

ALGEBRA FOR ALL AND ITS RELATIONSHIP TO ENGLISH LANGUAGE
LEARNER'S OPPORTUNITY-TO-LEARN AND ALGEBRA I SUCCESS RATES

by

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Dedication

Thank you Lord Jesus Christ, for guiding my path as I pursued my dream of achieving a doctorate level of education; I feel like I have self-actualized. I will use this achievement to your glory and honor.

I would like to dedicate this dissertation to my mother Margarita Veith and to both my children, Daniel R. Ortiz and Lauren V. Bartels.

Mom, you have always been a source of strength for me, and, if it were not for you helping me in so many ways along my journey towards higher education, I could not have made it this far. Your sacrifices in life were not in vain. I know I have made you proud.

Daniel and Lauren, both of you bring so much joy and happiness to my life; I am so blessed to have such a loving and supportive family. My great love for both of you inspires my work ethic, determination in life and goal-oriented attitude, as I desire to provide you with opportunities I did not have, so that, as a family, we may together prosper in life. This accomplishment means a lot to me because it represents the achievement of many years of dedication as I raised you both while continuing to attend school. I pray you will both follow in your mother's footsteps by always striving to be your best and never giving up on attaining your dreams.

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To my beloved father, Daniel Veith, although you are no longer here in person, you are with me in spirit, and I know you would have been so proud to see your daughter

be hooded as a doctoral student. I was motivated by you to obtain a Master's degree, and now I have gone above and beyond that goal as I have faced my fears and challenges.

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Abstract

English as a Second Language (ESL) learners' access and achievement in Algebra I was examined to determine whether ESL students continue to be denied equal opportunity-to-learn (OTL) as a result of unnecessary tracking practices. In this quasi-experiment, a pre-post retrospective comparison group design was used to determine the effects of the California *Algebra for All* (2005) initiative. Two dependent variables, OTL and California Standards-Based Test (CST) Algebra I success, were measured. This retrospective comparison group design allowed for an analysis of the difference between post- (2012) and pre-intervention (2004) Algebra I scores. Three independent variables in this study were examined: (1) LAUSD versus seventeen large urban school districts, (2) White vs. ESL students, and (3) differential implementation of *Algebra for All* from 2004 to 2012 in eighteen large urban school districts.

Four research questions were addressed: 1) To what extent, if any, have large urban school districts in California increased ESL access to early Algebra between 2004 and 2012?; 2) To what extent, if any, have large urban school districts in California decreased the gap between ESL and White student access to early Algebra between 2004 and 2012?; 3) To what extent, if any, have large urban school districts in California increased ESL success in Algebra I between 2004 and 2012?; and 4) To what extent, if any, have large urban school districts in CA decreased the gap between ESL and White student Algebra I success between 2004 and 2012?.

The 2005 *Algebra for All* initiative in all but two districts, Long Beach and Elk Grove, led to more equitable changes. Seven of the eighteen large districts in this study, each with 31 percent or higher ESL student population, increased ESL opportunity-to-

learn by 50% or more since the year 2004. These districts were Anaheim, Lodi, San Francisco, San Bernardino, Stockton, Moreno Valley, and Mt. Diablo. The mean percent change in ESL OTL was 38%.

The 2012 ESL Algebra I opportunity-to-learn data were equally promising. The top three districts with OTL rates greater than or equal to 90% were San Francisco, Stockton and Moreno Valley. In addition to these three districts, Mt. Diablo, Corona-Norco, San Bernardino, and San Diego districts had ESL 2012 OTL rates greater than 80%. Fifteen out of the eighteen districts had an ESL OTL rate greater than 50 percent. The median 2012 district level OTL rate was 63%.

Since the inception of the 2005 *Algebra for All state initiative*, seventeen out of eighteen large school districts improved ESL Algebra I success rates by over 20 percent. Within all 18 districts, the improvement ranged from 8% to 60%. In all but Elk Grove, increases in success ranged from 22% in Sacramento to 60% in Anaheim. The median success rate change for all 18 districts was 32%. Aside from two districts, Riverside and Stockton, in which ESL students experienced larger success changes than White students, there were substantial success changes.

The 2012 Algebra I success data are equally encouraging. The top eight districts with success rates greater than or equal to 65% were Anaheim, Riverside, San Francisco, San Diego, Sweetwater, Corona-Norco, Sacramento and Elk Grove high school districts. Each statewide district had a success rate greater than 50% and the median district level success rate is 63%.

California school districts made great strides for ESL learners in 2012 in comparison to 2004. Thus, the January 16, 2013, State Board of Education decision to

end the 2005 *Algebra for All* push for Algebra I at grade eight is reason for great alarm. Despite acknowledging improvements in Latino enrollment which nearly tripled to 63% and Latino proficiency rates doubled to 42 percent, the state's concern for the other 60% who were not proficient, coupled with the fact that only one in five of those who repeated the class scored proficient, was reasonable cause for them to stop *Algebra for All* (Fensterwald, 2013). Parenthetically, the problem with the new decision to stop Algebra I by grade 8 is that it will only apply to "some" students and not all. Predicted is a decline from the two-third eighth grade enrollment in Algebra I as a result of the Common Core's gradual approach to Algebra I.

Lastly, Algebra I grade 8 advocates, such as Doug McRae, warn that inconsistencies in the current state decision such as (1) unclear language standards stressing acceleration to Algebra I, (2) not testing for Algebra I in grade 8 which may lead to both a "path of least resistance" and more teacher bias (cited in Fensterwald, 2013), and (3) the lack of state incentives will, in essence, only serve to deny student's their civil right to OTL as initiated by NCLB. Instead of "No Children Left Behind", this current legislation will contribute to "ESL Students Left Behind."

Chapter 1: The Problem

Introduction to the Problem

In an era of high stakes accountability, California has strived to increase student performance, specifically in the areas of math, technology and science in order to compete within the 21st Century global market. In regards to accountability, a major concern in the state of California is the significant gap between White students and their non-white counterparts, particularly the Latino English Language (EL) Learner population. This gap is most salient in the area of math, as the political climate has focused on mathematics as the leading indicator of future success. Mathematics has been linked to graduation rates and predictability of college readiness and success more so than SAT scores or other accountability measures.

In addition to the math achievement gap, another major concern in California for EL students is equity, as school districts continue to segregate Latino students under the guise of tracking, even after initiatives such as *Algebra for All* (2005) were mandated to ensure that all students take Algebra I by grade 8. Segregation and/or tracking practices limit student curricular pathways by diminishing equal opportunities to learn, which form a fundamental constitutional right (Oakes, 1990). Differential educational practices that put students on either low-ability and slower or high ability and accelerated academic tracks have detrimental long-lasting effects on the quality of Latino students' lives. The high dropout and very low graduation rates, along with the percentage of college-going rates for Latino children, should concern us all, as this population is predicted to become the majority subgroup in the nation in terms of numbers (Kohler & Lazarin, 2007).

Education has the potential to either positively or negatively affect our future economy and overall welfare.

A continued attempt by California to close the math achievement gap includes increasing student math proficiency rates for all students (National Science Foundation, 1983; SBE, 2008). The problem with seeking to increase math proficiency rates across the board is that not all students start their educational paths on the same level (Oakes, 1990). Despite that, California adopted academic content standards for math in 1997, and, in 2004, the passing of Algebra I became a requirement for high school graduation (EdSource, 2009). In 2008, after the U.S. Department of Education (DOE) notified the California Department of Education (CDE) that its General Math California Standards Test (CST) did not comply with federal requirements because the content was considered 6th and 7th grade standards, even by California's own standards, *Algebra for All* was initiated (EdSource, 2009). While the debate over how the California academic content standards in mathematics are organized has continued, the CDE's *Algebra for All* (2005) initiative mandated that all students should have access to an Algebra I class by grade 8. Even the new Common Core standards, which will replace the existing California standards, support the *Algebra for All* initiative in creating Algebra I standards for grade 8. The policy issue of concern for Latino students in California is whether school districts will give underrepresented and low-achieving groups of students equal opportunities to participate and achieve in the field of mathematics by enrolling students in Algebra I by grade 8.

Although theoretical battles over Algebra I and student developmental readiness for it continue, when reform movements for excellence are in place, educational

ideologies and practices also shift (Reyes & Valencia, 2003). With that in mind, students who take Algebra I by 8th grade are said to be on track towards high school graduation and are “on-time” or considered to be on a high ability track/pathway to success.

Completing Algebra I by grade 8 provides students the opportunity to complete Algebra II by grade 10, and doing that diminishes the gap in college graduation rates between Latino students and their White counterparts (Adelman, 1999). Students who do not have this option or access to Algebra I are considered “not-on-time,” and on a low-ability track/pathway to success. As a result of the *Algebra for All* (2005) initiative, all students in California are now expected to take Algebra I in grade 8 in order to be on target for high school graduation and college. Passing Algebra I has become known as a prerequisite to future math success, higher educational access, and career success (EdSource, 2009; Paul 2005; Silver, 1997).

As the practice of excellence presses forward, excluding Latino students from early Algebra will only serve to exacerbate their plight for equality (Reyes & Valencia, 1993). The National Science Foundation (NSF) recognized that there are not enough studies related to the impact of the uneven distribution of opportunities to learn science and mathematics (Oakes, 1990). Therefore, in addition to the math achievement gap, another major concern for Latinos in California, and for this study, is that of unequal opportunities to learn, as certain school districts continue to segregate students. This often occurs under the guise of tracking or homogenous grouping.

Although segregation has been unlawful for over 55 years, segregation practices have penetrated time and slipped through policy. Second-generation segregation, known as tracking, has its roots in elementary school; however, it is more commonly

documented in secondary schools (Buttaro, Catsambis, Mulkey, & Steelman, 2010). A problem with the practice of tracking students in secondary schools is that it isolates students according to their race and ethnic background, (Buttaro et al., 2010) and this promotes the stereotype that certain ethnicities cannot succeed.

Secondly, a misunderstanding of second language learners and their ability to learn rigorous content has influenced segregation practices (Reyes & Valencia, 1993). The *Lau v. Nicolas* (1974) decision held public schools accountable for providing comprehensible educational opportunities to students who could not speak English because English is the vehicle to education (Valencia, 2002). As a result of trying to make educational opportunities comprehensible, tracking has become the common tool used by many school districts in response to diversity (Buttaro et al., 2010; Valencia, 2002).

Adding to the challenge of making school comprehensible for English Learners is the challenge of master planning to address the Latino population, as it continues to be the fastest growing sub-group in California schools (Kohler & Lazarin, 2007; Yates & Ortiz, 1991). Demographers found that the U.S. population is becoming less White (Reyes & Valencia, 1993). Further, variables that have an impact on success in mathematics, such as teacher preparation programs, have not adequately addressed the English Learner subgroup. Furthermore, cultural proficiency attitudes penetrate into educational programs even after mandates to provide English Learners services have been made (Lopez, 2011). As a result, the students who are most negatively affected by tracking practices are Latino English Learners, as they are more likely to be matriculated onto low-ability curricular tracks (Valencia, 2002).

Tracking

When students enter the school system in elementary school, some are placed on educational pathways, and this practice is referred to as tracking. Some students are considered high achievers and are placed on fast-paced and high-ability tracking pathways, while others are placed on slow-paced and low ability tracking pathways of education. A major problem with the tracking system is that low-ability tracking increases the risk of inequitable opportunities to learn (Oakes, 2000). Placing students on pathways that are slower (not at grade level) in an attempt to give them more time to learn the content material will often result in an unbalanced curricular program. For example, extra interventions within a school day may be added.

In regards to unbalanced programs, students in some districts are segregated by ability levels and put into homogenous groups (same ability or leveled groups) throughout the school day or are scheduled in double blocks of English classes which include English Language Development (ELD) time. Studies on English Learner instructional programs by Obrien (2007) and Saunders, Foorman, and Carlson (2006) found that a double block schedule that includes both English Language Arts (ELA) and ELD was the least effective program design for acquiring English proficiency levels. Instead, teaching ELD as a separate class with protected time resulted in better language instruction and increased English literacy skills (California Department of Education, 2011). Yet, despite the research, some districts continue to implement scheduling practices that cut back, minimize, or supplant core subjects (math, science, and history) in elementary schools, depriving students of rigorous courses and subject matter essential to later learning.

In regards to slower pacing, students in remedial classes are more likely to work at low cognitive levels on test-oriented tasks, are rarely given opportunities to construct and solve math problems, seldom have opportunities to talk, and have instruction that is geared to rote skills (Darling-Hammond, 2007). It is important to note that placing students on low-ability tracking in lower grades leads to differences in curriculum pathways and different access to opportunities towards grade-level mastery. Tracking only serves to stagnate or hinder student progress.

The main problem with tracking is that tracking students starts early on in elementary and then continues when students are sorted out in high school (Darling-Hammond, 2007). This tracking practice may be attributed to an overreliance on assessments that are used as accountability measures. Because districts use language proficiency data in the case of English learners to program students into a master schedule, tracking becomes well institutionalized by middle school. As students enter high schools, they are denied enrollment opportunities that help them towards graduation or towards becoming college ready: Algebra I, Advanced Placement (AP), and Honors courses. These decisions are based on the perception that EL students lag behind academically. By the time students are in secondary school, they subtract themselves from the educational system by not enrolling themselves in challenging classes because they are aware of their deficiencies in education and do not feel they can keep up (Olsen, 2010; Valenzuela, 2000). Pelavin and Kane (1990) state "...there are large differences among students of various racial and ethnic groups in course taking in areas such as mathematics, science, and foreign language" (as mentioned in Darling-Hammond, 2007).

Math has become an increasingly more important curriculum subject for English Learners because it is a springboard to college preparation in high school, as it sets in motion a chain of events in curricular options such as access to biology and geometry classes (Paul, 2005). Math preparation, access to rigor, and success are related to the type of pathway the tracking offers. Therefore, low-ability tracking based on assumptions that ELs are slower than English-only students and cannot learn at the same rate do not adequately prepare students with a strong foundation in concepts that will be needed in future math classes (Valencia, 2002; Oakes, 2000).

As a result of tracking practices, there are many English Learner students who have become what is known as Long Term English Learners (Callahan, 2005; Linquanti, 2001). The issue of Long Term English Learners (LTEL's), though not new, has become a renewed focus of attention among educators, the legislature, and economists due to the growing and projected future numbers of English Learners (Freeman, Freeman, & Mercuri 2003; Garcia, 2000). The Hispanic/Latino population is projected to be the new majority in the country (Freeman et al., 2003). As recently as 2012, the AB2193 Bill, which defines the term Long-term English Learners as being "at risk" of not progressing at an appropriate rate, will require the California Department of Education (CDE) to annually ascertain and provide to school districts the number of pupils at risk of becoming long-term English learners (August 2012, AB 2103). An LTEL student is described as being stagnate (not progressing in English Language levels as determined by the CELDT test). In addition, an LTEL student has not obtained a basic or above score on the English Language portion of the CST test and has remained in an English Learner Development (ELD) class for over 5 or 6 years (AB2193, Lara, 2012; Callahan, 2005).

The Reparable Harm report released in 2010, states 59% of secondary school ELs were LTELs. Until recently, math was a requirement towards re-classification by many districts. However, because EL students were not reaching proficiency rates in math, the reclassification requirements have instead focused on English proficiency only (California Department of Education, 2012-2013).

The Lau v. Nicholas (1974) case influenced educators' response to the issue of teaching English to non-English speaking students, and English as a Second Language (ESL) classes, currently referred to as English Learner Development (ELD) classes, were created. Although the goal and purpose of ELD classes is to help students acquire the English Language at an appropriate pace in order to reclassify them as Fluent English speakers, the reality is that approximately 60% of students in grades 6-12 in California have not reclassified and are struggling academically. Cummins (1984, 1980) states it takes a person approximately 3-4 years to learn basic interpersonal language and 5 to 7 years to acquire academic language. Not reclassifying before or within the middle school years has detrimental effects for EL students in high school, such as not graduating at appropriate rates and increased dropout rates.

Disparity in graduation rates. An NCES report by Chapman, Laird, and KewalRamani (2011), found 93.8% White of non-Hispanic descent students had a high school completion rate of 93.8% in 2009, whereas, 76.8% of Hispanic students completed high school, a difference of 17%. Moreover, Hispanic students were 9.4 times more likely to drop out of high school with a status dropout rate of 17.6 percent in comparison to the 5.2 percent status dropout rate for White students, creating a gap of 12.4%. In each

“recency from immigration” categories in the report, Hispanic youth had a higher status dropout rate in comparison to non-Hispanic youth.

Table 1

Graduation and Dropout Rates in the state of California

2010-2011 Cohort Graduation and Dropout Data					
	Cohort Total	Graduated Total	Graduation Rate	Dropout Total	Dropout Rate
Hispanic or Latino of any Race	238,436	167,886	70.4%	42,126	17.7%
White, non-Hispanic	146,169	124,863	85.4	12,980	8.9%
LAUSD Hispanic	77,066	51,732	67.1%	13,886	18%
LAUSD White	20,695	17,446	84.3%	1,795	8.7%

California Department of Education DataQuest

Table 1 presents the graduation and dropout rates for California and LAUSD. Statewide, of 501,663 students in the 2010-2011 cohort, 382,558 students graduated (a rate of 76.3%), and 72,314 dropped out (a rate of 14.4%). From the Hispanic or of Latino Race cohort total of 238,436, only 167,886 graduated (a rate of 70.4%) and 42,126 dropped out (a rate of 17.7%). Hispanic students dropped out of high school 3.3% more often than did White students. LAUSD White students graduated at a rate of 84.3%, while LAUSD Hispanic students graduated at a rate of 67.1%. The difference reveals a graduation gap of 17%. In addition, LASUD White students’ dropout rate was 8.7%, while the Hispanic rate was 18%, which means there is a dropout gap of 10%.

The concept of cultural proficiency refers to a level of knowledge-based skills and understanding required to teach and interact successfully with students and colleagues from a variety of backgrounds. The level of understanding may be measured using a

cultural proficiency spectrum. The reason cultural proficiency is important is that how a person, or culture, values other cultures affects choices educators make in terms of equal access to educational opportunities (Olsen, 2010). To increase cultural proficiency, educators need to develop their knowledge and strong understanding of EL typologies and how each type is related to motivation, engagement, and student success. Currently, a gap of knowledge in this area exists (Olsen, 2010). Teacher education programs have not adequately prepared teachers for working with the diverse EL student population, and, although research is emerging, it is considerably sparse.

Moreover, knowing the difference between a student's academic ability and academic language, or linguistics developmental needs, is essential. Knowing that learning a second language does not prevent students from learning other academic content such as Algebra concepts is important for OTL. This misunderstanding contributes to educators' lower expectations for English Learner students. For example, although students may not speak English and need ELD classes to help them obtain English proficiency, it is unfair to assume that they cannot learn at high cognitive levels or that they should be denied access to a rigorous curriculum. Many times, however, the rigor expectations for these students are decreased (Freeman, Freeman, & Mercuri, 2003; Garcia, 2000).

Within School Segregation

The push for accountability arose from the publication of "A Nation at Risk" (1983), which revealed American children are not prepared for the 21st Century, and America is at risk of losing its political power and influence in the world. The authors stated, "Between the years 1975 and 1980, remedial mathematics courses in public 4-year

colleges increased by 72% and now constitute one-quarter of all mathematics courses taught in those institutions...” (Nation at Risk, 1983). As a result, an urgency to increase high school math standards with programs such as the *Algebra for All* initiative (2005) had an impact on California’s school system, and, as a happenstance, more EL students have experienced access to Algebra I (EdSource, 2009, 2011), which is the gatekeeper to high school graduation and higher education. ESL students benefit from this opportunity, as more EL students are currently enrolled in Algebra by 8th grade now than before the *Algebra for All* state initiative.

Although mandates such as desegregation laws (Brown v. Board of Education, 1954), the NCLB (2001) and, more recently, the California CDE *Algebra for All* (2005) initiative are supposed to protect students’ rights to equal education, not all students experience the same opportunities to learn (OTL) or have equal access to high stakes classes. This is mainly due to the fact that some school districts continue to practice segregation disguised as grouping or tracking practices. As school districts perpetuate the status quo and prevent underrepresented groups from equitable educational experiences such as taking Algebra I, the nation will continue to be at risk of not meeting future human capital financial stability, students will continue to drop out, and the college-going rate will not increase. Furthermore example, if English Learner students are not adequately prepared to succeed in schools, they will not only be at risk of not graduating, but they will also not be prepared to enter the work force.

Jobs in the 21st century have increased skill requirements and a college degree and/or knowledge of technology is needed for employment in high-paying jobs. Economic security comes from having a low unemployment rate. Moreover, as a nation,

the deficiency in school district efforts to close the achievement gaps between subgroups will result in society's not being able to keep up with global market competitiveness in the areas of science, technology, engineering and mathematics (STEM).

Despite the influence segregation practices have on students and on increasing student achievement gaps, the *Algebra for All* (2005) initiative appears to be making a difference in some California districts. In support of the *Algebra for All* initiative and its effect on ESL Learners in acquiring math success, Figure 1 below shows successful growth rates for ESL students in the State of California. It appears that the *Algebra for all* initiative is addressing the issues at hand: OTL, math success, and, hence, the achievement gap.

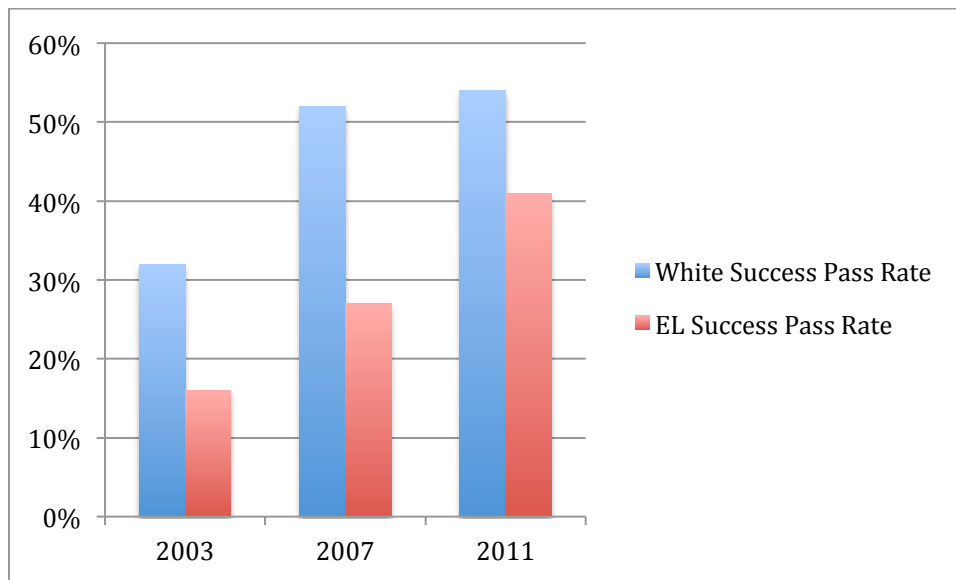


Figure 1. Algebra I Success Passing Rates in California

Figure 1 shows 2003, 2007, and 2011 Algebra I scores for both the White subgroup and ESL students in California and demonstrates that there has been a substantial increase in math proficiency rates as a result of the *Algebra for All* initiative (2005). The passing rate for White students rose from 32% in 2003 to 52% in 2007 and

then rose by 2% in 2011. In comparison, the passing rate for ESL students increased 11%, from 16% in 2003 to 27% in 2007, and then by 14% in 2011. When comparing and benchmarking the ESL students' scores to White students' scores, the results show progress towards closing the achievement gap.

While great progress has been made overall, many low SES and EL students still find themselves wedged in the cycle of diminished success in mathematics. In some schools, the practice of segregation among high school students has become a self-fulfilling prophecy, and EL students subtract themselves from the school system by either failing or dropping out (Olsen, 2010; Valenzuela, 2000). Subtraction refers to instances where school systems subtract the value of students' second languages by creating a situation in which students feel vulnerable to academic failure (Valenzuela, 2000). These problems feed into the educational achievement gap and, particularly, the mathematical educational gap between ethnic minorities and their White counterparts. For example, many English Learner students on slow tracks were not enrolled in Algebra I in grade 8 or earlier until the *Algebra for All* initiative (2005). However, it is hypothesized that some districts still ignore the *Algebra for All* initiative.

Preparation for success is an important variable in regards to math success rates. Preparation starts with first having the opportunity to enroll in courses early on, as these provides practice in content and conceptual knowledge. Unfortunately, U.S. Educational systems allocate opportunities to groups versus individuals (Oakes, 1990). Students clustered in "low-ability" groups differ from their more advantaged peers, and their mathematical experiences are strikingly different by the time they reach secondary school (Oakes, 1990). For example, Algebra I is a prerequisite to future math success rates in

high school, and it is better if it is taken at or before grade 8. Student math success rates in high school depend on whether they have the opportunity to take Algebra I at grade 8 or earlier (EdSource, 2009).

While considerable progress is evident in California, the problem this study addresses is the extent to which progress has been limited in some districts due to district policies. The graph below depicts subgroups and the opportunity to learn (OTL), defined as access to Algebra I by grade 8 or earlier in two Southern California Districts, Culver City and Torrance.

Table 2

Students and OTL (took Algebra I by 8th or earlier)

	2006	2011	2006	2011
	Culver City	Culver City	Torrance	Torrance
White	.51	.62	.42	.97
Asian	.43	.80	.58	1.00
AA/Black	.42	.43	.39	.94
Hispanic	.39	.32	.34	.97

OTL = students who took Algebra I by 8th grade or earlier (determined OTL by column Torrance 2011 -1)

Table 2 reflects the percentage of students who had adequate OTL as defined as having access to an Algebra I course by grade 8 or earlier, broken down by district, school year and ethnicity. Hispanic students in Torrance experienced a 34% chance of taking Algebra I by 8th grade or earlier in 2006 in comparison to a 39% chance in Culver City in 2006. After the *Algebra for All* initiative was instituted in Torrance, Hispanic OTL rose from 34% to 97% in Torrance, whereas, in Culver City, the percentage decreased from 39% in 2006 to 32% in 2011. The Torrance Unified School District has made a significant difference for English Language Learners OTL, while Culver City has

not. In Culver City, the percentage of students enrolled in Algebra I by 8th grade actually decreased for the Hispanic sub-group between 2006 and 2011.

Table 3

Student Success Rates by 9th Grade

	2006	2011	2006	2011
	Culver City	Culver City	Torrance	Torrance
White	.59	.76	.54	.89
Asian	.39	.81	.62	1.0
AA/Black	.43	.50	.43	.70
Hispanic	.46	.43	.38	.71

There is much debate regarding student readiness to take Algebra I in grade 8. Table 3 shows success rates in grades 9 broken down by year and ethnicity. White students' success rates increased by 17% in Culver City by the year 2011, and Asian students' success rates increased by 42%. Hispanic students' success rates did not show growth in Culver City. In contrast, all students in Torrance had an increased success rate by 2011. White students' success rate increased by 35%, Asian students' success rate increased by 38%, African American students' success rate increased by 27%, and Hispanic students' success rate increased by 33%. These results indicate two things: (1) In the Culver City School District, White and Asian students have better success than Hispanic and African American students, and (2) although Hispanic students made some gains in Torrance, White and Asian students did so as well, meaning the achievement gap is actually growing in Torrance. Although all groups in Torrance made gains, Hispanic and African American students had the lowest gains of 33% and 27%, respectively.

Statement of the Problem

The English Learner population has increased substantially. In the 2004-2005 school year, an estimated 5.1 million English Language Learners enrolled in preK-12 public schools, and they represent 10.5% of the total public school student enrollment (Kohler & Lazarin, 2007). “Nearly four-fifths (79%) of all Latino children are Hispanic native Spanish-speakers” and “Latino children represent nearly half (45%) of English Learners in our nation’s public schools” (Kohler & Lazarin, 2007). Limited English Proficient enrollment is highest in places where Hispanic populations exist, such as in California.

A problem that exists is that English Language Learner students, specifically Latinos of Hispanic descent, often are not eligible for graduation due to not having the appropriate credits or courses required for graduation. Therefore, EL students’ graduation rates are too low and dropout rates are too high. Moreover, segregation practices may contribute to the increase in EL population students who become Long-term English Learners (LTELs). By the time ESL students reach high school, many are discouraged, alienated, and are so far behind they either drop out or are riddled with remedial and/or credit recovery courses. Their opportunities for graduation and higher education are severely limited (Olsen, 2010; Valencia, 2002).

Though accountability measures such as NCLB (2001) and the *Algebra for All* (2005) initiative in California are meant to close achievement gaps and provide all children equal rights to education, the problem is many ESL students in California may be held back through tracking practices.

Purpose of the Study

The practice of segregation (homogenous tracking) serves as an organizational barrier that prevents EL students from equal opportunities to learn. Therefore, it preserves the status quo in terms of achievement gaps between White and English Learner students. The purpose of this study was to determine how many English Language Learners in California receive the opportunity to learn Algebra I by grade 8 and to test the theory that, when EL students are given the opportunity to take Algebra I at the appropriate 8th grade level, Algebra I success rates will increase. Further, the analysis will determine which large districts in the state of California implement the *Algebra for All* initiative. It is hypothesized that cross-sectional district level data will allow for a comparison of the success rates of students who took Algebra I in 8th grade with those of students who did not take Algebra I prior to the *Algebra for All* initiative (2005).

This study will examine segregation practices (homogenous tracking) of English as a Second Language students (ESL) and how that influences OTL and success rates for three reasons: (1) ESL students are commonly placed on low-ability tracking pathways, (2) ESL students continue to have high dropout rates and overall low Algebra I test scores, and (3) ESL students are the fastest growing US minority group. Moreover, this study will use the *Algebra for All* initiative (2005) to demonstrate that access to Algebra, the gatekeeper to high school graduation, may have implications for OTL for underrepresented and minority students thought to be low-achieving. To determine how many ESL students take Algebra I and which districts implemented *Algebra for All*, this study will concentrate on LAUSD and 17 large urban school districts in California.

Inequalities in learning opportunities must be addressed head-on if they are ever to be successfully removed (Darling-Hammond, 1994). Benchmarking is one way to measure continuous improvement, according to Tucker (1996). Therefore, this study identifies which districts embraced the *Algebra for All* initiative by increasing ESL access to early algebra. The study also will have implications for district level accreditation and accountability.

Research Questions

This study focused on the success scores of White and ESL students before and after the *Algebra for All* initiative in selected school districts. The population includes White and ESL students who took the Algebra I CST and General Math Tests in the years 2004, 2007, and 2012. The research questions are:

- 1) To what extent, if any, have large urban school districts in CA increased ESL access to early algebra between 2004 and 2012?
- 2) To what extent, if any, have large urban school districts in CA decreased the gap between ESL and White student access to early algebra between 2004 and 2012?
- 3) To what extent, if any, have large urban school districts in CA increased ESL success in Algebra I between 2004 and 2012?
- 4) To what extent, if any, have large urban school districts in CA decreased the gap between ESL and White student Algebra I success between 2004 and 2012?

Definition of Terms

For the purpose of this study, the following the following terms were operationally defined as follows:

Algebra I. a branch of mathematics in which arithmetical operations and relationships are generalized by using alphabetic symbols to represent unknown numbers or members of specified sets of numbers (Google Dictionary.com). It includes Whole Numbers, Common Fractions, Decimal Fractions, Percentages, Units of Measurement, Signed Numbers, Simple Powers, Substitution, Setting up Equations, Solving Equations, Geometry, Comparisons, Graphs, Tables, Estimation, Probability, Statistics, Order of Operations, Ratios, Math Vocabulary, Word Problems (Engehard, Garner, & Lueck, 2001).

Basic or Proficient. Basic or proficient, for the purpose of this study, refers to students who score a 300 and above on the CST test.

CDE. California department of education (California Department of Education College Readiness. College Readiness is defined by the Conley (2007) reports as the level of preparation a student needs in order to enroll and succeed in postsecondary institutions without needed remediation.

CST. The CST is defined by CDE as the California standardized-based test. It is a criterion-referenced measure of how students are achieving the rigorous academic standards adopted by the California State Board of Education. Five performance levels are used to describe achievement: Far Below Basic, Below Basic, Basic, Proficient, or Advanced.

Dropout. Dropout is defined by CDE as a student who was enrolled in grades 7 – 12 at some time during the school year and left school without completing the year, or successfully completed a prior year but did not return to the next grade assigned and was not enrolled or attending school by the specified year.

English Learner. English Learner refers to a student who does not speak English or whose native language is not English and who is not currently able to perform ordinary classroom work in English, also known as a limited English proficient or LEP Child (Education code 306).

English Language Development (ELD). ELD stands for English Language Development. ELD refers to California English Language Development standards in the domains of listening, reading, speaking, and writing. The standards were adopted by the California State Department of Education as a result of AB 748, enacted in 1997, which stated a need to test students to determine their English proficiency level. The levels of progression are beginning, early intermediate, intermediate, early advanced and advanced (CDE, 2009). As a result of *Lau v. Nicholas* (1974), English Language Development classes were designed to address ESL student's English proficient levels. English as a Second Language (ESL). ESL is defined by CDE as a student in K-12 whose home language is not English.

Limited English Proficient (LEP). LEP is defined by the CDE as (1) an EL Learner, or (2) a student who has reclassified but has not reached proficient level on CST.

Fast track. Fast track refers to curriculum and master scheduling for students which will lead them to opportunities for a college career. Fast-tracking for math is

defined as taking Algebra I by grade 7, which will enable students to take Calculus or other college level courses by grade 12.

General Education Development (GED). GED is a national test given to people 18 or older. Topics tested include language arts/reading, language arts/writing, mathematics, science and social studies. People who do not have a diploma may use this test as an equivalency to a high school diploma (CDE, 2013).

General Math. General math consists of numbers sense, pre-algebra and functions, and measurement and geometry (CDE, 2013).

Graduate. High School graduate is defined as a student who has received formal recognition from school authorities, through the granting of a diploma, for completing a prescribed course of study.

Hispanic or Latino. Hispanic/Latino is defined by the California Department of Education (2013) as the ethnic group of a person of Mexican, Puerto Rican, Cuban, Central of South America, or other Spanish culture or origin, regardless of race.

Latino. The Latino term is defined by Webster's dictionary as a Latin Americano or a person from Latin America. Latin American includes countries in Mexico or those in Central America, the Caribbean, and South America. The term Latino is meant to unite these countries with the single factor they have in common, the Spanish language.

LEA. Local Education Agency (LEA) is defined by CDE as a government agency that supervises public elementary and secondary schools in the delivery of instruction and educational services. LEA's include school districts and county offices of education.

Long-term English Learner (LTELs). A Long-term English Learner is defined as a student who is learning English as a second language and has been enrolled in U.S. schools starting in grade K or First, and, after 6 years, has not met the requirements to exit the English Learner program due to legislated criteria for reclassification (2012, Lara Bill, AB2193).

Opportunity-to-learn (OTL). OTL is access and equal opportunities to effective teachers, curriculum, scheduling or high-ability tracking, in order to learn standards. (Goals 2000: Educate America Act). OTL may also be used as a measurement tool for evaluation purposes (Pub. L No. 103-227, § 3 [7]).

Pathway. A pathway refers to a typical course of study. In reference to the math pathway, it refers to two algebra courses and one geometry course.

Reclassification. Reclassification is the local process used by LEA's to determine whether students have acquired sufficient English language proficiency to perform successfully in academic classes without additional ELD support: EC Section 313 (d) specifies four criteria to determine reclassification status (CDE website) RFEP. Reclassified as Fluent English Proficient is defined by CDE as students with a primary language other than English who were classified as English Learners and have met LEA criteria for English language proficiency.

Slow academic track. A slow academic track is defined as a tracking pathway that does not prepare students to be college ready. It refers to curriculum that is less cognitively challenging and master planning schedules that do not include honors or rigorous courses so that students do not follow the traditional course of testing for Algebra I by grade 8. Instead, a slow academic track includes remedial classes and/or

math courses that focus on altered curriculum to reteach or repeat basic curriculum. It also refers to less exposure to math conceptual understanding that will help prepare students for more abstract math and problem solving ability.

Success. Success in Algebra I is defined as a score considered basic or above on the CST. The basic score scale begins with 300.

Chapter 2: Literature Review

The purpose of this study was to determine whether the *Algebra for All* initiative has provided equitable opportunities for English Learners to learn Algebra I. Algebra I is essential to the educational process of English Language Learners because, as math accountability has increased, so has the need to have opportunities to be successful in Mathematics (Herman & Abedi, 2004; Powers, 2004; NCLB, 2002; Silver, 1997; Smith, 1996; Spielhagen, 2006). Further, Algebra I is vital for English Learners' future progress in the area of science, mathematics and technical careers, as the jobs of the future will require proficient knowledge in these areas. Math has become the gateway to educational and occupational advancement (Powers, 2004).

Chapter two will examine, identify, and establish criteria that are relevant to this study regarding English Learners and their Opportunity-to-Learn (OTL). Current legislation defines OTL as a measurement tool to measure the quality of resources, practices and conditions necessary for learning (Pub. L No. 103-227, § 3 [7]). The OTL theory serves as a conceptual framework for the literature, as this study examines five areas of concern associated with OTL.

This section defines and explains the OTL concept and how it relates to education. Second, it explains the achievement gap and its implications to OTL in order to provide background knowledge necessary to better understand the problem. Third, it examines tracking as it is influenced by segregation practices, in order to provide a foundational understanding as to why English Learners continue to be segregated through the guise of homogenous grouping, otherwise known as tracking (Buttro et al., 2010). A math achievement gap exists between minority students, specifically English Learner

students and their counterparts, White students, in the state of California. It further explains the implications of tracking practices as they relates to English Learners as a group and how tracking relates to math success rates and opportunities to learn (Darling-Hammond, 2003; McDonnell, 1995; Oakes, 1992; Wang & Goldschmidt, 1999).

As accountability measures have increased, mathematics requirements have also increased to the degree that Algebra I has become part of the high school graduation requirement (Silver, 1997). As of 2006, English Learners and other students with exceptional needs must pass the California High School Exit Exam to receive a high school diploma, despite possibly not having been taught the curriculum on which it is based (Powers, 2004).

Therefore, it is important to explore OTL and success in math and future student outcomes such as graduation rates (Kohler & Lazarín, 2007). This is accomplished through providing historical content related to the importance of math, accountability, and current math initiatives in order to provide a foundational understanding of the *Algebra for All* (2005) initiative.

Lastly, this chapter explores the *Algebra for All* (2005) initiative and other programs that have tried to support equal access and opportunities to learn. The difference between English and Math accountability is that there are more initiatives and interventions that support English Language development in comparison to math. Therefore, the literature review explains how the *Algebra for All* (2005) initiative helps to address the achievement gap by providing all students with the opportunity to access math.

Opportunity-to-Learn

The Opportunity-to-Learn concept was first introduced about 30 years ago by the International Association for the Evaluation of Educational Achievement (IEA) to measure curricular differences experienced by students (McDonnell, 1995). According to McDonnell (1995), OTL was based on a belief that students should not be assessed on knowledge that they have not been given an opportunity to learn and, later, the Goals 2000: Educate America Act defined OTL as OTL standards. The Opportunity-to-Learn concept was introduced by the First International Mathematics Survey. However, the concept was later refined in the Second International Mathematics Study (SIMS), conducted between 1976 and 1982, in which a teacher questionnaire measured for student OTL (McDonnell, 1995). The SIMS OTL data not only documented policy problems, but it also provided a possible solution to the problem because the study revealed a significant relationship between curriculum exposure and student achievement. Raizen and Jones' (1985) summary on four studies showed a strong correlation between the number of mathematics courses students take and their achievement in mathematics (as mentioned in McDonnell, 1995). OTL concept has evolved from being referred to as a relationship between students' curricular exposure and their achievement to a policy instrument that may be used as a measurement tool (McDonnell, 1995).

OTL. Opportunity-to-Learn is a concept that suggests students should have access and equal opportunities to effective teachers, curriculum, scheduling or high-ability tracking in order to have increased chances for success rates. The No Child Left Behind Act (2001), an update and reauthorization of the Elementary and Secondary Act of 1996, attempts to provide opportunities to learn by stating a guarantee that all students

will have educational equality. While the No Child Left Behind Act of 2001 proclaimed it protects equal opportunities for every student in California schools, not all students do, in fact, have the same opportunities to learn (Buttro et al., 2010; Herman & Abedi, 2000; Oakes, 1992). Darling-Hammond (2003) states it is important to restructure schools in order to provide every student an opportunity to learn.

OTL and its relationship to student success. Parish and his colleagues' (2002) study on English Learners included both English Learners and those who became English proficient, known as reclassified English Learners (RFEP), in order to give a more accurate representation of the data related to English Learners (as mentioned in Rumburger & Gándara, 2004). With this in mind, their study showed a significant gap between English-only students and English Learner students in the area of English. The gap was significant enough to warrant a concern for English Learners because they are falling further behind (Rumburger & Gándara, 2004). Although this study concentrated on elementary students, relevant to this study was the sizable gap that exists at all levels, which supports the fact that English Learners continue to lag further behind their English Learner counterparts. Grade 5 English Learner students were reading at grade 3 and 4, a gap of 1.5, and, by grade 8, former English Learners (those who may have reclassified), were reading at the same grade level as English-only grade 6 students, yielding a gap of 2 years (Rumberger & Gándara, 2004). The data indicated that the poorest scoring English Learners had dropped out of school by grade 11. Thereby, the data from this study supports the idea that OTL has an impact on dropout rates.

The Center for Language Minority Education and Research (1996) found that Limited English Proficient (LEP) students face academic challenges due to OTL and,

therefore, have a high probability of dropping out (as mentioned in Wang and Goldschmidt, 1999). While, Rumberger and Palardy (2005) stated student success has more to do with SES than with OTL or access to classes, the OTL theory differs. OTL states that English Learner students do not begin their educational experience on an even playing field. Therefore, the average performance of English Learners does not exceed that of English-only students upon entering secondary school (Rumberger & Gándara, 2004).

OTL inequalities. Rumberger and Gándara (2004) found seven inequitable conditions that account for the differences in OTL: (1) inequitable access to appropriately trained teachers, (2) inequitable professional development opportunities to help teachers address the instructional needs of English Learners, (3) inequitable access to appropriate assessment to measure EL achievement, (4) inequitable time to accomplish learning goals, (5) inequitable access to instructional materials and (6) curriculum, and (7) inequitable access to adequate facilities.

Furthermore, *Williams v. State of California* also resulted from existing inequalities, and it attempted to provide resources to increase student achievement. Due to these inequalities, *Williams v. State of California* (2000) mandates that all students should have safe and clean schools, textbooks, and qualified teachers.

OTL studies. The Coleman report, which was published 12 years after *Brown v. Board of Education*, was based on data from the National Education Longitudinal Survey of 1998, and it found a discrepancy on OTL which was based on socioeconomic level of students' schools. It noted that schools had just as much impact on achievement as students' own socioeconomic status (Rumberger & Palardy, 2000). The Coleman report

(1996) further attributed the inequalities of educational opportunities to widespread school segregation (as mentioned in Rumberger & Palardy (2005)). The TIMSS documents also credited the U.S. education system with creating a lagging achievement between the U.S. and the other developed countries (William et al., 2011). In reference to math, Oakes (2000) stated minority students and inner-city students are the ones who experience fewer opportunities to learn math in schools as a result of inequalities.

Further, Oakes' (2011) research on patterns of disproportionate access to science and math opportunities reported strong evidence to indicate inequalities exist in both elementary and secondary schools. Moreover, cross-sectional data in regards to science and math programs found differences in opportunities to learn related to race and social class (Oakes, 2011). By using the National Survey of Science and Mathematics Education (NSSME) survey tool, Oakes (2011) was able to demonstrate reasons why low-income and minority students are more likely perceived as having low ability and why low-income and minorities are put on low-ability tracking. While this study was able to show disparities among opportunities to engage in math and science in the elementary grade levels, these disparities also lead to multiple disparities in math and science at the secondary level (Oakes, 2011). However, the NSSME data was not able to show how the distribution of learning opportunities was directly related to student performance in science and math. Therefore, opportunity-to-learn and its relationship to student performance warrant more research that may determine the strength of the relationship between OTL and success.

OTL Court Case. The Williams case argued that California's public education system failed on both of these counts; it did not give all students the necessary

educational resources and it allowed unequal opportunities to persist across schools. Williams called on the state to create standards for basic educational materials, a system of management and oversight, and accountability. The settlement, however, cannot produce an adequate education for every child (Glenn & Picus, 2011). According to Glenn and Picus' (2011) analysis, the winners of the Williams case were primarily the decile 1 through 3 schools, or schools that scored below the 30% percentile of the 2003 API. That included less than 30% of the state's elementary, less than 20% of middle schools, and less than 10% of high schools that achieved an API of 800 (Glenn & Picus, 2011). The remaining 40% of elementary schools, 50% of middle schools, and 60% of high schools that scored above the 30th percentile of the 2003 API did not benefit from the Williams Act. Neglected is the need for state-of-the art facilities, high-quality textbooks, lab equipment, and technology. The funding translated to \$73 per pupil at the lowest performing schools for instructional materials. Adequacy litigation is likely to be brought against the state in the future because this litigation was not able to address all students over time (Glenn & Picus, 2011). However, *Williams* led to improved practices at the County Office of Education, in districts, and in schools (ACLU Foundation of Southern California Public Advocates, Inc., 2007).

Achievement Gap

Minorities face an uphill battle for a greater portion of their educational experience, as they try to catch up with the American standards in education and American culture, which include performing well on high stakes tests. The discrepancy between minority and White American students' achievement levels on the California State Standards Test (CST) is described as the achievement gap.

Achievement gap related to assessments. The achievement gap is not only important because it highlights academic differences which exist, but also because it relates to how well students will perform on high-stakes tests such as CAHSEE, Algebra I, and the SAT, which are all considered gateways to graduation and higher education. Rumberger and Gándara (2004) indicated the California High School Exit Exam (CAHSEE) is a standard-based, criterion-referenced test that has become a high-stakes test for English Learners. Data on CAHSEE passage rates show patterns which support the concept that English Learners are not performing the same as non-English Learners (Department of Education, 2011). According to the California Department of Education, only 19% of English Learner students in the year 2004 passed after two opportunities compared to 48% of all students (CDE).

Since the NCLB Act (2001) was passed in 2002, states have been required to develop standards, administer tests aligned with those standards and expand implementation so that, by 2005-2006, every student in grades 3 through 8 is tested in both reading and math. In addition, states, districts and schools are required to make yearly progress towards proficiency rates or risk the consequence of sanctions (Powers, 2004). The expectation of the NCLB (2001) is that all students will score proficient and above by the year 2014. Currently, the California State Academic Performance Index (API) score for English Language Learners is 692 and that of White students was 838. There is a gap of 146 in terms of performance. In regards to graduation, the state goal is 90% for all students. In 2009, the graduation rate in California was 80.21% and, in 2010, the graduation rate decreased to 78.9%, a decline of 1.31%. White students met the AYP goal of 70.9% at or above proficient, while English Learners scored 35.6%, and Hispanic

or Latino students scored at 41.7%. Only the white Asian and Pilipino subgroups met their AYP goal in both English and Math in 2010. The achievement gap caused school and school districts to analyze the impact their subgroups have on overall achievement scores.

Much renewed attention on English as a Second Language (ESL) Learners resulted from California's robust efforts to increase rigor and math success rates for subgroups. This effort stems from NCLB (2001) and, along with the implementation of high-stakes accountability testing such as Algebra I and CAHSEE assessments, accountability measures contributed to an overall achievement gap for English Learners. For example, all districts in California are obligated under the Under the No Child Left Behind Act (2001) to implement accountability systems to verify yearly progress of students. Achievement levels are intended to illustrate "appropriate performance standards for each grade in each subject area to be tested under the National Assessment" (Improving America's Schools Act, 1994). The percentage of students achieving at or above these levels are labeled *Basic*, *Proficient*, and *Advanced...*" (Hombo, 2003, pp. 59-60).

Moreover, Adequate Yearly Progress (AYP) goals are set by the state in order to measure student progress. The AYP goals encompass four areas: student participation rates, student percent proficient (also referred to as Annual Measurable Objectives or AMOs), Annual Performance Indicator (API) as an additional indicator for AYP, and student graduation rates. Each of these four areas has specific requirements. Participation rate and percent proficient criteria must be met in both English language Arts (ELA) and in mathematics. The problem in California in reference to the Hispanic student

population is differences in OTL, as a lack of opportunities affect English Learner course participation rates and outcomes on achievement tests (Herman & Abedi, 2004, Madison, 2000; McDonnell, 1995; Rumberger & Gándara, 2004).

Achievement gaps related to English Learners. Among minority groups, English Language Learners have historically and consistently scored below basic on ELA and Math California Standard Tests (CST) while their white counterparts score remarkably higher. When comparing EL Learners to other second language learners, Latino students score lower than other second language learners who migrate to California from other countries. Trends reflect that immigrants from other countries enter the United States with higher levels of school completion. Hispanic/Latino students in urban districts more often come from low socio-economic status background and low parental educational levels, both of which are associated with low student achievement. Morales and Saenz (2007) states socioeconomic status is a major cause for gaps related to test scores. Therefore, accountability practices that require mandated tests be given to students who are not proficient in English also contribute to achievement gaps (Rumberger & Gándara, 2004).

Achievement gap studies. There are other variables that account for the current achievement gap between Hispanic/Latino sub-groups and their White counterparts (Oakes, 1990; Rumberger & Gándara, 2004; Valencia, 2002). Researchers identified disparities in teacher preparation programs (Oakes, 1990; Powers, 2004, Rumberger & Gándara, 2004), and disparities in teacher preparation program which included math course taking (Darling-Hammond, 1990; Wang & Goldschmidt, 1999).

While it may be argued that the achievement gap appears to be closing, Loveless' (2009) study on 160,000 eighth graders showed that, while the national average of scores rose, the advanced scores fell. That means the achievement gap is not closing, as the score reflects a loss of advanced scores. Additionally, as the Algebra I enrollment rose from 26.7% to 36.6%, there was a decline in general math scores (Loveless, 2009). It was noted that eighth grade low achievers in advanced classes scored lower than all 4th graders. Further, the National Assessment of Educational Progress (NAEP) scores for each state, which are based on advanced classes such as Algebra I, Geometry, and Algebra II, indicate there was an increase in advanced math class enrollment of 8th grade students. The national eighth grade math rose from 273 to 281 between 2000 and 2007. The limitation of this data is that eighth graders self-reported which courses they had taken and this may have effects on validity of that data, as they may have not known the name of the exact course taken.

Rumberger and Palardy (2005) attributed differences in the achievement gap to the socioeconomic status of the schools. School demographics played a significant role in student achievement, and, in support, the Coleman report (1990) stated achievement for all racial and ethnic groups was found to be higher in schools with higher proportions of White students because White students had better educational backgrounds. This finding was later referred to as a middle-class peer-effect, and it became a popular reason cited in defense as to why desegregation by race is important. The findings also suggested that schools which service mostly lower-income students operate differently than schools that service more-affluent students (Rumberger & Palardy, 2005).

Research by Siegel (2011) attributes achievement gaps to teacher perceptions and expectations of students of different socioeconomic and racial groups as a root cause of racial achievement gaps. In addition, the study analyzed the impact of parental education level and family income and found that, between Hispanic and White students, discrepancies in wealth and education of parents among average White and Hispanic families are more likely to affect Hispanic students than White students. However, after correcting for socioeconomic and language status, this gap also occurs at higher socioeconomic levels. It noted that mitigating the impacts of poverty and limited English proficiency would not close the achievement gap, and, instead, it suggested further research regarding expectations for Hispanic students. This study did not expand to changes in achievement gaps across grade level progression nor did it apply to higher-grade levels as this study does.

In order to address achievement gaps, reform efforts have tried to close the achievement gap by increasing accountability measures. For example, the Annual Performance Index (API) includes Annual Yearly Progress (AYP) scores, which track the progress of subgroups such as ESL Learners. There appears to be agreement among researchers that a correlation between students' socioeconomic status and achievement gap exists (Rumberger and Palardy, 2005; Wang & Goldschmidt, 1999). It would seem that, in order to close the achievement gap, one must first close the socioeconomic gap. However, opportunities to learn are key factors, which may influence and make a difference in a student's life. The problem with opportunities is that not all districts offer the same opportunities to learn despite mandates (Darling-Hammond, 2006; Mullis et al., 1991; Silver, 1997).

Although substantial information has been documented on the educational achievement gap that exists between minority groups and their White counterparts, most recommendations for closing the achievement gap have not shown a significant impact on English Learners, specifically low SES EL Learners.

Achievement gap and OTL. English Learners do not have the same opportunity to learn in terms of course taking (Wang & Goldschmidt, 1999). Gamoran and Hannigan (2000) used national survey data to examine the impact of high school algebra among students who differed in their math skills. Students who are assigned to college-preparatory courses such as algebra and geometry learned more and were more likely to pursue higher mathematical studies. Despite the benefits of early entry into college-preparatory math classes, many school systems diverted students from taking algebra upon entering high school (Gamoran & Hannigan, 2000). White, Gamoran, Smithson & Porter (1996) stated that high school mathematics curriculum sorts ninth-grade students into courses such as general math, pre-algebra, algebra, or geometry (as mentioned in Gamoran and Hannigan, 2000). Higher educational systems add to the achievement gap, as tuition rates have increased at universities and made it financially challenging for minority students to attend.

Segregation Theory

Critical Race Theory. According to Delgado (1995), Critical Race Theory (CRT) suggests racism as pervasive and structurally endemic that affects minority students' progress in schools and their performance on high-stakes testing (as cited in Marx, 2008). Evidence such as Affirmative Action and NCLB are examples that society recognizes that gaps exist because of race and ethnicity. Students are segregated into

groups based on a belief that some are smarter than others. Institutions are created to help end these injustices. However, whenever groups try to maintain their interest, other barriers (such as high-stakes testing) arise in order to stop the process. According to Collins (1993), conflict gives rise to subsequent conflict (as mentioned in Green, 2004). The idea is that an opposing side will counter-mobilize as a function of the group's ability to galvanize resources in order to weaken and diminish the group who is trying to maintain their interest. Green (2004) stated social conflict occurs over limited social resources, and this produces a struggle between people who have and those who do not. As a result, achievement disparities on high-stakes testing are created in order to limit resources to those who have versus those who do not. This reality leads to reasons an achievement gap on high-stakes tests exist.

Cultural Ecological Theory. Ogbu and Simons (1998) published comparative work in six countries: Britain, India, Israel, Japan, New Zealand, and the United States and found that all minorities were historically denied equal educational opportunities in terms of access to educational resources, treatment in schools, and rewards in employment and wages. It is argued that, while cultural and language differences do cause learning problems, it is cultural ecological theory that determines student success (Ogbu & Simons, 1998). Ecological theory refers to the environment of minorities, and, specifically, how people in the environment treat them and how the minorities see themselves in that environment. Ogbu and Simons (1998) state that all the minorities in their studies experienced discrimination in educational policies such as school segregation and unequal funding and staffing. In addition, students were discriminated against by their teacher expectations, teacher to student interaction patterns, grouping,

and tracking. Structural barriers of discrimination in society and school are important determinants of low school achievement among minorities

A related study by Marx (2008) explored cultural and linguistic dynamics in a secondary school and found that Latino students did not blend in as a result of the environment. White students responded more positively to school experiences than Latino students did. Latino students reported feeling less prepared than White students. Qualitative observations and interviews supported the idea that teachers, as part of the school environment, affected Latino students' perceptions of school. White teachers indicated they contributed to feelings of disenfranchisement by insisting Latino students' home cultures "do not matter," by rejecting Spanish in their classroom, and emphasizing the importance of assimilation (Marx, 2008). As a result, Latino students were less convinced that English fluency was a critical component of school success.

History of Hispanic segregation. Forced segregation of Chicano children and youth from their White peers has its roots in the post 1848 decades following Treaty of Guadalupe Hidalgo (Valencia, 2002). After 1870s, the number of schools for Mexican-American children increased due to mandates. However, due to a context of discrimination and a general subordination of Mexican Americans, this dual message caused a pattern of institutional discrimination reflected in establishment of segregated schools for Mexican Americans (Valencia, 2002). Valenzuela (2000) states Mexican American students learned to subtract themselves from the education process by dropping out or withdrawing themselves through absences. They do not identify with school practices, and, therefore, feel it does not pertain or apply to them, mainly because they do not feel valued (Olsen, 2010 Valenzuela, 2000,). As a result, many students fail classes,

are absent or tardy on a regular basis, and, later on, drop out of high school. “Oppression is a system of interrelated barriers and forces which reduce, immobilize and mold people who belong to a certain group, and effect their subordination to another group (individually to individuals of the other group, and as a group, to that group” (Frey, 1983).

Misunderstandings that contribute to segregation policies. False assumptions and misunderstandings about English Learners arise because of negative or less valued attitudes towards the Latino population (Valenzuela, 2000). Perceptions that English Language Learners are low achievers and have low ability have contributed to segregation practices, otherwise known as homogeneous tracking. These common misunderstanding in regards to EL students who do not progress and, therefore, do not reclassify or graduate at appropriate rates is that these outcomes are attributed to deficiencies in the English language or to lesser abilities to learn (Valenzuela, 2000). In fact, English Learners who attend secondary schools are set behind because they are often given multiple periods of English as a Second Language (ESL) classes, while other students are scheduled into a more comprehensive program (Rumberger and Gándara, 2004, Olsen, 2010).

As previously mentioned, reform efforts have not helped English Learners due to the false assumptions that EL learners are homogenous (Reyes & Valencia, 1993). This assumption is based on the idea that students need to be grouped together due to a language commonality or barrier and that they share the same learning needs (Olsen, 2010). The *Lau v. Nichols* (1974) states, “...merely by providing the same textbooks, teachers, and instruction, a student who does not speak English is foreclosed from a

meaningful education.” In addition, contrary to the 2002 vote by the State Board of Education to adopt an English Language Arts textbook program for all, supplementary materials were provided instead. Currently, English Learner advocates await a renewed provision for supplementary materials to support English Learners with the incoming Common Core standards (CDE, 2012; Olsen, 2010).

Another misunderstanding that affects English Learners and, hence, affects low-ability placement is the overreliance on state test scores as relevant data. Teachers and schools who do not share the same language as their students tend to rely on state assessments to make judgments and decisions about categorizing students (Gándara & Rumberger, 2003). However, testing students in a language they are not proficient is invalid and unethical (Rumberger and Gándara, 2004).

Segregation as an input. States and school policies regarding scheduling procedures contribute to segregation practices, as they are also based on misunderstanding and false assumptions about what English Learners need. The extent to which EL learners are segregated by being put on low-ability tracks is a result of segregation practices.

Despite 30 years of pursuing equity, there are still deplorable school facilities, an absence of textbooks and materials, inadequately prepared teachers are observed in schools who are nonwhite and poor (Kemerer, Sansom & Kemerer, 2005; Williams v. California, 2007). Success is, therefore, withheld or hindered by district policy and bureaucracy, as low-level classes are not beneficial for any low-achieving students (Buris, Corbett, Heubert & Levin, 2004; Kifer, 1993; Valencia, 2002).

Outputs of segregation. Bennett (2001) found there continues to be a declining rate of college access since the early 1970's, and the college-going pool is shrinking for African-American and Latinos. The fact that people of White descent are not experiencing the same decline in the college-going pool as other groups of people adds to the achievement gap. Literature on high-stakes testing and reasons students do not perform well on them is an area that needs more research (Rueda, 2005; Valenzuela, 2000).

Outcomes that result from students dropping out of high school include increased crime and increased cost for community services. For example, a loss of income is experienced as the jobs of future will not only require college degrees but also require proficient knowledge in the areas of science, mathematics and technology (Brown & Campbell, 2008). In a 2011, compendium report by the National Center for Educational Statistics (NCES), which included a Current Population Survey (CPS), the Annual Common Core Data (CCD), and the General Education Development Testing Services (GEDTS), Black and Hispanic students had higher event rates than did Whites in 2009. According to Chapman, Laird, Ifill, and KewalRamani (2011), the median income for students who drop out is \$25,000, and the median income of persons 18 to 67 who graduate or receive a General Education Development (GED) certificate is \$43,000. This translates into a \$630,000 loss of income over a person's lifetime (Chapman, et al., 2011). Further, comparing students who drop out of high school with those who complete high school, the average drop-out costs the economy \$240,000 over his/her lifetime due to lower tax contributions, Medicare use, welfare, and higher rates of crime (Levin & Belfield, 2007 as mentioned in Chapman, Laird, Ifill, and KewalRamani, 2011).

The future of English Learners is important as the Mexican-American, Hispanic/Latino population is projected to become the new majority. This fact is relevant to the future economy as a whole. The concern is that students who come from homes in which English is not the primary language are not progressing at the same rate as other minorities or their White counterparts.

Research indicates the main predictor for success for English Learner students is their economic status (Morales, & Saenz, 2007; Seymour, 2010). Already, there is a disproportional achievement gap and economic gap for this subgroup. Adding to the hindrance are the following barriers: segregation efforts through tracking, and losses of opportunity-to-learn by inequitable decisions. Are California schools prepared to service English Language Latino students? What can districts do to reduce the educational gap in order to help English Language students improve and have access to opportunities to learn?

Mandates. Mandates have been institutionalized in order to protect a person's civil rights and right to a free and appropriate education. Although mandates have both the power and influence to determine opportunities for all students to learn, they sometimes have unintended consequences which hinder and segregate students from equal opportunities to learn. For example, the mandate that each English Learner students be placed in an appropriate ELD program protects the right to learn English at students' fluency level. However, this same mandates requires exit criteria, which differs from district to district. Exit requirements become an obstacle late on in secondary education curriculum because, many times, an ELD class takes the place of an elective.

Furthermore, Hochschild and Scovronick (2003) argue that desegregation mandates have not worked. The federal government attempts to institute an equitable solution to inequalities in education by race and ethnicity, but it is faced with an uphill battle given the cultural norms that have been ingrained in U.S. society. When one positive step is made towards equality, then, eventually, another counter step changes or softens a mandate. The danger in softening mandates is that some counterproductive changes are hard to undo. For example, after the *Milliken v. Bradley* case, the Supreme Court began to develop guidelines to release districts from court supervision, and loopholes have now allowed courts to announce discrimination must be “eliminated to the extent practicable” (Hochschild & Scovronick, 2003). Those words make it hard to hold districts accountable.

Tracking and Academic Achievement

The bureaucratic system of education, which includes assessments, does not support English Language Learners’ development. English Learners experience school differently than their native English-speaking counterparts. Students are put on regular tracks, meaning they have non-honors and non-college classes as a result of testing low on standardized tests. High school exit-level exams discourage students who would have been motivated to work in a skilled occupation from obtaining a high school diploma (Valenzuela, 2000) because they score very low rates. Knowing the value of passing these difficult tests and knowing that their future is held hostage as a result of the need to succeed in them, students develop unproductive strategies of action and either drop out, are absent, and or enroll in continuation schools as a form of escape.

Although tracking practices can benefit some groups of students, for most, the tracking path contradicts itself, as it only serves to place students further behind. Spielhagen (2006) found that tracking did not benefit low-performing students. Once a student is identified as an English Language Learner, s/he is put on a lower path of instruction and curriculum due to low expectations. As a result, these students do not have the same opportunity to learn as prescribed by NCLB (2001). In support of not tracking students, Schofield (2010) found that being in a classroom with high-ability/high achieving classmates was associated with increased achievement.

There is not a large body of literature on the subject of EL curriculum tracking and the impact tracking has on student academic success (Callahan, 2005). When it comes to high school, the research quantity is more trifling. There is a need to revisit course-taking patterns and there is a need to focus on classroom instruction that focuses on academic content (Callahan, 2005). This study looks at the pattern of tracking Algebra at appropriate grade levels in order to determine student academic success.

High-ability tracking v. Low-ability tacking. High-track students have more time to learn, teachers are clearer, classroom-learning tasks appear more organized, and students are engaged and more active learners (Oakes, 1992). Lower track classes, on the other hand, are dull and consist of passive instruction and more time on routine, seatwork, and worksheet activity (Oakes, 1992). The use of tracking to address ability in math and science stems from widespread belief that there are intellectual differences and perceived abilities are so great that these students need to be taught in separate classes.

According to Buttaro, Catsambis, Mulkey and Steelman (2010), slow tracking for Hispanic students continue to exist under the guise of homogenous grouping. Hispanic

students in wealthy districts are being segregated and put into slow tracks (Spielhagen, 2006). Students in high-performing tracking pathways outperform students who were placed in low-performing track pathways. Unfortunately, students on high-performing tracks are less likely to be from minority groups (Smith, 1996; Spielhagen, 2006).

Low-level tracking/pathways. The theory behind tracking presumes some students need simplification (Callahan, 2005) therefore; a cycle of low-level tracking for remedial or low-tracked student is perpetuated. First, unequal learning opportunities help to create and perpetuate differences in achievement and participation (Oakes, 1990). Second, opportunities push a particular group of students towards higher achievement and, therefore, others are on a lower track of achievement. Third, the curriculum needed for these students is not appropriate in secondary schools (Callahan, 2005; Oakes, 1990).

As mentioned by Callahan (2005) learning English as a second language serves to slow down pathways because schools focus more on linguistics needs and neglect academic development. The direct impact *Algebra for All* has on the 75% of students, whom we know are not successful due to both low SES and their low levels of acquired English Fluency, remains to be further explored.

Tracking and English Learners. Students who are identified as second language learners are, by law, placed into an ELD program, based on their CELDT levels, designed to help students acquire the English language. Once in an ELD program, students are required to have 45 minutes to one hour a day of English Language Development instruction. Students exit the program based on a set of district criteria, which include obtaining a score of 4 (Early Advanced) or a 5 (Advanced) level on the CELDT test. This mandated program has long been recognized as a tracking and

systemic problem, as research has shown it denies students a rigorous academic pathway that would help them achieve a college and career readiness level. Rumberger and Gándara (2004) agree that this course of study has added challenges for EL students to prepare themselves to meet the requirements for high school graduation. Many EL students are not eligible to take college requirements or higher-level classes in high school, and they do not have the opportunity to apply to universities as a result of not being college-ready. English Language students in affluent communities are more likely to be segregated and put on a slower academic track than other student populations.

Tracking and its relationship to OTL. Frequently, English learners are inadequately informed as to the breath of their choices and the consequences of taking one class over another (DeLany, 1991; Romo & Falbo, 1996, as mentioned in Callahan, 2005). Although every student has an English class, math classes differ in that the content taught varies as students progress from elementary to secondary. If a school determines a student is not ready for Algebra, s/he will be put into a pre-Algebra course or not allowed to enroll until a later time. The problem with this method for English Learners is they will more likely be put on low-ability tracking despite having the ability to learn. With that in mind, opportunities to access and achieve in math are interrupted by school policies and practices.

Oakes (1990) shows that students who do not do well in math in elementary grades will suffer the consequences and that these students are not in the position to obtain careers. A problem for English Language Learners is they suffer from a loss of equity due to lower-ability tracking patterns. They are unable to catch up by the time they are in high school and, as a result, they drop out of high school. One reason is that math,

which needs to be taught sequentially, is hard enough to learn in one year, and, when English Learners find themselves trying to learn what others learned in several years, it becomes overwhelming. According to Mansini (2001), ethnic minorities have less exposure to content and math instruction tends to cover less (as mentioned in Herman & Abedi, 2004). Another reason is that, when students are placed in remedial courses, they are not taught conceptual math concepts but, instead, continue to receive procedural instruction.

Tracking and its relationship to dropout rates. Students who drop out of high school and/or do not go to college increase expenditures for government assistance to individuals and families, add to an increase in crime rates, and disenfranchise from society and its institutions (Amos, 2008; McDill, Natriello & Pallas, 1986). As a result, students face limited occupational choices. The English Language learner population continues to grow, and there will be a majority group of people who are not educated if we do not find ways to help students feel connected to the school environment and make higher education available to them (Amos, 2008; Morales & Saenz, 2007; Valenzuela, 2000).

College level entrance exams, which tend to serve as the determining factor for whether students will attend college, are biased against English Language Learners (Morales & Saenz, 2007). Despite the controversies, standardized testing continues to act as the gateway to higher education, which means high-stakes testing will continue to contribute to the achievement gap that already exists between white Americans and minorities entering universities unless more attention is brought to discriminating factors

which prevent English Language Learners from moving into higher educational opportunities (Morales & Saenz 2007; Valenzuela, 2000).

Studies on tracking. Although there is not a large body of literature on the subject of EL curriculum tracking and the impact tracking has on student academic success, Callahan (2005) found English Learners are not progressing as their mean scores fell below those of recent immigrants on three of six academic achievement outcomes: GPA, credit ratio and CAHSEE math. In addition, their SAT 9 scores were significantly lower. District policies and scheduling practices, as they relate to who may have access to what classes, contribute to segregation in California schools (Act, 2008). Implications for Second Language Learner students is that, from the time they enter into an English Language Development (ELD) program until they reclassify and beyond, they are more likely to be put on a slow-paced and low-ability track for instructional purposes.

OTL and Success in Math

Adoption of math standards - background of the problem. The idea that, for the first time in history, the next generation will not surpass or equal their parent's education attainment was a major concern with broad appeal (A Nation at Risk, 1983). The Nation at Risk report's urgent cry for help was based on the perception that America's prosperity and security is at risk based on the following indicators: American children are behind academically in comparison to other countries, 23 million American adults are illiterate, 13% of 17- year olds are illiterate, 40% of youth are from minority populations, the College Board found a decline in physics and English, and lower achievement scores indicate American students are behind in comparison to other countries in the areas of reading, writing, spelling and computation. With technology

growing rapidly, a concern is that America is raising technologically and scientifically illiterate students. The public agreed that the United States was at risk and, in 2002, NCLB was instituted.

NCLB. The theory of action behind NCLB suggests that, if we raise our standards and set yearly benchmarks to allow states to catch students up and measure growth with AYP targets, then all students will be proficient by the year 2014. The action included monetary funds to help support states and districts with additional interventions for those with lower socioeconomics and lower-achieving subgroups. However, the administration of the program fell short due to policy instruments, a lack of implementation and enforcement, and the ways in which schools were evaluated.

NCLB (2001) intended to close the achievement gap, and provide flexibility choice so that no child is left behind (NCLB, 2001). In addition, it designed a distribution model and targeted resources sufficiently to make a difference for local agencies with greatest need. Title 1, Part A, subpart I, states there should be challenging standards, and part F prohibits a state from revising existing standards (Public Law 107-110 January, 2002). Accountability measures for NCLB stated each state shall demonstrate adequate yearly progress (AYP) and allowed each state the right to set its own targets and develop its own standards. Each state and local district was made responsible for increasing student achievement by providing rigorous standards in order to make sure students are ready to compete in the 21st Century. The goal was that all students should reach proficiency by 2014. Assessments such as the California State Test (CST) were designed to measure students' progress and proficiency on grade level work

and national assessments are meant to measure what students ought to know (Viadero, 2010).

NCLB's goal was to provide provisions that would ensure all students have equal opportunities to learn so that all students would be on track towards proficiency. The accountability authors of the API and AYP accountability measures made sure all subgroups were accounted for and calculated into the overall determination of a district's success rate. They help monitor and regulate the achievement of subgroups in order to ensure no child would be left behind. California reports student achievement data and outcomes on a California Report Card (SARC), which is posted on the California Department of Education Website.

Math adoption. California adopted academic content standards for math in 1997 and it included Algebra I for 8th grade (Rosin, Barondess & Leichty, 2009). Later, in 2005, Algebra I became a requirement for high school graduation as it was instituted into the California Math Frameworks. Algebra I became an official test students needed to pass in order to graduate. Passing Algebra by grade 8 is important because it gives students more time and opportunities to retake the course if needed.

High schools are accountable for providing courses that fulfill the minimum criteria for University of California (UC) and the California State University (CSU) systems. Districts have decision rights over the use of different philosophies and approaches toward math curricula. A traditional curriculum begins with Algebra I and moves onward to Geometry, and, later, Algebra II. The sequential order depends on each school district (Rosin, Barondess & Leichty, 2009). The order is related to on-time course taking, and that feeds into on time graduation rates.

NCTM standards. National Council of Supervisors and Mathematics (1988) advocated for math reforms and endorsed and published three major components known as the “NCTM Standards”. This document outlined standards for grades K through 4th, grades 5 through 8th and grades 9 through 12th. The Standards represented an increased expectation for student proficiency with mathematics so that students are able to understand math processes through communication in the language of math (Miller & Mercer, 1997). The Standards promoted advanced skills such as algebra and geometry. The trend for higher standards increased rigor and made it difficult for “all” students to meet the requirements of a high school diploma (Miller & Mercer, 1997). Rigor has increased in textbooks, classroom planning and teaching (Resnick & Resnick, 1985).
Increased Competency Testing

Math and OTL. NCLB (2002) required that California standards outline mathematical content taught at particular grade levels, and, because high stakes are attached to mandated assessments, determining which students have opportunities to learn math is important (Herman & Abedi, 2004; Spielhagen, 2006).

Algebra for All Initiative (2005)

Algebra for All and its implications for English Language Learners. The *Algebra for All* mandates of 2005 opened the door of opportunity for EL students by mandating that districts should enroll all students in Algebra I by grade 8. *Algebra for All* has become a goal in school reform and is supported by the NCTM (Chambers, 1994; Miller & Mercer, 1997). Although *Algebra for all* was supposed to be implemented in 2005, it has not been universally implemented (Gamoran & Hannigan, 2000). Districts have approached the transition by bridging the gap between low-level and college

preparatory math (White et al., 1996). Unfortunately, the OTL data regarding algebra in California showed that 10% of students received no algebra instruction and 25% who received instruction only received half of the math content covered on the algebra subtests; this was attributed to class assignment (McDonnell, 1995). Research shows that ethnic minorities and English Learners have less exposure to math content, and they are highly overrepresented in lower level mathematics courses (Gross, 1993; Herman & Abedi, 2004; Oakes, 2004).

Algebra has been called a “gatekeeper” because successful completion of an algebra course is a prerequisite to further studies in math and many jobs or later opportunities Silver (1997). Unfortunately, recent NAEP data indicates that less than half of students in urban schools take any mathematics beyond one year of algebra and one in five may not study algebra (Mullis et al., 1991). In addition, statistics show that minority students often make unguided decisions in high school and drop mathematics (as mentioned in Silver, 1997). Jetter (1993) states equity is so important that access to algebra is a crucial issue for civil rights movement for minorities (as mentioned in Silver, 1997).

Timing of algebra. According to Spielhagen, (2006) two events have influenced the timing of Algebra. First, the need to increase math literacy was established by the National Council of Teachers of Mathematics (1989) and, second, five years later, grade 8 became the right time to take algebra based on the National Council of Education Statistics (1994) report. It stated that schools that offered algebra in grade eight were more effective (Spielhagen, 2006). In addition, Smith (1996) determined that early access to algebra has positive sustaining effects on students and that exposure to

advanced mathematics is better than not. Moreover, the TIMSS –R concluded that the grade 8 mathematics curriculum in the U.S. was comparable to the average grade 7 curriculum, which indicates that U.S. students are behind other countries (Spielhagen, 2006).

Silver's (1997) counterargument to early algebra states that, although students take Algebra I, not all do well, and, therefore, the timing of the class is important. Further, the National Assessment of Education Progress (NAEP) reports that less than half of all students take any more math courses after Algebra I, and many twelfth-graders have scored poorly on algebra concepts (Silver, 1997). Nevertheless, taking algebra in grade 8 is better than not taking it (Gamoran & Hannigan, 2000; Spielhagen, 2006).

Despite an increased interest in providing algebra to 8th graders, educational research has conducted few studies regarding the effect of taking Algebra I or other on-time math courses (such as Algebra II or Geometry) on EL Learner success rates in both math and ELA. English Learner research has not provided strong evidence to show what happens when English Learner students are given opportunities to learn rigorous material such as Algebra I because it has been difficult to show what other factor besides SES, can have an impact on success.

Studies on *Algebra for All*. The National Center for Education Statistics conducts longitudinal studies on English and math trends. The most recent math trends from the 2007-2008 school year showed that, while there was some math gains for 9 and 13-year-olds, the average scores for secondary students (17-year-olds), did not significantly change since the 1973 (NEAP, 2008). Results yielded support for the *Algebra for All* initiative, as the study found that higher-level mathematics courses was associated with

higher scores on the 2008 mathematics assessments. However, the performance of twelfth grade students on many algebra related tasks on the NAEP suggests enrollment in these courses does not ensure mastery (Mullis et al., 1991). A benefit to having an increased percentage of students enrolled in Algebra classes is that these students score higher on average than students enrolled in either Pre-Algebra classes or general math in 2008 than they did in 1986 (NEAP, 2008). However, because the increase was not significant enough more in-depth-research on how high math courses relates to English Learners is needed.

Benefit of algebra in grade 8. Gamoran and Hannigan (2000) used national survey data to conduct a study on the impact of high school algebra on 12,500 students who differed on their math skills before entering high schools. Students who had access to Grade 8 Algebra were Whites, and Asians and females, while males, African Americans and Latinos were underrepresented in this group. Data on 3,000 student data were excluded from the analyses because of missing transcript data. However, the overall study results indicated that all students would benefit from taking algebra, even students from low SES backgrounds. The difference between students who took algebra and those who did not was significant enough to support the *Algebra for All* initiative in that all students should take algebra. According to Spielhagen (2006), two events have influenced the timing of Algebra. First, the need to increase math literacy was established by the National Council of Teachers of Mathematics (1989) and second, five years later, grade 8 became the right time to take algebra based on the National Council of Education Statistics (1994) report. It would be, therefore, valuable to study which districts are still continuing to deny students access and OTL.

Who takes algebra? Spielhagen's (2006) mixed-method study on policy implications and potential benefits of providing algebra instruction to all students was conducted on a large southeastern suburban school district. Characteristics of students in each of the algebra pools, which consisted of eighth grade and post-eighth grade students, and the effects of their math course-taking for eighth grade (n=2,634) were examined. The study attempted to determine who got into eighth grade algebra, what background circumstances affected the district and what effect did studying algebra in eighth grade have on student achievement and attainment (Spielhagen, 2006). This study revealed that a greater proportion of Black and Hispanic students were enrolled in Mathematics 8, while a larger proportion of Asians and White students were enrolled in Grade 8 Algebra 1 (Spielhagen, 2006). Caucasian students were 1.4 times more likely to get into an early algebra group. In agreement with the study above, Silver (1997) states there is an inequality that exists for students of color in regards to access to Algebra courses. The proportion of students taking one or two years of algebra is lower in urban schools in comparison that in affluent communities (Silver, 1997).

In regards to student background and how students were selected, it was noted that once a student is on a particular track, s/he stays on that track (Spielhagen, 2006). However, the district did support parents who insisted on their students' staying on a high track. A difference is that parents of minority students who are from lower SES schools are not likely to question the placement of their children. Spielhagen (2006) states that, once students gain access to Grade 8 Algebra, the majority of them pass the state exam in algebra despite having some difficulty with the subject. Therefore, this finding prompts a closer examination of student achievement and student enrollment.

In support of *Algebra for All*, the outcomes of this study showed that students in the access group, Grade 8 Algebra I, scored higher than their peers, but, on the state test, the scores of both groups were closer in range (Spielhagen, 2006). In support of detracking, the study found tracking did not benefit lower performing students. It was noted that students who had the opportunity to take algebra through parent or teacher override gained access to eighth grade algebra (OTL) and were successful. These students received the benefit of “jumping the tracks” and had the opportunity to take more math courses (Spielhagen, 2006). Because this study was conducted on southeastern suburban students’ generalization is compromised. Therefore, an examination of enrollment practices and success rates for students in urban districts is needed.

Summary

All minority groups, 37 percent of the US population, are projected to comprise 57 percent of population in 2060 (U.S. Census Bureau, 2012). California is one of the few states in which minorities will soon be the majority (Teranishi, Allen, & Solorzano, 2004; U.S. Census Bureau, 2012). The State of California Department of Finance demographic research unit found that, in 2002, California became home to the largest number of legal immigrants (27.4%) from 10 countries and 36 percent of them were born in Mexico. The remaining 39 percent of the total include those from the Philippines, the People’s Republic of China, India, El Salvador, Vietnam, Guatemala, Iran, Korea, and Taiwan (State Department of Finance, 2013). A major concern in California is the rapid growth of the Mexican-American Latino population and, unless the education system is prepared to better service English Language Learners, dropout rates may rise to an all-

time high. The state and communities will have to deal with a large number of students who are not qualified to compete in the 21st Century because they do not have basic skills or the education necessary to obtain careers or attend higher education. Further, California communities may experience the consequences of not investing in a large group of struggling youth that are at risk of living in poverty or below poverty levels.

The rising Hispanic/Latino population is not only growing in number, but, since they are dropping out at high rates and not graduating high school, this is a societal problem (Kholer & Lazarín, 2007). There should be an urgency to save the generations of children who do not meet grade level standards. Although it has become common knowledge that tracking students leads to inequitable opportunities to learn, today's secret is that many students are prohibited from accessing classes that will help them graduate. This study focuses on English Language Learners because they are a low-performing subgroup that is marginalized and segregated in many public schools. As a result, the achievement gap continues to widen for them, and they are slowly being subtracted out.

Without a substantial increase in the educational achievement of underrepresented groups, the nation will continue to risk not meeting future human capital needs such as those for science and technical positions. Mathematics Teaching in the 21st Century (MT21), a cross-national study, found that a teacher "preparation gap" is what affects student OTL (2011). This study was based on 2,627 future teachers from 6 countries, including the United States and it differs from the Third International Math and Science (TIMSS) study in that the highest mathematical level of teacher preparation programs

was found in Taiwan and Korea. This study attempts to link OTL and the *Algebra for All* (2005) initiative. The research questions are:

- 1) To what extent, if any, have large urban school districts in CA increased ESL access to early algebra between 2004 and 2012?
- 2) To what extent, if any, have large urban school districts in CA decreased the gap between ESL and White student access to early algebra between 2004 and 2012?
- 3) To what extent, if any, have large urban school districts in CA increased ESL success in Algebra I between 2004 and 2012?
- 4) To what extent, if any, have large urban school districts in CA decreased the gap between ESL and White student Algebra I success between 2004 and 2012?

Chapter 3: Methodology

The purpose of this study is to evaluate the effect the *Algebra for All* (2005) initiative has had on opportunity-to-learn and Algebra I achievement of California students designated as English as a Second Language Learners (ESL) as measured by Algebra I participation rates and Algebra I achievement on the California Standards-based Test (CST) within Standardized Testing and Reporting (STAR). In addition, this study aims to provide new knowledge to further investigate the harmful effects that tracking has on English Learners as it limits access and opportunities to learn. In 2005, the California Superintendent of Instruction implemented an initiative known as *Algebra for All*. The design of the policy and intent of the initiative was to provide all students more equitable Opportunity-to-Learn (OTL) and to increase achievement rates. This policy serves to help ESL students, who, before this initiative, may have not had the opportunity to take Algebra I by the 8th grade.

In addition to the Los Angeles Unified School District (LAUSD), 17 large California school districts were selected for study. They were Anaheim Union High, Corona-Norco Unified, Desert Sands Unified, Elk Grove Unified, Fresno Unified, Lodi Unified, Long Beach Unified, Moreno Valley, Mt. Diablo Unified, Riverside Unified, Sacramento City Unified, San Bernardino City, San Diego Unified, San Francisco Unified, Santa Ana Unified, Stockton Unified, and Sweetwater Unified. The following research questions will be addressed:

1. To what extent, if any, have large urban school districts in CA increased ESL
 - a. access to early algebra between 2004 and 2012?

2. To what extent, if any, have large urban school districts in CA decreased the
 - a. gap between ESL and White student access to early algebra between 2004 and 2012?
3. To what extent, if any, have large urban school districts in CA increased ESL
 - a. success in Algebra I between 2004 and 2012?
4. To what extent, if any, have large urban school districts in CA decreased the gap
 - a. between ESL and White student Algebra I success between 2004 and 2012?

Method Summary

This study focused on the success scores of White and ESL students before and after the *Algebra for All* (2012) initiative in order to determine whether access to Algebra I increased student achievement. The primary independent treatment used in this study is the *Algebra for All* initiative. The primary dependent variables were opportunity-to-learn based on the percentage of students tested in Algebra I by grade 8 and achievement based on the mean percentage of White and ESL students who scored “basic and above” on the Algebra I CST by grade 9.

In order to determine whether the *Algebra for All* initiative made a significant impact on ESL student achievement, a quasi-experimental design was used. All data were collected via the California Department of Education (CDE) website and downloaded as a single research file. Next, data was entered into an SPSS data file and analyzed using the Statistical Package for the Social Sciences (SPSS) software.

The English Language Arts enrollment numbers were used as a benchmark to determine total enrollment; the number of students tested in grade 8 ELA (denominator)

along with the number of students who tested for Algebra I by grade 8 (numerator) was used to calculate the percentage of students who had the opportunity to learn Algebra I. Variables were later added to the SPSS research file. To determine a relationship between early algebra and success rates, students who took Algebra I by grade 7, 8, and 9 in the years 2004, 2007 and 2012 were examined. Success was determined as a score of “basic and above” on the Algebra I CST. According to Rosin, Barondess, and Leitchy (2009) there are two ways to determine success, (1) student participation, and (2) math success in the course (EdSource, 2009). This study examined both, how OTL increased overtime through participation rates and how well students performed on CST Algebra I, grade 9 over time.

Students’ success rates in LAUSD were compared to student success rates in 17 statewide large school districts before (2004) and after (2012) the *Algebra for All* (2005) initiative was introduced by the California Superintendent of Instruction.

Quantitative Research Design

Pre-post Retrospective Comparison Group Design. A pre-post retrospective comparison group design noting the difference in OTL and Algebra I CST scores was used to analyze the effects of the *Algebra for All* initiative. Below is the graphic representation of the retrospective comparison group design. In this design, the X represents the intervention of the *Algebra for All* initiative.

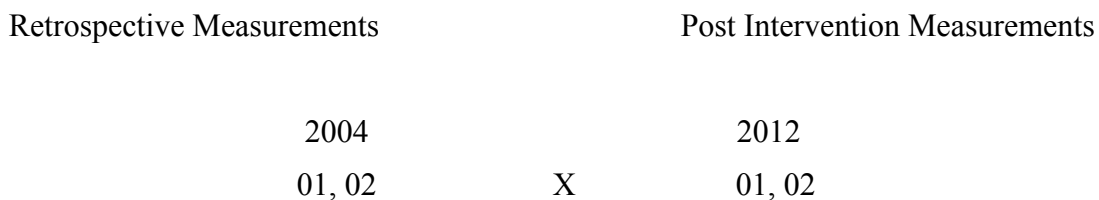


Figure 2. Non-Equivalent Retrospective Comparison Group Design

OTL and CST student test scores for the intervention group in 2012 were compared to the data outcomes of the retrospective comparison group in 2004. This comparison allows for an analysis of the difference between post and pre-intervention scores. The two dependent variables (01, 02) were OTL and CST Algebra I success.

Non-equivalent Comparison Group Design. Below is a graphic representation of the LAUSD group and the 17 comparison districts. The intervention is the implementation of the *Algebra for All* (2005) initiative. There are two groups of dependent variables: the CST success math scores and the OTL scores. Below is a graphic representation of the non-equivalent comparison group design. In this design, the X represents the intervention of the *Algebra for All* initiative for LAUSD in the year 2012.

	2004		2012
LAUSD Districts	01, 02	X	01, 02
17 Comparison Districts	01, 02		01, 02

Figure 3. Non-equivalent Comparison Group Design

Dependent variables. Two dependent variables were measured. The first dependent variable measured Algebra I OTL by grade 8. OTL was determined by the sum of the number students who took Algebra I by grades 7 and 8 divided by the number of students who tested in the English Language Arts portion of the CST in grade 8.

The second dependent variable will be success in Algebra I by grade 9. Success is defined as basic or above on CST.

To compute for success rates in grade 9, the following three groups of computations were added: (1) the number of students who scored “basic and above” in Algebra I by grade 7; (2) the number of Algebra I students who scored “basic and

above,” in grade 8; and (3) the number of Algebra I students who scored “basic and above,” in grade 9. Then, the number of students who tested in English Language Arts by grade 9 was divided by the total of the three groups.

All of the computations were done for each year, 2004, 2007, and 2012, to determine both OTL and success rates and changes over time.

Independent variables. There are three independent variables in this study: (1) LAUSD versus 17 large urban school districts, (2) White vs. ESL students, and (3) differential implementation of *Algebra for All* from 2004 to 2012. LAUSD represents one district with a large number of ESL learners, and, in this study, was compared to 17 other large districts that also had a large number of ESL learners to determine differences. District ESL proportions ranged from 28 percent to 80 percent. A total of 14,680 White students took the ELA, CST in 2012 in comparison to a total of 9,717 White students who took Algebra 1 by grade 8. A total of 47,753 EL and RFEP students took the ELA, CST in 2012 in comparison to a total of 31,251 EL and RFEP student who took Algebra 1 by grade 8. Finally, to analyze the effects of *Algebra for All*, data were collected for the years 2004, 2007, and 2012. Comparison data focused on the years 2004 and 2012 and on the differential effects of *Algebra for All* in all seventeen districts.

Participants and Setting

The sample consisted of White and ESL students in LAUSD and in 17 comparison districts who took the California Standards-based Test (CST) in Algebra I in the years 2004, 2007, and 2012. The participants of this study were districts that enrolled students in one of California’s examinations (CST) in Algebra I during the years 2004 to 2012. To be considered “numerically significant” districts either (1) had a subgroup that

consisted of at least 50 students with valid test scores who made up at least 15% of total valid scores, or had (2) 100 students enrolled to test in CST (CDE, 2012; Edcode 5052).

The districts selected differed in grade level enrollment practices for grades 7, 8 and 9.

Table 4 provides enrollment data for LAUSD and 17 urban school districts used in this study. A condition for district selection was a grade 7 to 11 enrollment of more than 10,000 students and an ESL percentage greater than 28.

Table 4

17 Urban School District percent and number of ELs

District Name	Dist Enroll	ESLpercent	N ESL
Anaheim Union High	27495.4162	.5395	14835.0268
Corona-Norco Unified	17786.6292	.3090	5496.4172
Desert Sands Unified	10280.1377	.4151	4267.7257
Elk Grove Unified	22565.2684	.3034	6847.0434
Fresno Unified	20710.1403	.3551	7354.0536
Lodi Unified	10341.8687	.3802	3931.8253
Long Beach Unified	34117.7377	.3716	12679.8010
Los Angeles Unified	216792.2356	.5092	110384.8730
Moreno Valley Unified	13416.5444	.4092	5490.4628
Mt. Diablo Unified	12147.6422	.3118	3787.4613
Riverside Unified	16109.1450	.2878	4635.4887
Sacramento City Unified	16213.0885	.3485	5650.0728
San Bernardino City Unified	20875.1082	.4487	9365.9652
San Diego Unified	39243.8337	.4267	16743.4357
San Francisco Unified	17437.3817	.4783	8340.3620
Santa Ana Unified	19786.7853	.7992	15813.2096
Stockton Unified	13250.5115	.4159	5511.3145
Sweetwater Union High	29860.2198	.5074	15151.6535
Total	31023.8719	.4231	14238.1218

LAUSD. The city of Los Angeles founded in 1853 is situated in Southern California and is the most populous city in California and the second most populous city in the United States. It is considered to be one of the most ethnically diverse cities in the U.S. The United States Census (2010) records show a population of 9,818,605 in Los Angeles County, and 4,936,599 of these residents are White and 4,687,889 are Hispanic

or Latino (US Census). Los Angeles is the largest city in Los Angeles County. LAUSD is the second largest district in the nation and LAUSD enrolls more than 640,000 students in kindergarten through 12th grade. There are over 900 traditional schools and 187 public charter schools within the LAUSD boundaries that extend over 720 miles. LAUSD includes the mega-city of Los Angeles, 31 smaller municipalities, and several unincorporated sections of Southern California.

The total student population of LAUSD in 2009-2010 was 677,538, of which 497,583 were Hispanic students. The percentage of reclassified students in 2010-2011 was 12.75. The total English Language learner student count in 2010-2011 was 181,373, and 169,541 of these students spoke Spanish. The other 3,737 EL students spoke the following languages: Armenian (2,075), Cantonese (732), Korean (1,939), Farsi (586), Tagalog (1,641), Russian (538), and Vietnamese (584). With this in mind, there are about 92 languages other than English spoken in LAUSD schools. Primary languages are Spanish (93.4% of English Learners), Korean (1.1%), and Armenian (1.1%). Tagalog, Cantonese, Arabic, Vietnamese and Russian, each account for less than 1% of students who are learning to speak English proficiently. Total student enrollment as of October 2011 was 911,413 (which includes Adult Ed.), and 144,412 of these students were in senior high school grades 9 through 12 (LAUSD).

LAUSD's mission is focused on the rights of LAUSD youth to gain an education that prepares them for success. Their mission statement is "LAUSD will provide high quality instruction coherent and rigorous curriculum in every classroom to facilitate student learning and achievement." Their vision is "Every LAUSD student will receive

an education in a safe, caring environment and every student will be college-prepared and career-ready” (LAUSD, 2012).

17 statewide districts. Data collected for Table 4 were created using a data archive credited to Levy (2011). Table 5 shows the demographics for the 18 California districts used in this study. The ESL student population ranges from 29 percent in Riverside Unified School District to 80 percent in Santa Ana Unified School District. Column 2 shows the percentage of students whose parents completed various levels of education. The items are coded as follows: (1) not a high school graduate, (2) high school graduate, (3) some college, (4) college graduate, and (5) graduate school (California Department of Education, 2012). The average student’s parent education ranged from a low of 1.7 percent in Santa Ana Unified School District who to 3.0 in Mt. Diablo Unified School District. LAUSD has an average education of 2.3. Column 3 shows the percentage of students whose parent did not have a high school degree. This index ranged from 11 percent in Elk Grove Unified School District to 57 percent in Santa Ana Unified School District. Thirty-four percent of the parents in LAUSD did not have a high school degree. Column 4 shows the percent of students who are socioeconomically disadvantaged, as measured by participation in the federal Free or Reduced-Price Lunch Program. The percentage range of students who participate in the Free or Reduced-Price Lunch Program ranges from 44 percent in Mt. Diablo to 90 percent in Fresno Unified School District. LAUSD has a FRLP rate of 78 percent. The overall average is 67 percent.

Table 5

District Demographics

District	ESL percent	Aver_Educ	HS_only	FRLP
Anaheim Union High	.5395	2.5945	26.1818	61.5909
Corona-Norco Unified	.3090	2.8012	19.1765	46.7059
Desert Sands Unified	.4151	2.4594	26.7429	66.4857
Elk Grove Unified	.3034	2.9830	10.5522	54.8806
Fresno Unified	.3551	2.3123	29.4623	89.9057
Lodi Unified	.3802	2.6019	20.4074	62.6852
Long Beach Unified	.3716	2.7453	21.5495	68.0769
Los Angeles Unified	.5092	2.2951	34.2279	78.0106
Moreno Valley Unified	.4092	2.4741	20.5897	78.1795
Mt. Diablo Unified	.3118	3.0670	15.4821	43.5714
Riverside Unified	.2878	2.4406	22.4082	61.0612
Sacramento City Unified	.3485	2.6736	20.9767	71.1163
San Bernardino City Unified	.4487	2.1148	36.3200	83.5067
San Diego Unified	.4267	2.7711	18.4954	66.7844
San Francisco Unified	.4783	2.6261	14.2589	60.3393
Santa Ana Unified	.7992	1.7293	56.7705	80.6721
Stockton Unified	.4159	2.2715	29.3051	83.6441
Sweetwater Union High	.5074	2.7071	19.8710	53.4516
Total	.4231	2.5371	24.5988	67.2593

Instrumentation

Achievement. The data for this study was collected at different points in time in order to determine differences after the *Algebra for All* initiative was implemented in year 2005. The study was based on the years 2004 to 2012. Achievement was measured through the California Standardized Tests (CST) in Algebra I. Students who take this test receive feedback in the form of both raw and scale scores. Scale scores are used to balance off test scores across multiple versions of different tests, and they range from 150 to 600 for each test and grade level (CDE, 2010). Because scale scores are not scaled vertically across grade levels or subjects, they may not be used to measure success across

grade levels (CDE, 2010). To address this issue, scaled scores are categorized into five performance bands labeled Far Below Basic (FBB), Below Basic (BB), Basic (B), Proficient (P), and Advanced (A) by the CDE (2010). The minimum scale score required for students to earn scores in the basic range of 300 is the same measurement used across all tests and grade levels (CDE, 2010). This alignment allows the Basic category cut-off to act as an appropriate indicator of success for this study, as those who score below this marker are judged as having “little or no command” of the subject tested (William et al., 2011).

Chapter 4: Results

The purpose of this study was to assess the impact that the *Algebra for All* (2005) initiative had on ESL students' opportunity to learn Algebra I by grade 8 and on Algebra I success rates. In addition, this study examined large districts in California to determine which districts still used tracking and which districts did not, as determined by how many students were tested in Algebra I by grade 8.

There were three independent variables: (A) Los Angeles Unified School District versus 17 large districts, (B) White versus ESL students, and (C) differential implementation of *Algebra for All* at the district level. In addition, two dependent variables were incorporated in the design: (A) the number of students who took the Algebra I test in grade 8 (OTL), and (B) the percentage of students who scored "basic and above" on the CST in Algebra I by grade 9. The Los Angeles Unified School District and a target group of 17 large California districts were used for comparison purposes. This research investigation sampled CST Algebra I data from 2004, 2007, and 2012.

Results for Opportunity to Learn

As shown in Figure 4 the ESL OTL increased from 2004 to 2012 in all but one of the 18 large school districts. The data from Figure 4 show an increased Algebra I OTL by grade 8 in 16 of the 18 large districts of 20 percent or more. The most significant increase was in the Mt. Diablo Unified School District (.70). In 2004, 16 percent of the students took the Algebra I test by grade 8, and, in 2012, 86 percent of students took the test; a statistically significant increase of 70 percent. The second largest increase of the ESL OTL was in the Stockton Unified School District (.69). In 2004, 25 percent of

students had access to early algebra and, by 2012, 94 percent did, a statistical increase of 69 percent. The third largest increase was the Anaheim Union High School District which saw an increase of 68%. In 2004, only 11 percent of students had access to early math and, by 2012, 79 percent did.

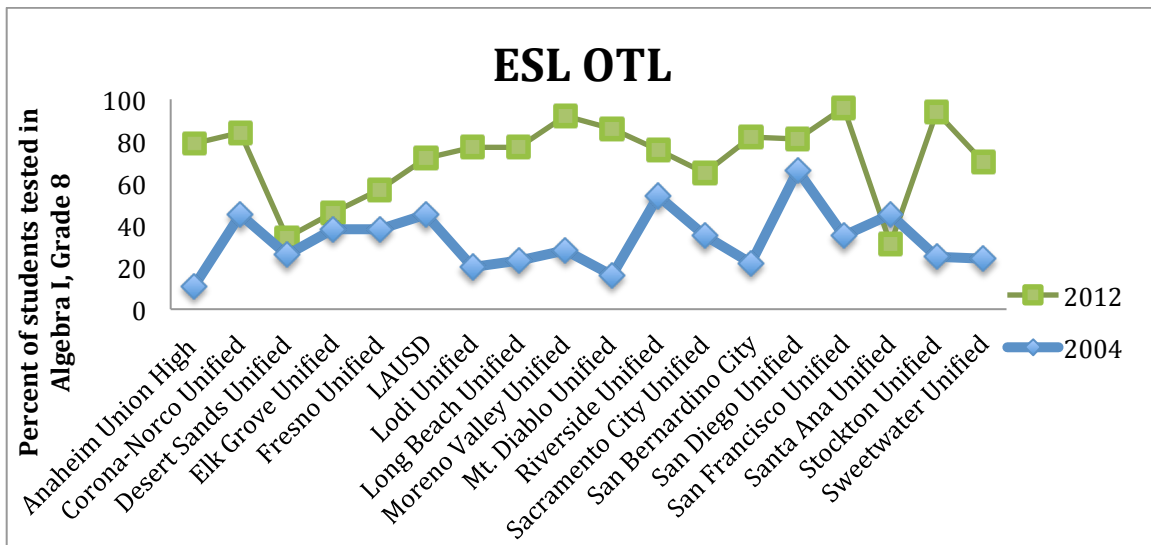


Figure 4. English as a Second Language students OTL scores per the 18 districts.

Two of the smallest, yet positive, increases were found in Desert Sands Unified School District, which had an increase of 8 points (from 26 in 2004 to 34 points in 2012) and Elk Grove Unified School District, which had an increase of 8 points (from 38 in 2004 to 46 in 2012).

Santa Ana Unified, which had a population of 80 percent ESL students, decreased student OTL for Algebra I by 14 percent. Thus, EL students in Santa Ana were least likely to take Algebra I in comparison to the other 17 districts.

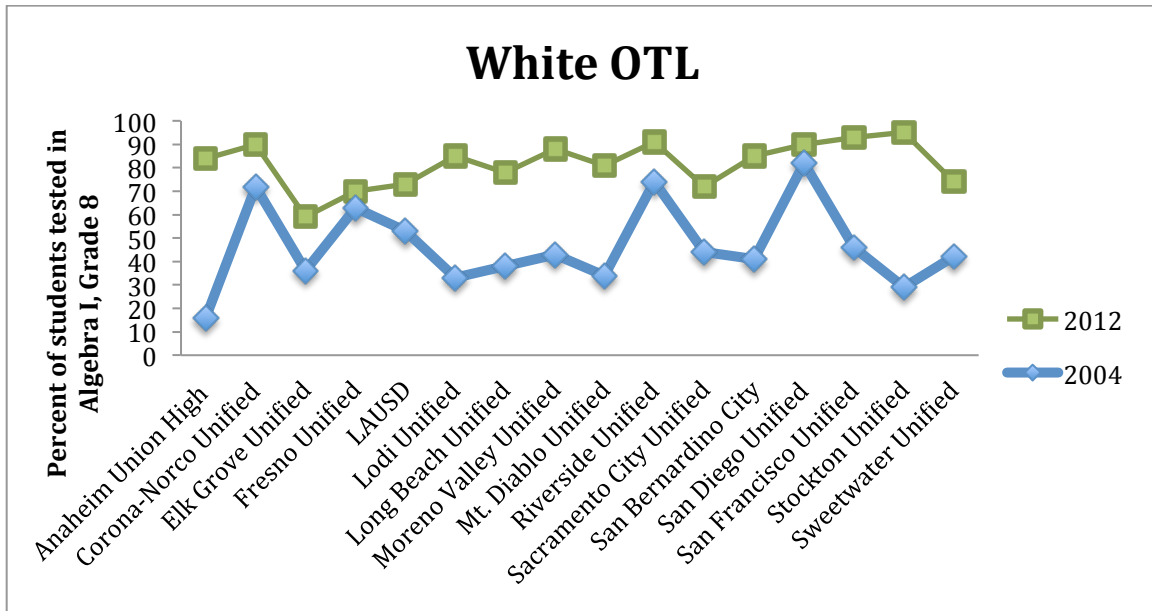


Figure 5. Statewide White student Opportunity -to-Learn data for 16 large districts.

The data from Figure 5 shows an increasing trend for White student Algebra I OTL by grade 8 in each of the 16 large districts. Statewide, the White OTL increased from 2004 to 2012 by a mean score of 41 percent. The largest increase for White OTL was in the Anaheim Union High School District (16 points in 2004 to 84 points by 2012), which had a statistical increase of 68 percent. The second largest increase for White OTL was in the Stockton Unified School District (29 in 2004 to 95 in 2012), which had a statistical increase of 66 percent. The third largest was found in Lodi Unified School District (33 in 2004 to 85 by 2012), which had a statistical increase of 52 percent.

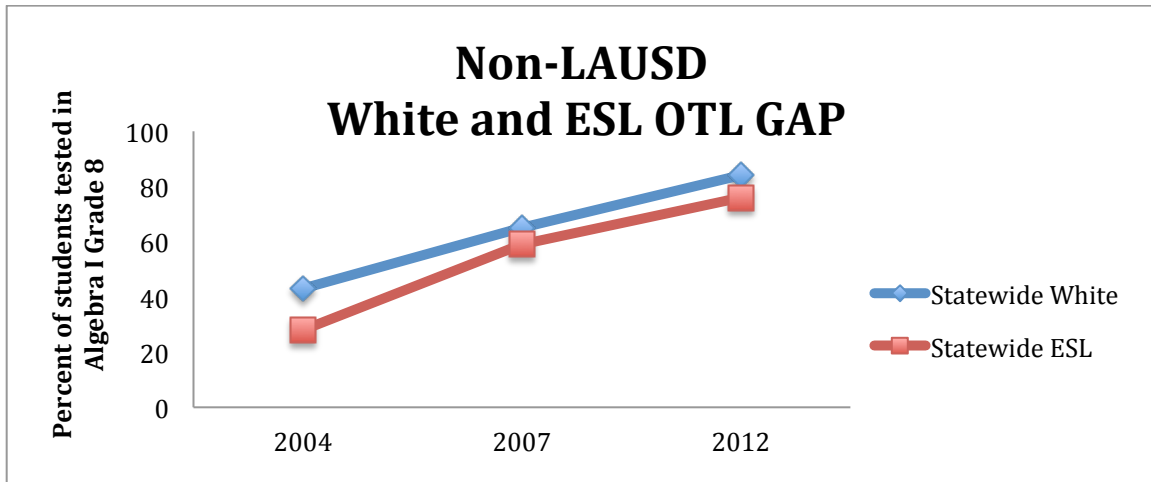


Figure 6. Non-LAUSD, Statewide White and Statewide ESL comparison data.

The upper line in Figure 6 shows the statewide mean score for White students (43 in 2004, 65 in 2007, and 84 in 2012). Opportunity to Learn Algebra I in grade 8 increased by 41 percent from 2004 to 2012. The statewide mean score for ESL students increased by 48 percent (28 in 2004, 59 in 2007, and 77 in 2012). The ESL and White student's OTL gap decreased by 8%.

The Non-LAUSD findings from Figure 6 indicate that the gap between ESL and White students' opportunity to learn Algebra I by grade 8 is closing, as each sub-group increased Algebra I OTL. The fact that more ESL students are taking Algebra I by grade 8 is a positive trend that has continued since the year 2004.

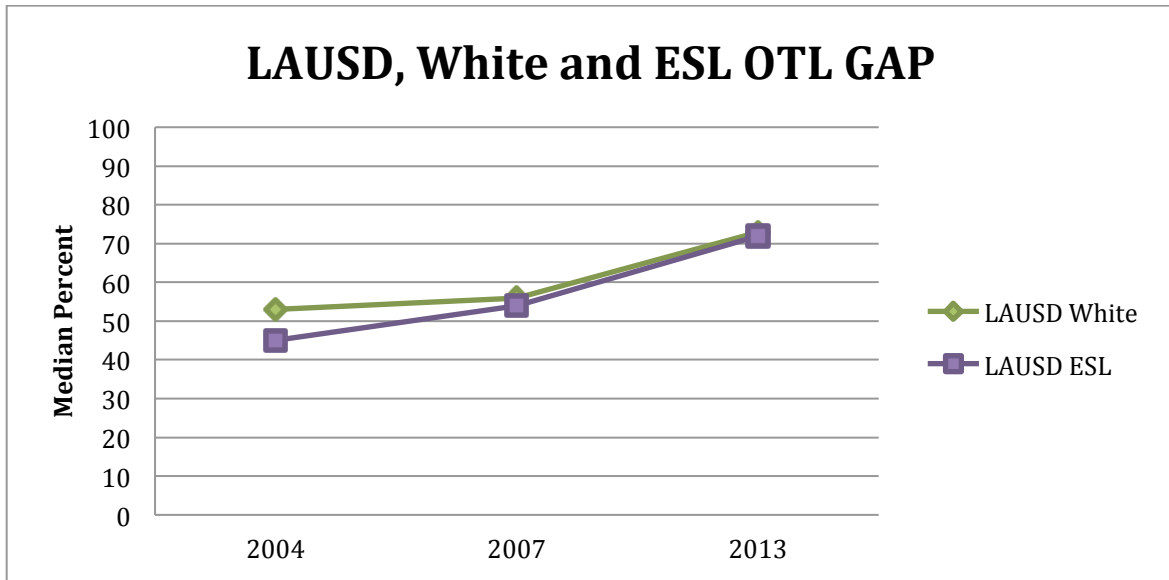


Figure 7. LAUSD, White and ESL comparison data.

Figure 7 shows LAUSD White students in comparison to LAUSD ESL students. The findings show that both groups increased their participation in Algebra I OTL by grade 8. LAUSD White students rose from 53 percent in 2004 to 73 percent in 2012, and LAUSD ESL students rose from 45 percent in 2004 to 72 in 2012. Moreover, in 2012, LAUSD had closed the gap to nearly zero between ESL and White students.

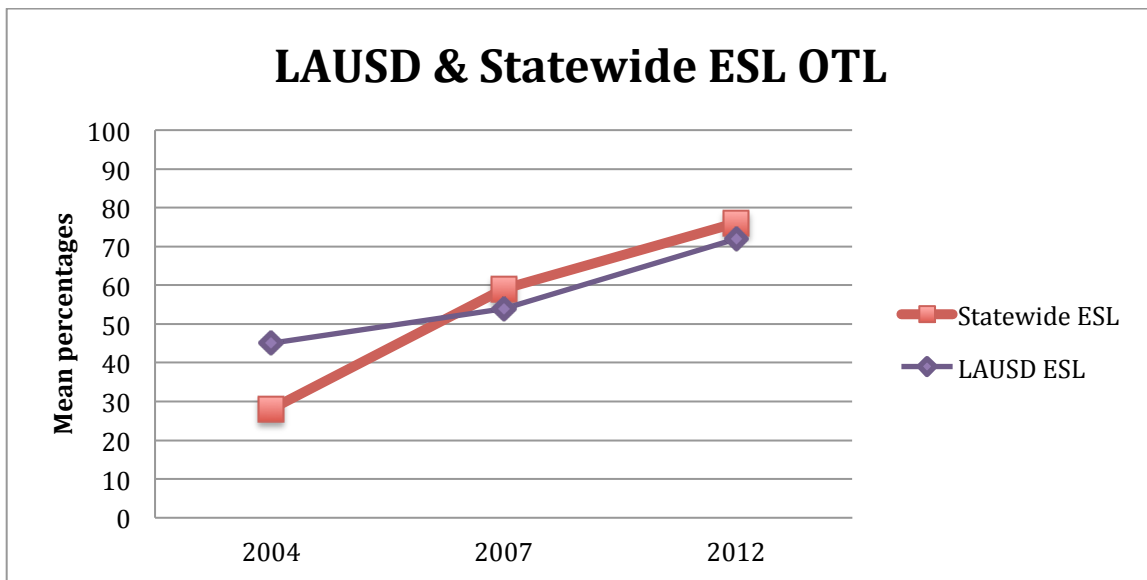


Figure 8. LAUSD ESL and Statewide ESL Opportunity to Learn

Figure 8 shows ESL students statewide compared to those in LAUSD. In 2012, 72% of LAUSD ESL students took the Algebra I test by grade 8 and 76% of ESL students statewide took the Algebra I test by grade 8. Thus, it can be concluded that, in 2012, ESL students outside of LAUSD were 4% more likely to take the Algebra I test by grade 8. This is in contrast to 2004 when ESL students inside LAUSD were 17% more likely to take the Algebra I test by grade 8.

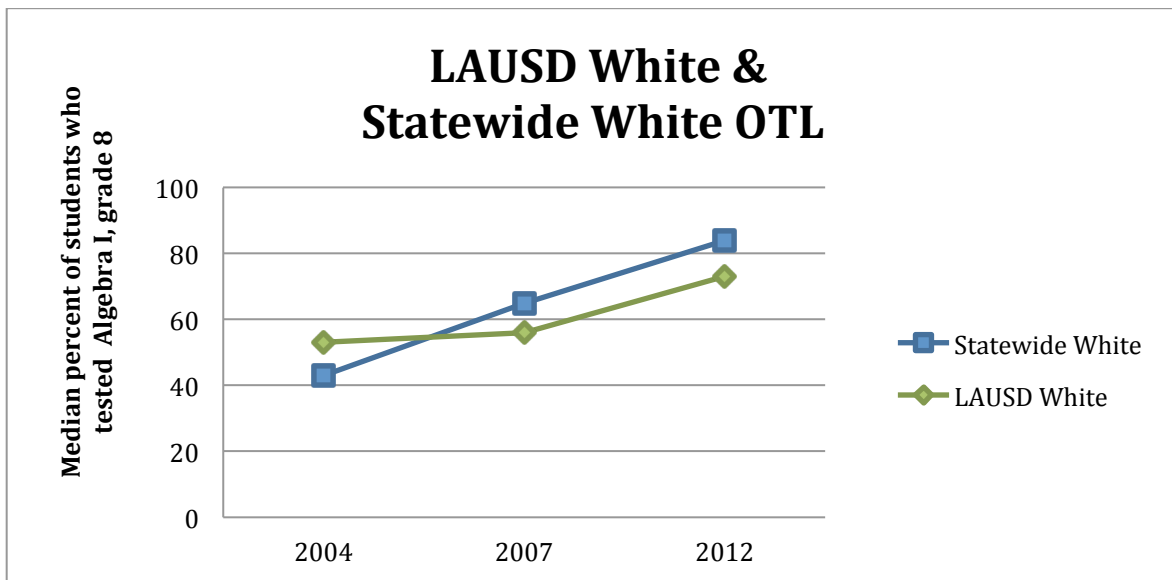


Figure 9. LAUSD White and Statewide White OTL

Figure 9 shows LAUSD White students compared to White students statewide who were enrolled and had test scores in Algebra I by grade 8. Both groups of White students increased their opportunity to take Algebra I by grade 8 over time. By 2012, 73% of the students took the Algebra I test in grade 8 in LAUSD and 84% of White students took test in statewide. Thus, it can be concluded that White students outside of LAUSD were 11% more likely to take Algebra I in the eighth grade.

Table 6

The Percent of Students per District Tested for Algebra I in grade 8

2004-2012 ESL OTL Change: ESL Subgroup			
	2004	2012	Change
Mt. Diablo Unified	16	86	70
Stockton Unified	25	94	69
Anaheim Union High	11	79	68
Moreno Valley	28	92	64
San Francisco Unified	35	96	61
San Bernardino City Unified	22	82	60
Lodi Unified	20	77	57
Sweetwater Unified	24	70	46
Corona-Norco Unified	45	84	39
Long Beach Unified	23	59	36
Sacramento Unified	35	65	30
LAUSD	45	72	27
Riverside	54	76	22
Fresno Unified	38	57	19
San Diego Unified	66	81	15
Desert Sands Unified	26	34	8
Elk Grove Unified	38	46	8
Santa Ana Unified	45	31	-14

Table 6 shows that the percent of ESL students who were enrolled and took the Algebra I test in grade 8 increased in all districts, except for Santa Ana Unified School District. The greatest changes were made in Mt. Diablo, Stockton Unified, Anaheim Union High, Moreno Valley, San Francisco, and San Bernardino Unified School Districts which all had increases of OTL at or above 60%. The lowest impact was seen in Santa Ana Unified which had a decrease of -14, followed by Desert Sands and Elk Grove Unified which saw an increase of 8 percent each.

Table 7

Opportunity-to-Learn changes from the year 2004 to 2012

2004-2012 OTL CHANGE		
	2004-2012 White Δ	2004-2012 ESL Δ
Mt. Diablo Unified	47	70
Stockton Unified	66	69
Anaheim Union High	68	68
Moreno Valley Unified	45	64
San Francisco Unified	47	61
San Bernardino City Unified	44	60
Lodi Unified	52	57
Sweetwater Unified	32	46
Corona-Norco Unified	18	39
Long Beach Unified	40	36
Sacramento City Unified	28	30
LAUSD	20	27
Riverside	17	22
Fresno Unified	7	19
San Diego Unified	8	15
Elk Grove Unified	23	8
Desert Sands Unified	n/a	8
Santa Ana Unified	n/a	-14

The data in Table 7 show the change in opportunity for White and ESL students to take the Algebra I test from the years 2004 to 2012. The important information from these data is that for all but 2 districts, Long Beach Unified and Elk Grove Unified School District, NCLB led to more equitable changes in OTL in the ESL subgroup as compared to the White subgroup, which is an intended consequence of NCLB. For seven districts (Mt. Diablo, Stockton, Anaheim Union, Moreno Valley, San Francisco, San Bernardino City, and Lodi Unified School Districts), the amount of change in OTL for the ESL subgroups exceeded .50, a practically significant change.

Table 8

White and ESL student OTL Rates 2012

	2012 OTL Rates	
	White 2012 OTL Rates	ESL 2012 OTL Rates
San Francisco Unified	93	96
Stockton Unified	95	94
Moreno Valley Unified	88	92
Mt. Diablo Unified	81	86
Corona-Norco Unified	90	84
San Bernardino City Unified	85	82
San Diego Unified	90	81
Anaheim Union High	84	79
Lodi Unified	85	77
Riverside	91	76
LAUSD	73	72
Sweetwater Unified	74	70
Sacramento City Unified	72	65
Long Beach Unified	78	59
Fresno Unified	70	57
Elk Grove Unified	59	46
Desert Sands	n/a	34
Santa Ana Unified	n/a	31

Table 8 shows the statewide rates for both White and ESL student OTL. The higher the rate, the higher the likelihood that ESL students had access to Algebra I by grade 8 in 2012. For example, ESL students in San Francisco Unified were most likely to have OTL in 2012 at a rate of 96%, while students in Santa Ana Unified were least likely to have the OTL Algebra I in 2012 at a rate of 31 percent. In addition to San Francisco Unified, Stockton and Moreno Valley provided ESL students OTL Algebra I at a rate of 90 percent or more. Mt. Diablo, Corona-Norco, San Bernardino City and San Diego Unified provided students OTL Algebra I at a rate of 80 percent or more. However, Elk Grove and Santa Ana Unified School Districts provided ESL students the least amount of

OTL Algebra I at a rate less than 50 percent. Overall, fifteen out of 18 large districts provided students OTL Algebra I at a rate of 50 percent or more.

Table 9

The Opportunity to Learn GAP between White and ESL students 2012-2004

	OTL GAP (White – ESL)		
	2004 White - ESL	2012 White - ESL	2012-2004 GAP Reduction
Mt. Diablo Unified	18	-5	23
Corona-Norco Unified	27	6	21
San Bernardino City Unified	19	3	16
Sweetwater Unified	18	4	15
Long Beach Unified	15	1	14
San Francisco Unified	11	-3	14
Fresno Unified	25	13	12
Moreno Valley	5	-4	9
LAUSD	8	1	7
San Diego Unified	16	9	7
Lodi Unified	13	7	6
Riverside	20	15	5
Stockton Unified	4	1	3
Sacramento Unified	9	7	2
Anaheim Union High	5	5	0
Elk Grove Unified	-1	13	-14

Table 9 shows the changes in the OTL gap between White and ESL students. The last column (2012-2004) shows the changes in OTL between the years 2004 and 2012 and highlights districts that have, over time, significantly reduced the OTL gap. The gap was computed by subtracting the OTL change percentages for ESL students from those of White students to determine the existing OTL gap. The most significant results were found in Mt. Diablo Unified, which had a gap reduction of 23 percent and Corona-Norco Unified School District, which had a gap reduction of 21 percent.

The third column shows the gap reduction for each of the 16 large districts. The larger the OTL gap percentages in the last column, the better the corresponding district did in reducing the OTL gap for ESL learners. Seven districts that decreased the gap by more than 10% were Mt. Diablo (.23), Corona-Norco (.21), San Bernardino City (.16), Sweetwater (.15), Long Beach (.14), San Francisco (.14), and Fresno Unified School District (.12). Elk Grove, Fresno and Riverside Unified School Districts left the OTL gap greater than 10%. Overall, the ESL OTL gap was decreased in all but Anaheim Unified School District.

Results for Algebra I Success by Grade 9

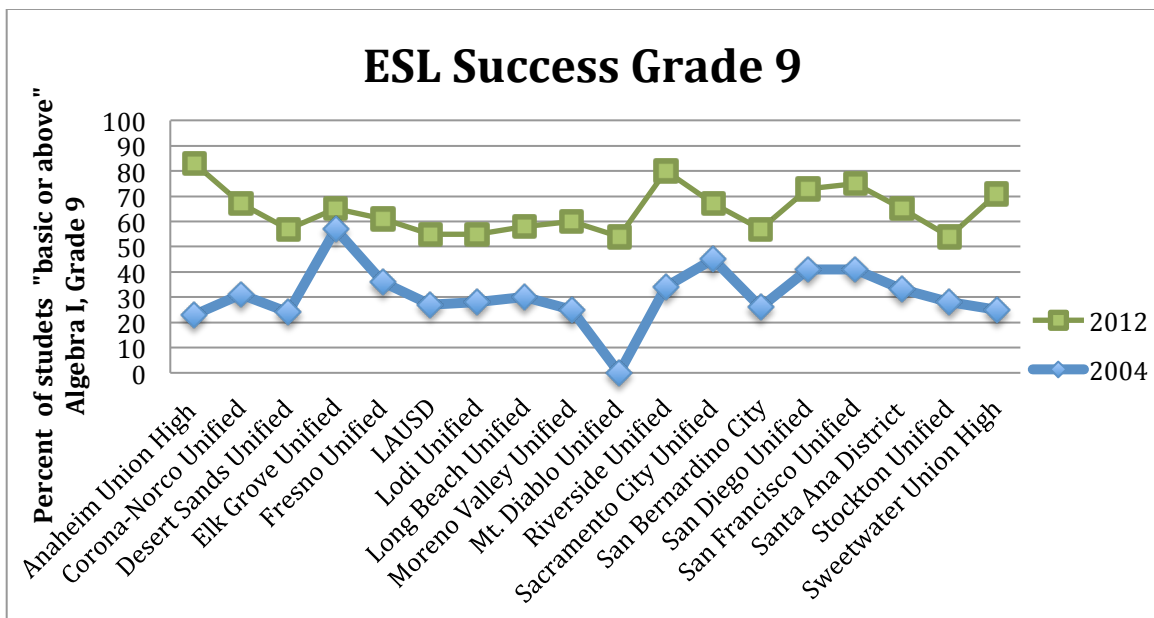


Figure 10. Percent of ESL students who scored “Basic or Above” Algebra I, grade 9.

The data from Figure 10 show a positive success trend for ESL students in each of the 18 large districts statewide. Statewide, the ESL success in math by grade 9 dramatically increased between 2004 and 2012. The largest increase for ESL success in terms of percentages was in the Anaheim Union High School District (from 23 percentage points in 2004 to 83 points by 2012), which had a statistical increase of 60

percent. The second largest increase for ESL success was in the Mt. Diablo Unified School District (0 in 2004 to 54 in 2012), which had a statistical increase of 54 percent. The third largest increase for ESL student success was in Riverside Unified School District (34 in 2004 and 80 in 2012), which had a statistical increase of 46 percent.

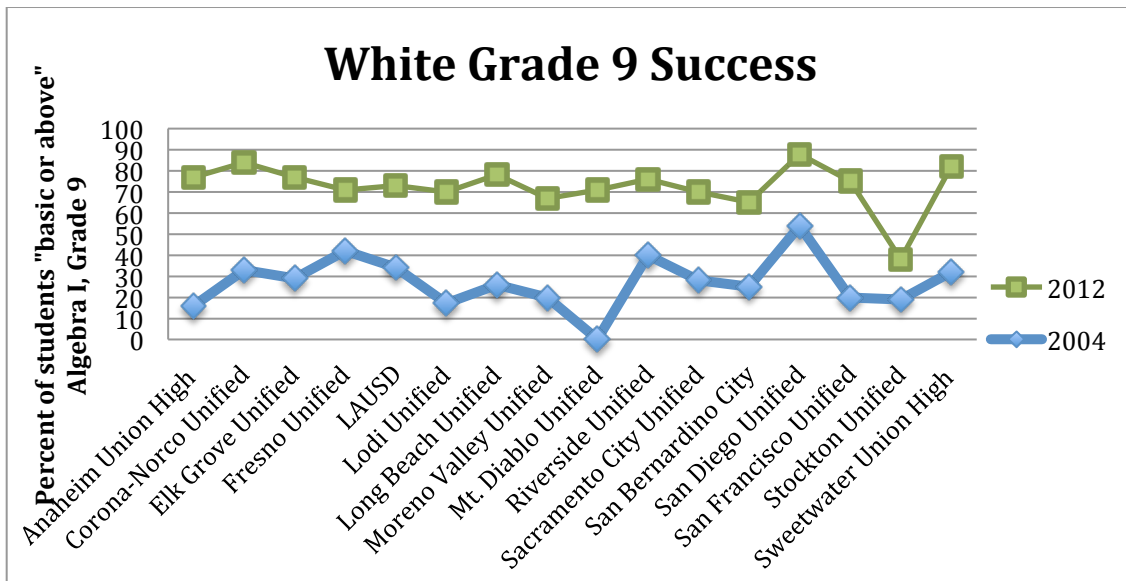


Figure 11. Percent of statewide White students “Basic and Above” Algebra I, Grade 9.

Figure 11 shows the changes in success rates for White students. As was the case with ESL students, Anaheim Union High and Mount Diablo Unified had the greatest amount of change.

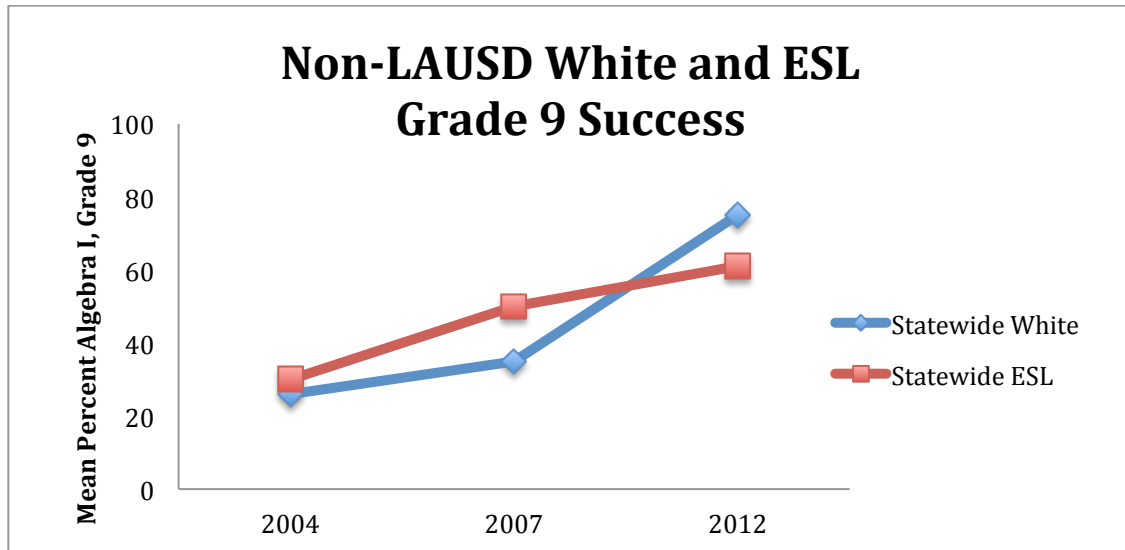


Figure 12. Mean percent White and ESL “Basic and Above” Algebra I Grade 9.

The upper line in Figure 12 shows the mean success score for statewide ESL students (.30 in 2004, .50 in 2007 and .65 in 2012). ESL success in Algebra I grade 9 increased by 35 percent. The statewide mean score for White students was .26 in 2004, .35 in 2007 and .75 in 2012. White success scores increased by 49 percent. The gap between ESL and White students’ success decreased to 10 percent between 2004 and 2012, which was a practically significant change.

The Non-LAUSD findings from Figure 12 show that the Algebra I grade 9 success gap between ESL and White students increased. It increased because White students’ success scores increased at a faster rate than those of ESL students after 2007. By 2012, White students’ mean success increased by 49 percent in just 4 years while ESL students’ mean success increased 30 percent in 4 years.

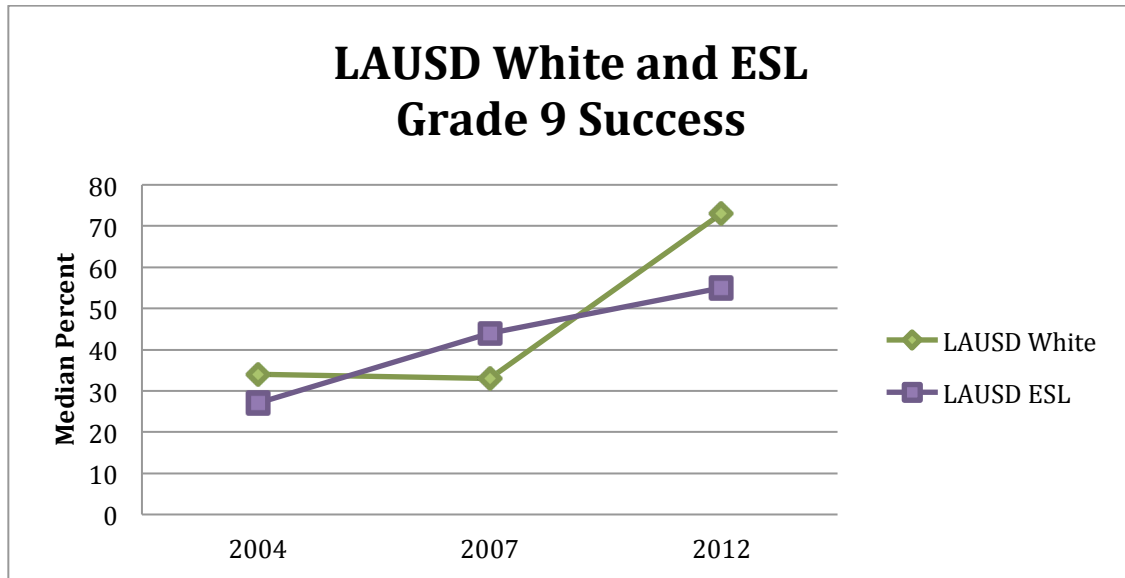


Figure 13. Mean Percent LAUSD White and ESL Grade 9 Success Algebra I

Figure 13 shows LAUSD White students' mean percent success scores (34, 33, 73) in comparison to LAUSD ESL students' mean percent success scores in Algebra I, grade 9 (27, 44, 55). As was the case statewide, White students had the greater amount of change, and, thus, the gap between White and ESL students' success increased. In 2012, LAUSD White students outscored LAUSD ESL students by 18% (73% versus 55%).

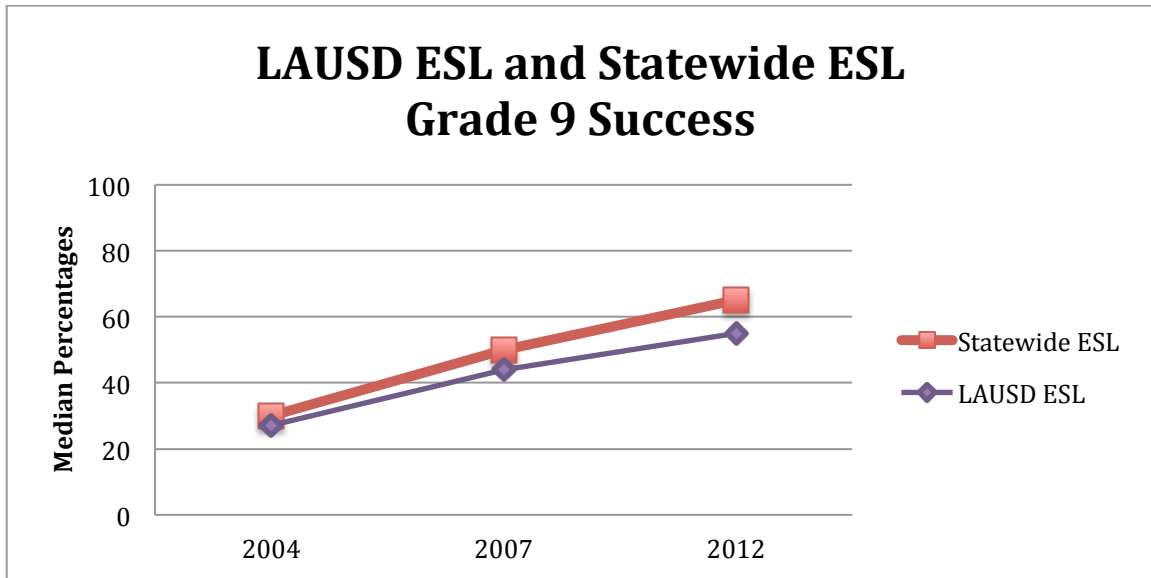


Figure 14. Mean Percent LAUSD and Statewide ESL success Algebra I, Grade 9.

The top line in Figure 14 shows LAUSD ESL students' mean percent success (.27 in 2004, .44 in 2007, and .55 in 2012) and the bottom line shows the statewide ESL students' mean percent (.30 in 2004, .50 in 2007, and .65, in 2012). ESL students statewide scored higher in terms of success in comparison to LAUSD. In 2012, sixty-five percent of ESL students statewide were successful on the Algebra I CST test in grade 9 compared to fifty-five percent of LAUSD ESL students. The gap between statewide ESL students' success and that of LAUSD ESL students is 10 percent. In 2004, ESL students outside LAUSD were 3% more likely to be successful on Algebra I by grade 9 than statewide ESL students. Thus, the gap between LAUSD's ESL students and ESL students statewide increased more than three fold.

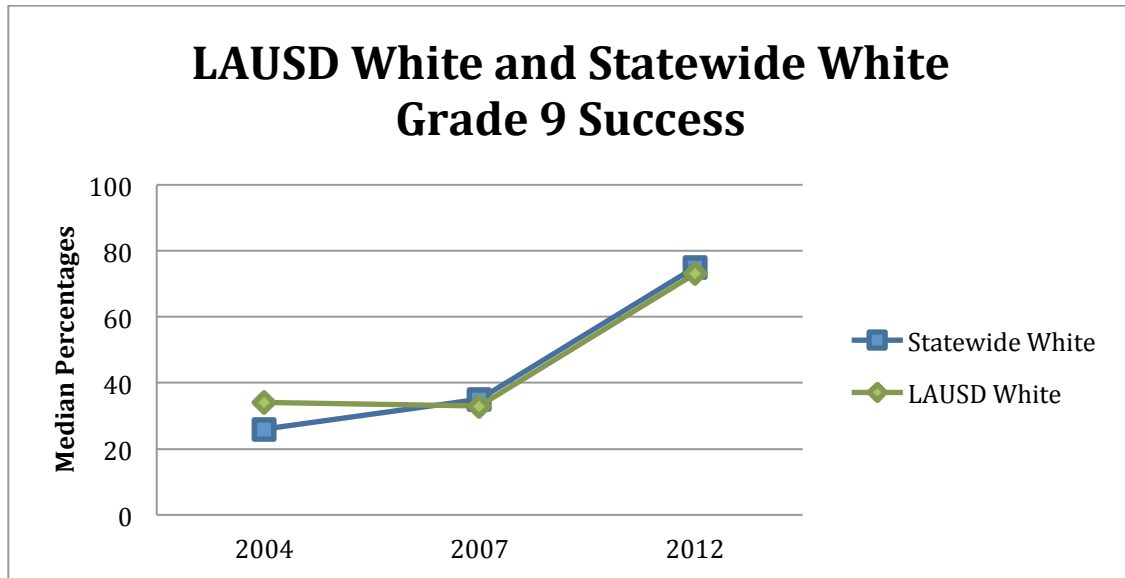


Figure 15. Percent of LAUSD and Statewide White student success Algebra I, Grade 9

Figure 15 shows LAUSD White students who were successful on the Algebra I CST test by grade 9. Statewide, White students had a mean score of .34 in 2004, .33 in 2007, and .73 in 2012, and LAUSD White students had a mean score of .26 in 2004, .35 in 2007, and .75 in 2012. In contrast to the higher scores statewide for ESL students, LAUSD White students outscored White students statewide in 2012 by two percent.

Table 10

The ESL Success 2004 to 2012 Percent Changes

2004-2012 ESL Success Change Data: ESL subgroup			
	2004	2012	Change
Anaheim Union High	23	83	60
Mt. Diablo Unified	0	54	54
Riverside	34	80	46
Sweetwater	25	71	46
Corona-Norco Unified	31	67	36
Moreno Valley	25	60	35
San Francisco Unified	41	75	34
Desert Sands Unified	24	57	33
San Diego Unified	41	73	32

Table 10, continued

Santa Ana Unified	33	65	32
San Bernardino City Unified	26	57	31
LAUSD	27	55	28
Lodi Unified	28	55	28
Long Beach Unified	30	58	28
Stockton Unified	28	54	26
Fresno Unified	36	61	25
Sacramento Unified	45	67	22
Elk Grove Unified	57	65	8

Table 10 shows that the change in ESL success rates in each large district increased between the years 2004 and 2012. The greatest impact was in the Anaheim Union High School District, which had an increased change of 60 percent. The lowest impact, although a positive one, was found in the Elk Grove Unified School District, which had an increase of 8 percent. Seventeen out of the 18 large districts improved in success percentages by over 20 percent, a change of great practical significance. Overall, the mean success rate change was 32 percent.

Table 11

White and ESL Grade 9 Success Changes from 2004-2012

	2004 – 2012 Grade 9 Success Change	
	2004-2012 White Δ	2004-2012 ESL Δ
Anaheim Union High	61	60
Mt. Diablo Unified	71	54
Riverside Unified	36	46
Sweetwater Unified	52	46
Corona-Norco Unified	51	36
Moreno Valley District	47	35
San Francisco Unified	55	34
Desert Sands Unified	n/a	33
San Diego Unified	34	32
Santa Ana Unified	n/a	32
San Bernardino City Unified	49	31
LAUSD	39	28

Table 11, continued

Lodi Unified	53	28
Long Beach Unified	52	28
Stockton Unified	19	26
Fresno Unified	29	25
Sacramento Unified	42	22
Elk Grove Unified	48	8

Table 11 shows the changes in Algebra I success percentages for White and ESL students in 2012. The important information in this data is that for all but two districts, Riverside and Stockton Unified School District, ESL student success change was smaller than that of White students. Nonetheless, ESL student success change was substantial in all but Elk Grove Unified, ranging from .22 in Sacramento to .60 percent in Anaheim Union High School District.

Table 12

Grade 9 Statewide White and ESL student success rates 2012

2012 Grade 9 Success Rates		
	White 2012 Rates	ESL 2012 Rates
Anaheim Union High	77	83
Riverside	76	80
San Francisco Unified	75	75
San Diego Unified	88	73
Sweetwater Unified	82	71
Corona-Norco Unified	84	67
Sacramento Unified	70	67
Elk Grove Unified	77	65
Santa Ana Unified	n/a	65
Fresno Unified	71	61
Moreno Valley	67	60
Long Beach Unified	78	58
Desert Sands Unified	n/a	57
San Bernardino City Unified	65	57
LAUSD	73	55
Lodi Unified	70	55
Mt. Diablo Unified	71	54
Stockton Unified	38	54

Table 12 shows both the statewide White and ESL student 2012 success rates on Algebra I CST by grade 9. The higher the rates, the higher the likelihood that ESL students had of being successful on Algebra I in grade 9 in 2012. For example, ESL students in the Anaheim Union High School District were most likely to be successful in 2012, and students in Stockton Unified School District were least likely to be successful in Algebra I in grade 9. The top eight school districts were Anaheim (.83), Riverside (.80), San Francisco (.75), San Diego (.73), and Sweetwater (.71) Corona-Norco (.67), Sacramento (.67) and Elk Grove (.65) High School Districts, while the bottom eight performing school districts in terms of student success rates were: Moreno Valley (.60), Long Beach (.58), Desert Sands (.57), San Bernardino City (.57), LAUSD (.55), Lodi (.55), Mt. Diablo (.54), and Stockton (.54), school districts. The overall mean success rate was 62 percent.

Table 13

Grade 9 Success Gap results ESL students from 2004 to 2012

	Grade 9 Success (White – ESL)		
	2004 White - ESL	2012 White - ESL	2012-2004 GAP Change
Elk Grove Unified	-28	12	40
Lodi Unified	-11	15	26
Long Beach Unified	-4	20	24
Sacramento Unified	-17	3	20
Mt. Diablo Unified	0	17	17
Corona-Norco Unified	2	17	15
Moreno Valley	-5	7	12
LAUSD	7	18	11
San Bernardino City Unified	-1	8	9
Fresno Unified	6	10	4
Sweetwater Unified	7	11	4
San Diego Unified	13	15	2

Table 13, continued

Anaheim Union High	-7	-6	1
Stockton Unified	-9	-16	-7
Riverside Unified	6	-4	-10
San Francisco Unified	-21	0	-21

The last column in Table 13 shows the changes in Algebra I success in grade 9, and it highlights districts that have significantly reduced the Algebra I success gap. The gap was computed by using the success change percentages from Table 12 for White students and subtracting that for ESL students to determine the existing success gap. The smaller the success gap percent is in the last column, the better the corresponding districts did in reducing the success gap for ESL Learners. The most significant increases in the success gap were found in Elk Grove, which had an increase of 40 percent; this was a practically significant change. Eight districts that increased the success gap by more than 10% were Elk Grove, Lodi, Long Beach, Sacramento, Corona-Norco, Mt. Diablo, Moreno Valley, and the LAUSD Unified School District (as seen in the last column). While the trend was towards an increased White-ESL gap, three districts decreased the size of the gap: Stockton, Riverside and San Francisco.

Chapter 5: Summary and Discussion

This dissertation was designed to examine the relationship between the Algebra for All (2005) initiative and English as Second Language learners' (ESL) opportunity to learn (OTL) Algebra I. In order to determine the effect of the Algebra for All initiative, Algebra I CST data before and after the Algebra for All (2005) initiative were used. Students who tested in Algebra I by grade 8 were determined to have OTL, as algebra by grade 8 is considered an on-time and appropriate pace. The rate of success was determined through student scores from the Algebra I, CST test in grade 9. Students with "basic and above" scores were considered to be successful. Data from the Los Angeles Unified School District and other large California districts were used in this study.

This study focused on 18 large California school districts because California has a large percentage of English Learners. In this study, the total district student population among the 18 urban school districts was 558,429. The total sample size of English Learners consisted of 256,286; the mean EL sample size was 42 percent. As Table 3 shows, of the total EL sample, 25% represents EL students in high school (Levy, 2011).

The problem addressed in this study was related to the achievement gap, specifically the math achievement gap between White students and English Learner students since EL students drop out and do not graduate or become college-ready at alarming rates. Although PSAA (1999), NCLB (2001) and recent legislation such as *Algebra for All* acknowledge the need for high expectations, high quality education and access to equal opportunities for learning, disparities continue to exist; one such disparity relates to the extent to which large districts in California provide greater OTL and success in Algebra I.

The purpose of this study was to identify which statewide districts, if any, increased ESL OTL Algebra I by grade 8 and which statewide districts, if any, closed the gap between White and ESL students by increasing ESL student Algebra I success between the years 2004 and 2012.

The following research questions were addressed:

1. To what extent, if any, have large urban school districts in CA increased ESL access to early algebra between 2004 and 2012?
2. To what extent, if any, have large urban school districts in CA decreased the gap between ESL and White student access to early algebra between 2004 and 2012?
3. To what extent, if any, have large urban school districts in CA increased ESL success in Algebra I between 2004 and 2012?
4. To what extent, if any, have large urban school districts in CA decreased the gap between ESL and White student Algebra I success between 2004 and 2012?

Opportunity-to-Learn

In regards to Research Question 1: To what extent, if any, have large urban school districts in CA increased ESL access to early algebra between 2004 and 2012?

Opportunity-to-Learn. California large urban school districts increased White and ESL students' OTL to Algebra I by grade 9 by an average of 48 percent. Criteria for practical significance is (10%). In all but one of the 18 large districts in California, Santa Ana Unified ESL student OTL was increased. Important to note is that Santa Ana Unified School District is composed of 80 percent ESL students.

Mount Diablo, on the other hand, with a population of 31 percent ESL students showed the greatest change in student Algebra I OTL of 70 percent. In addition to Mount

Diablo, Stockton, with a population of 42 percent ESL, students increased their ESL student OTL by 69 percent and Anaheim Union High increased OTL by 68 percent. Desert Sands, Elk Grove, and Santa Ana Unified School Districts had changes of 8, 8, -14 percent, respectively.

Overall, seventeen of the 18 large urban school districts in this study improved ESL Algebra I OTL by grade 8 and had changes ranging from 8 to 70 percent. Two districts increased OTL by 8 percent, eight districts improved by 15 to 46 percent, and seven districts increased OTL by 57 to 70 percent; Santa Ana Unified School District was the only district with a decrease in OTL from 45 to 31 percent, a -14 percent change.

In regards to Question 2: To what extent, if any, have large urban school districts in CA decreased the gap between ESL and White student access to early algebra between 2004 and 2012?

Opportunity-to-Learn Gap. In regards to the OTL Algebra I gap between ESL and White students in California, large districts decreased the OTL gap by 8 percent from 2004 to 2012. The Mt. Diablo School District had the highest gap reduction of 23 percent followed by six districts with a gap reduction of 12 percent or more: Corona-Norco (.21), San Bernardino City (.16) and Sweetwater (.15), Long Beach (.14), San Francisco (.14) and Fresno Unified School District (.12). There were nine districts that had an ESL OTL gap at less than 10%: Moreno Valley (9), Desert Sands Unified (8), LAUSD (7), San Diego (7), Lodi Unified (6), Riverside Unified (5), Stockton Unified (3), Sacramento (2) and Anaheim Union High School District (1).

Within the ESL subgroup data, although seven statewide districts had the highest impact in ESL OTL changes of > 80%, these changes in increased access to Algebra

alone did not contribute to a gap reduction. For example, the districts with the highest ESL subgroup success changes were Anaheim Union High (.60), Mt. Diablo Unified (.54), Riverside Unified (.46), Corona-Norco Unified (.36), and Moreno Valley Unified (.35). Out of those 5 districts, Mt. Diablo had a 17 percent gap reduction, Corona-Norco had a 15 percent gap reduction, Moreno Valley had a gap reduction of 12 percent and Anaheim Union had a gap reduction of only 1 percent. On the other hand, Riverside Unified did not reduce the gap and, instead, increased the gap by 10%. The reason for this mixed message in a district which experienced an increase in ESL success in Algebra I changes yet did not reduce the gap is that, while the district increased ESL Algebra I success, White student also had increased Algebra I success rates in grade 9, thereby not reducing the gap between White and ESL students. White students take advantage of what NCLB has to offer, and they are more likely to be better prepared for Algebra I than are ESL students (EdSource, 2011).

In all, seven districts decreased the ESL OTL gap by more than 10 percent while Elk Grove, Fresno and Riverside Unified School Districts left the OTL gap greater than 10%. Elk Grove is one district in particular that bucked the decreased tracking trend with a -14 gap reduction. In conclusion, out of 14,238 ESL students (42 percent) in the statewide districts, the mean OTL was 70 percent in 2012 in comparison to 33 percent in 2004. The data represent a gap reduction of 37 percent. Overall, within the 17 districts, the White and ESL gap, all together, the LAUSD and Statewide gap increased more than threefold. Notwithstanding, it may be said that LAUSD closed the gap to nearly zero within and between the district's ESL and White students as compared to the other 17 districts statewide.

In order to see in which districts, if any, and to what extent ESL students are tracked, the evidence showed the difference between White and ESL students OTL Algebra I in 2007 grade 8. Further, the evidence showed the extent to which each of three districts (Fresno, Riverside, and Elk Grove Unified) tracked students in comparison to the other districts as per the gap percentage. Fresno, Riverside, and Elk Grove showed a gap of 13, 15, and 13 percent, respectively, which showed an increase in the gap of over 10 percent. In comparison, the other districts showed a gap reduction of less than 10%.

Discussion of OTL findings. The problem this study examined was the lack of ESL learners' OTL Algebra I due to tracking practices. First, tracking practices (aka, unequal learning opportunities) help to create and perpetuate differences in achievement and participation (Oakes, 1990). Second, differential opportunities either push a particular group of students towards higher achievement or others towards a lower track of achievement (Oakes, 1990).

According to Oakes (2000), minority students and inner-city students have fewer opportunities to learn math. One factor for this is schools' judging low-income families and minority students as having low ability when, in fact, many of these students suffer from being in classrooms that offer less (Oakes, 2000). The use of ability tracking in math and science stems from the widespread belief that, due to intellectual differences, ESL students need to be taught in separate classes. Oakes' findings suggest that tracking decreases opportunities to learn because low-ability tracking does not adequately prepare students with a strong foundation in math concepts that will be needed in future math classes (Oakes, 2000) and that, in it of itself, becomes a defeating situation. Also, once a student is on a low-ability level or slow-paced tracking pathway, Darling-Hammond

(2007) stated students are more likely to work at low cognitive levels on test oriented tasks, are rarely given opportunities to construct and solve math problems (high cognitive thinking skills) or have opportunities to talk because most of the instruction is geared to rote.

Because tracking practices start early, tracking is well institutionalized by middle school, and later on as students continue to be sorted out in high school (Darling-Hammond, 2007; Oakes, 1990). In particular, Hispanic ESL students are not in the position to enroll in rigorous classes such as Algebra I and beyond. Oakes (1990) referenced a variety of variables that interact and build upon each other to make it difficult for minority students to succeed, such as poor curriculum, differences in teacher expectations and instruction.

Opportunity-to-learn should be viewed as all students' having equal opportunities to be exposed to a rigorous curriculum at all grade level standards, and legislation provides safety nets to level the playing field because not all students start off on the same playing field. The Public Schools Accountability Act (PSAA) of 1999, NCLB (2001) and the 2005 *Algebra for All* initiative each shares the common the desire to promote high quality education for all students. Since the passage of PSAA (1999) California maintained a system for holding schools accountable for student achievement (EdSource, 2013).

With the reauthorizations of the Elementary and Secondary Act (ESEA) of 1996, later known as NCLB (2001), more federal focus on achievement for disadvantaged students, including English Learners and students of poverty and special needs, were guaranteed. Relevant to this study is that the updated NCLB added the assessment

requirements for subgroups. NCLB's (2002) intended outcomes included the intended goal of producing 100 percent proficient students in California by the year 2014 through increases in OTL, increases in equal opportunities for student participation in regards to rigorous curriculum, and access to teacher quality in order to meet the overall goal of decreasing the achievement gap.

The findings of this study are corroborated by EdSource (2011) and Levy (2011). Large California districts made strides in the right direction as an increased percent of ESL learners have access to early algebra. California Latino 8th grade students have nearly doubled in participation, as 26 to 48% tested in Algebra I between 2003 and 2008 (EdSource, 2013). In corroboration to this study Levy (2011) found that participation in Algebra I by Grade 8 in California nearly doubled between 2003 and 2011, from 32 percent to 62 percent. By 2011, 50 percent of California schools had improved student OTL with an increased student enrollment of at least 60 percent of students in Algebra I in grade 8 (Levy, 2011). In conclusion, the results of this study provide strong support for the efficacy of the aforementioned legislation on ESL OTL.

With the intended consequences in mind, NCLB policy formatted the following tools to ensure outcomes: (1) the use of federal funds as leverage to ensure that all students have equal opportunities for an education (EdSource, 2013), (2) the use of mandates such as supported by PSAA, through AMOs which help set AYP goals in order to further meet state API goals, (3) incentives and sanctions to motivate participation and punish underperforming districts, and (4) the ability to provide system changes when needed, such as the charter schools.

Algebra I Success

In regards to Question 3: To what extent, if any, have large urban school districts in CA increased ESL success in Algebra I between 2004 and 2012?

Algebra I Success. Since the inception of the 2005 *Algebra for All state initiative*, seventeen out of 18 large school districts improved ESL Algebra I success rates by over 20 percent. Within all 18 districts, the improvement ranged from 8% to 60%. In all but Elk Grove increases in success ranged from 22 percent in Sacramento to 60 percent in Anaheim. The median success rate success rate change for all 18 districts was 32%. Aside from two districts Riverside and Stockton, in which ESL students' experienced bigger success changes than White students, there were substantial success changes.

The 2012 Algebra I success data were equally encouraging. The top eight districts with success rate increases greater than or equal to 65% were: Anaheim, Riverside, San Francisco, San Diego, Sweetwater, Corona-Norco, Sacramento and Elk Grove high school districts. Each statewide district had a success rate greater than 50% and the median district level success rate was 63%.

In regards to Question 4: To what extent, if any, have large urban school districts in CA decreased the gap between ESL and White student Algebra I success between 2004 and 2012?

Algebra I Success Gap. In regards to ESL student success gap, there was a trend towards increasing the White – ESL gap. Districts that increased the gap by more than 10 percent were: Elk Grove, Lodi, Long Beach, Sacramento, Corona-Norco, Mt. Diablo,

Moreno Valley, and LAUSD Unified School Districts. In contrast, three districts in particular decreased the success gap: Stockton, Riverside and San Francisco.

Discussion of Algebra I success findings. Results on OTL Algebra I from this study are corroborated by findings from Levy (2011). Levy analyzed a total of 152 districts that enrolled 100 or more students in each of grades 7-11. As in the present study, Levy (2011) defined success as “basic and above,” which is a raw score of 300 or greater on the Algebra I CST. Averaged over 152 districts, Levy found that Algebra I success by grade 9 increased from 41% in 2003 to 68 percent in 2011.

In addition, Levy (2011) found that higher percentages of students enrolled in Algebra I by grade 8 was related to higher success rates in Algebra I by grade nine. In other words, as the percentage of OTL Algebra I by grade 8 (access to rigorous courses) increases, the percentage of students increasing in math success “basic and above,” also increase. Although correlation does not prove causation, Levy used complex path analytic techniques and made the case that districts can use early Algebra I to increase Algebra II success by grade 11.

The EdSource (2011) study of the entire population of California schools provides further corroboration to the present findings. EdSource found that students are experiencing more success in math due to greater opportunity-to-learn and that nearly twice as many 8th graders scored proficient or advanced in 2009 as in 2003. Most importantly, there were 3.8 times as many economically disadvantaged students who scored proficient or advanced in Algebra I in 2009.

However, *Algebra for All* is not without its critics. Many educators claim that schools are faced with uncontrollable factors and cannot ensure Algebra I success in

grade 8. In support of this claim, Taylor, Kurlanender, and Rose (2012) provided evidence to suggest that grade 8 algebra course placement decreased 8th grade math GPA and therefore does not help NCLB meet its intended consequence of decreasing math achievement gaps. However, Taylor et al. only looked at the bottom 10% of the student test score distribution.

Furthermore, there is a concern about the effect of *Algebra for All* on students at the top end of the distribution. Nomi (2012) analyzed math achievement before and after the Chicago Public Schools suspended all ninth grade remedial classes and instead provided *Algebra for All*. Nomi found that this *Algebra for All* by grade 9 mandate only served to lower the skill levels of the higher performing students and attributed this effect to the increased scheduling of students in mixed grouping arrangements.

Levy and Hocevar (2013) contend that despite the lowered skills for remedial and advanced students, mixed ability courses than tracking students makes perfect sense, as it benefits a majority of marginalized students and this is the greater good in comparison to the lower than expected scores that remedial and advanced students experience.

Discussion and Implications

The results of this study are consistent with results of previous studies on tracking which reveal the harm of tracking practices because they are neither equitable nor effective (Oakes, 1990, 1992, 1995). First, there are multiple inequalities which, without legislation such as the 2005 *Algebra for All* initiative, minority, low-income, and Hispanic/Latino EL students would not experience OTL early algebra and math success in comparison to White students. Oakes' (1990) cross-sectional data from the National Science Foundation 1985-1986 survey (NSSME) found, in cases in which low-income

Hispanic students in secondary schools are the majority, they have (1) less extensive and demanding math programs, (2) fewer OTL algebra and geometry courses in middle school and later calculus as a high school senior – indicators of college and career readiness, and (3) disproportionate placement in less traditional academic science and math content courses needed to prepare them for future careers in science, math, and technology.

Second, Oakes (1990, 1992) supports the present study by crediting inequalities of OTL and tracking practices to achievement gaps between White and Hispanic/Latino students. Oakes (1990, 1992) found (1) schools with low-income and minority students had less qualified teachers in comparison to schools with in more affluent areas (2) inequalities related to resources (for example, technology and quality textbooks), (3) and discrepancies in instructional conditions such as classroom instruction and opportunities for rigorous curriculum. For example, Latino students are less likely to be involved in mathematics and science learning and are disproportionately assigned to low-track classes in comparison to White students. Minority students were seven times more likely to be matriculated into low-track classes while White students were six times more likely to be in high-tracked classes (Oakes, 1990).

Third, without opportunities the *Algebra for All* initiative offers *all* students, Hispanic/Latino students who are more likely placed on a low-ability tracking pathway will not have a way out, and, therefore, need legislation such as *Algebra for All*.

Oakes and Guiton (1995) found that, once students were placed on a particular track or ability level of a course, students were predisposed to subsequent years of the same. For example, Oakes and Guiton's (1995) study on three demographically different

comprehensive West Coast urban high schools found that, when prerequisites (which consists of a combination of test scores, grades and teacher and counselor recommendations) were met, students were more likely to move onto honors tracks, and, if prerequisites were not met, students were assigned to lower course levels. Oakes and Guiton (1995) also found that, once on a particular track or ability level course pathway, students were predisposed to subsequent years of the same.

Oakes and Guiton (1995) found that each school in their study shaped tracking decisions differently based on seven propositions. Relevant to this study were (1) schools view students' abilities, motivation and aspirations as fixed ("it's all over by high school" p.10), so judgments about students' beliefs contributed to tracking, (2) curriculum seeks to accommodate, not alter, student characteristics (schools that viewed student body as highly abled provided more rigorous and Advanced Placement offerings), (3) schools accommodated achievement with advantage (meaning students with higher test scores led to math courses placements that met college requirements), and (4) because race, ethnicity, and social class signal ability and motivation, they also influence curriculum decisions. The implication suggests that, at mixed-population schools that include high population of Latinos, fewer college preparatory classes were offered because this population is perceived as less likely to go to college,.

Oakes and Guiton (1995) found participation in college-prep math (defined as Algebra 2 by grade 11) differed by race/ethnicity, and Latino students participated at lower rates than Whites at two of the three schools in the study. Whites had 33 percent participation in college-prep courses at Washington while only 15 percent of the Latinos participated. At Coolidge High School, 38 percent of Whites participated in comparison

to 8 percent of the Latinos. As a result, Oakes (1995) found a disproportionately large amount of Latinos in the ESL, remedial and low-tracked vocational programs and at each of the 3 schools due to judgments about Latinos as being less-well suited for academic work. Since inequalities are not likely, according to Oakes (1990), to correct themselves, legislation such as the PSAA (1999), NCLB (200, 2002) and, according to this study, the 2005 *Algebra for All* initiative are necessary as schools strive to protect every student's right to equal opportunities to education and the right to pursue happiness that comes from having OTL and be successful in life.

State decision implications. This study comes at an important time in history as the California State Board of Education (SBE) shifted math policy ending the *Algebra for All*, Algebra I by grade 8 OTL. The decision to stop early algebra also has the potential to reverse the great strides made by districts in providing OTL early math and future ESL Algebra I gap reductions as presented in this study and another study (EdSource, 2013). This study may, therefore, serve as current and relevant support for the *Algebra for All* initiative and may have the potential to influence future policy decisions made by policy-makers, present day state and local boards, and, more importantly, it may make a difference in the lives of many minority students, specifically English Language Learners.

The state's decision to stop *Algebra for All* carries with it impending responsibility which may negatively affect future generations of English Learners' OTL and math success rates. Just when English Learners have begun the quest to more OTL early math and are experiencing increased percentages in math success, the California Board of Education is changing the rules. The unintended consequence may result in a

lower opportunity for ESL students along with increased risks to our national and financial security. The decision to stop early algebra was based on old ideals that suggest only “some” students are ready and “only those who have the skills” will be encouraged to take algebra. This decision should cause serious concerns as race-based tracking, which is illegal, is *de facto* segregation. Additionally, these comments and the decision to stop Algebra I by grade, itself, are in direct contradiction to not only this study but studies done by many others. Oakes (2009) described that tracking, an illegal process, has been, over the years, disguised in the form homogeneous grouping and, today, the state’s decision will, again, multiply student inequalities by leaving the decision of who takes algebra in the hands of local boards.

Leaving opportunity-to-learn algebra in the hands of local boards is worrisome, as it may lead to regressed OTL for ESLs. For example, since the 2005 *Algebra for All* initiative, in 2012, five of the ten largest districts in this study with over 40 percent ESL student population met the NCLB high expectation goal towards meeting equitable OTL Algebra by grade 8, as 43,541 students within those five districts tested for Algebra in grade 8. Five districts that ESL students with over a 50 percent change in OTL were Anaheim, San Francisco, San Bernardino, Stockton, and Moreno Valley Unified. In addition to these five districts, Mt. Diablo and Lodi Unified (seven districts in all) met the NCLB high expectations goal towards more equitable changes in OTL by exceeding the amount of ESL change in OTL by 50 percent or more, as 17 percent of these ESL students had an increase in OTL Algebra I by grade 8 of over 40 percent.

ESL students are not successful because they have been denied rigorous opportunities and slowed down by being put on slow track pathways early on in

education, so that, if it appears that their math skills are weak, they are. However, this is not because ESL students cannot learn. It is because the education system has failed by separating students and not preparing them adequately (Darling-Hammond, 2006; Oakes, 1990, 1992). Noting that only “some” students will be encouraged to take algebra is cause for alarm since it can be a disguise for unwarranted tracking practices. Some students will remain in high-ability tracking pathways while others and, more likely, ESL students will be put on low-ability tracking pathways.

Oakes and Guiton (1995) stated that Human Capital Theory recognizes that all educational options do not provide the same opportunity-to-learn, but, instead, capitalism encourages competition for educational opportunities. This acknowledgement should continue to prompt legislators, policy-makers, districts, school boards, administrators, teachers, and parents to advocate for students who depend on adults to guide them. At a more practical level, there is a need to minimize bureaucracy and organizational regularities that have created tracking conditions (Oakes & Guiton, 1995). These include the need to create efficient master schedules, the need to minimize biased teacher recommendations, and need to provide academic prerequisites that will benefit all students (consisting of a combination of test scores, grades and teacher and counselor recommendations), all of which would help to de-regulate the propensity for student tracking (Oakes & Guiton, 1995).

Limitations

A primary internal validity limitation regarding this study, which affects the ability to show causation is the fact that the large districts examined were not randomly assigned. Further, there were external validity limitations. For example, the participants

were limited to grade 7 to 11 and the setting was limited to California. Moreover, the treatment, *Algebra for All* may be considered a misnomer because the definition of what is considered *Algebra for All* may have been operationally defined differently by each state, in that some may have determined that providing 85% of students with Algebra I access is what was meant by Algebra for All, while others may have interpreted it to mean 90%. Lastly, the Algebra I California State Test, a dependent variable measured in this study, is considered the hardest test in the nation as it includes quadratic equations; and this calculation is not tested in other states.

Recommendations for Future Study

Overall, the English Learner population and academic achievement has yet to be explored to a full extent. In addition, opportunity-to-learn warrants more research in order to strengthen statements regarding the relationship between OTL and success. In terms of secondary education, high school research is marginal and more research regarding course taking patterns for English Learners would provide school districts opportunities to make master scheduling decisions based on research (Callahan, 2005).

Recommendations for Practice

The results of this study suggest California school districts should continue the practice of *Algebra for All*, Algebra I by grade 8, as this policy provides all students, particularly ESL students, more opportunities-to-learn and more opportunities to experience early math success. Students with the opportunity to learn math will be able to transfer those skills to Science, Technology, Engineering and Mathematics (STEM) coursework in college. To do this, and in response to how to handle the difficulties of learning algebra, it has been suggested that all students experience access and math

success before the 7th grade (EdSource, 2011). For example, knowing how to convert fractions to decimals and percentages along with having the basic understanding of graphs and ability to follow multi-step problems is fundamental to algebra concepts (EdSource, 2011).

For policy-makers, it is suggested that caution should be taken in regards to which students are given the opportunity-to-learn, as this affects minority students of color, low-income and special needs children. Taking into account and learning more about the intended audience, such as English Learners, is important (Olsen, 2010). In the next section, six strategies for doing so are outlined.

Increase knowledge and awareness of ESL Typologies. Although the Common Core State Standards are intended to even the playing field for students, unless increases in teacher and administrator knowledge and understanding of equity and EL typologies (NCTM, 2008; Olsen, 2010) are implemented, students will continue to be affected by what people think about them. Currently, there exists a lack of knowledge and strong understanding in regards to English Learner typologies and how to motivate, engage, and meet the needs that go along with each typology for student success (Olsen, 2010). Teacher education programs have not prepared teachers adequately for working with this diverse student population and, although research is emerging, it is considerably sparse. Moreover, administrators have not been trained either. This lack of knowledge and understanding has influenced policymakers, districts, administrators and teachers in regards to appropriate EL program planning and master scheduling. Therefore, students have been homogenously tracked and put on narrow course pathways that lead to a decrease in OTL and success rates, specifically in math.

Access and address knowledge gaps. The NCLB (2002) mandate of “Highly Qualified” teachers did not guarantee students would have teachers with a deep understanding of the culture and context in which different children live, or that teachers are prepared to work with diverse groups such as English Learners (Darling-Hammond, 2006; EdSource, 2009; Olsen, 2010). Research has shown that a gap in knowledge and understanding regarding English Learners contributed to mixed messages and misunderstandings that lead to educators’ lower expectations for English Learners and misplacement in terms of curriculum (Darling-Hammond, 2006; Oakes, 1990, 2010; Oakes & Guiton, 1995).

Assessing and then addressing knowledge gaps would increase student OTL Algebra I by grade 8 and math success rates. The difference between a student’s academic ability and academic language or linguistic developmental needs is essential for OTL. Knowing that the ability to learn English as a second language does not prevent students or affect their ability to learn other academic content such as Algebra concepts is important for OTL (Valenzuela, 2000). For example, although students may not speak English and need to be put in ELD classes to help them obtain English proficiency, it is unfair to assume that they cannot learn at high cognitive levels or that they should be denied access to a rigorous curriculum. Many times, however, the rigor expectations for these students are decreased (Freeman, Freeman & Mercuri, 2003; Garcia, 2000; Oakes, 1992).

Provide cultural proficiency awareness. To address knowledge gaps, districts need to provide cultural proficiency awareness professional development. The concept of cultural proficiency, which refers to a level of knowledge-based skills and

understanding required to teach and interact successfully with students and colleagues from a variety of backgrounds, affects the choices educators make in terms of equal access to educational opportunities within master scheduling (Olsen, 2010). In addition to adults receiving training, students also should participate.

Address student self-efficacy. Addressing student self-efficacy is essential. Indicators of long-term problems associated with tracking practices are low scores on high stakes tests and high drop-out rates (Olsen, 2010). Drop-out rates may be influenced by low-self efficacy, which is based on motivational theory of action (Mayer, 2011). Low self-efficacy results from being in low-ability classes over time. Self-efficacy is an important motivation theory that affects student success. The experience of segregation and isolation leads to low student self-efficacy. Students have been known to suffer in silence (Kindlon & Thompson, 2002).

Provide high student expectations and rigor. Callahan (2005) revealed that tracking was a better predictor of EL Learners' academic achievement performance than was proficiency in English. Therefore, students should be involved both in learning English and in rigorous academic content. Rigor and high-order thinking skills are necessary for all students and are important elements to achieve equity.

Conclusion

The relationship between the 2005 Algebra for All initiative on English as a Second Language (ESL) learner access and achievement in Algebra I was examined to determine if ESL students continue to be denied equal opportunity-to-learn (OTL) as a result of unnecessary tracking practices. In this quasi-experiment, a pre-post retrospective comparison group design was used to determine the effects of the California

Algebra for All (2005) initiative. Two dependent variables, OTL and California Standards-Based Tests (CST) Algebra I success, were measured. This retrospective comparison group design allowed for an analysis of the difference between post (2012) and pre-intervention (2004) Algebra I scores. Three independent variables in this study were examined: (1) LAUSD versus 17 large urban school districts, (2) White vs. ESL students, and (3) differential implementation of *Algebra for All* from 2004 to 2012 in 18 large urban school districts.

Four research questions were addressed: 1) To what extent, if any, have large urban school districts in CA increased ESL access to early algebra between 2004 and 2012?; 2) To what extent, if any, have large urban school districts in CA decreased the gap between ESL and White student access to early algebra between 2004 and 2012?; 3) To what extent, if any, have large urban school districts in CA increased ESL success in Algebra I between 2004 and 2012?; and 4) To what extent, if any, have large urban school districts in CA decreased the gap between ESL and White student Algebra I success between 2004 and 2012?.

The 2005 *Algebra for All* initiative in all but two districts, Long Beach and Elk Grove, led to more equitable changes. Seven of the 18 largest districts in this study, each with over 31 or more percent of an ESL student population, increased ESL opportunity-to-learn by 50% or more since the year 2004. These districts were: Anaheim, Lodi, San Francisco, San Bernardino, Stockton, and Moreno Valley, and Mt. Diablo. The mean percent change in ESL OTL was 38%.

The 2012 ESL Algebra I opportunity-to-learn data were equally promising. The top three districts with OTL rates greater than or equal to 90% were: San Francisco,

Stockton and Moreno Valley. In addition to these three districts, Mt. Diablo, Corona-Norco, San Bernardino, San Diego (seven in all) districts had ESL 2012 OTL rates greater than 80%. Fifteen out of the 18 districts had an ESL OTL rate greater than 50 percent. The median 2012 district level OTL rate was 63%.

Since the inception of the 2005 *Algebra for All state initiative*, 17 out of 18 large school districts improved ESL Algebra I success rates by over 20 percent. Within all 18 districts, the improvement ranged from 8% to 60%. In all but Elk Grove increases in success ranged from 22 percent in Sacramento to 60 percent in Anaheim. The median success rate success rate change for all 18 districts was 32%. Aside from two districts Riverside and Stockton, in which ESL students' experienced bigger success changes than White students, there were substantial success changes.

The 2012 Algebra I success data are equally encouraging. The top eight districts with success rates greater than or equal to 65% were: Anaheim, Riverside, San Francisco, San Diego, Sweetwater, Corona-Norco, Sacramento and Elk Grove high school districts. Each statewide district had a success rate greater than 50% and the median district level success rate is 63%.

California school districts have made great strides for ESL learners in 2012 in comparison to 2004. Thus, the recent January 16, 2013 State Board of Education decision to end the 2005 *Algebra for All* push for Algebra I at grade eight, is reason for great alarm. Despite acknowledging improvements in Latino enrollment which nearly tripled to 63% likewise, Latino proficiency rates doubled to 42 percent, the state's concern for the other 60% who were not proficient coupled with the idea that out of those who repeated the class only one in five scored proficient, was reasonable cause for them

to stop *Algebra for All* (Fensterwald, 2013). Parenthetically, the problem with the new decision to stop Algebra I by grade 8 is that it will only apply to “some” students not all. Predicted is a decline from the two-third eighth grade enrollment in Algebra I as a result of the Common Core’s gradual approach to Algebra I.

Lastly, trepidation by Algebra I grade 8 advocates, such as Doug McRae, warn that inconsistencies from the current state decision such as: (1) unclear language standards stressing acceleration to Algebra I, (2) the fact that not testing for Algebra I in grade 8 leads to both a “path of least resistance” and more teacher bias (cited in Fensterwald, 2013), and (3) the lack of state incentives, will in essence, only serve to deny student’s their civil right to OTL as initiated by NCLB. Instead of “No Children Left Behind”, this current legislation will contribute to “ESL Students Left Behind.”

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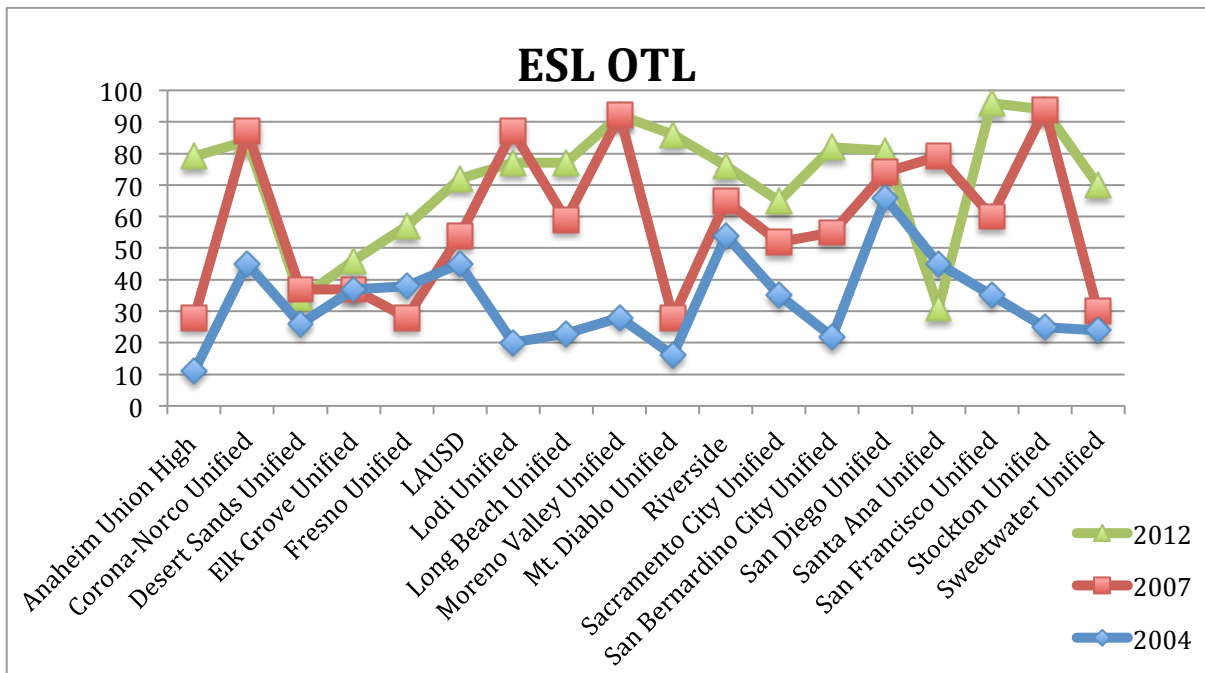
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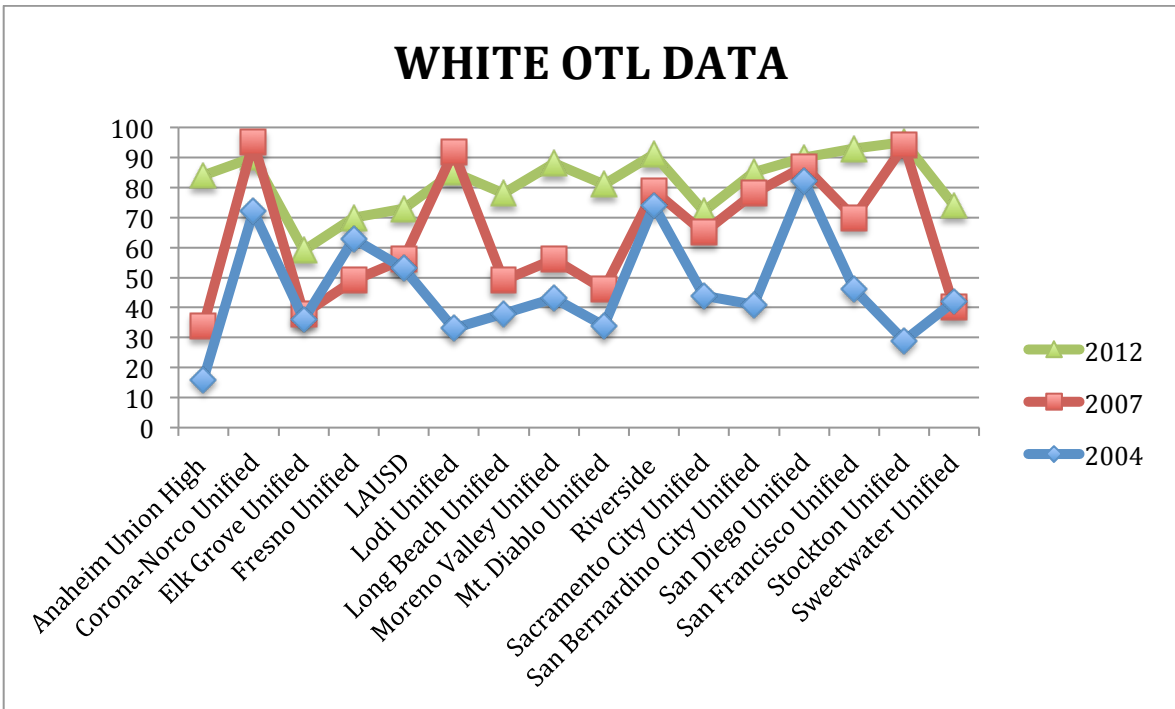
Appendix A

ESL OTL



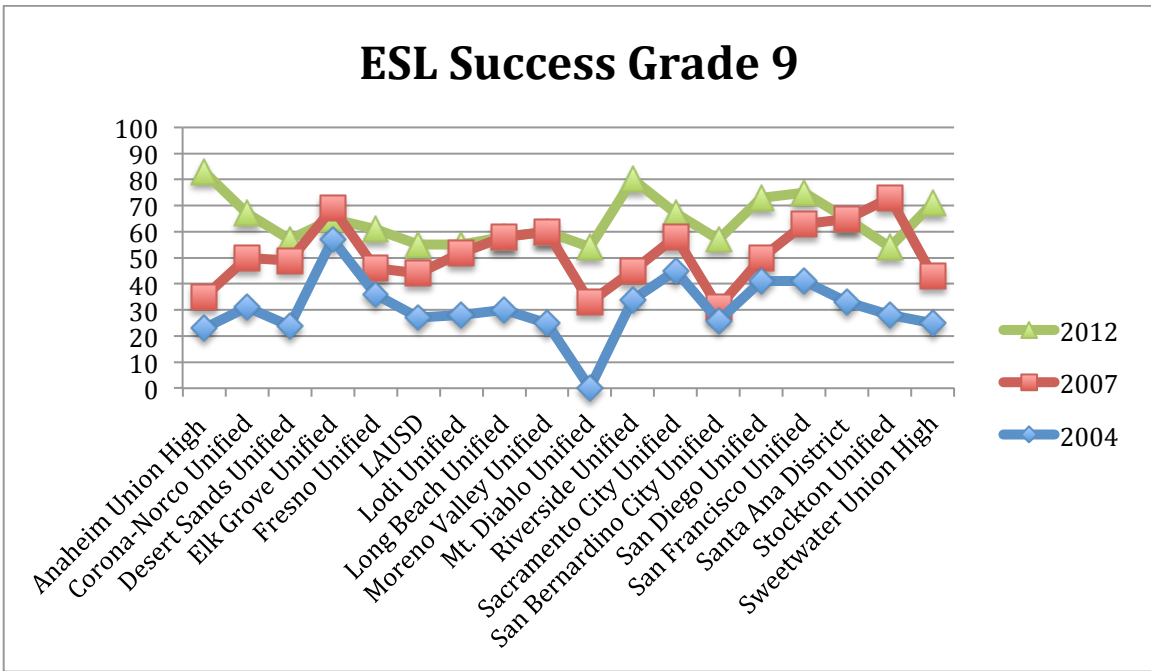
Appendix B

White OTL Data



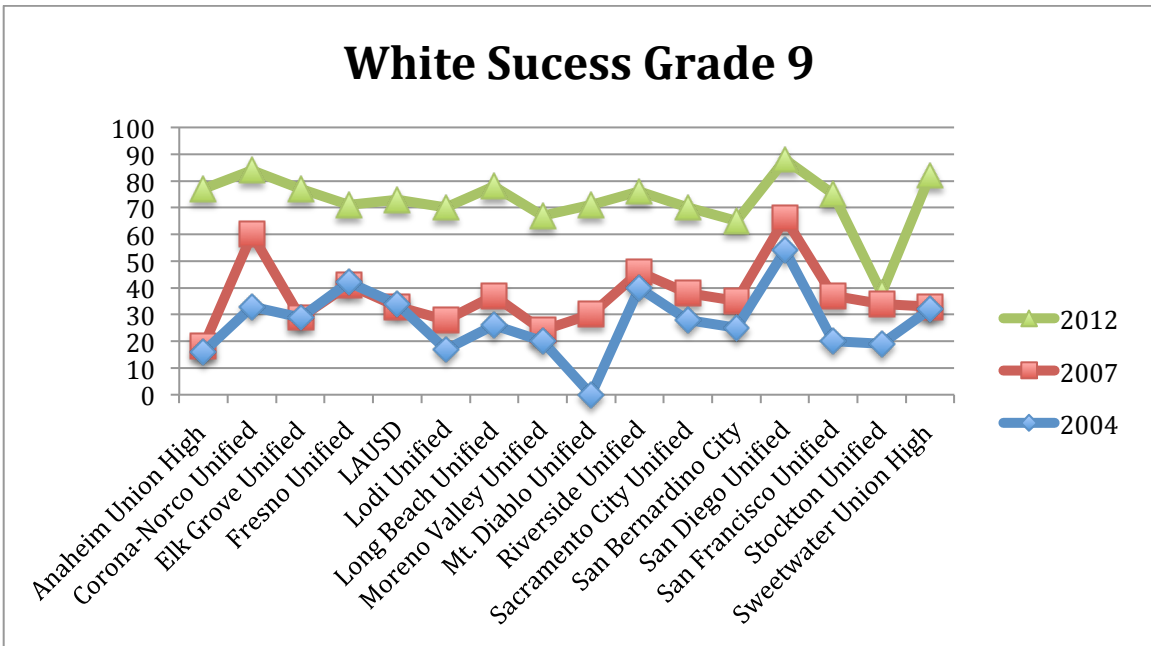
Appendix C

ESL Success Grade 9



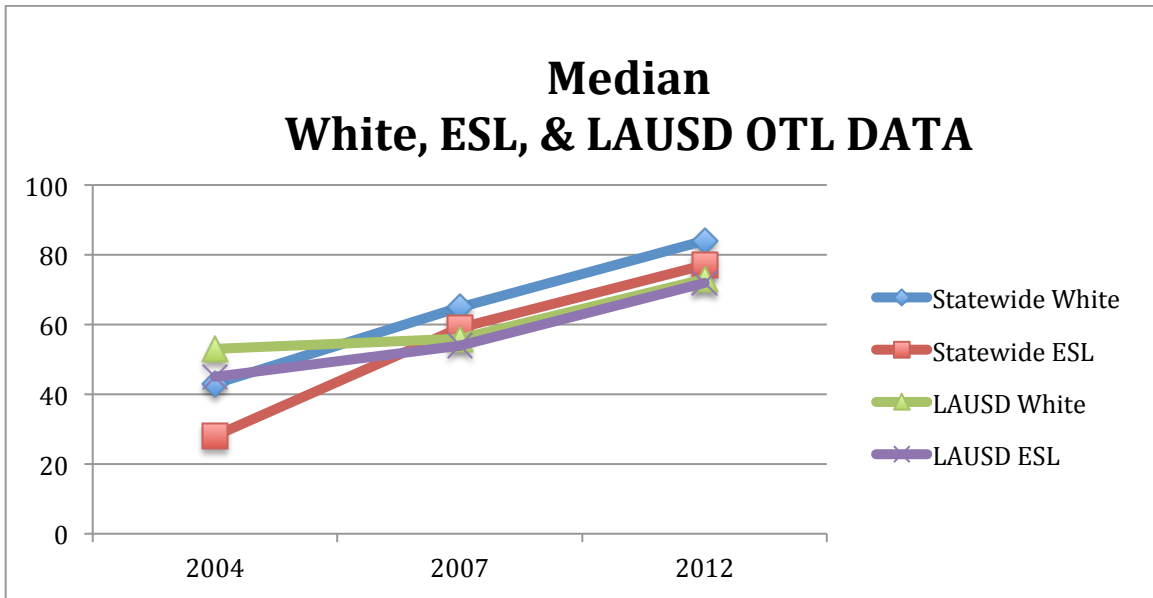
Appendix D

White Success Grade 9



Appendix E

Median White, ESL, & LAUSD OTL Data



Appendix F

Median LAUSD, White, ESL Success Grade 9

