 71% of the high and

low tracks, respectively. In math classrooms, 60% of the white students were in the high track and 37% were in the low track. This is compared to students of color who represented 40% of the high track math class and 63% of the low track math class.

These distributions are significant because Oakes (1985) found that there were major differences in quality of content and teaching across tracks. In high track classes, students were exposed to various literary genres or mathematical systems and expected to construct viable arguments or critique the reasoning of others. In low track classes, students were asked to recall memorized or basic facts or were engaged in refining low-level skills like decoding or multiplication facts (Oakes, 1985).

Within-school tracking: Santamaria v. Dallas ISD (2006). In *Santamaria v. Dallas Independent School District* (2006), within-school tracking was based on perceived language deficiencies of the Mexican-American students (Valencia, 2008). One difference between *Santamaria* and *Mendez* is that the Mexican students in *Santamaria* were sent to the English as a second language classroom as opposed to the Mexican school in *Mendez*. The plaintiffs claimed that their children were being segregated from their White peers by being placed in an English as a Second Language (ESL) classroom. The plaintiffs argued that the Mexican American children demonstrated they were comparable to their White peers on the Iowa Test of Basic skills and had scored as English proficient on a language assessment (Valencia, 2008). Ultimately, the court found that the elementary principal "intentionally discriminated against the Latino children by segregating them from the White children" (*Santamaria v. Dallas Independent School District*, 2007).

In the decision, Judge Lindsay admonished the within school tracking program because it operated an Anglo-only "private school" within a "predominantly minority" public school (*Santamaria v. Dallas Independent School District*, 2007). Furthermore, in regard to the consequences such segregation has on students of color, Judge Lindsay echoes those expressed in the *Mendez* case by stating:

> …being segregated and placed in ESL classrooms in different hallways from one's Anglo counterparts would adversely affect a minority student's self-esteem, leading to feelings of being stigmatized based on race and national origin, as well as adversely affect a minority student's ability to obtain the same benefit from schooling as his or her Anglo counterpart. (Santamaria v. Dallas Independent School District, 2007)

Oakes (2005) laments that "despite some teachers' efforts to reconceptualize intelligence as multidimensional, developmental, and manifest equally across groups, a traditional conception retained a firm hold" and it was "not part of their normal discourse to look to the school's role in creating and maintaining what they were describing as students' deficits" (p. 271-272).

California's Math Policy Landscape

California's governing bodies continue to create and adapt educational policy specific to mathematics (EdSource, 2009). The main features of policies have been trying to address major equity features of mathematics programs. In doing so, California has also tied equity aims to its accountability system. In California's K-12 system, algebra has been an important content domain within state assessments and accountability measures for school effectiveness (EdSource, 2009). Since the late 1990's,

California has used assessments and accountability measures to require increased access to algebra for students in middle and high school (EdSource, 2009).

***Algebra for all* policy at grade 8.** Increasing enrollments in grade 8 Algebra 1 has been a major initiative in California since the 1990's (EdSource, 2009). The research methods and theoretical frameworks used to analyze the effects of this policy are consistent with common forms of inquiry. For example, Liang et al. (2012) used a cohort model to study longitudinal state test taking patterns. They analyzed changes in test-taking for a cohort of 8th grade students beginning in 2003 with their Algebra 1 assessment. They found that between 2003 and 2008 as more students took the Algebra 1 CST in 8th grade, more students took the Summative High School Mathematics CST in grade 11 between 2006 and 2011. In other words, as more students took the Algebra 1 CST in grade 8, more students took a higher-level mathematics CST in high school.

In one respect, this implies that increasing access to algebra in middle school puts more students in position to access higher levels of mathematics in high school. On the other hand, taking Algebra 1 in 8th grade did not appear to improve persistence through high school, especially for students of color or students living in poverty (Finkelstein et al., 2012). For example, Liang et al. (2012) found that, proportionally, fewer students were taking higher level mathematics courses in high school. Using a cohort model between 2003 and 2008, California had 19% more students taking the Algebra 1 CST in grade 8. However, between 2004 and 2009, only 8% more students took the Geometry CST in grade 9 and between 2005 and 2010 only 7% more students took the Algebra 2 CST in grade 10. In other words, increased participation in Algebra 1 in 8th grade did not translate to sustained or proportional increases in subsequent mathematics courses in high

school. To better understand why students were not progressing to the next course, studies attempted to bring greater understanding to the relationship between course-taking patterns and other indicators of achievement (Domina et al., 2015; EdSource, 2009; Gaertner et al., 2014; Liang et al., 2012; The National Mathematics Advisory Panel, 2008)

Research on successful completion of a grade or course uses different indicators. In California, Kurlaender, Reardon, and Jackson (2008) found that grade 7 grade point average and failure in grade 8 were both predictive of high school graduation. Among their other findings, they found that completion rates of Algebra 1 by grade 8 were predictive of graduation rates. In a similar finding, Finkelstein et al. (2012) found that performance on the grade 7 state assessment predicted high school math course taking. Although these findings speak directly to successful students, not all students experience success.

Both Liang et al. (2012) and Finkelstein et al. (2012) found that students who repeated Algebra 1 at grade 9 were less successful taking the CST a second time as opposed to students who took the Algebra 1 CST for the first time in grade 9. Similar to Liang et al. (2012), Domina et al. (2015) found that California's algebra policy may have slowed achievement growth for grades 6 through 10 and possibly reduced future benefits in high school from taking Algebra 1 in grade 8.

The achievement on CSTs provides some evidence that the algebra policy in California was positive for increases in course-taking patterns, however, the findings suggest that the impact was limited, especially as it concerns students who were not identified as successful through these measures. Because achievement and course-taking

continue to be focus areas in mathematics education research, it is important to understand the current status of mathematics policy in California.

***Algebra readiness for all* by grade 8**. In California, algebra continues to be a major content feature of the content standards (California Department of Education, 2015). The mathematics content standards were designed to develop and provide access to critical algebraic concepts within the general mathematics curriculum (California Department of Education, 2015) and not as limited access content (Stein et al., 2011). The mathematics standards center readiness on two complementary sets of standards. The standards integrate content specific standards with overarching practice standards or habits of mind (California Department of Education, 2015).

In addition, the math standards deliberately sequence algebraic concepts in grades 6 through 8 prior to an aligned grade 9 course (California Department of Education, 2015). Strategically positioning algebraic content prior to high school lent itself to Senate Bill 359 (SB 359), commonly called the California Mathematics Placement Act of 2015. SB 359 aims to ensure that students entering grade 9 are placed in an appropriate mathematics course (California Mathematics Placement Act, 2015). Taken together, the math content standards and SB 359 are educational mathematics policies aimed to ensure students have access to important mathematical content prior to high school and are placed into appropriate mathematics courses in grade 9 (Fong & Finkelstein, 2014).

***Equitable placement for all* at grade 9.** The California Mathematics Placement Act of 2015 (CaMPA) is different than the previous policy mandates of Algebra by grade 8 in a few ways. First, it reinforces an ideology that the K-8 content sequence prepares students for high school mathematics (California Department of Education, 2015). As a

result, this positions grade 9 as the critical grade level for all students (California Mathematics Placement Act, 2015). Secondly, it defines misplacement in grade 9 not as promotion of *unprepared* students, but rather as misplacement of *successful* students (Mitchell, 2015). This distinction makes "successful" completion critical. Third, it resolves to end disparate placement and persistence outcomes on behalf of *successful* students of color so they can reach Calculus by grade 12 (California Mathematics Placement Act, 2015). This policy requires that districts examine placement data to ensure there "is no disproportionate impact on mathematics placement by race, ethnicity or socioeconomic background" (California Mathematics Placement Act, 2015).

Senator Holly J. Mitchell (2015), coauthor of Senate Bill 359 (SB 359) references two studies in her resolution that led to the creation and adoption of the policy. One of the studies focused on course taking patterns between eight elementary school districts and their matriculating high school district (Waterman, 2010). Another study, suggested that in order for students of color to reach Calculus by grade 12, placement at grade 9 needed to be addressed (Finkelstein et al., 2012). Both studies implied that California needed to develop an urgency for equitable mathematics course placement so *successful* students were placed in an appropriate mathematics course beginning in high school.

Outcomes and Access in Math Education

The studies below reflect how access to important mathematics courses or achievement in secondary mathematics programs are studied when race, class, or language status are operationalized to understand who benefits from the mathematics program within a certain context. The studies also highlight how research explaining access to mathematics courses or achievement in mathematics are conducted when race,

class, or language are studied using methods that are either variable based or comparative. I highlight this point because researchers often are trying to isolate a variable set (e.g. demographic variables) or control for it in an attempt to associate certain outcomes (e.g. achievement) with predictive variables.

Factors as outcomes: Fixed and intractable. Other research illustrates how traditional research frames disparate outcomes and outlines how research can be conducted using methods that attempt to "unpack the black box of complex, interrelated factors and processes that produce race/ethnic inequities in school achievement" (Allen et al., 2008, p. 227). The studies in this section represent how researchers attempt to explain educational inequality by trying to make sense of individual factors (e.g. race, class) that explain disparate outcomes. In addition, the studies suggest that a student's individual factors are fixed and that desirable outcomes depend on these fixed notions.

Klugman's (2013) mixed-methods study questioned whether increasing access to high school Advanced Placement (AP) courses could narrow disparities along racial or class lines between schools. Klugman (2013) specifically analyzed California's attempt to increase AP offering during the 2000-2002 school years. In order to determine if inequality decreased along race or class lines, he used predictor variables of African American, Hispanic, impoverished, and upper-middle class. Klugman analyzed panel level high school data between 1997 to 2006 and utilized Lucas' (2001) theory of Effectively Maintained Inequality (EMI).

Lucas (2001) theorized in order to address seemingly intractable inequalities in education, reformers must consider how the current structures and attitudes reproduce inequality and effectively maintain the status quo. This theory suggests that families

from higher socioeconomic backgrounds will seek any advantage available for their children whenever an advantage is possible in order to maintain their privilege throughout the educational system.

Klugman (2013) found that Advanced Placement (AP) offerings and enrollments were stronger in upper-middle class schools. He also found that greater enrollment in AP courses occurred in schools that served more White and Asian students than African American and Latina/o students. He concluded that although interventions can be made to increase access to higher level courses, schools with families of higher socioeconomic status seem to generate more opportunities for their children than schools who serve families of lower socioeconomic status. While the findings are not surprising, Klugman (2013) suggested that inequities widened because Latina/o and Black students did not demand AP courses or the school staffs' time was spent on having "to deal with *problems* [emphasis added] that occur in schools serving disadvantaged students" (p. 26). This conclusion is an example of deficit theorizing by blaming inequality of Advanced Placement course-taking on Black and Latina/o student motivation and the schools that they attend.

Mickelson, Bottia, and Lambert (2013) conducted a metaregression analysis of 25 studies that reported relationships between the racial makeup of a school and mathematics achievement. Their primary purpose was to estimate the effect size of the racial makeup of a school (independent variable) on mathematics achievement (dependent variable). In other words, they wanted to determine if the racial makeup of a school had a measureable correlative effect on mathematics achievement. They found a statistically negative relationship between math achievement and racial composition of a

school. While they were extremely careful in how they expressed their findings, the use of race as an independent variable is still highly problematic because of the possibility of making incorrect inferences about the results (Zuberi, 2000), which can possibly lead practitioners to misuse the findings in ways that reinforce false notions of racialized math ability.

Challenging and changing the narrative. Battey (2013) analyzed four different national datasets between 1980 and 2004 to find trends related to mathematics course completion and wage differentials. First, Battey found that Native Americans, African Americans, and Latinas/os had lower rates of taking higher levels of mathematics compared to Asians and Whites. He did not, however, take this result as given. On the other hand, when higher level mathematics courses were offered in schools with high concentrations of students of color, Battey (2013) noticed an increasing rate of participation over the long-term. This suggests that when students of color are presented with opportunities to access more rigorous math courses, they come to value these types of opportunities over the long-term. He argues there are structural processes, such as tracking, that contribute to less than desirable rates of participation and availability of rigorous math courses in schools where students of color are a majority.

Given the importance of Advanced Placement (AP) courses and opportunities for students applying for college admission, Solorzano and Ornelas (2004) used a critical race theory framework to understand how educational opportunities for post-secondary education for African American and Latina/o students are impacted by the accessibility and availability of AP courses in their high schools. The researchers studied AP course offerings and enrollments at Los Angeles Unified School District during the 2001-2002

school year. When this study was conducted, Latinas/os represented 66% of the student population while African Americans represented 14%.

They focused on AP enrollments in thirteen high schools within the district and found that ten high schools that had more than 90% Latina/o and African American students enrolled significantly fewer students in Advanced Placement (AP) courses than the other three high schools that were more affluent and racially mixed. Between 0.6% and 21.6% of students were enrolled in AP courses among the ten high schools serving predominantly Latina/o and African American students. In the three affluent and racially mixed high schools the enrollment of AP ranged between 24.3% and 28.5%. Latinas/os and African Americans, however, did not fare any better at the more affluent and racially mixed high schools. Latinas/os were 43% of the student population at the high school with the largest overall AP enrollment, yet only accounted for 8% of the AP enrollment. Similarly, African American students were 15% of the student population and only 2% of AP enrollments. They found that both groups of students are:

a. disproportionately underrepresented in AP courses;
b. attending urban, low-income schools with low enrollment in AP courses; and
c. underrepresented even when enrollment in AP courses are high.

In this regard, they concluded that changes in educational policy at the post-secondary level coupled with restrictive access to advanced placement courses in high school negatively impacted Latina/o students applying for admission to the University of California at Los Angeles.

Access to AP is not the only point of the educational pipeline that Latinas/os must challenge. Faulkner, Stiff, Marshall, Nietfeld, and Crossland (2014) used the Early Childhood Longitudinal Study (ECLS-K) to analyze how students are placed in an 8th grade mathematics course. The main research questions centered on whether there were any differences in placement between using teacher evaluation of student performance and actual student performance for placement decisions. Faulkner et al. (2014) found that Black students were less likely than White students to be placed in the 8th grade algebra course even when student performance was controlled. They also found that teacher evaluations of student performance negatively impacted Black students more than White students when student performance was controlled. They found that the odds of an African American student being placed in the 8th grade algebra class was 40% lower than that of White students. Similarly, Walston and McCarroll (2010) found that higher achieving male students were placed in 8th grade algebra at lower rates than female students. In addition, African American 5th graders who scored in the highest two quintiles on a nationally normed mathematics test were less likely to be placed in an 8th grade algebra class compared to Whites, Asians, and Hispanics.

These studies use quantitative measures as a way to investigate how students of color were overrepresented in low-level math courses through placement or course taking structures. Mosqueda and Maldonado (2013) attempt to deconstruct the various labels assigned to Latinas/os to understand how those labels relate to mathematics achievement. In their study, they examined the first and second waves of the Educational Longitudinal Study of 2004 to determine any relationship between language proficiency, home language status, generational status, mathematics course pathways, and mathematics

achievement. They found that higher levels of language proficiency were positively related to mathematics achievement. This finding is significant because the researchers also found that taking an extra mathematics course in the college readiness sequence was related to greater overall mathematics achievement.

Standardized Testing as Un Estilo Científico: Race, Objectivity, and Racial Hierarchy

The historical construction of inferiority has transformed the process of placement and concepts of intelligence into a modern racial project (Omi & Winant, 2015) with features of a *changing sameness* (Bonilla-Silva, 2014). The main purpose of this section is to draw relationships among court decisions, educational research, testing, and placement practices. All reside within public institutions that have the power to "contribute to existing belief systems legitimating social frameworks and policy [that] result in educational inequities for people of color" (Tate, 1997, p. 197). This is an effort to highlight the interconnectivity among them and to question the historical legacy of social science logic and methodology (Zuberi & Bonilla-Silva, 2008) that impacts the political and social forces of standardized testing through conceptions of what research, testing, and race mean in education (Valencia, 2010; Zuberi & Bonilla-Silva, 2008).

Testing and Tracking: *Hobson v. Hansen* (1967). Questions about standardized tests as an appropriate tool for educational decisions has a significant place in legal and social science history. In *Hobson* tracking systems in schools were scrutinized for the appropriateness of using an aptitude test. In the ruling of the court, Justice Wright found that the aptitude tests used to place students in particular tracks are:

> Standardized primarily on white middle class children. Since these tests do not relate to the Negro or disadvantaged child, track assignment based on such tests, relegates Negro and disadvantaged children to the lower tracks from which, because of the reduced curricula and the absence of adequate remedial and compensatory education, as well as continued inappropriate testing, the chance of escape is remote. (*Hobson v. Hansen*, 1967, section 10)

However, standardized tests are not the only basis for decisions about placement in a particular track. Throughout history, the subordination of Black people has been built on "scientific theories that depend on racial stereotypes... where these stereotypes serve as a hegemonic function to rationalize oppression" (Ladson-Billings, 2016, p. 26). The same was true for Mexicans and Puerto Ricans. For example, Oakes (2005) explains that before World War I, the scientific procedure for placing students in different programs was based on their ethnic, racial and socioeconomic characteristics. These characteristics formed the basis for an inferiority paradigm.

The notion of student deficits was dominant in the early 1900's and was used to rationalize school segregation in California and the Southwest. San Miguel and Donato (2010) state that in the early 1900's, Mexican and Puerto Rican students were systematically oppressed in schools through an administration of a biased intelligence test that classified them as "intellectually inferior" (p. 31). In California, Torres-Rouff (2012) explains that intellectual inferiority of Mexicans was a foregone conclusion for social scientists of the 1930's who ignored the impoverished conditions of schooling for these students during the 1910's and 1920's.

Inferiority paradigm. The inferiority paradigm is premised on the belief that people with visible racial or ethnic characteristics are "limited biologically" and "genetically inferior" to whites (Carter & Goodwin, 1994, p. 294). These ideologies became more prevalent in education during the early 20th century in the Southwestern and Western states through the work of Lewis Terman. Terman was a prominent psychologist and notable eugenicist working at Stanford University. In his highly influential work, *The Measurement of Intelligence*, Terman (1916) concluded:

> High-grade or border-line deficiency… is very, very common among Spanish-Indian and Mexican families of the Southwest and also among negroes. Their dullness seems to be racial, or at least inherent in the family stocks from which they come. The fact that one meets this type with such extraordinary frequency among Indians, Mexicans and negroes suggests quite forcibly that the whole question of racial differences in mental traits will have be taken up anew… Children of this group should be segregated into special classes… they cannot *master abstractions* [emphasis added] but they can often be made into efficient workers. (p. 91-92)

The notion of inferiority continued through the 1990's in Herrnstein and Murray's *The Bell Curve* (1994). Herrnstein and Murray (1994) claimed that the variance in mean test scores as distributed in a bell curve, between different ethnic groups is the result of the unequal mental capacities of each group. They further claimed this was largely due to genetics and the environment. According to Herrnstein and Murray (1994), these variances then play out in society through evidence in employment, education levels, and welfare.

Social science research and race. The main argument among social scientists is the persistence of research reifying race as a biological construct and not as a historical (Molina, 2014) or social construct (Bonilla-Silva, 2014; Omi & Winant, 2015; Valencia, 2010). Social scientists argue that using race, as a fixed variable, most often results in an interpretation that race, used as an objective category, *causes* a myriad of social differences (Zuberi, 2001). Social scientists and other researchers interpret and use these results in ways that perpetuate myths about inferior innate ability. The use of race in these ways reinforces an ideology of deficit-thinking in education (Valencia, 2010) and a racial hierarchy where intelligence is linked to phenotypes in skin color (Brayboy et al., 2007).

Zuberi and Bonilla-Silva (2008) note that misapplication of statistical methods in analyzing race has been acceptable in social science publications. The continuous publication of these types of studies speaks to how Durkheim (1965) pointed out the degree to which society regards scholarly work:

> It is not at all true that concepts, even when constructed according to rules of science, get their authority uniquely from their objective value. It is not enough that they be true to get believed. If they are not in harmony with other belief systems and opinions, or in a work, with a mass of other collective representations (the concepts taken for granted by most people in a given time and place), they will be denied; minds will be closed to them; consequently, it will be as though they do not exist. (Tate, 1997, p. 486)

Therefore, if we know that racism is real and race is socially constructed (Bonilla-Silva, 2014), then it behooves us to "question society, its educational and social institutions, and

its evaluation mechanisms used to determine who achieves" (Brayboy et al., 2007, p. 174).

Gutierrez (2013) explains that a sociopolitical turn in mathematics education shifts the emphasis from what students learn or know in mathematics to identifying the dimensions of power and authority that have determined what students learn or know in mathematics. Gutierrez (2013) claims that the sociopolitical turn in mathematics education stems from the belief that mathematics is a human activity, thus politics and points of conflict are ubiquitous. Martin (2009) suggests that one of those major points of conflict lies in how race is positioned and operationalized in educational research. Martin (2009) points out that most mathematics educational research does not explicitly link race to "meanings in the larger society" or discuss ways race is "experienced as a result of those meanings" (p. 298). Because research approaches to race have the potential to be inadequately framed, it may do little to help problems of practice or inform policy in more beneficial and insightful ways (Martin, 2009). Studies that solely use race to disaggregate achievement data ignore the structural dimensions of racism in and out of school.

This study seeks to avoid these shortcomings by centering race to understand structures, processes and discourses and how they distribute opportunities for students of color in middle school mathematics. Therefore, I employ race as a "sociopolitical, historically contingent construct" (Martin, 2009, p. 298) to explore how racism changes over time and how it underlies an unequal distribution of power and resources that systematically disenfranchises students of color, especially Chicanas/os and Latinas/os.

In an effort to address the evidence that student outcomes are dependent on conceptions of race or other attributed constructs, researchers contend that gaps in student outcomes are a result of a historical, political, and social process to label students of color as inferior (Au, 2016; Carter & Goodwin, 1994; Gandara & Contreras, 2009; Ladson-Billings, 2006; San Miguel & Donato, 2010; Torres-Rouff, 2012; Valencia, 2008). As evidenced by these authors, many studies continue to neglect the historical, political, and social process that shapes race, which then impacts how educational researchers frame and report on factors in achievement outcomes. In reviewing race in educational scholarship, Brayboy et al. (2007) argue that "individual distinctions cannot explain large-scale group realities" and these realities are shaped more by "pervasive, systemic, and structural issues" than individual assumptions about students (p. 160). If the research-to-policy cycle is to have an impact for students of color, then it is imperative that methods and frameworks inclusive of race are used to explain how policies shape and impact the educational experiences for these students from the bottom up (Martin, 2009).

Mapping the use of standardized tests reveals a legacy of power over the educational outcomes of Latinas/os and Chicanas/os, particularly through the practice of placement. Placement, when resulting in *de facto* segregation, is significant in today's terms because it operates outside of the parameters set forth in *Brown* (Leonardo & Grubb, 2014), and it often rests on the results of what are considered to be objective, race-neutral standardized tests (Au, 2016). Placement and standardized tests mask racism within educational policies and practices that cause the racial segregation they are often intended to prevent.

Race in Educational Research

This study used a critical race theory (CRT) perspective within mathematics education to position educational achievement of and access to critical courses in secondary mathematics as a historical, political and social process in which the conceptualization of intelligence is formed through an inferiority paradigm of achievement. A CRT perspective challenges terms like *objective* and *access* by pointing out the disproportionate effects of placement policies on students of color in hopes of eliminating inequitable structures, processes and discourses. Because this study is concerned about how a middle school mathematics placement policy may reproduce inequity, it is important to understand the history of CRT and its evolution into education.

Sociologists agree that race as a category used in research is socially constructed (Bonilla-Silva, 2014). Framing race as an objective condition, an ideological construct, or as biological has significant limitations for addressing effects (Omi & Winant, 2015) and is heavily criticized within the academy (Bonilla-Silva, 2014). A critical review of U.S. educational history reveals how those in power use devious frames of race to "erase and replace" the Indigenous (McCarty & Nicholas, 2014, p. 107), "depress and crush" the African Americans (Woodson, 1933, p. 21), make invisible the Mexicans (Trucios-Haynes, 2001), and bestow model minority status on Asians (Subedi, 2013).

History. CRT was advanced by the work of Bell, Crenshaw, Delgado, Harris and Matsuda in critical legal studies (Lynn & Parker, 2006). Critical legal studies (CLS) emerged in the late 1970's to "challenge the view that legal reasoning was neutral, value-free, and unaffected by social and economic relations, political forces, or cultural

phenomena" (Brown & Jackson, 2013, p. 12). Although CLS provided a context to understand how the legal system worked, foundational CRT scholars argued that CLS was not able to address the everyday difficulties that people of color faced, especially as it related to education (Tate, 1997).

Education. Since the introduction of CRT to education (Ladson-Billings & Tate, 1995), Delgado and Stefancic (2016) describe how CRT has had to be defended from media, politics, and those within the academy who frame CRT as racist in its own right. These sorts of challenges arise because CRT examines contentious issues in society. For example, critical race scholars analyze social hierarchies, dilemmas in affirmative action, Whiteness, and Eurocentric influences (Taylor et al., 2016). In education, critical race scholars have analyzed seemingly intractable educational inequalities that transcend political, economic, and social eras (Gandara & Contreras, 2009; San Miguel, 2013; Solorzano & Yosso, 2000; Valencia, 2008). Educational inequalities arise in issues related to language, citizenship, school discipline, tracking, testing, and school finance (Delgado & Stefancic, 2016). Because persistent educational inequalities are intimately tied to historical events, it is critical that the connection to contemporary educational inequality is made explicit.

There is a general consensus to the applicability of CRT in education; however, the concepts outlined in CRT are not used exclusively or entirely. Table 2.1 is a list of the foundational tenets of CRT (Taylor et al., 2016) and another that outlines how those tenets apply to education (Solorzano & Yosso, 2000). This study will use a combination of the tenets below followed by Yosso's (2002) critical race curriculum.

Table 2.1

Tenets of Critical Race Theory

Tenets of CRT	**Tenets of CRT in education**
Racism as normal	Racism is endemic, permanent and central
Interests by people of color must converge with the interests of Whites	Work toward eliminating racism, thereby ending all forms of oppression
Systematic review of historical context	Integrate scholarship across disciplines to better understand historical and contemporary context
Narrative accounts of context to reveal new points of view	Acknowledge the legitimacy of experiential knowledge and voice of people of color
	Challenge the concepts of colorblindness, meritocracy, objectivity, or race neutrality

Racism as normal. A central tenet of CRT is the notion that "racism is the normal order of things in US society" (Ladson-Billings, 2013, p. 37) and not only the horrendous, spontaneous acts of behavior by individuals. This notion was first established by Bell (1992) who points out that Jim Crow like signs are no longer visible, yet people of color suffer from "adverse psychological effects of nonexistent opportunity" (p. 375). In this regard, racism is pervasive and serves as "the backdrop against which other systems are defined" (Taylor et al., 2016, p. 4). As a result, "Challenging racism requires critique of seemingly nonracial and post racial discourses that claim neutrality (objectivity) and color-blindness without regard for the history of White racial power" (Buras, 2014, p. 32). This form of White racial power is so ingrained in the political, legal, and educational structures that they seem hidden from view (Delgado & Stefancic, 2012).

Social construction of race. In addition to establishing race as a socially constructed category, Bonilla-Silva (2014) asserts that it has a "social reality" (p. 8). A

social reality exists when the category of race begins to have an effect on the people it aims to categorize (Bonilla-Silva, 2014). Categories of difference, namely genetic differences such as skin color or hair texture form a social structure that bestows systemic privileges, protections, and rewards to Whites (Bonilla-Silva, 2014) as they systematically disempower those categorized as different.

Colorblindness. In general, colorblindness asserts that race is no longer a barrier for advancement in society because all citizens are treated equally (Freeman, 2005). The objective of colorblindness is to reduce racism to the actions of individuals and not systemic oppression experienced by marginalized communities through legal, social and political reforms (Freeman, 2005). However, colorblindness can also be the inability or unwillingness to confront issues related to race (Brayboy et al., 2007). Operationalizing colorblindness in this way conceals the possibility of material impacts of a system where benefits and privileges are in reality drawn along racial lines (Brayboy, et al., 2007). Thus, colorblindness creates an illusion that race is not a significant factor in analyzing disparities within society. This allows those with accumulated power to retain and reproduce their economic, political, and educational status and privileges (Brayboy et al., 2007).

Meritocracy. One of the themes central to a CRT in education is to deconstruct the concept of meritocracy and its appeal in current educational practices and policies. Au (2016) explains the ideology of meritocracy as based on two premises: anyone, regardless of their racial, class, or gender status, can become successful through individual effort; and failure is a result of an individual's lack of effort. In addition to shifting the blame and responsibility to the individual, even more pernicious is how the

ideology of meritocracy is used to disallow any naming of race as a feature of social interactions in favor of a mythical "post-racial identification" of "freely acting and competing individuals" (Au, 2016, p. 40).

Critique of CRT. CRT frameworks deliberately center race in order to identify, expose, and discern transformations of racism and "explain the realities of race in an ever-changing society" (Tate, 1997, p. 235). Although CRT centers race, it does not privilege race over other frameworks that use class, gender, language, or other constructs (Ladson-Billings & Tate, 1995). Notably, critics within Marxist theory claim that CRT obfuscates social class inequity as the main issue confronting society (Darder & Torres, 2013). CRT scholars maintain that constructs like social class or gender "are not powerful enough to explain all the educational achievement difference" (Ladson-Billings & Tate, 1995, p. 51) between socially constructed student groups. However, CRT provides the space for use of intersectionality to discern the material effects, in and out of school, on people of color (Taylor et al., 2016). In this same vein, I adopt Martin's (2009) explanation:

> My analysis does not imply that race, class, and gender intersections are unimportant. However, more nuanced understandings of race – understandings that do not reinforce deficit explanations for disparities in achievement and school experiences – must be developed among mathematics educators and policy makers if these intersections are to be considered. (p. 300)

A central purpose of CRT in education is to deconstruct the status quo in ways that reveal how structures reproduce unequal distributions of power. Part and parcel to this is to understand how the status quo diverts attention from the power structure while

simultaneously discrediting paths to social justice (Bonilla-Silva, 2014). I frame this study using a combination of these tenets of CRT in education because as Ladson-Billings exhorts, "we are still not saved" (Ladson-Billings, 2006, p. 115). In addition, CRT offers a way to analyze implementation of educational policies which then structure opportunities for students and how those same policies can, ironically, create seemingly intractable inequities for students of color (Gillborn, 2013). Because this study is concerned about how middle school mathematics placement may reproduce inequity, Yosso's critical race curriculum (CRC) offers a way to assess racism within a broader view of curriculum in school settings.

Educational polices related to mathematics are having significant impacts on placement and achievement, especially when issues related to access or equity are brought into the discussion (EdSource, 2013; Stein et al., 2011). In one respect, mathematics placement, course taking, and achievement continue to be a major research domain because mathematics education continues to be a priority in policymaking and accountability (Stein et al., 2011). On the other hand, debates surrounding disparate outcomes become circular because observed inequalities in certain outcomes (e.g., access to courses) conflict with ethical claims for an equitable education for all students (Stewart, 2008). Passage of SB 359 is an example of a research-to-policy cycle and how policymakers use selective research methods and findings to write and pass legislation. This example is important because SB 359 was based on issues of equity, that then have impacts on the educational experiences for all students.

A CRT perspective and analysis of SB 359. The research used to support the creation of SB 359 is representative of national and local studies that focus on course

patterns and educational outcomes in relation to access to algebraic content and higher levels of mathematics courses. However, these studies frame access, achievement, and equity from top-down perspectives where the school system is the focus and as if students' racial, residential, language, or another characteristic is static and uncontested (Martin, 2003). For example, Waterman (2010) claims that

> there is no evidence that any district set out to hold back any students of color or to advance one ethnic group rather than others. Rather, the movement to algebra in eighth grade seems to have run into a series of unwritten beliefs and rules. (p. 2)

This view highlights how a majority of people continue to hold static views of overt racism (Bonilla-Silva, 2014) while simultaneously discounting the disproportionate effects of "unwritten beliefs and rules" (Waterman, 2010, p. 2) on students of color through a lens of neutral decision-making dilemmas (Essed, 2002). The dilemmas in Waterman's study are presented as how teachers determine if a student has demonstrated sufficient mastery or how teachers decide which content or homework is important. These types of decisions then have effects on all students, especially students of color (Gutierrez, 2013; Martin, 2009).

In Finkelstein, et al. (2012), race, language, ability, and socio economic status are used only as descriptive variables for the study, not explored as explanatory constructs. The use of these characteristics is an example of what Forman (2004) calls racial apathy in mainstream research. Forman describes racial apathy as either "a lack of concern about racial and ethnic disparities or an unwillingness to address proximal and distal forms of racially disparate treatment" (p. 44).

Secondly, Finkelstein et al. selectively choose 24 unified school districts from California Partnership for Achieving Student Success (Cal-PASS) to represent the demographics of students in California's public schools. The data set appears to be a descriptive representation of students across the state; however, the study does not mention the limited educational opportunities and historical segregation of students of color in California (Orfield & Ee, 2014), nor the poor schooling conditions students of color continue to face (Kozol, 1991; Valencia, 2011). At a broader social level, Finkelstein et al., do not question the social context of learning, teaching, and identity (Martin, 2009) and evidence that schools are racialized contexts. Research that uses variables in this manner reinforces deficit notions of achievement by associating race with achievement without considering how schools privilege certain cultural markers and behaviors associated with White, middle class students (Carter, 2005).

Liang et al. (2012) investigated the connection between students taking the algebra-based state assessment in eighth grade and success in later mathematics courses. Using a cohort model, Liang et al. (2012) show smaller rates of students taking the next higher mathematics course along the secondary mathematics course pathway. In order to improve the success rate of students along the math course pathway, Liang et al. (2012) suggest that remedies for varying student persistence can be found within the motivation, teaching, or learning sciences of mathematics and/or education research literature.

This suggestion is problematic for students of color in at least three ways. First, race and racism continue to be marginalized concepts within mathematics education despite a growing body of literature that identify math teaching and learning as a racialized experience for all groups of students (Aguirre, Mayfield-Ingram & Martin,

2013; Delpit, 2012; Mosqueda & Maldonado, 2013; Oakes, 1985). Secondly, the conclusions refer to content and pedagogical content knowledge derived from a predominantly "white institutional space" when one "considers who is allowed to speak on issues of teaching, learning, curriculum, and assessment and who dominates positions of power in research and policy contexts" (Martin, 2008, p. 390). Often, scholars of color or teachers of color are not represented in these kinds of panels or asked to provide feedback in these sorts of publications (Martin, 2008).

Third, Liang et al. neglect how teachers and students are situated within this context and how identity and power intersect with race and mathematics learning (Gutierrez, 2013). In addition, they do not challenge the implied causality of race on mathematics course persistence or the internal deficit-oriented belief structure about students of color by educators (Vaught & Castagno, 2008). These recommendations problematize disparate outcomes through color-blind conceptualizations of learners by defining them as those who know mathematics and those who do not, those who are ready for Algebra and those who are not, all the while neglecting the racialization of students of color learning mathematics and their achievement (Gutierrez, 2008; Gutierrez, 2014).

Critical Race Curriculum

Yosso (2002) frames a critical race curriculum (CRC) as the structures, processes, and discourses that go beyond the concrete materials, knowledge, and discussions commonly understood as classroom curriculum. She describes CRC as:

- *structures* in place so particular courses offer certain knowledge;

- *processes* that place students in particular courses, and thus have access to specific knowledge; and
- *discourses* that rationalize placement of certain students in particular courses or reinforce deficit-ideologies about students of color.

The purpose of CRC is to reveal the "multiple layers of racialized inequality perpetuated by traditional curriculum processes" and "challenge educators to recognize deficit-based practices that deny students of color access to 'college-bound' knowledge" (Yosso, 2002, p. 93). Because I use theoretical frameworks in this way, the research is not neutral.

Summary

Current reviews of CRT discuss how its influence has expanded and continues to intersect across disciplines (Howard & Navarro, 2016; Ledesma & Calderon, 2015; Lynn & Parker, 2006; Tate, 1997). One of the pioneers of CRT in education, Ladson-Billings (2013), warns scholars about taking on CRT because "the work of critical race scholars must be as rigorous as that of any other scholarship (or perhaps more so)" (p. 45). Accepting this challenge, scholars have increasingly used CRT as a way to frame and investigate gaps in educational attainment (Burciaga et al., 2010; Villalpando, 2010), perverse effects of educational policy (Donnor, 2013; Gillborn, 2005), and challenging educational inequities (Valencia, 2008).

Current state law, policy, and educational practice need to be analyzed because states continue to generate legislation and enact laws that provide the general framework of education (Ladson-Billings, 2016). Because race remains untheorized (Ladson-Billings & Tate, 1995), it is imperative that scholarship offer an "explanatory structure that accounts for the role of race and racism in education and works toward identifying

and challenging racism as part of a larger goal of identifying and challenging other forms of subordination" (Yosso et al., 2004, p. 2).

Framing education through critical race theory (CRT) allows researchers to better understand why students of color are systemically afforded fewer of the critical opportunities and resources that lead to successful outcomes in and out of school (Ladson-Billings, 2006; Taylor et al., 2016; Solorzano & Yosso, 2000; Valencia, 2011). Still, Howard and Navarro (2016) charge scholars to remain steadfast in their use of CRT as an analytic tool to generate better policies in pursuit of social justice.

Lastly, educational systems are not immune to larger political and social contexts. Educational systems operate within segregated communities that must contend with a legacy of racism in social, political, and economic ways (Kozol, 1991; Ladson-Billings, 2006; Orfield, 2009, Valencia, 2008). Thus, school systems, too, must contend with their own legacies of oppression and marginalization of students of color. One way to frame a legacy of racism in education is to "challenge the presence of racism in policies intended to remedy racism" (Yosso et al., 2004, p.19).

In this study, I operationalize CRT and CRC to confront uses of standardized tests for a racial hierarchy of mathematics ability as defined by standardized tests and/or discourses that use labels from standardized tests as proxies for race, such as *average, below grade-level*, or *exceeded standards*. Because these types of labels are derived from standardized tests and often predicated on an artificial bell curve, they are presumed to be objective comparisons of students. The unchallenged notion of objectivity conceals and diverts attention from the structural inequality of a meritocratic discourse. Identifying and isolating meritocratic labels that serve as proxies for race informs a critical analysis

of the material effects these labels have on students, especially those of color. A critical race methodology in education challenges majoritarian stories framed by dominant ideologies and interrogates the contextual and structural aspects of the case with a commitment to social justice. Highlighting the use of labels also shows how words or phrases are often used because to talk about race and/or racism challenges the legitimacy and confidence in math placement as a rational process. The aim of this research is to seek ways of understanding the effects of educational practices and, consequently, the impacts on students' lives. The following chapter presents the methodology of the study.

CHAPTER 3: METHODOLOGY

The issue is not only that underserved children have access to far fewer rigorous mathematics courses, but that they attend schools where such disparities are not questioned or critiqued.
– DiME, 2007

This study is framed within a critical race theory (CRT) theoretical framework to understand how the curricular system influences mathematics placement of students entering 7th grade. In the previous chapter, I presented the literature related to mathematics placement. I underscored the lack of research in mathematics education that centers race in order to understand how students of color are marginalized (Martin, 2009) through the local curricular system (Yosso, 2002). This chapter describes the overall methodology, design, and data analysis techniques used in this research study. Embedded in this section is an explanation linking critical race theory and critical race methodology to make explicit the purpose of the use of mixed methods and the data analysis.

Research Questions

The overarching question posed in this study is how the curricular system (structures, processes, and discourses) influences mathematics placement of students entering 7th grade. In order to answer this overarching question, the following sub-questions will be used:

1. How is 7th grade mathematics structured?
2. How are key placement criteria expressed in the curricular structure?
3. How do middle school principals place students into 7th grade accelerated math courses?

4. How do middle school principals identify and resolve dilemmas embedded in the curricular structure for their students?
5. How does centering race and using a critical race curriculum reveal inequality within a curricular system?

In order to answer the research questions, the study is a mixed methods comparative case study. The design, method, and analysis for the study were framed using Solorzano and Yosso's (2000) tenets of critical race theory in education and Yosso's (2002) critical race curriculum.

Research Design

This study used both quantitative and qualitative research methods in a mixed methods design. A mixed methods research design "is a procedure for collecting, analyzing, and mixing both quantitative and qualitative methods in a single study or a series of studies to understand a research problem" (Creswell, 2015, p. 537). A mixed methods design seeks to build on the strengths of both types of data (Decuir-Gunby & Schutz, 2017).

The study used an explanatory sequential social justice design (Creswell, 2015) to analyze the results from the qualitative data to explain and interpret the findings within a quantitative data set (Decuir-Gunby & Schutz, 2017). This design is similar to a traditional explanatory sequential design insofar as they both require the data to be collected in separate phases and in a certain order (Decuir-Gunby & Schutz, 2017). A social justice design differs because the intention, after the analysis of both sets of data, is to be critical of the current status in order to bring about change for marginalized communities through a call for action based on data (Creswell, 2015).

This particular process affords the ability to mix the "what" from quantitative methods with "how" of qualitative data to investigate how curricular structures influence placement of students in mathematics courses. As a result, a mixed methods approach provides a more complete understanding of the phenomena than using only one method. The methodologies complement each other by producing data with potential for greater depth and breadth (Creswell, 2015).

This study design is based from Creswell's (2015) process for an explanatory sequential social justice design. In general, this process unfolds as follows:

- Collect the quantitative data first,
- Analyze quantitative data through a CRT lens to determine a subgroup for qualitative data collection,
- Collect and analyze qualitative data using the tenets of CRT,
- Interpret how the qualitative data explains the quantitative results using CRT, and
- Make a call for change.

Figure 1 represents the sequence in which the study was conducted, including the collection and interpretation of data, and the points at which the CRT lens was used.

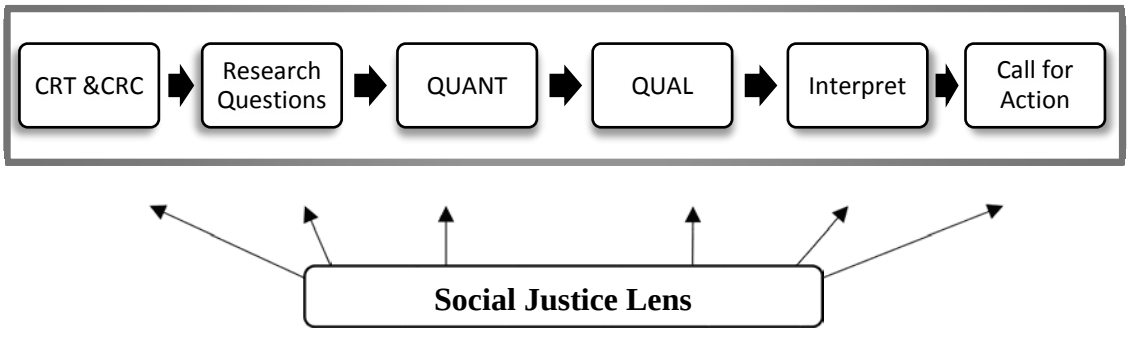

Figure 1. Explanatory Sequential Social Justice Design. (adapted from Creswell, 2015)

Through a critical race lens, the overall design allows the researcher to pose research questions, collect various forms of data, and determine the findings to better understand the structures, processes and discourses that influence mathematics placement in middle school. The result is to make a call for action because the opportunities afforded to students heavily relies on how decision makers influence their curricular system which can "operate in contradictory ways, with their potential to oppress and marginalize coexisting with their potential to emancipate and empower" (Solorzano & Yosso, 2002, p. 26).

This study investigates placement processes and criteria used in middle schools of one school district by comparing three schools' placement data, processes, outcomes, and discourse. Merriam and Tisdell (2016) generally define a case study as "an in-depth description and analysis of a bounded system" (p. 37). A bounded system, according to Stake (1995) is the *what* a case study aims to understand well. Merriam and Tisdell (2016) define the *what* as "a single entity, a unit around which there are boundaries" (p. 38). Stake (1995) maintains that "we are interested in them for both their uniqueness and commonality" (p. 1). In this sense, Merriam and Tisdell (2016) use Creswell's (2013) detailed definition:

> Case study research is a qualitative approach in which the investigator explores a bounded system (a *case*) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving *multiple sources of information* (e.g., observations, interviews, audio-visual material, and documents and reports), and reports a case *description* and case-based themes. (p. 97)

This particular study aims to investigate how the curricular system impacts placement of students in middle schools of a unified school district.

A multicase study approach is supported by Stake (2006) where he states, “An important reason for doing multicase study is to examine how a program or phenomenon performs in different environments” (p. 23). In addition, he extends this by holding high expectations of the qualitative researcher to describe the multiple dimensions of the “reality perceived by the people” and “the interactivity of functions and contexts” (p. 28). This is a comparative case study because each middle school represents a case within a bounded system of a district in which middle school placement may vary.

Research Setting

The setting of the study was a unified school district in southern California. The study was confidential, and pseudonyms are used for La Semilla Unified School District (LSUSD), as well as school and participant names. LSUSD is a large urban unified school district with approximately 50 schools, including alternative setting schools. Ten middle schools that enroll only 7th and 8th grade students. The racial classification of the middle school students in this school district are: Latina/o 65%, White 20%, African American 5%, and Asian 5%. Native Hawaiian/Pacific Islander, Native American/Alaskan Native, and multiracial students are less than 1% each of the students. Nearly 70% are considered low-income and roughly 20% are English learners. Table 3.1 provides demographic data on the middle schools.

Table 3.1

Demographics of Middle Schools

Middle Schools	# of Students	Low-Income	Latina/o	African American	White	Asian
Adelante	800	95%	75%	10%	10%	5%
Amistad	900	95%	80%	5%	10%	2%
Anderson	900	70%	65%	5%	25%	2%
La Puente	1,000	40%	35%	10%	35%	10%
Palm	650	90%	70%	5%	15%	2%
Raincross	1,000	50%	40%	5%	40%	10%
Zapata	800	90%	80%	5%	10%	2%

Case Selection

This study used data on all middle schools and a purposeful selection of 3 principals to interview about the curricular structure of mathematics courses and placement criteria. In order to understand how the curricular system influences the mathematics placement of students entering 7th grade for this district, it was important to interview the primary decision-makers at the school. The primary decision-makers for placement were the counselors and/or the administrative staff. The administrative staff comprised the principal, assistant principal, and/or an administrative designee. This study limited the sample to the principals because they have ultimate responsibility for decisions.

The middle school principals were contacted via email and phone to inform them of the study. They were emailed information about the study along with the participant consent form. A phone conversation confirmed receipt of the informational email and responded to any questions or comments regarding the study.

The racial make-up of the participants in this study are one Latina/o and two White principals. One of the principals is female and the other two are male. All three have been principals at the middle school level for at least two years and each has more than 6 years' total experience as an administrator, from elementary through high school levels, including traditional and alternative settings. One of the principals has administrative experience at the district level. Specific professional information, including school name and location, was intentionally withheld from this analysis to preserve and protect the anonymity of the participants.

Data Collection

This mixed methods study utilized an explanatory sequential social justice design, so the quantitative data were collected first. The analysis of quantitative data then determined a subset of questions for the qualitative data sources. The quantitative data were primarily from de-identified student, enrollment, and achievement statistics for the district. The qualitative source were interviews with middle school principals and materials describing the curricular structures and processes in the school district.

A commitment to social justice is described from a researcher and structural perspective. Solorzano and Yosso (2002) describe a social justice commitment as researchers who understand that schools "operate in contradictory ways, with their potential to oppress and marginalize coexisting with their potential to emancipate and empower" (p. 26). If this commitment is central for researchers studying race, then careful attention is made to refrain from racist assumptions throughout the methodological process (Allen et al., 2008). For example, this study refrained from implying that race causes disparate access mathematics courses in middle school.

From a structural perspective, Solorzano and Yosso (2002) acknowledge "that multiple layers of oppression and discrimination are met with multiple forms of resistance" (p. 26). This implies that critical race methods challenge the interconnectivity of social and structural layers that bound the activities in the case. Thus, to understand the uniqueness and similarities of mathematics placement at various school sites, selection of school sites is important. The selection of school sites came from an analysis of quantitative data. The criterion used for selection of middle schools was the number of grade 7 accelerated math sections offered at the middle school.

Quantitative data. This study used common (de-identified) student demographic, achievement, and enrollment data. De-identified data are presented in summary form to protect student and school identity. All data were collected from LSUSD sources on enrollment and achievement data related to middle school mathematics placement. Summary student and course level data were used to generate descriptive statistics related to enrollment and demographics by course. Disaggregating data by enrollment and demographics allowed the researcher to inquire about how the curricular system impacted placement of all students, especially those that are identified as Latina/o.

Because this study investigated the influence of the curricular system on mathematics student placement entering 7th grade, semester 1 course level data were analyzed. Semester 1 course enrollments were set at a week prior to the end of semester 1 to include all students who maintained course enrollment through the end of the semester.

Qualitative data. The qualitative data collected for this study came from semi-structured interviews, document reviews and publicly available media. The purpose of using common qualitative data is to describe the multiple dimensions of the "reality perceived by the people" and "the interactivity of functions and contexts" (Stake, 2006, p. 28). In addition, it is important to note that qualitative research is an interactive process between the researcher, participants, the phenomenon, emerging insights, triangulated data, and rich, thick descriptions (Merriam & Tisdell, 2016).

In order to better understand the quantitative data of the curricular structure, it was important to interview the main decision-maker for placement in a middle school. Making decisions about placement is considered a normal function of the middle school principal. The qualitative findings for this case study were generated from a subgroup of middle school principals from within the district. The selection of principals was determined by a structural feature of the curricular system. The structural feature used was the number of grade 7 accelerated math sections. This feature was selected because there is not a requirement to offer the accelerated course and most of the middle differ in the number of sections they offer.

Data Analysis

The analysis of data follows from the explanatory sequential social justice design. The quantitative and qualitative data were analyzed using the tenets of critical race theory and Yosso's curricular race curriculum as explained in previous chapters. Because this is an explanatory sequential design, the findings from qualitative data were used to explain the findings from the quantitative analysis.

A subgroup of middle school principals was asked to participate in the semi-structured interviews. Specific professional information, including school name and location, was intentionally withheld from this analysis to preserve and protect the anonymity of the participants. Each middle school principal was asked a series of questions from an interview protocol. The interview protocol was designed to illuminate features of the curricular system. The interview protocol was coded to highlight questions that elicited the structures and processes related to the placement of 7th grade students into the 7th Grade – Accelerated mathematics course (see Appendix B).

At the conclusion of each interview, the audio recordings were transcribed by the researcher and shared with the participants. The purpose of this step in the data analysis process was to ensure accuracy prior to starting the coding process. The participants were asked to verify, to the best of their knowledge, the accuracy of the transcription and the overall meaning of their responses to the questions. Each participant was given a copy of the transcribed interview.

Furthermore, before the transcribed interview data were uploaded into a mixed methods software, a coding tree was developed to organize the codes. The coding tree was created according to the central tenets of the theoretical framework outlined in a previous chapter (see Appendix C). The purpose of this coding tree was to outline the concepts in the theoretical framework that are central in the literature review. Most importantly, this step was essential to the overall design of the study because a social justice lens looks for ways to imbue concepts from the theoretical framework throughout the research process.

In addition to the semi-structured interviews, publically available documents and/or other media sources were collected and analyzed that related specifically to placement and/or the 7th grade mathematics courses. These sources were analyzed for information that related to the curricular system as a structure, a process and/or a discourse.

Role of Researcher, Critical Race Theory, and Methodology

Solorzano and Yosso (2002) point out that a critical race methodology should share elements with its foundation in critical race theory. Two of the five elements presented in a critical race methodology (Solorzano & Yosso, 2002) are central to this mixed methods study. A critical race methodology in education challenges majoritarian stories framed by dominant ideologies and interrogates the contextual and structural aspects of the case with a commitment to social justice.

As noted in the literature review, the inferiority paradigm has had a lasting impact, whether explicitly or implicitly, on the majoritarian story of the lack of educational attainment of people of color. The majoritarian story often frames race as a biological construct and/or as a causal variable to explain gaps in mathematics achievement (Martin, 2009). In order to combat majoritarian stories, Merriam and Tisdell (2016) explain that in critical research:

> questions are asked regarding whose interests are being served by the way the educational system is organized, who really has access to particular programs, who has the power to make changes, and what outcomes are produced by the way in which education is structured. (p. 61)

A critical race methodology also challenges majoritarian stories by asking, "Whose stories are privileged in educational contexts and whose stories are distorted and silenced?" (Solorzano & Yosso, 2002, p. 36). These types of questions speak to a *transformative worldview* that seeks to understand and confront power relations regardless of the level at which oppression or inequality occur (Mertens, 2015). These questions, in turn, present an opportunity for the researcher to make unequal power relations visible in pursuit of social justice by questioning the processes, structures and discourses surrounding middle school mathematics placement.

Validity and Trustworthiness

Solely quantitative or qualitative research designs have different strengths and weaknesses (Creswell, 2014). Mixed method designs offset each of those designs by leveraging the strengths of each to offset the weaknesses of the other (Plano-Clark & Ivankova, 2016). The quantitative results help in understanding the influence of the curricular system from a structural and processes frame, and the qualitative data provides the "thick, rich descriptions" (Creswell, 2014, p. 202) of the processes and discourse frame. In this study, I used the processes frame to connect the discourse and structural frames within Yosso's (2002) curricular system. The results from each were used together to understand how the curricular system influences the placement of students in 7^{th} grade.

Embedded in this approach are the opportunity to triangulate the data. I used all forms of data from multiple sources along with the tenets of CRT in education. Plano-Clark and Ivankova (2016) suggest that triangulation within a mixed methods study is a critical concept to support validity or trustworthiness. Triangulation in this study occured

when qualitative interview data, quantitative enrollment results, and the tenets of CRT in education were compared to understand the curricular system.

Researcher Positionality and Critical Race Theory (CRT)

In addition to using careful research methods and attending to bias, I bring my own personal experiences and distinct Chicano perspective forward to the study of how race structures inequality in schools in spite of ongoing attempts at objective and color-blind practice. The main purpose is to show how my own personal journey through education intersected with dominant structures, processes, and discourses that impacted my own educational experiences. I recognize that the experiences of Chicana/o, Mexican-American, Mexicana/o, or Latina/o students may be different from mine because we are not a monolithic group, although we are similarly categorized in limiting and deficit ways.

As an experienced educator and administrator of school and district mathematics programs in California, I employ CRT as an analytic lens through my racial identity as a Chicano Fronterizo to this research. As I describe below, my purpose in this explicit stance is to challenge the dominant view that underpins and subverts our attempts to find equitable, just policies and practices in schools for all students.

I was born and raised in Anthony, Texas, a small town outside of *La Frontera* (El Paso, Texas). As a Chicano Fronterizo, I take my Abuelo's (grandfather's) stance that we are children of the earth, or Xi'kriztl 'kano, in the root words from the Nahuatl language. Taking this stance brings forward the knowledge and history of my ancestors that lives within me and will continue through my own family. Embedded in our diverse identities are historically documented patterns of racial discrimination and deficit

theorizing that children of color experience across a variety of contexts (Delpit, 2012; Kozol, 1991; Oakes, 2005; San Miguel, 2013; Valencia, 2010; Valenzuela, 1999; Yosso, 2006). These views were structured in obvious ways, regardless of my own personal academic or life skills.

As a Chicano Fronterizo, I experienced several racist and/or deficit-based views that impacted how I experienced public education and how my parents responded to it. I offer a few of these situations that are relevant to the practice of placement in education. First, when I first started school, my local elementary enrolled me in kindergarten because officially, I was not of age for 1st grade. My parents argued that I was academically ready for 1st grade because my reading and math skills were beyond kindergarten and my social skills were comparable to my peers. After testing my academic skills in reading and math in both English and Spanish, I was placed in 1st grade on the second day of school—despite the disapproval of the 1st grade teacher who would later tell my mom that she had made an unwise choice on my behalf.

Second, throughout elementary and into middle school, my parents noticed that I was not challenged by the grade level mathematics course. My mom requested that I be placed in the high school Algebra 1 course in 8th grade. Her petition was denied. The effect of this decision would materialize when I entered 9th grade of a different high school in a nearby city. Among the 160 freshmen at this high school, only 30 were enrolled in Algebra 1, and I was one of them. The other 130 freshmen took Geometry or Algebra 2. As a result, the highest math course I had access to and completed prior to college was Pre-Calculus, contrasted with the majority of my peers who had access to Calculus.

Last, prior to entering college, I participated in a summer learning program to help 1st generation students of color become more familiar with college courses and campus life. During the program, we were introduced to Covey's (1989) *7 Habits of High Effective People*. The professor presented this text as a guide to develop skills, or habits, that may be helpful as we transitioned from high school to college. However, the content of the text and author's point of view were not relatable to my experience or definitions of success. I expressed my position to the professor and the professor suggested that if I did not adopt these habits into my new *college self*, it could lead to being unsuccessful in college and/or life. Needless to say, I struggled in this course. As a result, I was placed in an alternative English literature course where nearly all of the students in the course were students of color, compared to a student body that was less than 15% students of color.

I name my positionality and describe my experiences here to explain how they affect this research. My positionality as a critical race researcher posits that my experience reveals an example of how curricular structures, processes, and discourses perpetuate seemingly intractable patterns of inequality and racism for students, especially for students of color (Yosso, 2002). My personal and professional experiences distinguish between a *majoritarian story* based on values of meritocracy and objectivity and surfacing the "silence within statements" that position students of color in deficit-ways (Solorzano & Yosso, 2002, p. 29). Asking critical questions grounded in personal insights is intended to foreground how the curricular system shapes educational experiences for marginalized students, and especially for students of color.

The research participants in this study are my colleagues, with whom I share responsibility for evaluating and implementing the mathematics program in the district. As an insider, I greatly appreciate their trust, honesty, and thoughtful responses to questions about critical issues. Their responses show how careful and caring they are with decisions about our students, especially when their decisions are in response to common dilemmas within education. We work together and continue to seek better ways to meet our responsibilities to children as we are faced with complex national, state, and local policies that continue to hold a majoritarian view of meritocracy and objectivity in place. I specifically name this part of my positionality to state that I am not an outsider to the structures, process, or discourses of this school district and I, too, ask myself the same critical questions that I pose to my colleagues.

As leaders at their respective sites, principals are responsible for the overall educational experience and success of their students. Part of this requires understanding their own context and the impact their decisions may have on children when policies are implemented (Spillane, Reiser, & Reimer, 2002). Principals also play a pivotal role in shaping the teaching and learning environments by prioritizing varying policies and practices in their decision-making within their own contexts (Spillane, Halverson, & Diamond, 2004). In order to distinguish between the majoritarian story in practice and my use of CRT, I frame decisions about practice through Spillane's sense-making frame. Sensemaking is the process of understanding reform messages through personal and professional lenses of past experiences and knowledge (Spillane et al., 2002). Sense-making helps to explain the process and positionality of principals who have actively engaged in examining mathematics placement using data. Their dedication to using

various forms of data and various processes means that the findings here can be useful in considering new ways to mitigate the effects of mathematics placement policies on students of color.

Definition of Terms

The following terms are referenced throughout this study. The definitions are meant to clarify their meaning and/or intention.

Chicana/o: I use the Nahuatl meaning for my positionality as a child of the earth. It is also considered a political term and racial category to name people whose indigenous roots predominantly reside in Southwestern United States and Mexico (Acuña, 2014; Yosso, 2006).

Code words: Neutral labels, words or phrases that serve to veil structural inequality and/or preserve deficit oriented ideologies so White, Asian, and/or middle and upper class students continue to benefit from the status quo (DiME, 2007; Yosso, 2002).

Curricular discourse: Statements that justify, clarify, and critique the status quo or omit, distort, and stereotype students of color (Yosso, 2002).

Curricular process: The process of placing students into specific courses, which have specific knowledges (Yosso, 2002).

Curricular structure: Specific classes that are designed to offer specific knowledges or content (Yosso, 2002).

Curricular system: The design and intersection of curricular structures, processes, and discourses that maintain the status quo (Yosso, 2002).

Equity: A process of achieving justice and/or fairness (Gutierrez, 2002).

Equality: Sameness. In education, it generally means sameness in resources and opportunity (Brayboy et al., 2007).

Honorary Whites: People/Immigrants of Color that are lighter skinned and do not believe in, accept, or recognize the social, historical, and political processes of racism (Bonilla-Silva, 2014).

Latina/o: Broad category of people whose ancestral lands and language in the Western Hemisphere are traced back to Spain or Portugal (Trucio-Haynes, 2001).

Strategic essentialism: "The process of deliberately categorizing people based on socially defined traits for the purpose of reaching an equitable goal" (Gutierrez, 2002, p.154).

Students of color: Refers to all students who are categorized as African American, Native American, Chicanas/os, or Latinas/os. Asians are not considered students of color in this study because more than 85% of the Asian subgroup are either Asian Indian, Chinese American, Japanese American or Korean American. In this historical moment and in the context of this study, these categories are considered "Honorary Whites" (Bonilla-Silva, 2014, p. 228).

Summary

This chapter describes the methodology of a mixed methods case study. The design is based on an explanatory sequential design where the quantitative data collection and analysis precedes the qualitative portion and informs it. Quantitative data were obtained from the school district and state databases. Qualitative data were collected using audiotaped interviews, which were transcribed and member-checked by the interview participants. This chapter also provided the rationale for an explanatory

sequential social justice design as part of a purpose to challenge the status quo and offer a call to action. Chapter 4 presents the findings of the study.

CHAPTER 4: RESEARCH FINDINGS

It is important to address the inequality embedded in school curriculum before addressing unequal educational outcomes.
– Yosso, 2002, p. 94

The purpose of this study was to investigate how the curricular system (structures, processes and discourses) influences mathematics placement of students entering 7th grade. The literature review suggested that mainstream theoretical frameworks and research methods do not fully unpack the role that race and racism play within mathematics education and educational systems more broadly. In addition, the literature review highlighted that research on this topic persistently places the focus of equity on critiquing issues related to the characteristics or preparedness of students themselves, rather than looking inward at the system. Looking inward is the process of addressing the "inequality embedded in school curriculum before addressing unequal educational outcomes" (Yosso, 2002, p. 94) as they relate to mathematics placement.

This chapter provides the findings of the quantitative and qualitative data of this case study. The quantitative data focus on the disaggregation of the raw enrollment data related to the curricular structure in 7th grade math. The qualitative data describe the curricular processes and discourses. The qualitative data were analyzed to explain the quantitative findings of the curricular structure. Each of the components of the curricular system work interdependently to create the conditions of the curricular system. This chapter explains the findings that describes how LSUSD's curricular system impacts all students, especially students of color.

Research Questions

The research questions are framed within the concepts of power and identity in a sociopolitical turn in mathematics education (Gutierrez, 2013), defined in critical race theory of education of Ladson-Billings & Tate (1995) and critical race curriculum of Yosso (2002). In addition, it is my intention to understand how placement criteria, framed within colorblind, meritocratic, and neutral discourse, shape dominant institutional practices of math placement for students of color. The overarching mixed methods research question investigates how the curricular system influences mathematics placement of students entering 7th grade. The following sub-questions help to answer the overarching question:

1. How is 7th grade mathematics structured in LSUSD?
2. How are key placement criteria expressed in the curricular structure?
3. How do middle school principals place students into 7th grade accelerated math courses?
4. How do middle school principals identify and resolve dilemmas embedded in the curricular structure for their students?

Research Question 1: Math Courses as a Curricular Structure

The first research question asked how the curricular system of 7th grade math was designed in LSUSD. The data are presented from a district perspective of the curricular system. The curricular system refers to the curricular structures, processes and discourses. The components reinforce each other and are interconnected in various ways, and I disentangled them for descriptive and analytic purposes.

District curricular structure. There are two main features of the curricular structure in LSUSD's math program: content standards and entry/exit points. First, the content standards in the course identified as 7th grade accelerated math include more content standards than the 7th grade-level course. Second, there are specific entry points into and pathways between the two middle school courses. The content standards in each of the middle school math courses are differentiated in the number of mathematics standards expected

- In the 7th-grade-level course students are expected to achieve 43 of the state's 7th grade-level standards.
- The 7th-grade accelerated course includes *all* 43 of the 7th grade-level standards, 22 additional standards that are expected in 8th grade-level math classes, and 4 additional standards that are expected in 9th grade-level standards.
- The 8th grade-level course includes 36 grade-level standards.
- The 8th-grade accelerated course includes 16 of the 8th-grade-level standards and 61 of the 9th-grade standards.

Appendix E outlines the content standards for each grade-level in middle school. Other than the different number of grade-level standards in each course, the curricular materials associated with the standards are the same.

The LSUSD curricular structure offers two paths or approaches to meet the mathematics standards for middle school math. One approach addresses grade level standards only in each of 7th and 8th grade *regular* math courses. Another approach addresses 7th, 8th, and 9th grade content standards in two courses: 7th grade *accelerated*

and 8th grade *accelerated*. compresses seventh, eighth, and ninth grade content standards into two courses: 7th grade accelerated and 8th grade accelerated. The approach of including more content standards in the accelerated courses can be described as a *compressed* sequence. In other words, students who enroll in the accelerated courses take three years of math in two years of middle school. In addition to understanding how knowledge is organized by course, or structured, the courses are connected in specific ways.

Table 4.1

Number of Content Standards in Each Course

7th Grade		8th Grade		Math 1	Math II		Math III	
Reg	Acc	Reg	Acc	Reg	Reg	Acc	Reg	Acc
43	69	36	77	64	76	115	48	95

Note: Reg = Regular or Grade-level course; Acc = Accelerated course

The 7th grade curricular structure is also defined by the district as a pathway of connected courses. Figure 2 shows the pathways in middle school. The pathways begin in 7th grade and those courses represent an entry point for subsequent courses in 8th grade. For example, after 6th grade, a student can enter either 7th grade Regular or 7th grade Accelerated. If a student enters the accelerated course, then they will have the option to enter 8th grade accelerated or 8th grade regular when they finish seventh grade because they have achieved all of the 7th grade-level standards. However, if a student enters the 7th grade regular course, then they will only have the option to enter the 8th grade regular course after seventh grade.

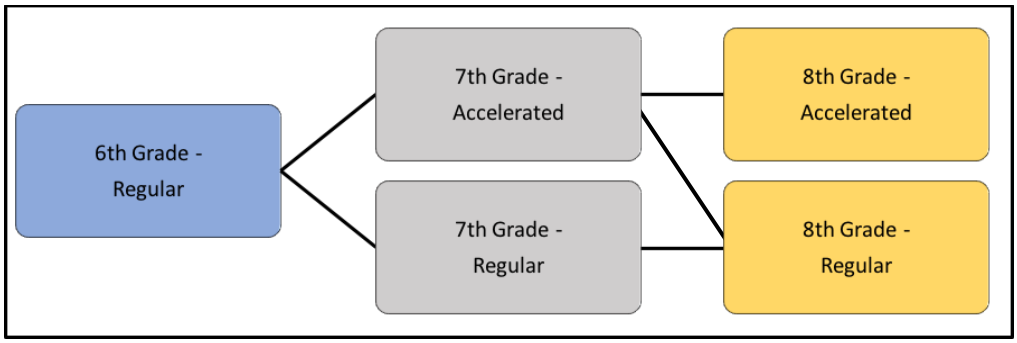

Figure 2. Adapted flowchart of LSUSD's middle school mathematics courses.

The middle school flowchart connects to the curricular structure of high school mathematics. Figure 3 shows how the courses from middle school connect to high school course options and how placement on the accelerated pathway in middle school allows students to *compress* another high school mathematics course beginning at grade 9. By compressing a math course at two different entry points, a student on the accelerated pathway will have the opportunity to take a higher-level math course during their 11th and 12th grades. If students on the accelerated pathway in middle school decide to take the regular math pathway at grade 9, then they will be able to take a higher-level math course in 12th grade.

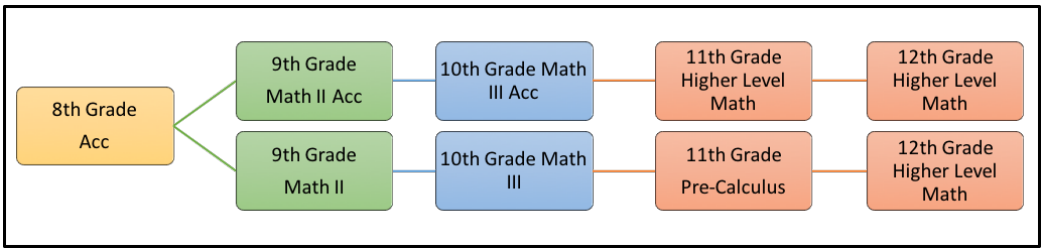

Figure 3. Adapted flowchart of LSUSD's middle school accelerated pathway into high school.

Figure 4 shows the course flowchart for students who begin on the regular pathway in middle school and their course options entering high school. This pathway shows that students who begin on the regular pathway in middle school can enroll in the grade-level course in 9th grade, or 9th grade, called Math I. Students on this pathway will

have an opportunity to enter an accelerated pathway at 10th grade or continue on a regular pathway. If a student continues on the regular pathway throughout high school, then the highest-level math course they will have access to is Pre-Calculus or Intermediate Algebra, which are college preparation courses. If a student enters the accelerated pathway in 10th grade, then they will have an opportunity to take 1 higher-level math course by the end of 12th grade. The accelerated pathway in high school is compressed the same way as in middle school. In high school, Math II, Math III, and Pre-Calculus are compressed into 10th and 11th grades.

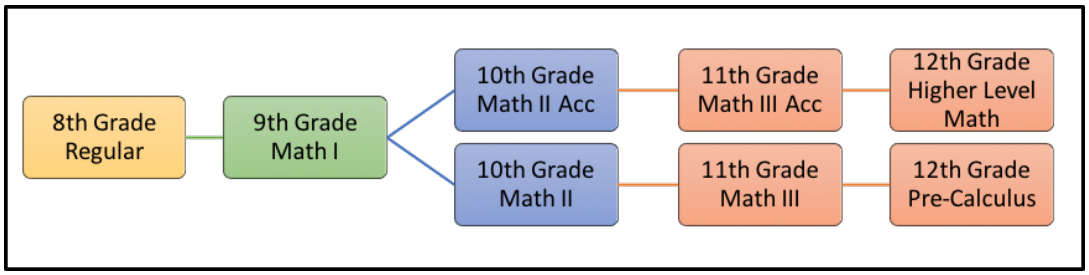

Figure 4. Adapted flowchart of LSUSD's middle school regular pathway into high school.

District curricular process. Analysis of LSUSD documents and webpages that described the curricular process decisions about 7th grade mathematics. LSUSD also provides public access to search and view current policies. A review of public documents and information do not describe a curricular process of placement at 7th grade. However, the 7th-grade regular course description makes an inference about placement.

The webpage describes the 7th grade regular course as the course where most seventh-grade students will be enrolled. Because the course description suggests that most students will be enrolled in the grade-level course, it implies that some students will be enrolled in the accelerated course. The description of the regular math course also

does not specify the number or percent of students that should be enrolled in the regular course. (The participant interviews provide the details about the placement process.)

District enrollment data in math courses. The percentage of students enrolled in each course for each grade-level was collected using LSUSD's online student data system. The courses were disaggregated to determine the number of sections of each course offered in all the middle schools across the district. The number of mathematics sections shows which mathematics courses were available for students and structured into the middle school master schedule. The data lists the number of students enrolled in each mathematics section, along with program and demographic information. All student information was de-identified and presented in summary form.

The enrollment data indicates that district-wide, 75% of seventh-graders were enrolled in a regular math course and 25% were enrolled in an accelerated math course. Of the students enrolled in 8th grade, 85% were enrolled in the grade level math course and 15% were enrolled in the accelerated math course. Table 4.2 displays the district percent enrollment data by course and grade-level.

Table 4.2

District Percent Enrollment by Course and Grade

Course	7th	8th
Accelerated	25%	15%
Regular	75%	85%

Middle school enrollment by math course. The district enrollment data for each course and grade was disaggregated to find the percent enrollment for each middle school. Seven middle schools are included in this study: Adelante, Amistad, Anderson,

La Puente, Palm, Raincross, and Zapata. The sample of middle schools was restricted to traditional settings of schools that enroll only 7th and 8th graders.

Amistad has the lowest percent enrolled in 7th Grade accelerated math courses at 10% and is followed by Adelante, Palm, and Zapata at 15% each. Anderson and La Puente each have 25% of their 7th grade students enrolled in the accelerated math courses. Raincross is above district average and enrolls 35% of its seventh graders in the accelerated math courses.

Table 4.3

Middle School Percent Enrollment by Course and Grade

Middle School	7th		8th	
	Reg	Acc	Reg	Acc
Adelante	85%	15%	95%	5%
Amistad	90%	10%	90%	10%
Anderson	75%	25%	85%	15%
La Puente	75%	25%	85%	15%
Palm	85%	15%	80%	20%
Raincross	65%	35%	75%	25%
Zapata	85%	15%	95%	5%

Note: Reg = Regular or Grade-level course; Acc = Accelerated course

Seventh grade math sections. The data also reveals that the middle schools offered a range of sections for each math course in 7th grade. Amistad offered one section of accelerated math compared to Raincross that had six. Three of the middle schools offered two sections, and Anderson and La Puente offered 3 and 4, respectively. Table 4.4 shows the number of sections of each course at each middle school in 7th grade.

Table 4.4

Number of Sections by Course and Grade for Semester 1

Middle Schools	7th Grade – Regular	7th Grade – Accelerated
Adelante	10	2
Amistad	11	1
Anderson	11	3
La Puente	13	4
Palm	7	2
Raincross	12	6
Zapata	11	2

Research Question 2: An Intersection of Criteria and Structure.

The crux of the second research question is to understand how specific criteria are expressed in material ways through enrollment data. One of the key criteria used by all three middle school principals was the sixth-grade achievement results from the Smarter Balanced Assessment (SBA). The California Department of Education (2016) explains the scores on SBA as:

- A level 4 means the student has *exceeded* grade level standards;
- A level 3 means the student has *met* grade level standards;
- A level 2 means the student *nearly met* grade level standards; and
- A level 1 means the student *did not meet* the grade level standards

The achievement data were collected from LSUSD's online assessment system and was used to explore the significance of SBA through course enrollment data. The data set only includes the SBA level of all 7th grade students who were enrolled in 7th Grade accelerated math course and had a 6th grade SBA score.

Table 4.5

District Enrollment in Accelerated Based on Gr. 6 SBA

	SBA Level 1 or 2			SBA Level 3 or 4		
	#	# in Acc	%	#	# in Acc	%
LSUSD	1,500	45	3%	1,070	610	57%

Note: District data includes all 7th graders with grade 6 SBA scores in all race/ethnicity groups

The district level data shows that students who score at level 3 or 4 are enrolled in the accelerated math course at a greater rate than students who score at level 1 and 2. Of the 1,070 seventh-grade students who scored at level 3 or level 4 on their 6th grade SBA, 57% were enrolled in the accelerated math course. On the other hand, 3% of the students that scored a level 1 or 2 on SBA are enrolled in the accelerated math course. Table 4.6 shows the percent of students enrolled in the 7th grade accelerated math course based on their 6th grade SBA level score.

Table 4.6

Number and Percent of Gr. 6 Students in Gr. 7 Accelerated Math

	SBA Level 1 + 2		SBA Level 3 + 4	
	# in Acc	% in Acc	# in Acc	% in Acc
Adelante	15	7%	36	51%
Amistad	0	0%	30	40%
Anderson	0	0%	95	56%
La Puente	0	0%	115	52%
Palm	5	3%	40	53%
Raincross	8	5%	150	60%
Zapata	15	7%	45	43%
LSUSD	45	3%	610	57%

Note: Data includes all 7th graders with 6th grade SBA scores

Summary data, like district data, can be disaggregated to reveal a more nuanced analysis. Table 4.6 presents the middle school data parallel to the district data. The

middle school data shows how achievement level groups are distributed across the district. This data shows that enrollment in the 7th grade accelerated course is between 40% and 60% for students who scored at levels 3 and 4, while the level 1 and 2 range is much narrower at 0% and 7%.

As the SBA levels are further disaggregated, the percentage of students enrolled at each SBA level are more distinct. The data indicates that as the SBA scores increases, the percent of students in accelerated courses also increases. For example, at the district level, 90% of level 4 student scores are enrolled in the accelerated math courses, 25% of the level 3 scores, 5% of level 2, and 0.5% of level 1. The pattern is opposite for the regular courses. In other words, as the level on SBA increases, the percent of students enrolled in the regular course decreases.

In addition to the relationship described above, the percent enrollment by SBA level also reveals another dimension of access to math content. Adelante and Zapata offer more access than the other five schools. Adelante and Zapata are the only two schools in which all levels of SBA are somewhat represented in the accelerated math course. Raincross and Palm include students in accelerated math with scores at levels 2, 3, and 4. On the other hand, Anderson, Amistad, and La Puente, appear to have more restricted access than the others. The data shows that no students at levels 1 or 2 were enrolled in the accelerated courses at these three schools. Table 4.7 shows the district enrollment data by SBA level and how the data are distributed across the middle schools.

Table 4.7

Percent of Each Gr. 6 SBA Level in Gr. 7 Accelerated Math Courses

Middle Schools	Level 1		Level 2		Level 3		Level 4	
	Reg	Acc	Reg	Acc	Reg	Acc	Reg	Acc
Adelante	99%	1%	85%	5%	65%	35%	10%	90%
Amistad	100%	0%	100%	0%	70%	30%	15%	85%
Anderson	100%	0%	100%	0%	75%	25%	5%	95%
La Puente	100%	0%	100%	0%	85%	15%	10%	90%
Palm	100%	0%	95%	5%	70%	30%	5%	95%
Raincross	100%	0%	95%	5%	70%	30%	20%	80%
Zapata	98%	2%	90%	10%	70%	30%	30%	70%
LSUSD	*99.5%*	*0.5 %*	*95%*	*5%*	*75%*	*25%*	*10%*	*90%*

Note: Reg = Regular or Grade-level course; Acc = Accelerated course

Research Question 3: Principal Perspectives on Data, Access, and Options

The third and fourth research questions are interrelated because the curricular process of placement presents dilemmas for administrators. The third research question asked how middle school administrators placed students into 7th grade math courses. Embedded in this question is making an explicit connection between the curricular structure and process. The other purpose was to better understand the curricular process of placement at the local level in relation to the corresponding descriptive data presented in the previous section. In addition, to these connections, issues about access are discussed in relation to the second sub-question within research question two.

The curricular structure is that 7th grade mathematics courses that are distinguished by the criteria for entry to each course, the content standards expected in the courses, and the course pathways or tracks that determine opportunities to learn

specific content from that course forward. The curricular process refers to how students are placed into those courses.

As described in Chapter 3, three middle school principals participated in the semi-structured interviews. As the leaders of their respective schools, they are responsible for implementing the mathematics program for their school. Each of the middle school principals are directly involved in the design and implementation of the curricular process of math placement of students in 7th grade and decisions each year about where students are placed. The interview data revealed that the curricular process varies across schools in terms of the criteria used, how the criteria are used, and the priority of some criteria for placement decisions.

The design of the curricular process is coded as either *open* or *tiered*. An open process means the principal does not follow a sequence of steps during the curricular process. On the other hand, a tiered process means that criteria are met in a particular order. The following criteria were described by the three middle school principals:

3 – Smarter Balanced Assessment (SBA)

3 – Student *voice* (survey, request)

3 – Parent *voice* (survey, request)

2 – Teacher-created placement test

2 – Elementary teacher recommendations

1 – NWEA's MAP

SBA, NWEA's MAP, and the teacher-created placement test each have distinct achievement levels. The levels are defined by what and how much specific content standards or knowledge and which specific skills students demonstrate on the particular

standardized tests. The curricular process by each principal is described below along with detailed information about how the process is implemented with the school's curricular structure.

Curricular process at Amistad: Tier-placement and trial. Amistad enrolls about 900 students. Of these students, 95% are considered low-income. The race/ethnic make-up of Amistad is 80% Latina/o, 5% African American, 10% White, and 2% Asian. English-learners are about 20% of the student population. Principal Amistad has been an administrator at the elementary and middle school levels for more than six years, at Amistad for four years, and is Latina/o. Principal Amistad uses NWEA's MAP, SBA, teacher recommendations and student voice as criteria. Table 4.4 shows that Amistad has only one section of accelerated math, and 10% of all 7th graders are enrolled in this course. Table 4.7 shows that no students at SBA level 1 or 2 are enrolled in the accelerated course. The data also shows that 30% of level 3 and 85% of level 4 are enrolled in the accelerated math course.

The curricular process at Amistad is described as *Tiered-Placement and Trial* because it has two phases. The first phase involves the use of specific criteria to start the placement process. The second phase involves student performance and experience after being in the accelerated math course for about 3 weeks. Principal Amistad described the first phase of the *tiered-placement* curricular process by singling out NWEA's MAP criterion:

> So, when I look at our students and where they are [level of readiness], one of the first places that I look at is this MAP assessment, right? It is a nationally normed assessment, so it is a good, valid tool. I'm looking for students that are on the

> high end. I'm looking for those students because those are the students that you want to make sure that you are properly placing. Then you start looking at the students that fall within the average of the bell curve. You look at those students and ask, 'Alright, so which of these students can we proceed as candidates [for the accelerated course]?'

After looking at the results from the MAP criteria, Principal Amistad considers other criteria, such as the Smarter Balanced Assessment (SBA), to help decide which *average* students would be *candidates for an accelerated math course*:

> The criteria for placement has to be multifaceted, so you can't just be looking at one metric…You look at SBA, as well. We also get teacher recommendations from our feeder schools about whether this is a good placement for the students. We also see if a student has expressed a desire to want to be in this class. We consider that as well.

The next part of the *Tiered-Placement and Trial* method is the performance and experience of the students in the accelerated course. After the students are placed in the accelerated course, they are given a trial period at the beginning of the school year to experience the pace of instruction after which a decision is made as to whether the student will stay in the accelerated math course or move to the regular math course. Principal Amistad described it as:

> After looking at these data points, we do a *two- or three- week trial* [emphasis added] so students get a sense for the pace of the course and the first unit. If it's something that they begin to struggle, they have an option to go back into the regular course. For those that want to continue and can demonstrate they can

> handle it, then we leave them in the accelerated course. So, you got to offer an on-ramp, off-ramp without sacrificing the content or skills that students have to master at that particular grade level.

The enrollment data at Amistad changes from the first day of school through the end of the first nine weeks of school. On the first day of school, there were 35 students enrolled in the accelerated math course. At the end of the third week, there were 40 students enrolled. By the end of the ninth week of school, or 1st quarter, there were 33 students in the accelerated math course.

In general, Principal Amistad feels that the curricular process of placement works well for students because s/he is able to monitor student progress:

> We look at their overall achievement in the form of common assessments which are tied to grades. We want a C or better in accelerated math, so if a student is getting a D or an F, then that's an indication that either content, skills, or other connections are not being made. So, we sit, and we talk with the students. We also look to see what we can do with assignments in the gradebook.

Closely monitoring student grades as data is essential because s/he works closely with the math department to find opportunities for students to improve their grade:

> So, the accelerated math teacher looks at a student's assessments and assignments and then sets a goal with the student. The teacher explains to the student that if they complete classwork that is missing, then they could significantly improve their grade from D's to B's or C's…That's the thing we need to share with our students.

Monitoring data also helps Principal Amistad consider any changes to the curricular process, especially if the criteria produces *damaging effects*:

> If the criteria that we're applying is resulting in failure for students or is having a damaging effect as far as their academics, their drive, their desire to excel, then that's the minute we stop using criteria. Also, if we have criteria that is only self-selecting a particular subgroup of students and it's not representative of the students on my campus, then I am using criteria that is over identifying a particular group of students.

Curricular process at Anderson: Open communication. Anderson enrolls about 900 students. Of these students, 70% are considered low-income. The race/ethnic make-up of Anderson is 65% Latina/o, 25% White, 5% African American, and 2% Asian. English-learners are about 10% of the student population. Principal Anderson has been an administrator at the middle and high school levels for more than six years, has been at Anderson for two years, and is White. Principal Anderson uses SBA, student voice, parent voice, teacher recommendation, and teacher-created placement test results as criteria. Table 4.4 shows that Anderson has three sections of accelerated math in 7th grade, and 25% of seventh graders are enrolled in the course. Table 4.7 shows that no students scoring at SBA level 1 or 2 are enrolled in the accelerated course. Table 4.7 also shows that 25% of students scoring at level 3 and 95% of students scoring at level 4 are enrolled in the accelerated course.

The curricular process at Anderson is described as *Open Communication*. The criteria used for placement are considered *open* because if students want to take the

accelerated course, then they would be given the opportunity. Principal Anderson views students voice as *integral* to the process and described it this way:

> We look at student achievement data on SBA and teacher recommendations from the elementary school. We also take parent and student requests. Our master schedule is based on student request. Students have an integral part in the decision-making process. We make sure that the parents and students are educated on what accelerated math is, including the benefits and why they should be in accelerated math. We also use a placement test.

The curricular process is also viewed as a *communication* tool. Principal Anderson describes the criteria as:

> …a guide, it's something to use so when people come and ask, 'What are your criteria for placement?' we have a few data points to talk about. We also inform people that we do not put everybody into accelerated math 7; however, if everybody asked to be in accelerated math 7 because they wanted to challenge themselves, we would put them in.

The enrollment data at Anderson shows an increase in enrollment in the accelerated math course from the first day of school through the end of the first nine weeks of school. At the beginning of the school year, there were 77 students enrolled in the accelerated math course. After the third week of school, there were 104 students enrolled in the course. By the end of the ninth week of school, or the 1st quarter, there were 105 students.

In general, Principal Anderson feels that the curricular process of placement works well for students because s/he is able to provide access to all students:

> Successful placement is when a student feels they are learning, or a student feels that they have experienced success, or that the student has self-efficacy. It's not all of them together, so it could be one or all and it doesn't have anything to do with grades.

Access to the accelerated math course ties directly to Principal Anderson's belief in student *potential*: "I've never treated students differently. They all have awesome potential. It's our job to help them meet their potential." In order for students to meet their potential, Principal Anderson views placement as a need to have access to the *most rigorous content*:

> You have to allow students to challenge themselves and to have access to the most rigorous content. I always want to give students the benefit of the doubt. Let them challenge themselves and we make sure that we help them be successful.

Curricular process at Raincross: Open-voice. Raincross enrolls about 1,000 students. Of these students, 50% are considered low-income. The race/ethnic make-up is 40% Latina/o, 40% White, 5% African American and 10% Asian. English-learners are fewer than 5% of the student population. Principal Raincross has been an administrator at the middle and high school levels for more than six years, a district administrator, and at Raincross for three years. Principal Raincross uses SBA, student voice, parent voice, and teacher-created assessment results as criteria. Table 4.4 shows that Raincross has six sections of accelerated math and 35% of seventh graders are enrolled in this course. Table 4.7 also shows that no students at SBA level 1, 5% of level 2, 30% of level 3, and 80% of level 4 are enrolled in accelerated math.

The curricular process at Raincross is described as *Open-Voice* with a priority on parent voice. Principal Raincross explains the priority of parent voice this way:

> Well, for one thing, I don't think there's any one day that somebody takes a test that you should make a major decision about a curriculum that they are going to take. I am always going to try and triangulate the data and ask, 'Do we see a pattern?' So, I don't want to just look at a single test score on a certain day or ask a student in class through a survey if they want to take the course. I want to have multiple ways and multiple time periods.

Student and parent voice are prioritized in the curricular process at Raincross. They collect student and parent voice through at least two student-parent surveys, and Principal Raincross defers to parent request when the situation arises. Principal Raincross describes it as follows:

> So, we use multiple approaches. One of them, and probably the most significant, is the parent and student desire to be in the accelerated class. We also look at the students' previous test scores on SBA. We also analyze the responses they shared through a district student survey. In our school, we created our own survey and our own teacher-created test. We have them take the survey and analyze the results from the teacher-created test…However, if the parent wants it [accelerated math course], and we've talked through whatever the other points are, …I always fall back to the parent position.

The enrollment at Raincross is consistent from the first day of school through the end of the 1st quarter of school. On the first day of school, there were 178 students enrolled in

the accelerated math course. By the end of the third week, there were 181 students enrolled and by the end of the ninth week, or 1st quarter, there were 180 students enrolled.

In general, Principal Raincross feels that the curricular process of placement works well for students because s/he is able to monitor student progress:

> We look to see if students are performing on classroom assessments and how they are performing on the district semester assessment. Then we can correlate that data with how they perform on SBA.

Principal Raincross also is able to follow through on student voice being the primary criteria:

> I wouldn't change it because I believe that the way we have it set up here is to support students who are already perceiving themselves as being good at math, but also to encourage more students to have that perspective of themselves. I would continue to do that.

Other than a comprehensive process change at the district level, Principal Raincross would keep their current process:

> What would cause me to change is if the district decided that this is not what we are going to do. However, many discussions would need to happen with math teachers, math specialists, principals, and curriculum experts. Data should also be used, and if we were convinced that there was another route to go, then I'm going to go with the consensus of the group. I'm fairly good at looking at all these things, so they'd have to be good at convincing me.

Research Question 4: Dilemmas and Remedies

The fourth research question asked how middle school principals identify and resolve dilemmas in curricular structures and processes for their students. The data are selected to represent different perspectives of the curricular structure and how to maneuver within the system to create opportunities for students.

Opportunities and challenges using data at Amistad. Principal Amistad selects, uses, and critiques the criteria in many ways. Principal Amistad focuses on criteria because of the significant role algebra plays in the mathematics program for students. One of the challenges that s/he sees for some students is how the math curricular structure [courses and flowchart] seems to be geared for STEM fields, describing it as follows:

> I always think about students, especially at this level when you hit eighth or, for some students, it's seventh grade, the idea that algebra is a gatekeeper course. You hear that from high school; you hear that from higher education, right? So, we need to get our students to be algebra ready and have algebraic thinking skills. That's great for students that might want to pursue a STEM career, but what about the students that do not want to pursue a STEM career? They still have the same prescribed pathway in our system.

Principal Amistad uses the data to identify students on the *high-end* and students who are *struggling*. Because algebra is a major aspect of the curricular structure in middle and high school, Principal Amistad uses as many data points as possible to select students that would do well in an accelerated math class

> …one of the first places that I look at is this MAP assessment, right?... I'm looking for students that are on the high end. I'm looking for those students because those are the students that you want to make sure that you are properly placing.

Principal Amistad does not want to misplace *struggling* students in the accelerated math course:

> So, we have some criteria and some data points, then you can start looking at how students are doing. What benefit does it do for us if we know a student is already struggling or has some deficits and then place them in the accelerated course… just so they can continue to struggle? I don't think so.

In the middle of the *high-end* students and the *struggling* students are the *average* students. Selecting average students is difficult:

> Then you start looking at the students that fall within the average of the bell curve. You look at those students and ask, "Alright, so which of these students can we proceed as candidates [for the accelerated course]"?

Principal Amistad acknowledges that working with multiple criteria is not always easy:

> There's an inherent challenge in using multiple data because you don't know what would be happening at that point in time with that particular student. We come across that here. You look at an SBA score where you say, "Wow, they did quite well" and you look at an MAP score and say, "Well, what happened here?" There's a bit of a mismatch, a bit of a disconnect. We're not getting the sameness between MAP and SBA. That's the challenge is to be able to look at different multiple data points to be able to make a good decision.

Principal Amistad uses multiple criteria so average students can get an opportunity to take accelerated math:

> So, the benefit again is not relying on a singular data point, but rather looking at multiple factors. I take it back to the experience that I've had going through the system. I think that if I wasn't ever challenged, then I never really would have tapped into a potential that I knew I had. That's when I talk about students that we may look at that may be on your bell curve, on an average. I want those students to have an opportunity. They need to have every opportunity and … if they can show that they can handle it, then they should also be able to have the opportunity to take challenging courses.

Principal Amistad sees data as a way to neutralize misplaced judgements about students:

> Sometimes, I think that we use this [race] profile in a counter-productive way. We make a judgment based on who we see sit in front of us. And that's been true, and even an experience that I had in high school, where you're looked upon in judgment. You looked like you're probably a bad student who doesn't have good grades, so you'll probably end up in continuation school. Well, the opposite is true. Go look at my grades. Look at what I'm doing. I'm a firm believer that intelligence is everywhere.

Although Principal Amistad recognizes the usefulness of data, s/he knows that data can lead to unintended consequences:

> One of my tenets is that intelligence exists everywhere. If we have criteria that only select a particular subgroup and it's not representative of what I have as my school demographic, then I am using criteria that are over identifying a particular

group of students. Think about what we do in special education. That's one of the things that I always look at as a school principal. I look at who we are identifying, what instruments we use, and if we use the same battery of assessments.

Data are key. Principal Amistad views the curricular process as a way to better understand the ability or readiness of students in a consistent way.

> We use the criteria we use because its available to us. Also, you have to have criteria so that you are equally applying it to all students, so that you are sensitive to the equity and the access piece. Having that criteria, you will see which students are going to be your likely candidates to experience success and do well.

Principal Amistad uses multiple criteria in order to select students for placement:

> So, the benefit again is not relying on a singular data point, but rather looking at multiple factors…That's when I talk about students that we may look at that may be on your bell curve, in the average range, that I would like to see have an opportunity in the accelerated math course.

Structural (in)equality and access at Anderson. Principal Anderson takes care to not disadvantage any student who could be successful in the accelerated course. In this way, Principal Anderson sees the potential for misplacement as a gatekeeper:

> The students know the goals that they have for themselves, and we know what math they need in order to achieve those goals. We don't want to have math as that roadblock or that gatekeeper. For example, if a student does not get enrolled in the accelerated course because of our placement policy, it doesn't do the child any good. Who knows? Maybe by challenging them to a higher level of math, the

student will be successful and open up their eyes and opportunities to many more career options.

Principal Anderson did not view the curricular process of placement as unequal because the criteria are *researched-based*, are used as a guide, and not used in limiting ways. This is how Principal Anderson described it:

> The benefits of using the criteria we use and holding tight to the criteria is we are utilizing research-based criteria to make the best guess or best placement for a student to not only ensure their success but also to challenge them. The criteria are used as a guide, so when people ask about our criteria for placement, we are able to discuss it. We don't just put everybody into accelerated math, but if everybody asked to be in accelerated because they wanted to challenge themselves, we would. The criteria are not used as a limiting factor.

This view on access places the challenges of placement on the practice of placement and criteria. Principal Anderson expresses it this way:

> If you're using the criteria as a limiting factor, the challenges are, you're going to have students that may be successful in [accelerated] Math and you're not letting them in. But if you're not using it as a limiting factor, there aren't any challenges.

If the criteria are not used in a limiting way, then placement is open for students to request access and for Principal Anderson to place students into the accelerated course:

> Our master schedule is built on course request. It is not built on how many seats I have in accelerated or regular Math 7. If 35 students sign up for accelerated math 7, then that's how many seats I will create. But of course, we go looking for students to place in accelerated math because we think it's the right thing to do.

> Then, that's how many sections we have. So, in this way, we don't let staffing be a limiting factor for placement.

Principal Anderson sees access to the course as open to students and when students are not being successful, they need the supports to be successful:

> If students aren't being successful, it's not because of the criteria, it's because of what we're doing in the classroom. I mean still, you have to allow students to challenge themselves and have access to the most rigorous courses. I always want to give students the benefit of the doubt. Let them challenge themselves and make sure we help them be successful. We'd probably get rid of regular Math and do all accelerated if we would provide optimum supports for students. I bet they all could be successful in accelerated math.

Advocacy is key. Principal Anderson sees the current curricular structure, or math courses, as unequal:

> Students on the regular pathway and students on the accelerated pathway don't have the same access or opportunities. So, if you have two students: one gets straight A's in the regular math classes and the other student in the accelerated courses gets straight A's too, the student on the accelerated track will have the higher GPA because of the pathway. So, if everything else is the same and both students are applying to the same school, the student in the accelerated track is going to get accepted, and the student on the regular track isn't going to get accepted. The accelerated student's GPA is going to be higher, and they also had access to a more rigorous curriculum, while the other student will not have that opportunity to get a higher GPA.

In response to this intractable condition of the system, Principal Anderson advocates for students to take accelerated courses because he/she would like for students to be competitive for college admissions:

> Our students need to have access to the most rigorous courses because we have to compete with every other school in the state of California and the country. Our students want to get into the most prestigious universities and into different programs after high school. So, our students have to have access to the most rigorous coursework because if you look at the students that are getting into UCLA, USC, and the amount of honors and AP classes those studnets take is crazy. So, if you want any of our students get into UCLA, they better have accelerated math, honors, and AP classes all over the place because if we don't offer these types of courses, then they will not get in.

Principal Anderson advocates for students to take accelerated math as a way to overcome the possibility of criteria be a limiting factor:

> Well, we advocate for all of our students. So, we advocate for our students to go into accelerated math even if a parent doesn't advocate for it. We advocate for it to help the students be more successful, to be challenged, and have access to the most rigorous courses.

Role models and shifting the culture at Raincross. Principal Raincross sees placement as an opportunity to shift how students see themselves in relation to accelerated courses. Shifting this perspective is related to the larger goal of challenging the notion that it is acceptable for people to not be good at math. Principal Raincross discussed challenging the cultural norm in this way:

> For some reason, in our culture it is okay to say that "I don't do math. I never understood math. I don't do well in math." And it's almost akin to me just saying, "I can't draw." For some reason, our culture is okay with saying that they are not good at math. I've had to train people here [at Raincross] to stop saying that [they aren't good at math]. We need to stop saying that we were not good at math because it's all about the amount of time we are willing to put in. Everybody can understand it. It's just about how much time you are willing to put in. So, when we keep repeating those [negative] phrases, there is a perception that you either get it or you don't, and that's it. I don't think it's about that. I think it's about perseverance, good teaching, and a mindset. That's it.

As a step to challenging this notion, Principal Raincross takes it upon her/himself to use placement as a way to find students who may not think they would do well in accelerated math:

> I want to look for students that haven't perceived themselves as maybe being somebody that would be an accelerated student. So, I want to delve and look for evidence that we can see that there is a pattern through maybe test scores or something like that for somebody that hasn't necessarily challenge themselves before in that area or seeing themselves as maybe a student that could do well in accelerated. So, we're trying to get multiple ways and multiple data points, so that we help make the best decision for the student.

Principal Raincross has changed the process of placement because s/he believes that students should have multiple opportunities to see themselves as an *accelerated* or *honors* student:

> I believe the purpose of placement is to support students who are already perceiving themselves as being good math students. But *just as important* [emphasis added] is to encourage more people to have that perspective of themselves. So, I would continue to do that. My goal for all students is to take one advanced, or accelerated, or honors class because I want them to see what it's like to challenge themselves. I also don't want them to be afraid to do it when they're in high school. So, by taking it when it's not a credit bearing course, you get an opportunity to see what it's like. Hopefully, you're successful at it and hopefully, it reduces the anxiety of challenging yourself when you get to high school.

By taking this approach, Principal Raincross has noticed that student performance across two measures is not affected:

> But what has happened over the last couple of years is we look at how the students then performed on something like SBA. We also looked at their grades. We have looked at the performance of other schools that are comparable to us in student achievement on Smarter Balanced, and we can see that our students consistently maintain the same level of high achievement.

In order to offer more opportunities for students to experience honors or an *accelerated* course, Principal Raincross changed the curricular structure of the science classes:

> We took our science courses out of the realm of having honors and general. Every science course is mixed, and we do what's called embedded honors. So, every single student in science gets an opportunity to challenge themselves to honor's credit by having more in-depth work that they do. For example, doing a project for science fair causes students to have more requirements and in-depth learning.

By de-tracking science courses, Principal Raincross has noticed a change in perspective from the science teachers:

> Well, I've got to tell you that the science teachers love it. Because what they've said is there are role models in every single class that want to challenge themselves. This is going to be our third year of doing it, and the teachers say they haven't experienced any negatives about this change. They think it's been a positive experience because the students get to see examples [role models], and they feel that it's helped raise the level of the entire class.

Options are key. Principal Raincross recognizes that the curricular structure and process for math may overlook some *honors* or *accelerated* students:

> We are trying to make sure that we have opportunities for everybody to see and not just people who have self-selected in or have been selected into individual classes. So, we've done that with our science classes, so that everybody has an opportunity to the same course and to see what it's like to sit next to a person that's challenging themselves to honors and to get that type of experience.

Principal Raincross sees placement as putting students in position to do well in high school math:

> For me, the benefit is we are having more students in accelerated classes, and students are very successful. The other thing is, I know that from looking at data in the past, unless you had been in an advanced type of math class in middle school, then you were not likely to be successful on 11th grade college readiness measures. So, I know that the chances of students being successful are highly enhanced by them taking the accelerated courses in middle school.

The only challenge to the curricular process has been influencing math teachers that the criteria used for placement is good for students:

> The only challenge I can think of is that sometimes the math teachers would be hesitant to put students in the accelerated math course. They might only look at one data point, like maybe a test score. While we are looking at what the parents and students are requesting as part of the criteria. However, the teachers do see that our accelerated students have been successful.

Principal Raincross sees any changes to the curricular structure of math as similar to what has happened in science. For example, when asked if accelerated math was discontinued and regular math was the only math course, Principal Raincross said,

> So, it would be just like I described for science. We would probably have a way of challenging students that want to be able to either go more in depth or at a quicker pace, within the classroom setting, so that they have the option of doing that. That is probably what we would do.

Eligibility Criteria and Specialty Schools

The district offers one more option for student placement, that of specialty schools, with different curriculum structures, processes, and criteria. The curricular discourse on eligibility criteria for specialty schools provides an additional perspective in the discourse surrounding placement. Because it, too, deals with determining a set of criteria for assigning students to specific content access classes and pathways. Although the settings for specialty school eligibility and course placement are different, they share the central idea of deciding on access at a point in time with implications for students' long term access to higher level mathematics content.

I use the curricular discourse about the placement process from a principal's point of view with eligibility criteria from a teacher/parent's point of view to investigate access to math content. I also use these discourses to portray how dilemmas are framed from each point of view. Embedded in these discourses are broader perspectives and experiences that speak directly to issues of access. Some of these issues relate to the structures and processes and others relate to personal ideas or experiences about mathematics, students, placement, and eligibility for separate, specialty schooling opportunities.

One specialty school enrolls about 200 students in grades 7 and 8. The race/ethnic make-up is 30% Latina/o, 40% White, 20% Asian and 5% African American. Nearly 25% of seventh and eighth grade students are low-income and there are no English-learners in either grade. A teacher/parent point of view from three teachers who have one year to six years of experience at the school.

This specialty school enrolls students beginning in 5th grade through high school, depending on eligibility and capacity, students can be admitted to the school at various grade levels. All 7th grade students enroll in accelerated math, and there are multiple sections in each grade level. SBA scores are the criterion for admission. The SBA level data below refers to the prior year SBA scores. No students with an SBA level 1 score were enrolled at the specialty school.

Table 4.8

The Percent of Students at Each SBA Math Level for 5th and 7th Grades at a Specialty School

Grade level	Level 1	Level 2	Level 3	Level 4
5th	0%	15%	33%	51%
7th	0%	3%	7%	90%

Criteria as negotiable and other competing placement discourses. One of the interview questions asked principals to suggest steps the district could take if a placement policy for 7th grade math was going to be considered. Principal Anderson offered:

> For middle school, just make it flexible, give sites some discretion, give the community some discretion. Community standards are an important part of this whole discussion as well… and as educators we use our knowledge and experience to help communities that might not know that accelerated math is available to them.

Principal Raincross would like to know more about how students think about this topic and suggests:

> I think it would be neat to talk to students. I would include some way of having student voice in that process. Also, the parent voice [is needed] because I am sure there are people who have varying opinions that would be good to hear.

At the heart of these suggestions is knowing what the community thinks about placement. Principal Amistad points out:

> If a parent with resources and means has a child that begins to struggle, and it doesn't have to be in math, it could be social and emotional,… then all these *airbags* [emphasis added] go off. They get their student to counseling and

> provide all these supports. You take a student whose family does not have the means, what support can they provide? The same airbags don't necessarily go off. So, it makes it difficult to support the child. So that is why we get additional resources. We are able to provide the airbags and support our students need to succeed.

All three principals describe a need to understand how students and parents see the issue of placement and also more broadly, the needs of the student. This discourse is in contrast to another, with a teacher at a specialty school about whether the criteria for eligibility to a specialty school should be changed by the district.

> I would like for you to please consider *keeping* [emphasis added] the same standards for applying to our school that we have had for the last 6 years. We would like for all of the students that come in to have at least the nearly-meets standard to be admitted to our school.

Another teacher suggests that changing the criteria for a specialty school would shift the focus away from the *average* student:

> As an educator, we try to do a lot of intervention, but sometimes, we lose that focus on the *average student* [emphasis added] that can do better because we are always trying to help that *student that isn't doing well* [emphasis added]. So, we need to *keep this focus on the average student at this school* [emphasis added] …because they come to this school and they see things in a different way and do well. If there is a *student that is struggling* [emphasis added], and you start adding all the enrichment, it can be a struggle for the *struggling* student.

Issues about the curricular process of eligibility or placement are also about access. During the interview, I asked principals if they could think of anything that would cause them to reconsider the criteria they use. Principal Amistad names two specific instances to reconsider the criteria:

> If the criteria that we are applying is resulting in failure, as in a damaging effect… as far as their academics, their drive, their desire to continue to excel in school, I would stop using the criteria. Also, if we are applying the criteria and then I see the make-up of the classroom. One of my tenets is that intelligence exists everywhere, so if we have criteria that is only selecting a particular subgroup… and it's not representative of my school demographics, then I am using criteria that is over identifying a particular group of students,… there is something wrong with criteria.

Principal Raincross would reconsider the criteria if the district had collaborative conversations about the changes and if the data were *convincing*:

> If the district decided that's not what we are doing, and if we collaboratively had discussions about that with math teachers, with math specialists, with principals, with curriculum experts, and we looked at the data, and we were convinced that there was another route to go, then I'm going to go with the consensus of the group…They'd have to be good at *convincing* [emphasis added] me though.

This principal's point of view rests on using data to consider changing the criteria for placement. The dilemma seems to be selecting data and *convincing* educators on the merits of the data. A specialty school teacher acknowledges that some data do reveal disparities; however, other factors seem to be more important:

> I know the importance of our school in mirroring the demographics of the district. I understand the district is 60% Hispanic. I would love for our school to mirror that percentage. At the same time, we also have rigorous standards. We know it would be detrimental to students if we open our requirements to every single student out there.

The teacher recognizes the race/ethnic disparities in enrollment statistics, but nullifies the disparity because meeting *rigorous standards* (i.e., scoring at SBA level 2 and above) for eligibility is more important. I also asked principals if there were any challenges in using their criteria. Principal Raincross acknowledged that some teachers can be cautious:

> The only challenge I can think of is that sometimes the math teachers would be hesitant to put students in the course. They might only look at one criteria, like a test score and say, 'Well this student only scored *this* on that assessment.' And so, that's really the only thing. We haven't had any issue with parents or students, it's been more of a teacher issue.

Another challenge is if they are not enrolling a student who might have been successful in the course. Principal Anderson explains it this way: "you might have some challenges if you have students that may be successful in accelerated math and you are not letting them in. But if you are not using it that way, then there are not any challenges." Both of these points of view present the dilemma of trying to figure out who will be successful in accelerated math and what measures a principal should use to make the best possible decision about placement.

A final dilemma: Students know. Despite the veil of objectivity and accuracy, *students will know their placement status*. Which students are selected for certain courses

is viewed differently by students. Principal Amistad, a Latina/o, describes a personal experience:

> Students are so intuitive…If you talk to students, they'll know. Some [students] will tell you, 'Well, I'm not smart, I can't handle that.' or 'That's the class for the smart students'. Somewhere along the way in their educational journey, *someone* [emphasis added] may have said, 'That's probably not for you'… Let me give you a personal example. I'll never forget the day. I was sitting in a regular English language arts class. I was doing quite well, but I was bored out of my mind and I started to act out and got into trouble. *My counselor* [emphasis added] pulled me in and asked me why I was acting out. I told him, 'You want the truth? It's too easy for me.' He said, 'Ok'. So, I was placed in an honors class and I remember walking through that door and my first reaction was, 'Oh, this is where all the smart students are!'

A CRT Analysis: Searching for Certainty and Fairness

This analysis of the findings starts by centering race. The purpose in centering race is to provide an analysis of how race is salient even when a curricular system is based on attempts to use objective, race-neutral criteria. I also center race because these principals and I share the common goal of eliminating all forms of inequality in our district.

These principals recognize that math continues to be a gateway or gatekeeper within education. Their shared values for fairness and concern for their students provide an opportunity to frame the structures, processes, and discourses about placement from a critical race perspective so possibilities for eliminating racial inequality are explored

more fully. This analysis deconstructs the attempts to find race-neutral data by centering race. I describe how the discourses that bind and intersect the curricular processes and structures maintain (in)equality in the curricular system for students of color, specifically in this case for Latinas/os.

When race was centered as a question of how principals consider it during the placement process, all three reported that they do not consider race as a criterion for placement. Principal Raincross said, "I don't know that we do consider it. We look at student requests, test scores, and discussions with parents." Principal Anderson stated, "We don't even look at race when we're placing students or letting students enroll [in accelerated math]. Our master schedule is built on course request." Lastly, Principal Amistad specified, "We are not looking at it through a lens of race or ethnicity. We're looking at it through an achievement lens." The finding that all three principals do not consider race part of their placement process is not a surprising revelation or unexpected. However, all principals were concerned with students being challenged and sought students for the more rigorous course. The conclusions in Chapter 5 will interpret these contradictions in the findings and implications for research and practice.

Summary

This chapter described the data about curricular process and the points of view of three middle school principals with final authority over placements in their schools. The data describe dilemmas and opportunities within the curricular system and how these principals recognize and deal with them. Themes in the data illustrate how changes in process and criteria for placement change access and (in)equality. Because this study is framed around analyzing structures and processes, the data were specific to how equality or inequality are expressed in the structures and processes. Chapter 5 presents the conclusions, implications, and recommendations for future research.

CHAPTER 5: AN UNAPOLOGETIC LENS ON THE CURRICULAR SYSTEM

I'll never forget the day … so I was placed in an honors class and I remember walking through that door and my first reaction was, 'Oh, this is where all the smart students are!' Why is that then? –Principal Amistad

Yosso (2002) challenges educators, policy makers, and researchers to "address the inequality embedded in school curriculum before addressing unequal educational outcomes" (p. 94). Reflecting back to his personal experience in middle school, Principal Amistad asks how did all the *smart students* wind up behind *that door*? This study investigates that question. The analysis of findings is framed by the theoretical question: How does centering race and operationalizing a critical race curriculum reveal (in)equality within a curricular system? Yosso's (2002) critical race curriculum provides the overarching framework to analyze the curricular structure of math courses and tracks, the processes of placement, and the narratives that describe and justify the system.

The quantitative data in the findings are disaggregated by race/ethnic category by employing Gutierrez's (2002) concept of "strategic essentialism" (p. 154) to look for patterns and compare them with the principals' narratives about criteria and processes. This approach centers race to reveal how race persists as a category that defines and limits certain children to lower status and fewer opportunities to learn what is valued in our society, represented as math standards and specifically algebra. The purpose was to show how students benefit or are limited by the structures and processes within the curricular system.

The primary focus of this analysis is on the seventh grade accelerated math course as conferring short- and long-term benefits to students, as illustrated in Figures 3 and 4.

The interview data presented in Chapter 4 were coded for specific comments on race in placement as well as the "silence within statements" that position students of color in deficit-ways (Solorzano & Yosso, 2002, p. 29). Specific words and/or phrases are selected because they contribute to a dominant narrative that

(1) positions, distorts, omits, or stereotypes students and/or schools using what are ostensibly race-neutral criteria (i.e., uses of assessment scores and levels) or

(2) rationalizes processes and/or structures in ostensibly race-neutral ways to refrain from sounding derogatory or discriminatory to any student, school, or community. While these attempts to avoid racism are part of dominant narratives about school policies and practices, the dominant narratives drown out the undercurrent expressing the respondents' own concerns for students who may be harmed by the system.

The Dominant Narrative

This district's curricular system can be described as having three themes: discounts, premiums, and disservices as identified in the discourse that labels students as needing *challenge*, *regular*, or *struggling*. The DiME authors (2007) assert that "labels have power in that they route students into or away from college-bound trajectories" (p. 425). These labels reveal who gets the *challenge* of taking math courses that offer premium opportunities after graduation and why; and who gets the *premium* opportunities to learn high status math content in middle and high schools and why.

I present the themes separately to describe their meaning and impact not to suggest they are independent of each other. The themes intersect with curricular structures and processes in critical ways. I purposefully use the themes to highlight how intendedly race-neutral distinctions sill reinforce distinctions and to illuminate the

continual, unintended salience of race in a variety of curricular structures, processes and discourses.

Specific words can be decoded by centering students of color in purposeful ways. Labels, such as struggling or remedial, serve as proxies for students of color "without dealing with the racial implications …and not explicitly attending to race allows these ideologies to remain with superficial changes, no matter how well thought-out the policy" (DiME, 2007, p. 425). In the following sections, I position the data in different ways to discern the patterns with specific meanings for students and families of color and suggest some potentially surprising implications about good-faith efforts to change the dominant narrative about these students and families.

Disservice. Disservice is used to describe how a change in a process or structure can negatively impact specific students, especially those labeled as struggling. I offer two examples to frame the critical ways disservice is used in the curricular discourse that disproportionally affects students of color. The context of the first example is a school board meeting in which the criteria for eligibility for a specialty school was being discussed. The only criterion for entrance to the school is cut scores on an achievement test. A teacher described the rationale for this criterion and the potential for *disservice* this way:

> It is a great opportunity for these students [who meet the criterion] to get in there and do their best. It is also a huge *disservice* to those students that do not meet these qualifications to be part of our program. It's even rigorous for students who are straight A's at other elementary schools.

This discourse represents the oppositional nature of premiums and disservices. A great opportunity for *these students* (students who score at particular levels on tests) is opposed to a disservice to the students if they were admitted without meeting the criterion; and therefore, if the criteria are changed to include lower achieving students, they would be negatively impacted by how the school curriculum is designed and taught. Contrast this position with that of Principal Raincross who could envision changes to the science curriculum and teaching so that every student could have access to accelerated courses and content.

The second example was explained by Principal Amistad who shared a discussion s/he had with a colleague about challenges in creating a course master schedule:

> We have systems in place, for example, that prohibit you from offering Advanced Placement classes. A high school colleague of mine had a hard time finding ways to carve out AP (Advanced Placement) classes knowing that students would want access to AP. Because of the master schedule, they could not offer the courses and had to try other options outside of the master schedule. That's a *disservice* [emphasis added] to students as well.

Principal Amistad describes how access to advanced courses can be limited by seemingly neutral curricular structures, such as master schedules, and how imagined solutions may not eliminate these structural barriers. In this example, the limiting structure of a master schedule created a *disservice* for students requesting access to AP and by changing the process to enroll in AP. The structural barriers of master schedules are not neutral when they limit access to important content, particularly for students of color who are underrepresented in advanced courses.

Discounts and Premiums. *Discounts* and *premiums* are symbolic patterns in the data that contrast student groups, courses, or schools using intendedly race-neutral terminology, but clearly assigning value. A premium is associated with *high* or *average* students over low achieving ones, accelerated or honors courses over regular ones, and specialty schools over local ones. A *discount* is associated with specific terms like struggling students compared to motivated ones, a regular course compared to an accelerated one, or (in case of a specialty school) a local school.

The next example from a specialty teacher illustrates critical ways the themes intersect and connect with each other:

> … (A specialty school) is even rigorous for students who are straight A's at other elementary schools. Our students can have 3-4 hours of homework every single night [i.e., a rigorous program], and we would hate to have unhappy students go through our system.

This discourse discounts local elementary schools by asserting that the quality of students (i.e., getting straight A's) or rigor of the curricular program (i.e., 3-4 hours of homework) are not at the same level, or as rigorous, as a specialty school using high test scores as placement criteria. If straight A students (i.e., premium students) find the school curriculum rigorous, then it would be too rigorous for lower achieving students. Therefore, level 1 students would be *disserved* by the curricular system and teaching at at specialty school. This type of discourse attempts to justify segregation and inequality through a curriculum and teaching that have high value (rigor and challenge) but would disserve students who do not meet the placement criteria. There is no indication that the

curriculum or teaching should be changed to offer these premiums to all children, only unfortunate circumstances that justify racist policies and practices.

Race, Schools, and Math Courses: Structural Inequality

In this section I employ Gutierrez's (2002) concept of strategic essentialism by analyzing enrollment data through race/ethnic categories defined by LSUSD. She defines strategic essentialism as the "process of deliberately categorizing people based on socially defined traits for the purpose of reaching an equitable goal" (Gutierrez, 2002, p.154). I use strategic essentialism as another analytic lens to disaggregate data to provide for an analysis of race as a salient factor in how curricular structures and processes shape the educational experiences of students of color.

Table 5.1 shows race/ethnic data across the middle schools in this study. Within the middle school population, Latinas/os make up at least 65% of the student population at Adelante, Amistad, Anderson, Palm, and Zapata. The second largest student group are Whites, followed by African Americans and Asians. The pattern of student demographics at Raincross and La Puente is different. At Raincross and La Puente, Latinas/os and Whites are equal in percentage and are the largest two groups at 40% and 35% respectively. At these same two schools, African Americans and Asians represent no more than 10% of the student population.

Table 5.1

School Demographics: Low-Income and Race/Ethnicity

Middle Schools	Low-Income	Latina/o	African American	White	Asian
Adelante	95%	75%	10%	10%	5%
Amistad	95%	80%	5%	10%	2%
Anderson	70%	65%	5%	25%	2%
La Puente	40%	35%	10%	35%	10%
Palm	90%	70%	5%	15%	2%
Raincross	50%	40%	5%	40%	10%
Zapata	90%	80%	5%	10%	2%
LSUSD	*70%*	*65%*	*5%*	*20%*	*5%*

Table 5.1 shows that students of color are 70% of all students in LSUSD. Among the middle schools, Anderson is closest to the district distribution, while students of color make up at least 80% of the student population at four other schools. Students of color are half or less at Raincross and La Puente. Latinas/os, in particular, represent a large proportion of students across most schools. Adelante, Amistad, Anderson, Palm and Zapata have high concentrations of students of color, namely Latinas/os, compared to Raincross and La Puente.

The literature (DiME, 2007; Orfield & Ee, 2014; Valencia, 2011) describes how segregation by race impacts opportunities and access to advanced courses, content, and teaching and segregates students by race/ethnicity and socioeconomic status. First, socioeconomic status is highly correlated with students of color, as illustrated in Table 5.1. In public schools, the metric used most often for socioeconomic status is the percent of the student population that qualifies for free-reduced priced meals, labeled Low SES. Asians are not included in the students of color category because they represent a

designated demographic category that is considered not Latina/o or Black, and nearly 85% are considered "Honorary Whites" (Bonilla-Silva, 2014, p. 227). Table 5.1 shows that the percentage of students of color is nearly equivalent to the percentage of low socioeconomic status for each middle school.

Table 5.2 includes data from Table 4.4 in research question one and Table 5.1. The purpose of creating a new table is to emphasize how a structural feature, or number of accelerated math courses, relates to a race/ethnic category and confers benefits or premiums disproportionately.

Table 5.2

Middle School Students of Color, Low-Income, and # of Accelerated Math Sections

Middle Schools	Students of Color	Low SES	No. sections in 7th Accelerated
Amistad	85%	95%	1
Adelante	85%	95%	2
Zapata	85%	90%	2
Palm	80%	90%	2
Anderson	70%	70%	3
La Puente	45%	40%	4
Raincross	45%	50%	6

Second, the literature indicates that schools with high concentrations of Latina/o and African American students offer fewer advanced-level high school math and science courses. This study investigates the preliminary structures of middle schools that lead to disproportionate structures in high schools. Table 5.2 shows that as the percentage of students of color decreases, the number of accelerated math sections increases and vice versa. The table also shows that the number of 7th grade accelerated math sections at Raincross and La Puente, combined, is equal to the number offered at the other five

schools comgined. Proportionally, this represents an unequal distribution of accelerated math sections across the district. Because higher concentrations of students of color are at the other five schools, this means that they attend schools with fewer opportunities to take the 7th grade accelerated math course. This structural inequality in access to accelerated math sections represents limits on opportunities for students of color to learn accelerated math content.

Third, White or middle and upper class students consistently make up the majority of students enrolled in the accelerated courses. Table 5.3 indicates that White and high SES students are overrepresented in the accelerated math course. In terms of district averages, the accelerated math courses are 52% middle and upper class students and 48% low-income. In addition, accelerated math course enrolls a greater share of middle and high socioeconomic students than their share at each middle school.

Table 5.3

Percent of Accelerated Math Classes that are White or High SES

Middle Schools	White	% of Acc	High SES	% of Acc
Adelante	10%	15%	5%	10%
Amistad	10%	15%	5%	15%
Zapata	10%	10%	10%	10%
Palm	15%	25%	10%	25%
Anderson	25%	40%	30%	45%
La Puente	35%	50%	60%	70%
Raincross	45%	40%	50%	65%

Note: High SES refers to students who do not qualify for free-reduced priced meals

Table 5.4 shows the race/ethnic make-up of each math course in 7th grade. The percentages are determined by dividing the number of students in a particular race/ethnic category by the total number of students in the course. This means that 70% of the

accelerated students at Adelante are Latina/o and 5% are African American. This is the same for the percentages in the regular course. For example, 35% of the students in the regular course at La Puente are White and 5% are Asian.

Table 5.4

Race/Ethnicity Make-Up of Each 7th Grade Course in Each Middle School

Middle Schools	Latina/o		White		African American		Asian	
	Reg	Acc	Reg	Acc	Reg	Acc	Reg	Acc
Adelante	80%	70%	5%	15%	10%	5%	5%	10%
Amistad	80%	70%	5%	15%	5%	0%	2%	10%
Anderson	70%	50%	15%	40%	5%	5%	<1%	5%
La Puente	40%	25%	35%	50%	10%	2%	5%	15%
Palm	80%	60%	10%	25%	5%	2%	<1%	10%
Raincross	45%	30%	35%	35%	5%	5%	5%	20%
Zapata	80%	75%	10%	10%	3%	3%	1%	5%
LSUSD	*70%*	*40%*	*20%*	*35%*	*5%*	*5%*	*3%*	*15%*

Note: Reg = Regular or Grade-level course; Acc = Accelerated course

The district data shows that students of color are represented in fewer numbers in the accelerated course compared to their overall district percentage. Students of color make-up 70% of the student population in middle school and represent 45% of the accelerated math students. The opposite is true for White and Asian students. White and Asian student groups make-up 25% of the middle school population and represent 50% of the students enrolled in the accelerated math course.

Another way to view race/ethnicity at the district level is to divide the number of students of a particular race/ethnic category in the accelerated math course by the total number of students of the particular race/ethnic category at the school. These data again indicate that students of color are underrepresented in the accelerated math courses. One out of six Latinas/os, or 17%, are enrolled in the accelerated math course. For African

Americans, the number is comparable: about one out of five, or 18%, are enrolled in the accelerated math course. The percentages for White and Asian students, however, are more than twice as large. Two out of five, or 40%, of White students and three out of five, or 60% of Asians are enrolled in the accelerated math.

Conclusions. There are three main conclusions from these tables. First, students of color attend schools that do not match the district demographic distributions, meaning they tend to be segregated within the district. Second, the structural limitation of offering fewer accelerated math sections at the schools with larger proportions of students of color and/or low SES students impacts their opportunities and access to higher level mathematics courses in middle school and later at the high school level. Third, even when access to accelerated math sections is available, students of color are not proportionately represented in the accelerated math courses compared to Whites and Asians.

These patterns and aggregate data reinforce beliefs and ideologies about *who* can learn math and *what* math they should have access to. The issues of race in placement have been displaced onto and redefined within the structures and processes of math placement at the middle school level, in spite of individual efforts of school principals to level the playing field for students of color.

Race, Assessment Criteria, and Math Courses: Process Inequality

In order to show how the levels within an assessment are expressed in the curricular structure, the results from Smarter Balanced Assessment (SBA) were explored. SBA was chosen because it was cited by all three principals as a criterion for placement. Table 5.5 disaggregates Table 4.5 from research question two by race/ethnic category.

Table 5.5

Course Placement and Gr. 6 SBA

	Level 1 or 2 SBA scores		Level 3 or 4 SBA scores	
	#	# in Acc	#	# in Acc
LSUSD 7th grade students	1,500	45	1,070	610
% enrolled		*3%*		*57%*
Latina/o	1,070	25	500	250
% enrolled		*2.3%*		*50%*
African American	100	5	35	20
% enrolled		*5%*		*57%*
White	200	8	360	220
% enrolled		*4%*		*61%*
Asian	30	3	120	90
% enrolled		*10%*		*75%*

At SBA levels 3 and 4, Asians are enrolled disproportionately at 75% in the accelerated course, followed by Whites and African Americans. Although Latinas/os are the largest group of students represented in accelerated math courses, only half of level 3 or 4 Latinas/os are enrolled in the accelerated math course, compared to 75% of Asians and 61% of Whites at the same SBA score level.

A highly visible reminder of the disproportionality is seen in the data also showing that students of color outnumber the total number of White and Asian students by 55 students at SBA level 3 and 4 (or 535 to 480), respectively. Even though students of color outnumber White and Asian students by 55 students at SBA levels 3 and 4, the number of students of color enrolled in the accelerated math course at those levels is less than the total number of White and Asian students by 40 students or 270 to 310 respectively. This visible reminder of where the smart students are by racial descriptor reinforces negative stereotypes.

Race, SBA, and accelerated math at Amistad. Principal Amistad uses at least two forms of standardized test results for criteria: NWEA's MAP and SBA. Amistad has 1 section of accelerated mathematics and the placement process is defined as *Tier-Placement* and *Trial.* This means that students are placed in accelerated math based on data from standardized test results, then given a chance to experience the course over the first nine weeks of the school year. Based on the enrollment variations at Amistad, students entered and left the course throughout the nine-week trial period. At the end of the nine-week period, 33 students remained in the course through the first semester.

Table 5.6
Amistad Enrollment in 7th Accelerated Based on Gr. 6 SBA

	Level 1 or 2		Level 3 or 4	
	#	# in Acc	#	# in Acc
Amistad	320	0	75	35
% enrolled		*0%*		*47%*
Latina/o	240	0	50	20
% enrolled		*0%*		*40%*
African American	15	0	<5	0
% enrolled		*0%*		*0%*
White	15	0	10	5
% enrolled		*0%*		*50%*
Asian	<5	0	5	3
% enrolled		*0%*		*60%*

Table 5.6 shows that Latinas/os are underrepresented in the accelerated math course, since fewer Latinas/os are enrolled in the accelerated math course proportionally to their SBA scores. Second, although there are fewer than 5 African American students at SBA level 3 or 4, not one is enrolled in the course. Because Principal Amistad used additional criteria for placement, these data respond to a concern that if there are disproportionalities restricting students from access, the criteria should be reviewed. It appears that the other criteria impact students of color in more restrictive ways because fewer are enrolled at the same SBA level when compared to White and Asian students.

Race, SBA, and accelerated math at Anderson. Principal Anderson uses two forms of standardized test results for criteria: SBA and teacher-made placement test results. Anderson has 3 sections of accelerated mathematics and their process is defined as *Open Communication*. This means that Principal Anderson uses the criteria for placement as a guide and also advocates for students to be enrolled in the course. Enrollment in the accelerated math course increased significantly within the first two weeks of school going from 77 to 104.

At the end of the nine-week period, 104 students stayed in the course through the first semester. Table 5.7 shows that Latinas/os are underrepresented compared to proportions of White and Asian students in the accelerated math course. Similar to Amistad, other criteria for placement affect distribution of access for Latinas/os because fewer are enrolled at the same SBA levels when compared to other race/ethnic categories.

Table 5.7

Anderson Enrollment in 7th Accelerated Based on Gr. 6 SBA

	Level 1 or 2		Level 3 or 4	
	#	# in Acc	#	# in Acc
Anderson	240	0	175	100
% enrolled		*0%*		*57%*
Latina/o	165	0	90	45
% enrolled		*0%*		*50%*
African American	15	0	5	3
% enrolled		*0%*		*60%*
White	25	0	70	45
% enrolled		*0%*		*64%*
Asian	0	0	5	4
% enrolled		*0%*		*80%*

Race, SBA, and accelerated math at Raincross. Principal Raincross uses at least two forms of standardized test results for criteria: SBA and placement test results.

Different than Amistad and Anderson, students with SBA level 2 scores are enrolled in the accelerated math course along with levels 3 and 4. Raincross has 6 sections of accelerated mathematics and their process is defined as *Open Voice*. This means that Principal Raincross uses a variety of criteria but defers to parent voice for placement. The curricular process of placement is also different from Anderson and Amistad because there is very little enrollment variation from the first day of school to the end of the nine-week period. Table 5.8 shows that Latinas/os are underrepresented compared to White and Asian students proportionally in the accelerated math course at Raincross as well. Similar to Amistad and Anderson, other criteria for placement may contribute to limited access for Latinas/os because fewer are enrolled at the same SBA levels when compared to other race/ethnic categories.

Table 5.8

Raincross Enrollment in 7th Accelerated Based on Gr. 6 SBA

	Level 1		Level 2, 3 or 4	
	#	# in Acc	#	# in Acc
Raincross	80	0	385	160
% enrolled		*0%*		*42%*
Latina/o	30	0	145	45
% enrolled		*0%*		*31%*
African American	5	0	20	11
% enrolled		*0%*		*55%*
White	15	0	145	60
% enrolled		*0%*		*41%*
Asian	0	n/a	50	30
% enrolled				*60%*

Additional conclusions. The findings indicate that students of color are significantly impacted by use of SBA as a key criterion for placement. Because students of color disproportionately score at low levels, this assessment becomes a high stakes test for placement in the 7th grade accelerated math course, depending on the middle school a

student will attend. However, the test scores do not account for all disproportionalities in placement as indicated in varied enrollment patterns across schools. Principals describe a variety of ways they are attempting to mitigate disproportionate enrollments in accelerated math courses, with some indication that their efforts have the intended effects. Amistad and Anderson do not enroll any students scoring at SBA level 1 or 2 in accelerated math, but Raincross enrolls a small number of students in accelerated using different criteria for placement.

Math Courses, Pathways, and Discourse: Structural Inequality

Discounts and premiums are assigned within the curricular structure, or math courses. This analysis of the curricular structure is meant to highlight structural inequalities that persist through various efforts at mitigating these effects. These inequalities are significant because students of color are disproportionately represented in the regular math course across the district. Secondly, the discourse surrounding access to *premium* content is illuminating. Students of color are disproportionately disadvantaged by the curricular structure and processes to access knowledge that is allocated across courses with different entry criteria. Since the dominant narrative is colorblind and meritocratic, it is important to "address the inequality embedded in school curriculum *before* [emphasis added] addressing unequal educational outcomes" (Yosso, 2002, p. 94). The inequality is in assumptions, beliefs, and criteria that differentiate among students about access to content that labels an defines them as struggling, regular, and local because they cannot do work that is challenging, rigorous, and accelerated.

Course inequality in 7th grade: A structure of discounts and premiums.

Curricular structures are composed of classes designated to present specific knowledges

or content (Yosso, 2002). The findings in research question one outlined the structure, or specific knowledge, within the 7th grade math courses. A critical analysis of the pathways and course descriptions reveals that the grade-level course is discounted, while the accelerated course contains many benefits or premiums.

Using the themes of *discounts* and *premiums*, the regular course is *discounted* in relation to the accelerated course due to content inequality. The accelerated course contains significantly more content standards than the regular math course. Secondly, placement in the 7th grade accelerated course gives students a *premium* pathway to advance to the accelerated 8th grade math course. Access to the accelerated pathway allows for students to advance faster and farther in high school mathematics courses from middle school and complete college level mathematics courses by the end of high school. Because students of color are disproportionately underrepresented in this pathway, fewer students of color will have the opportunity to take college bound content such as Calculus before they complete high school.

Students who begin on the regular pathway in middle school are given the opportunity to take 1 higher level math course in high school. The critical decision point occurs in grade 10. Students will have to enroll in the accelerated math course in 10th grade in order to take 1 higher level math course in twelfth grade. If a student stays on the regular pathway, then the highest math course s/he has access to will be Pre-Calculus or Intermediate Algebra. Both courses are considered college readiness courses, but are optional, since only three years of math are required for graduation. On the regular pathway, because this pathway is overrepresented by students of color, this means that many will only have access to at most 1 higher level math course in high school, and

research indicates that some will not continue in mathematics courses after satisfying graduation requirements. Principals recognized these structural inequalities.

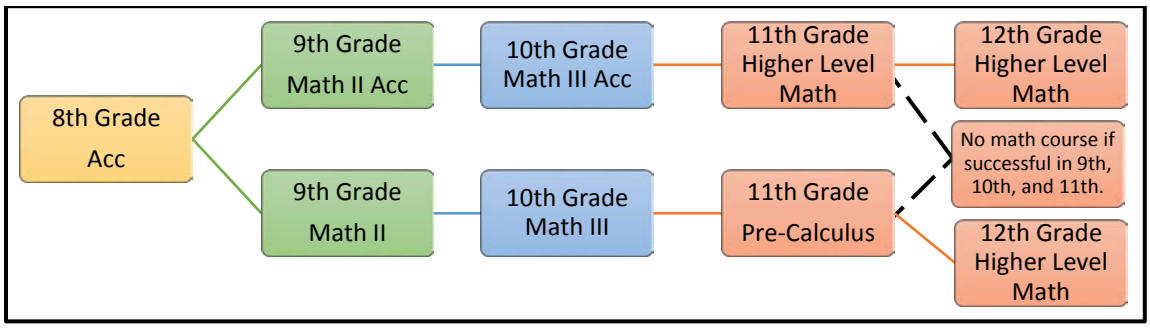

Figure 3. Flowchart of LSUSD's middle school accelerated pathway into high school.

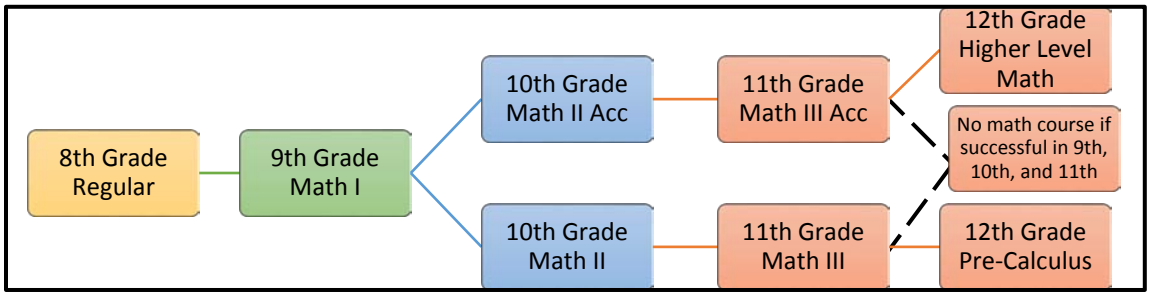

Figure 4. Flowchart of LSUSD's middle school regular pathway into high school.

When the regular course is centered, the principal discourse points out the structural inequality. Principal Anderson explains it this way:

> So, if you get straight A's in all your regular math classes and an accelerating student gets straight A's in their classes, the accelerating student will get the higher GPA because they will have access to the most rigorous curriculum. This means that the accelerating student will have a better chance of getting into college.

Principal Raincross knows that students on the accelerated pathway do much better on a high school readiness assessment generated by the Early Assessment Program, or EAP:

> The other thing, I know that before we had accelerated classes, when we had traditional algebra and geometry, the data showed that middle school math course

> was very important. The data showed that there were no students that were highly successful on the 11th grade assessment unless they had been in an advanced type class in middle school. So, I'm always trying to support the students to meet higher math goals when they get into high school. And so, I know that the chances of them being successful are highly enhanced by them taking the accelerated courses.

The results from this assessment are significant because they indicate to an 11th grade student if they are *ready* for college level mathematics. If a student does not meet the standard for readiness, then they will have to take a higher-level mathematics course like Pre-Calculus or Intermediate Algebra to demonstrate that they are ready for college level mathematics. These structural inequalities are more significant when race is centered. Principal Amistad offers a poignant recollection of a personal experience in middle school:

> Students are so intuitive…If you talk to students, they'll know. Some [students] will tell you, "Well, I'm not smart, I can't handle that." or "That's the class for the smart students". Somewhere along the way in their educational journey, someone may have said, "That's probably not for you"…Let me give you a personal example. I'll never forget the day. I was sitting in a regular English language arts class. I was doing quite well, but I was bored out of my mind and I started to act out and got into trouble. My counselor pulled me in and asked me why I was behaving differently. I told him, 'You want the truth? It's too easy for me.'. So, I was placed in an honors class and I remember walking through that door and my first reaction was, 'Oh, this is where all the smart students are!'

This is an example when the "silence within statements" (Solorzano & Yosso, 2002, p. 29) are not technical differences in course content or structural challenges in offering accelerated courses; this vivid recollection is an example of how a student can tell if a course is *honors* or not just by noticing which students are in the class. These types of *silent statements* affect regular course students throughout the mathematics program because *who* is in the course explicitly tells the students *what* is expected and *how* math will be learned and taught.

Race and Code Words: A Discourse of Power

The historical, social, and political narrative of racism in education is one that justifies structural inequality as appropriate for the students assigned to specific courses or schools that are labeled as inferior by those in power (Yosso, 2002). A narrative of power is the dominant, everyday narrative (Gutierrez, 2013). The dominant narrative is distinguished by its colorblind, meritocratic ideology. Because the dominant narrative is a colorblind narrative, its pseudo-neutrality can be decoded to see how it conceals, disguises, and rationalizes structural inequality for students of color.

The discourses for this section were selected because they meet two conditions: (1) they distort or stereotype students, courses, and/or schools using race-neutral criteria (i.e., assessment levels) in deficit ways and/or (2) they make inferences or are explicit about the inequality of processes or structures. These discourses are decoded by using the themes to show the salience of race within a discourse of power. Because achievement labels on SBA are used in lieu of race, the SBA levels were disaggregated. Table 5.9 shows that Latinas/os and African Americans score at the lowest levels of SBA. By

centering race in reference to SBA levels, students of color are a larger percentage of students who are labeled as *struggling*.

Table 5.9

District SBA Levels and Race/Ethnicity

	Level 1 or 2		Level 3 or 4	
	#	%	#	%
LSUSD	13,000	63%	7,500	37%
Latina/o	9,000	72%	3,500	28%
African American	900	72%	350	28%
White	2,100	47%	2,400	53%
Asian	300	30%	700	70%

A CRT lens on eligibility criteria. The context of the eligibility data is a school board meeting. One of the agenda items for discussion was the eligibility criteria used by a specialty school for their enrollment practices. In addition to the planned presentation by district officials regarding the eligibility criteria, the public was able to give input. The eligibility for enrollment at this specialty school is limited to all students who score at least a level 2 on SBA. District officials presented the data on the number of students eligible to apply for Specialty. I modified the SBA data using Gutierrez's concept of strategic essentialism, meaning that I identified race as a variable in the structure and processes.

Table 5.10

Race/Ethnicity of Students Eligible for a Specialty School

	Grade 4		Grade 8		All Grades	
	#	%	#	%	#	%
African American	105	5%	120	6%	750	6%
Asian	85	4%	90	5%	660	5%
Latina/o	1,250	60%	1,100	56%	7,600	56%
White	520	25%	530	27%	3,650	27%
LSUSD	2,100		1,975		13,500	

Across the district, Latinas/os make up 56% of the total number of students who meet the SBA criteria for Specialty, followed by Whites at 27%, African Americans at 6% and Asians at 5%. The demographic enrollment data at this specialty school is 30% Latina/o, 40% White, 20% Asian and 5% African American. A suggestion or possibility of having all students be considered for Specialty is framed as a *disservice* by one of the teachers:

> As of now, we have a standard of *nearly meets* to be able to apply for the lottery. It's a great opportunity for *these students* to get in there and do their best. It's also a huge *disservice* to *those students* that *don't meet* these qualifications to be part of our program.

The discourse is also a reason to keep the current eligibility criteria for *average* students:

> The next step for our school is to look at equity and access to our school. I would like for you to please consider keeping the same standards for applying to our school that we have had for the last 6 years. We would like for all of the students that come in to have at least that particular standard to be admitted to our school.

The disparity between eligibility and enrollment is stark, as is the resistance to change, especially given that the specialty school exclusively uses SBA for eligibility. The disparity did not go unnoticed by other parents of the community. One parent pointed out the differences in race/ethnic enrollment percentages and concluded:

> If these are the results from the lottery, then how diverse is the student eligibility pool? What is being done to prepare more students of color for this specialty school? … Either the students who are currently enrolled are *extremely lucky* [emphasis added] or we have a flawed system that needs to be repaired to reflect a proportionate distribution of students.

A CRT lens on school quality. The comments expressed at the school board meeting were analyzed for code words that favor this specialty school as a school over the *local* school/*regular* curriculum, and the *average* student over the *struggling* student. The discourses are intimately connected to contrasting groups of students in race-neutral ways by referring to SBA levels. The first example comes from a teacher who states that s/he has taught in the district for more than 10 years and at this specialty school for about 2 years.

> My oldest daughter goes to this school. She has gone from her local elementary school to this school and has really flourished. My other daughter… again, experiencing this rigorous and engaging math and science curriculum is just amazing to see my daughter kind of *lit up*. This is my perspective as a parent.

Another teacher at a specialty school expressed a similar idea by using what s/he has noticed in her/his own child:

> As a parent of a student at this school, I see her flourishing and now I see her challenged. It's an interesting perspective to have coming from the regular curriculum and now she is being pushed and is thriving.

Both discourses rationalize the differences between the local elementary and specialty schools through their own experiences as teachers in both contexts. Both situate the curriculum at specialty schools as premium compared to the curriculum offered at the local elementary school. Both describe how their own children have gone *from* their local elementary to a specialty school and are now flourishing, thriving, or *lit up* as a result of the curriculum offered. Secondly, both discourses make comparisons that the students at the local elementary school are not challenged or motivated by the curriculum or the teachers. The first teacher explains how s/he enjoys teaching at a specialty school because the students want to be challenged and the second teacher believes that her/his child are now being pushed.

School quality is also discussed in terms of differences in rigor or preparedness of students before and after their enrollment in the specialty school. One of the teachers points out:

> *It's* (i.e., the specialty school) even rigorous for students who are straight A's *at other* [emphasis added] elementary schools. Our students can have 3 or 4 hours of homework, and we would hate to have unhappy students go through *our system* [emphasis added].

These types of comments discount the level of preparedness through the use of grades as race-neutral criteria. The discourse indicates that similar students at other elementary schools, or straight A students, may not be equipped for the demands of a specialty

school. In some instances, coded language is not veiled because the request to maintain the current level of school quality is direct:

> I would like for you to please consider *keeping* [emphasis added] the same standards for applying to our school that we have had for the last 6 years. We would like for all of the students that come in to have at least that particular standard to be admitted to our school.

If the criteria changed, then level 1 students would be disserved by enrolling at Specialty.

> As of now, we have a standard of nearly meets to be able to apply for the lottery. It's a great opportunity for *these students* [emphasis added] to get in there and do their best. It's also a huge *disservice* to *those students* that *don't meet* these qualifications to be part of our program.

A CRT lens on student quality. This section describes how *average* students and *struggling* students are positioned and contrasted within the context. Words are used to identify and discount *struggling* students in favor of *average* students. SBA levels are used as labels to protect the dominant narrative from sounding derogatory or discriminatory toward any racially categorized student. The dominant discourse rationalizes current structures and processes by discounting the struggling student in favor of the average student or by describing how struggling students would be disserved by the curriculum at a specialty school.

One way average students are favored over struggling students is by describing how average students are overlooked due to the needs of struggling students:

> I am coming to advocate for that *average student* [emphasis added] that needs to be enriched. My experience comes from teaching an enrichment program for pre-

> AP/honors high school students during the summer to help them be more successful in these types of courses during the year. These types of enrichment programs helped *these students* be successful. The one thing that I see as an educator is we do try to do a lot of intervention but sometimes we lose that focus on the *average student* [emphasis added] that can do better, but we are always trying to help that student that isn't doing that well. We need to *keep this focus* [emphasis added] on the *average student* [emphasis added] at this school.

Another aspect to this discourse is the intervention curriculum seems to be appropriate for the struggling student and not for the average student. The average student is not able to go beyond because the resources and attention are for the struggling student. Because *average* students are being neglected over time and curriculum offered, then it is important to *advocate* on their behalf for *this school* (i.e., a specialty school).

Another part of the student quality discourse describes how the curricular structure, or content, may not be beneficial for a *struggling student*:

> While at this school, I have seen students come in and they are that average student or mid-standard and when they come to this school, they see things in a different way. If there is a student that is struggling, when you start adding all the enrichment, it can be a struggle for that student.

Struggling students are perceived as not wanting to be challenged or motivated:

> I also have another perspective as a teacher who has taught at other elementary schools and at this school. I just love the opportunity to teach and motivate *these students* [emphasis added] who want to be challenged.

Struggling students are also viewed as not wanting to extend their learning: "Keeping the current standard will allow us to enrich *these children* [emphasis added] who want to be pushed, who want to go beyond."

The reasons for maintaining an *average* standard for a specialty school is framed by nullifying any value struggling students could possibly benefit from by attending. This discourse is framed as *disservice* or detrimental for the struggling student instead of a challenge that is good for the student. The disservice theme also includes a request on behalf of the teachers at this specialty school who would have to teach struggling students:

> Again, if they are not meeting the standards and I have to intervene on the basic concepts, then it's really hard to go beyond and you have to make sure that they meet the standards that you are teaching them.

This discourse indicates that the content that is *beyond* is not suitable or appropriate for *struggling* students who need to master the *basic concepts* before they can go *beyond*.

> Keeping the current standard will allow us to enrich *these* [emphasis added] children who want to be *pushed*, who want to *go beyond* … Again, if they [i.e., struggling students] are not meeting the standards and I am having to intervene on the *basic concepts* [emphasis added], then it's really hard to go beyond…

Average students are given a premium label because they seem to do well at a specialty school, while *struggling* students are presumed to not benefit from exposure to premium content, or enrichment, because they struggle with regular content.

> While at this school, I have seen students come in and they are that average student or mid standard, and when they come to this school they see things in a

different way, and they do well. If there is a student that is struggling and when you start adding all the enrichment, it can be a huge struggle for that student.

The discourse also suggests that the premium content would be a *disservice* to struggling students:

> As of now, we have a standard of nearly meets to be able to apply for the lottery. It's a great opportunity for these students to get in there and do their best. It's also a huge *disservice* [emphasis added] to those students that don't meet these qualifications to be part of our program.

Lastly, and more pernicious, is the discourse suggesting that Latinas/os (i.e., Hispanics), by and large, are a *lower standard* than the school aspires:

> I also know the importance of our school in mirroring the demographics of the district. I understand that our district is 60% Hispanic. I would love for this school to mirror *that percentage* [emphasis added]. At the same time, *we* [emphasis added] also have rigorous standards. We know it would be *detrimental to students* [emphasis added] if we open our requirements to *every single student* [emphasis added] out there.

Conclusion. The CRT and CRC analyses indicate that the discourses in this setting primarily discount regular schools in favor of a specialty school that does not strive to have proportional representation of students of color. The school is seen as a level above or *premium* to the regular or local school. Through the use of code words, such as *this school* or *regular curriculum*, the dominant discourse discounts the local elementary school by contrasting how students who go to it are now *flourishing, lit up, thriving* or *challenged* as opposed to the student experience at the local school.

The discourse in this context also discounts *struggling* students. Struggling students are discounted strictly through the use of SBA. In turn, judgments about students who score at level 1 reflect a deficit ideology that is reinforced by the use of the labels to determine eligibility. The deficit ideology presumes that struggling students *stay* struggling and that they will not benefit from being challenged by the curricula or benefit from different teaching approaches. The use of race-neutral seeming criteria in this way allows for those in power, teachers in this case, to rationalize the structural inequality without sounding derogatory or discriminatory toward students of color, even when data on eligibility demographics shows disparaties.

A CRT lens on placement processes

One way principals *make sense of* the curricular structure and processes is by explaining the challenges and opportunities they consider and implement for their school. As the leader of their schools, principals make sense and justify or explain how they make decisions, prioritize, and plan processes for implementation through their own experience and professional knowledge (Spillane et al., 2002). Because principals hold ultimate authority for decision-making at their schools, they hold a position of power. Through their positional power as site leader, the discourse they use to navigate their local context matters. How they make sense of student data, opportunities, and access, or explain the curricular process of placement is critical to how students will experience education at their school. Therefore, the principal narrative can be a dominant narrative of power.

In Chapter 4, the principals' narratives about placement and courses were framed as dilemmas about structures and processes. The principal narratives, or dominant

narratives, in this section are decoded by centering the regular math course and the struggling or low-achieving student. Both of these ideas are centered to further investigate inequality and inequity embedded in the curricular system. These structural gaps confronted by principals affect ways to position their students for optimal success. The refocused narrative also indicates that structures and processes can be sites of critique in order to disrupt the inequality of opportunities to learn for students of color.

Students vs. Objectivity. Amistad has one section of accelerated math and no students at SBA level 1 or 2 are enrolled in accelerated math. This means that all *struggling* students, or SBA level 1, are enrolled in regular math. Overall, 90% of the seventh graders are enrolled in regular math and 85% are students of color. In the accelerated course, 8% of Latinas/os are enrolled in the course, as are 17% of White students, 0% of African Americans and 33% of Asian students.

Principal Amistad specifically points out why s/he has to use multiple data to place students, especially *struggling* and *average* students:

> If the instructional model doesn't change, if the way in which we deliver the curriculum doesn't change, then we are going to have a recipe for students to continue to struggle with Math…and we get a lot of students who then get this notion of what I like to call a *traditional classroom* [emphasis added]. They're passive observers. There is an expert in the classroom and that is the teacher mostly, who is working out those problems. Then students are given their problems in the text to complete, and they get this notion that there's this prescribed format that they have to use to be able to solve that. There's not a whole lot of thinking in that.

Principal Amistad describes the current model of pedagogy and curriculum as traditional. The *traditional classroom* that Principal Amistad describes is a "pedagogy of poverty" (Haberman, 1991) or a form of "subtractive schooling" (Valenzuela, 1999). Tienken and Zhao (2013) conclude that these models of pedagogy and curriculum disadvantage students of color or low-income students by offering fewer opportunities to develop their talents or learn new skills. In the face of these critical features of mathematics teaching and learning, Principal Amistad uses multiple kinds of data to place students:

> So, we have some criteria and some data points, then you can start looking at how students are doing. What benefit does it do for us if we know a student is already struggling or has some deficits and then place them in the accelerated course… just so they can continue to struggle? I don't think so.

Principal Amistad believes that some data are useful and appropriate for placement. One of the main standardized assessments Principal Amistad uses is NWEA's MAP. Principal Amistad claims that the assessment identifies which students are *average*, are *struggling* or are *high*:

> And with the NWEA MAP as you know, we get a nice bell curve of where students are as far as benchmark assessments. And so, when we look at a bell curve and you start looking at students, and you have students that are at benchmark. So, you have a student who has got the capacity who is a good learner, an *average* learner that can be *pushed* [emphasis added] and can go on to be a high performer…You might have high learners here on this end and then you might have some students that have challenges, might have some holes here. So, if we start looking at some data points and criteria, you can look at *where students*

> *are* [emphasis added] and ask, "What benefit does it do for us to have a student who already has *struggles* [emphasis added], has some *deficits* [emphasis added], and then put them in a *challenging course* [emphasis added] for them to continue to struggle?"

The eligibility discourse and Principal Amistad's narrative are similar on two main ideas. First, types of learners can be identified on race-neutral standardized assessments and those assessments provide labels that are useful for placement. Principal Amistad points to various regions on the bell curve to identify *struggling*, *average*, and *high* student groups. These labels are then used to explain who is *able* or *not able* to succeed in the accelerated math course. Second, the labels are also used to justify that *struggling* students would be *disserved* by placement into the accelerated math course because they would only *continue to struggle*:

> I have one section of accelerated math and that is a small percentage of students. If I were only to offer the accelerated math course and raise the bar that high to students knowing that the need is here (other side of bell curve), then that is a complete *disservice* [emphasis added] to students. We call that a gap.

Principal Amistad would also like criteria that is not based on *who we are*, but rather on race-neutral criteria that identifies the *ability* or *the potential* to be successful in accelerated math. Principal Amistad describes it this way:

> We have some data points that we can look at to make some very informed guesses about students that have the skills and the competency to be able to take on some of our challenging courses. I look at my school site and I look at my

achievement of students and how they are stratified as far as performance levels are concerned.

Principal Amistad also mentioned that SBA levels were used. The data below disaggregates SBA levels by race/ethnic category based on how SBA is used at Amistad.

Table 5.6

Enrollment in 7th Accelerated Based on Gr. 6 SBA

	Level 1 or 2		Level 3 or 4	
	#	# in Acc	#	# in Acc
Amistad	320	0	75	35
% enrolled		*0%*		*47%*
Latina/o	240	0	50	20
% enrolled		*0%*		*40%*
African American	15	0	<5	0
% enrolled		*0%*		*0%*
White	15	0	10	5
% enrolled		*0%*		*50%*
Asian	<5	0	5	3
% enrolled		*0%*		*60%*

These data indicate that students entering Amistad may be disproportionately underserved by the broader educational system because they score at SBA level 1 and 2 at greater rates. Nearly 83% of Latinas/os scored at level 1 or 2 on their 6th grade SBA, so do 87% of African Americans, and 60% of White students. Therefore, a large share of students of color may be considered *struggling* by using SBA as a criterion. To some extent, Principal Amistad intuits other ways students get labeled as *able* or *not able* when speaking from a parent perspective:

> Because students, if you talk to students, they'll know. Some will tell you, "Well, I'm not smart." or "I can't handle that" or "That's the class for the smart students." I deal with this even *in my own household* [emphasis added] with my

> students. *I know* [emphasis added] they have the ability. *I know* they can do this right, but somehow along the line in their educational journey, someone along the way has said, "That's probably not for you."

Principal Amistad also reflects back to a personal experience in middle school:

> I was sitting in a regular English language arts class. I was doing quite well, but I was bored out of my mind and I started to act out and got into trouble. My counselor pulled me in and asked me why I was behaving differently. I told him, "You want the truth? It's too easy for me." So, I was placed in an honors class and I remember walking through that door and my first reaction was, "Oh, this is where all the smart students are!"

Objectivity and course quality. One of the interview questions asked was to identify some of the pros or cons for the students if accelerated math was discontinued and regular math was the only course for middle school students. This analysis puts *regular math* at the center to highlight the discount placed on the course. Principal Amistad states:

> I think for our school the benefit of not offering [accelerated math] is that the students would do away with the sense that, "Those are only the smart students." At the same time, though, you are *not challenging* [emphasis added] and *not meeting* [emphasis added] the needs of the students that have the capacity and ability to take an accelerated math course.

The possibility of countering a narrative that benefits all students by disrupting the notion that accelerated math is for *smart students* is outweighed by the *discounts* associated with the regular math course. The regular math course is discounted by an

interpretation of student data from what is considered an objective, neutral, standardized assessment. Principal Amistad claims that the academic needs of the *able* students would not be met by the regular course. The results from the standardized assessment discount the content quality offered in the regular math course because *able* students would not benefit from the content offered in a regular math course. In this way, the regular math course is mainly for students defined by how results from standardized assessments are used in this context.

In addition to regular math being a disservice to accelerated students, it also is a disservice to the school because it might cause for some math teachers to leave the school. Principal Amistad expressed it this way:

> I have some math teachers on this campus that are very passionate. They want to teach a higher-level math. If we don't offer an accelerated course, then those teachers may want to go and transfer out to a high school campus where they can teach the higher-level course.

Teaching a *higher-level* course is coded language for teaching better students who are generally White, Asian and/or middle-upper class students since the higher achieving students are disproportionately White, Asian, and/or middle-upper class students. Table 5.9 shows that 56% of White and Asian students score at SBA levels 3 and 4 and make up 25% of the student population. On the other hand, 28% of students of color score at SBA levels 3 and 4 and represent 70% of total student enrollment. Therefore, the labels of *struggling* or *able* are reinforced along racial lines through the use of SBA as a criterion for placement.

Unequal is unequal. Anderson has three sections of accelerated math, and no students at SBA level 1 or 2 are enrolled in the course. This means that all *struggling* students, or SBA level 1, are enrolled in regular math. In the regular math course, 75% of the seventh graders are enrolled and 75% are students of color. In the accelerated math course, 25% of seventh graders are enrolled and 55% are students of color. Among each race/ethnic category, 18% of Latinas/os are in the course, 46% of White students, 16% of African Americans and 80% of Asian students are enrolled. White and Asian students are identified at a higher rate than Latina/o and African American students when using SBA as a criterion.

Principal Anderson views the overall structure of math pathways as unequal. The pathways are unequal because accelerated math courses have two premiums: *higher GPA* credits and a label as a *rigorous* course:

> Students on the regular pathway and students on the accelerated pathway don't have the same access or opportunities. So, if you have two students: one gets straight A's in the regular math classes and the other student in the accelerated courses gets straight A's too, the student on the accelerated track will have the higher GPA because of the pathway. So, if everything else is the same and both students are applying to the same school, the student in the accelerated track is going to get accepted and the student on the regular track isn't going to get accepted. The accelerated student's GPA is going to be higher and they also had access to a more rigorous curriculum, while the other student will not have that opportunity to get a higher GPA.

The literature review points out that inequalities within K-12 schools coupled with changes in post-secondary policies can exacerbate educational access inequalities for students of color. Solorzano and Ornelas (2004) found that students of color are underrepresented in college track courses, attend schools that offer fewer college track courses, and represent a smaller proportion of overall enrollment in these courses. They conclude that changes in educational policy at the post-secondary level coupled with restrictive access to advance placement courses in high school negatively impacted Latina/o students applying for admission to the University of California at Los Angeles.

Principal Anderson recognizes these unequal labels and attempts to advocate for students:

> Well, we advocate for all of our students. So, we advocate for our students to go into accelerated math even if a parent doesn't advocate for it. We advocate for it to help the students be more successful, to be challenged, and have access to the most rigorous courses.

Principal Anderson also tries to explain the premiums of the accelerated course:

> And we make sure that the parents and the students are educated on what is accelerated math, the *benefits* of accelerated math, and explain *why* students should be in accelerated math

This sort of institutional knowledge is often unequally distributed within local school communities. For example, in the literature review, Klugman (2013) explained that access to AP courses were increased across all racial lines, but White, Asian, or more affluent parent groups and communities generated more opportunities and courses for their own children, which maintained a structural advantage for their own children over

students of color or low-income students. Thus, schools with diverse student populations may not narrow or close any structural gaps because White, Asian or more affluent parents will maintain any advantage or redistribution of advantages sought for on behalf of students of color.

Good students vs. Bad students. Changes to the curricular structure and processes impacts which students teachers would prefer to teach. When regular math courses are centered, some teachers view the accelerated math course as being able to finally teach *those* students, meaning good students. Principal Anderson candidly acknowledged that some teachers prefer to teach the good students: "Some teachers would get mad because they wouldn't have the *good students*. Another group of teachers would be happy because they get some of those *good students*."

The literature around *good* math students or those who can do math indicates that these labels are highly racialized (Aguirre et al., 2013). These labels show up in how teachers view students as gifted or able. Faulkner et al., (2014) explained that teachers' recommendations of African American students for placement in an accelerated math course was 40% the rate of White students when achievement results were controlled. Similarly, Grissom and Redding (2016) found that students of color were less likely to be screened for gifted and talented programs when taught by non-Black teachers. So, who is *good* or who is *able* in math are affected by unintended biases.

Concluding Comments

Martin (2009) claims that disproportionate representations are socially constructed and therefore do not "… tell us anything factual, objective, or indisputable about African Americans, Latina/os, Native Americans, Asian Americans, or White students" (p. 300). Using one district's data illustrates how race does matter in data about representation in regular and accelerated math courses or structures, processes, and discourses, dispelling the notion that a system can be totally colorblind in the assigning of students of color to differentiated 7th grade math courses. The findings are consistent with research on how racially segregated schools and racially integrated schools are structured around advanced or higher-level courses and the impacts of fewer advanced courses or opportunities for students of color (Oakes, 2005; Orfield & Ee, 2014; Valenica, 2011; Welner & Carter, 2013). Including the voices of principals in this study illuminates that attempts to use race-neutral approaches to mitigate links among race, class, and achievement patterns face multiple, systemic, embedded obstacles.

This symbolic representation in math enrollment data illustrates that education reproduces racial inequality even with intentions and potential to eliminate such outcomes (Solorzano & Yosso, 2002). The principals acknowledge and describe how mathematics continues to operate as a gatekeeper within the educational system and is another example of how schools "operate in contradictory ways, with their potential to oppress and marginalize coexisting with their potential to emancipate and empower" (Solorzano & Yosso, 2002, p. 26).

The analysis from a critical theory lens describes a curricular structure that rationalizes inequitable processes that maintain and continue inequality. The analysis

indicates that hypothetically objective, race-neutral standardized tests negatively affect the educational opportunities and placement for students of color (Gutierrez, 2014; Orfield & Kornhaber, 2001; Tienken & Zhao, 2013; Tyson, 2013). Labels, such as struggling or remedial, serve as proxies for students of color "without dealing with the racial implications … and not explicitly attending to race allows these ideologies to remain with superficial changes, no matter how well thought-out the policy" (DiME, 2007, p. 425). Thus, structural inequality is preserved by any curricular system that disproportionately labels students of color as *struggling* or *low*, without attending or critiquing the process or structures that reinforce the causes and stereotypes of students of color. These labels are then used to justify why students of color are not eligible or not able to take advantage of educational opportunities that lead to college.

The racialized ideologies about *who* can learn math and *what* math they can learn have been institutionalized and adapted to the local structure of math courses and processes of math placement in LSUSD as it operates within a state context of policies and regulations designed to increase access and achievement in mathematics. Despite the limitations of standardized tests for placement and their profoundly negative effects on students of color, they are still used as criteria that route students of color away from higher track math pathways, which then impacts their paths toward college and career readiness.

Implications for Future Research

There are a number of opportunities to extend this research. All three principals in this study mentioned the use of parent or student voice as criteria in placement. One suggestion is to generate data from students and families who are in accelerated courses

and regular courses. Ishimaru, Torres, Salvador, Lott, Cameron Williams, and Tran (2016) argue that parents are often seen as important partners in the education of their children, yet continue to be marginalized by various structures and processes that are based on schoolcentric norms. These norms can conflict with community centric ways and knowledges.

From a generalizability point of view, broadening the sample of districts for more extensive statistical analysis may reveal other relationships or ways that using the SBA for placement affects students and outcomes. These analyses could be coupled with qualitative data from students, parents, and counselors. Stanton-Salazar's (2001) ethnographic study on the underachievement of disempowered Mexican-origin students may be helpful to get beyond macro-system data and to see if the findings parallel in a middle school context. In addition, these approaches can be compared to English Language Arts because it is another content domain that is used for accountability testing and where students in elementary are often tracked based on standardized measures of reading readiness. Another implication could be to use the data requested by the principals to further this study by designing an action research study centered on *counterstories* from marginalized communities and youth (Aleman Jr., Delgado Bernal, & Mendoza, 2013; Decuir-Gunby & Walker-Devose, 2013)

Implications for Policy and Practice

First and foremost, the findings from this study give me hope that since underrepresentation of students of color in college tracks is directly tied to the curricular system, it can be changed. This finding is critical to decision-makers and policymakers within school districts. The finding has the potential to influence decision-makers to

reconsider their practice in ways that "emancipate and empower" rather than "oppress and marginalize" students of color (Solorzano & Yosso, 2002, p. 26), including the principals here as role models for leaders to interrogate local options. This is one outcome that decision-makers can use to make a call to action that is more equitable for all students. The call for action is necessary because the opportunities afforded to students heavily relies on how decision makers frame and confront structural gaps, and make sense of their placement decisions.

Educational systems are not immune to larger political and social contexts. Many educational systems in California, like LSUSD, lie within highly segregated communities of color that must contend with a legacy of racism in social, political and economic ways (Kozol, 1991; Ladson-Billings, 2006; Orfield, 2009, Valencia, 2008). Thus, school systems, too, must contend with their own legacies of oppression and marginalization of students of color.

I also want to acknowledge that this study was conducted without the voice of parents or students. Principals Amistad and Raincross pointed out that educators often frame problems *for students* without consulting or including them in the decision-making process. Therefore, this presents an opportunity for praxis of how school systems can begin to interrogate "the presence of racism in policies intended to remedy racism" (Yosso et al., 2004, p.19).

The three narratives of schools in a district are intended to represent different ways principals make sense of their local context, interpret mathematics placement options, and use data on the students they serve. These narratives make the decisions that my colleagues face real as they grapple with how math placement affects students,

teachers, schools, and communities. They know it can be more than just a process of accuracy and efficiency. Their dedication to understanding their own context and math placement means that the findings can be useful in expanding alternatives to mitigate the effects of disproportionate placements and outcomes on students of color.

Since the design of the study incorporates a social justice feature, the impetus of sharing and discussing the findings with the principals is a priority. Principal Amistad's vision for the teaching and learning of mathematics supports Principal Anderson's advocacy for giving students access to the most rigorous mathematics content. Both of these visions tie directly to how Principal Raincross has detracked science and embedded opportunities for students to go deeper in content courses. The dilemmas presented by the principals are real and may be revealing for other principals or decision-makers to consider within their own contexts. My hope is that other school leaders will find their approaches useful and be able to develop new ways for leaders to improve on these approaches. We can find more equitable ways to educate the students we serve. ¡*Sí se puede!*

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APPENDIX A

Male/Female Distribution by Race/Ethnicity of US Educational Pipeline

Chicanas/os	Latinas/os	Native Americans	African Americans	Whites	Asian Americans
100/100 Elementary	100/100 Elementary	100/100 Elementary	100/100 Elementary	100/100 Elementary	100/100 Elementary
57/55 Graduate from High School	54/51 Graduate from High School	72/70 Graduate from High School	73/71 Graduate from High School	84/83 Graduate from High School	78/83 Graduate from High School
10/9 Graduate from College	11/10 Graduate from College	12/11 Graduate from College	15/13 Graduate from College	24/28 Graduate from College	40/48 Graduate from College
2.3/2 Graduate from Graduate School	4/4 Graduate from Graduate School	4/4 Graduate from Graduate School	5/4 Graduate from Graduate School	8/11 Graduate from Graduate School	13/22 Graduate from Graduate School
0.3/0.2 Graduate with Doctorate	0.3/0.4 Graduate with Doctorate	0.4/0.6 Graduate with Doctorate	0.3/0.5 Graduate with Doctorate	0.6/1.4 Graduate with Doctorate	1.4/4.4 Graduate with Doctorate

Note. The table was adapted to merge findings from Covarrubias (2011) and Burciaga, Perez Huber, & Solorzano (2010). This table reflects the US educational pipeline by race/ethnicity and gender. The first number in each cell (e.g., 100/100) represents females; the second, males.

APPENDIX B

Semi-Structured Principal Interview Protocol

1. What's your opinion to having a math placement policy for entering 9th graders?

2. What's your opinion to possibly having a MS mathematics placement policy?

3. Tell me about the general approach to placing students in the Accelerated Math 7 class.
    a. Can you tell me a little more why you use the criteria you mentioned?
    b. What are some benefits in using these criteria?
    c. What are some challenges in using these criteria?

4. What would you consider to be successful placement of a student in accelerated Math 7?
    a. What would you consider to be an unsuccessful placement of a student in accelerated Math 7?
    b. What expectations have you and/or your math department set for students placed in accelerated Math 7?
    c. Would you say this is true for your regular math students?

5. How do you consider the ethnic and/or racial makeup of your Accelerated Math 7 courses?

6. Suppose you were a principal at another school, would your criteria for selecting students change? Why or why not?

7. Suppose you had a change in the teacher who teaches Accelerated Math 7, would your criteria for selecting students change? Why or why not?

8. Suppose the elementary curriculum and/or assessments changed, would your criteria for selecting students change? Why or why not?

9. Can you think of anything that would cause you to reconsider the criteria you currently use?

10. Going back to the criteria, some people would say that (refer to criteria) are biased OR (parents, advocates, etc) creates an unfair advantage, what would you say to them?

11. Some people would say that placing students in different math classes creates a tracking system that negatively affects students not placed in the accelerated class, what would you say to them?

12. What if Accelerated Math 7 was discontinued in middle school, what would be the pros/cons for your school?
    … for your teachers?
    … for your students/families?

13. What if Accelerated Math 7 was the only math course, what would be the pros/cons for your school?
    … for your teachers?
    … for your students/families?

14. What if only one of these was an option, which do you see as a viable option for the district? Why?

15. Suppose you are in the neighborhood and noticed a significant number of your students standing outside a tutoring service. You ask them what they are up to and they say, "Waiting for math tutoring to start." Many of them are in your Accelerated Math 7 class. What would you wonder about?

16. Given where the district is, what might be the next best steps for the district to consider if a policy was going to be developed? What's your opinion to having a math placement policy for entering 9^{th} graders?

APPENDIX C


Curr System
Structure
Sequence of math courses
Higher Ed
expose White privilege
Processes
expose multiple layers
grant v. deny access
Whose knowledge is valid
deficit-based practices
underprepare SoC for HiEduc
"delay" access to ...
Discourse
Traditional
code words
Rationalize catering to White nonSES
Centering whiteness
Spoken narrative
Unspoken narrative
Outcomes
Formal (overt) v. Informal (hidden)
CRT
racism as normal
colorblindness
meritocracy

APPENDIX D

Interview responses were organized and coded as follows*:*

Question 1 and 2: Discourse

Question 3: Process

Question 4 and 5: Discourse

Question 6, 7, 8, and 9: Discourse and process

Question 10: Process and criteria

Question 11: Structure and criteria

Question 12, 13, 14: Structure and process

Question 16: Discourse

Question 17: Discourse

APPENDIX E

Content standards for middle school math courses as defined in the mathematics framework by the California Department of Education

7th	7th Accelerated	8th	8th Accelerated
7.RP.1		8.EE.1	8.EE.8
7.RP.2		8.EE. 2	8.EE.8A
7.RP.2A		8.EE. 3	8.EE.8B
7.RP.2B	ALL of 7th	8.EE. 4	8.EE.8C
7.RP.2C		8.EE. 5	8.F.1
7.RP.2D	8TH Grade	8.EE. 6	8.F.2
7.RP.3	8.EE.1	8.EE. 7	8.F.3
	8.EE. 2	8.EE. 7A	8.F.4
7.NS.1	8.EE. 3	8.EE.7B	8.F.5
7.NS.1A	8.EE. 4	8.EE.8	8.G.6
7.NS.1B	8.EE. 5	8.EE.8A	8.G.7
7.NS.1C	8.EE. 6	8.EE.8B	8.G.8
7.NS.1D	8.EE. 7	8.EE.8C	8.SP.1
7.NS.2	8.EE. 7A		8.SP.2
7.NS.2A	8.EE.7B	8.F.1	8.SP.3
7.NS.2B		8.F.2	8.SP.4
7.NS.2C	8.NS.1	8.F.3	
7.NS.2D	8.NS.2	8.F.4	N.Q.1
7.NS.3		8.F.5	N.Q.2
	8.G.1		N.Q.3
7.EE.1	8.G.1A	8.NS.1	
7.EE.2	8.G.1B	8.NS.2	A.SSE.1
7.EE.3	8.G.1C		A.SSE.1A
7.EE.4	8.G.2	8.G.1	A.SSE.1B
7.EE.4A	8.G.3	8.G.1A	
7.EE.4B	8.G.4	8.G.1B	A.CED.1
	8.G.5	8.G.1C	A.CED.2
7.G.1	8.G.6	8.G.2	A.CED.3
7.G.2	8.G.7	8.G.3	A.CED.4
7.G.3	8.G.9	8.G.4	
7.G.4		8.G.5	A.REI.1
7.G.5	HS Math I	8.G.6	A.REI.3
7.G.6	N.Q.1	8.G.7	A.REI.3.1
	S.ID.1	8.G.8	A.REI.5
7.SP.1	S.ID.2	8.G.9	A.REI.6
7.SP.2	S.ID.3		A.REI.10
7.SP.3		8.SP.1	A.REI.11
7.SP.4		8.SP.2	A.REI.12
7.SP.5		8.SP.3	F.IF.1

7.SP.6 7.SP.7 7.SP.7A 7.SP.7B 7.SP.8 7.SP.8A 7.SP.8B 7.SP.8C		8.SP.4	F.IF.2 F.IF.3 F.IF.4 F.IF.5 F.IF.6 F.IF.7 F.IF.7A F.IF.7E F.IF.9 F.BF.1 F.BF.1A F.BF.2 F.BF.3 F.LE.1 F.LE.1A F.LE.1B F.LE.1C F.LE.3 F.LE.5 G.CO.1 G.CO.2 G.CO.3 G.CO.4 G.CO.5 G.CO.6 G.CO.7 G.CO.8 G.CO.12 G.CO.13 G.GPE.4 G.GPE.5 G.GPE.7 S.ID.5 S.ID.6 S.ID.6A S.ID.6B S.ID.6C S.ID.7 S.ID.8 S.ID.9