UNIVERSITY OF REDLANDS

Access and Success in Rigorous Math Courses:
English Learners and Reclassified Students in High School

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Doctor of Education in Leadership for Educational Justice

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Dedication

This is dedicated to my husband, my children, and my parents. To my husband, my hero and my soul mate: thank you for your unconditional love and support throughout this journey and our life together. You have always believed in me and have pushed me to not limit myself nor to let others define me. Thank you for your patience and encouragement. Thank you for reminding me of what an accomplishment this is and for being our rock. You are the reason I was able to achieve this goal. I love you with all my heart.

To my children who I love beyond words: I wish to inspire you and show you that you can achieve anything. You are blessed with cultural capital to excel in life. Never take this for granted. Education is the key to social mobility and independence. Remember to always help others along the way who may not possess the same capital and opportunities as you. I love you more than I can express and know you will be successful in whatever you pursue.

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Abstract

This study focused on access and successful completion of A-G math courses for English Learner (EL) students. Access and success rates in A-G math courses for current and former ELs from six districts were analyzed, including how the rates vary by EL levels and time of reclassification. Relevant literature was reviewed, including state guidance for EL reclassification, tracking and placement, scholarship about EL access to rigorous coursework related to the English requirement for college, access to advanced courses, and math serving as a gatekeeper to more rigorous math courses and college access. This study focused on two research questions 1) How is the classification level of current and former English Learners related to their access to and success in rigorous (A-G approved) math courses in high school? 2) How does this vary by EL level and time of reclassification? The results of the study were analyzed through Bourdieu's cultural capital framework and it was ascertained that EL students' accessed and succeeded in A-G math courses at significantly lower rates than RFEP students. While higher level EL students accessed rigorous math courses at a higher rate than lower level EL students, success in these courses was not related to EL level. The results of the study further indicated that third and fourth grades are critical grades for reclassification as related to experiencing success in rigorous math courses. Based on the results, five recommendations for addressing these inequities are offered follow by ideas for future research.

Chapter 1 Introduction

College access is the key to social mobility and changing trajectories of future generations. In the state of California, the largest public university systems have established minimum required rigorous coursework, referred to as A-G courses, high school students must enroll in and successfully pass with a “C” or better in order to be eligible to attend college in the University of California and/or California State University systems. In addition to the coursework, students must earn and maintain a minimum GPA of a 3.0 and earn a minimum score on a standardized assessment to be considered college ready. The focus of this research study was on one of the three components required for college admissions: A-G completion. More specifically, this study focused on the placement and successful completion of A-G math courses for English Learner (EL) students in a southern California county. The alarmingly low A-G completion rates for ELs and the accompanying research on this issue exposed systemic challenges in policy implementation and low expectations that exist within the educational system and in society.

Problem Statement

Lau v. Nichols (1974) ruled that the lack of appropriate linguistic accommodations for students with Limited English Proficiency (LEP) was a violation of civil rights because students did not have access to equal educational opportunities (Hakuta, 2011, as cited in Kanno & Kangas, 2014). Therefore, the ruling in *Lau v. Nichols (1974)* required the public educational system to provide those appropriate linguistic accommodations for all LEP students so that they have equal educational opportunities. The ruling took a cultural deficit lens, and according to Watson (2004), required school districts to remedy the language *deficiency* of LEP students to ensure they have the opportunity to engage in a meaningful education, rather than taking an

assets-based approach and building upon the foundation of language that EL students bring to the educational system. Due to the absence of a federal mandate, the corrective measures were to be determined at the local level. School districts were responsible for establishing and implementing interventions to meet the LEP students' needs in a timely fashion (Watson, 2004).

Forty years after *Lau v. Nichols* (1974), the public school system continues to display educational disparities for ELs. Research indicates that ELs do not access four-year colleges at the same rate as non-ELs (Kanno & Cromley, 2015). Correspondingly, data indicates that there are clear disparities between the rates at which ELs complete A-G requirements as compared to non-ELs in a southern California county as well as throughout the state. ELs are also completing A-G courses at disproportionate rates when compared to their enrollment in the county. Considering that the completion of A-G courses is but one eligibility requirement to be admitted to a UC/CSU, ELs who pursue this postsecondary option are presented with unjustified inequities.

DataQuest (2018), a data website provided for the public by the California Department of Education (CDE), indicated that during the 2017-18 academic year, one southern California county's student population was 403,137. The county serves a large population of socioeconomically disadvantaged students at 72.9 percent with 17.2 percent of the student population identified as ELs. Of the EL population, 90.3 percent were identified as socioeconomically disadvantaged, and 83.6 percent identified as Hispanic or Latino. 92.6 percent of the EL population were identified as both socioeconomically disadvantage and Hispanic or Latino. A thorough description of the southern California county will be provided in Chapter 3.

In 2017-2018, the A-G completion rates in the local county for all students who graduated high school was 43 percent compared to 50 percent statewide (DataQuest,

2018). During the same year, the A-G completion rate for EL students in the identified county was 19.3 percent compared to the statewide EL A-G completion rate statewide of 24 percent (DataQuest, 2018). The A-G completion rate for Non-ELs was 46 percent. As seen in Figure 1.1, the countywide EL A-G completion rate (19.3 percent) is less than half of the overall county rate demonstrating a 23.7 percent gap. Furthermore, of the 43 percent of students who completed A-G courses in the county, only 5.2 percent of those students were ELs (DataQuest, 2018).

Figure 1.1 2017-2018 County A-G Completion Rates

This poses a social justice issue as ELs comprised 17.2 percent of the student population in kindergarten through twelfth grades and 10.2 percent of the student population in grades ninth through twelfth (DataQuest, 2018). At only 5.2 percent, ELs are underrepresented among A-G course completers compared to their representation in student bodies countywide. Statewide, the disproportionality is also evident, as ELs comprised 20.4 of the student population in kindergarten through twelfth grades and 11 percent of the student population in grades ninth

through twelfth, yet ELs only comprised 5.9 percent of the 50 percent of students who completed A-G courses (DataQuest, 2018).

Literature regarding EL placement in rigorous coursework reveals that when ELs exit sheltered courses, or EL-specific content area courses, they continue to be placed in low level courses regardless of their academic progress (Umansky, 2016; Kanno & Kangas, 2014), which inherently limits their access to A-G courses. Some scholars have found it is best for ELs to transition out of EL placement before high school, as it may delay entry into mainstream courses and access to the core content (Nuñez, Rios-Aguilar, Kanno, & Flores, 2016; Kanno & Kangas, 2014). Nuñez et al. (2016) recommended future research regarding college and career preparation, including determining how EL students are tracked into lower level courses and how to correct this trend. Thompson (2017) found that expanding access to rigorous courses for ELs is only part of the equation for their success and specifically identified the causal impact of current and former EL classifications on math course-taking outcomes as a gap in the literature. There is a clear need for research regarding college and career readiness for ELs focused on how EL students are tracked into non-rigorous math courses at the secondary level.

Purpose

The purpose of this study was to identify how the classification levels of current and former EL students in districts in a local southern California county are related to the access and success rates in A-G math courses in high school. EL students are not represented among A-G completers at a rate proportionate to their enrollment in the county (DataQuest, 2018). The completion of rigorous secondary mathematics serves as the largest gatekeeper to more rigorous courses in high school (Thompson, 2017) as well as postsecondary success (Adelman, 2006; The United States Department of Education, 1997). This content area deserves particular attention as

transcript analysis in a large southern California school district indicated that ELs are both completing the math A-G courses at a lower rate than other student groups and also completing math at a lower rate than all other A-G courses (UCLA's IDEA & ABC, 2013). Access to rigorous courses to support English acquisition and achievement for EL students is supported by empirical research, and access to rigorous math courses, specifically, is linked to an increased likelihood of bachelor's degree attainment (Adelman, 2006). This is a social justice issue in need of further attention.

Research Questions

The research questions guiding this study were:

- 1) How is the classification level of current and former English Learners related to their access to and success in rigorous (A-G approved) math courses in high school?
- 2) How does this vary by EL level and time of reclassification?

Scope of the Study

This was a quantitative study utilizing data from 29 comprehensive high schools in six districts in a local southern California county. Specifically, data for EL students through eleventh grade was used. T-tests and ANOVAs were conducted to analyze the data and gather insights into challenges related to access and success facing ELs in rigorous high school math courses.

Study Significance

Enrollment in and successful completion of rigorous math courses serve as high leverage for ELs, given that students who take rigorous math courses are much more likely to go to college than those who do not (Adelman, 2006; United States Department of Education, 1997). The completion of math courses in high school among ELs, former ELs, and English only students has been previously investigated (Thompson, 2017) including the high repetition rates

of math courses among ELs (Jacquet & Fong, 2017; Thompson, 2017). However, what has not been examined is how current and former EL classification is related to students' enrollment in and successful completion of A-G approved math courses in California, including how this varies by EL level and point of reclassification. Disaggregating the data in this manner could bring about additional insights regarding how ELs experience rigorous math courses in high school. This study focused on the relationship between EL students' classification on course access and outcomes in a southern California county, thereby addressing a gap in the research and contributing to the existing body of literature.

Unlike other students, ELs are not placed in courses according to prior achievement (Kanno & Kangas, 2014; Umansky, 2016) denying them equitable opportunities to access and complete rigorous courses. This placement denies them equitable opportunities to access and complete rigorous courses and negatively impacts their trajectory towards attaining a bachelor's degree from a four-year university. Given that there is little research in this area, this study will provide additional insights into the challenges ELs face in accessing and successfully completing rigorous math courses at the secondary level.

Definition of Terms

- *A-G courses* – Sequence of high school courses representing the basic level of academic preparation that high school students must complete with a grade of C or better to be minimally eligible for admission to the UC or CSU systems
- *English Learner* – any student who has not demonstrated English proficiency on the annual language proficiency assessment and/or who has not met reclassification criteria for the state

- *Language proficiency assessment* – Annual assessment administered to English Learners used to determine one of four criteria for reclassification
- *Rigorous coursework* – College prep courses that fulfill the A-G requirements, including Advanced Placement (AP), Honors (H), and International Baccalaureate (IB) courses
- *Reclassification* – The process of an EL meeting linguistic and academic criteria established by the state which allows that student to move from a classification as an EL to Reclassified English Proficient (RFEP).

Chapter 2 Literature Review

The review of the literature regarding ELs' access to and completion of rigorous coursework emerged into four overarching themes of guidance for EL reclassification, tracking and placement, access to rigorous coursework, and mathematics as a gatekeeper.

State Guidance for EL Reclassification

As a result of *Lau v. Nichols* (1974), ELs are placed into courses designated for English Learners and remain there until they are reclassified as English proficient. In California, reclassification from English Learner to Fluent English Proficient (RFEP) occurs at the local district level on an annual basis. The reauthorization of the Every Student Succeeds Act (ESSA) in 2015 required states to standardize criteria for designating students as ELs and for reclassifying ELs as English proficient. Districts in California utilize a language proficiency assessment to determine the level of EL classification of EL students each year. This assessment has transitioned from the California English Language Development Test (CELDT) to the English Language Proficiency Assessments for California (ELPAC) over the past few years. On the CELDT, EL students were able to score in one of five overall proficiency levels (Beginning - 1, Early Intermediate - 2, Intermediate - 3, Early Advanced - 4, Advanced - 5). On the ELPAC, there are four overall proficiency levels (1-4) that correspond to three English Language Development (ELD) proficiency levels (Emerging, Bridging, and Expanding). The alignment of the ELD proficiency levels, the ELPAC proficiency levels, and the CELDT proficiency levels can be seen in Figure 2.1

CA ELD Standards Proficiency Levels				
Emerging	Expanding		Expanding/Bridging	Bridging
ELPAC Performance Level Descriptors				
Level 1 – Minimally Developed	Level 2 – Somewhat Developed		Level 3 – Moderately Developed	Level 4 – Well Developed
CELDT				
Beginning	Early Intermediate	Intermediate	Early Advanced	Advanced

Figure 2.1 Comparison of CA ELD Standards, ELPAC Performance Descriptors and CELDT Levels (“LUSD”, n.d.)

The ELPAC proficiency level one corresponds to the Emerging ELD proficiency level. ELPAC level two corresponds to the Expanding ELD proficiency level. ELPAC level three corresponds to two ELD proficiency levels, Expanding or Bridging, depending on the overall score received. Lastly, ELPAC level four corresponds to the Bridging ELD proficiency level.

Prior to the reauthorization of ESSA, California identified ELs eligible for reclassification using the CELDT level four or five as the language proficiency assessment criteria and determined which EL students to reclassify using the additional minimal required criteria: teacher evaluation, parent consultation, and comparison of student performance in basic skills against an empirically established range of performance in basic skills of English proficient students of the same age (California Department of Education, 2019). Districts had the flexibility to add additional criteria, resulting in inconsistencies in reclassification criteria throughout the state.

Under the reauthorization of ESSA, California State Superintendent of Public Instruction Tony Thurmond released reclassification guidance in January 2019. The guidelines specified that districts are to continue to use the four criteria to establish reclassification policies and procedures, including 1) assessment of English language proficiency (including but not limited to the ELPAC), 2) teacher evaluation (including but not limited to student’s curriculum mastery), 3) parent consultation, and 4) comparison of student performance in basic skills against the basic

skills of same-age English proficient students (CDE, 2019). Regarding the first criterion of English language proficiency assessment, the January 2019 guidance document specified that the State Board of Education (SBE) approved the use of the ELPAC Overall Performance Level (PL) 4 as the statewide criterion for reclassification beginning with the 2018-19 administration of the ELPAC (CDE, 2019). As seen in Figure 2.1 above, ELPAC level four is aligned to the former CELDT level five. Under the CELDT, students who scored an overall level four (Early Advanced) or five (Advanced) could reclassify as long as the scores in each of the individual domains were not below a level three (Intermediate). The newly approved reclassification criteria is set at ELPAC level four with no caveats. Criterion two through four remain unchanged. For the fourth criteria, districts can use local assessments to determine if ELs are meeting academic outcomes and, for grades third through eighth and eleventh, districts have the option of using the Smarter Balanced Assessment Consortium (SBAC) summative assessment results to determine if students are meeting academic outcomes to be reclassified (CDE, 2019). The guidance further indicated that all other criteria remain locally determined and must continue to be reviewed by the EL district advisory committee (CDE, 2019).

Following the reclassification of EL students, ESSA requires progress monitoring of former ELs for four years, an increase of two years of monitoring compared to the requirements under No Child Left Behind (NCLB) (EdSource, 2019). Districts are required to monitor the reclassified students' progress in order to ensure accurate classification, placement, and additional academic support (CDE, 2018). The district is responsible for monitoring the grades of reclassified students in academic courses as well as for providing additional academic support as needed. Students who do not demonstrate adequate performance are eligible for academic support determined by school districts and school sites. The academic support of reclassified

students is included in the overall progress of ELs on the California School Dashboard, by which districts may become eligible for Comprehensive Support and Improvement or Additional Targeted Assistance provided by the county office. Beyond this, ESSA also requires the monitoring and reporting of EL student achievement in the state's accountability system. In California, this information is collected and reported using the California School Dashboard which includes the progress and current status of ELs on five state indicators: graduation rate, suspension rate, college and career readiness, chronic absenteeism, and academic performance (math and English Language Arts). Districts who demonstrate significant need across multiple indicators for one or more specific student groups become eligible for Differentiated Assistance provided by the county office.

Tracking and Placement

Federal Guidance

The U.S. Department of Justice, Civil Rights Division and the U.S. Department of Education, Office for Civil Rights (OCR) (2015) issued a joint guidance in January 2015 to support all public schools in meeting their legal obligations, ensuring all EL students are able to participate meaningfully and equally in educational programs and services. In the Dear Colleague Letter, the U.S. Departments of Education and Justice (2015) affirmed that school districts may not categorically exclude EL students from gifted and talented education (GATE) or other specialized programs including Advanced Placement (AP), honors, or International Baccalaureate (IB) courses. Based on 1991 OCR Guidance, the letter specifies that unless a specific GATE program or advanced course is demonstrated to require proficiency in English for meaningful participation, schools are responsible for ensuring that the procedures related to evaluation and testing for GATE or other specialized programs do not screen out ELs (U.S.

Departments of Education and Justice, 2015). Furthermore, the U.S. Departments of Education and Justice clarifies that if a school district believes that there is an

educational justification for requiring English proficiency in a particular program or course level mentioned above, both Departments consider a district's proffered rationale to assess whether it constitutes a substantial educational justification and, if so, to determine whether a school could use comparably effective alternative policies or practices that would have less of an adverse impact on EL students. (p. 21)

This federal guidance highlights and supports research conducted on the benefits of ELs accessing rigorous coursework in public schools.

Policies and Procedures

Schools' processes and procedures for EL placement determine and shape the trajectories of ELs (Callahan, Wilkinson, & Muller 2010; Minicucci & Olsen, 1992). A middle school study revealed that ELs are less likely to be enrolled in a full course of study, including English, math, and science (Umansky, 2016). Placement in content courses, including math, science, and social studies, is typically based on the student's English proficiency level (Minicucci & Olsen, 1992). When a student is identified as an EL, their access to rigorous academic content is typically postponed until that student is identified as proficient and ready to engage with the academic content in which that student is now behind (Minicucci & Olsen, 1992). Remaining EL at the secondary level may delay access to mainstream courses and to the core content (Estrada, 2014). ELs are rarely placed in rigorous courses because they are viewed as unqualified (Kanno & Kangas, 2014). Furthermore, administrators and teachers tend to steer ELs away from challenging courses with the idea that they are protecting ELs (Kanno & Kangas, 2014). When ELs are not reclassified to English proficient after six years, they remain in EL programs and

become identified as Long-Term ELs, further limiting their exposure to rigorous academic content via assignment to less challenging courses in high school (American Federation of Teachers, 2006; Kanno & Kangas, 2014; Nuñez et al., 2016; Rodriguez & Cruz, 2009; Wang & Goldschmidt, 2003). Limited access to content is attributed to their previous limited exposure while learning English (Callahan et al, 2010). Unfortunately, placement in courses designated for ELs impedes equity in accessing courses necessary to access college (Callahan & Shifrer, 2016).

The school placement policy often determines access and achievement of ELs (Callahan et al, 2010). In their study on placement in minimum standards courses, Wang and Goldschmidt (1999) found that while all students placed in minimum math courses scored below all others in higher math levels, such placement had the largest negative impact on the academic outcomes for ELs. The negative impact on the academic outcomes based on a students' EL status was significantly reduced when the EL student was placed in higher level math courses, implying that ELs have an increased sensitivity to the quality of academic courses and, given the opportunity, EL students will rise to the occasion (Wang & Goldschmidt, 1999). Research has indicated that rigorous instruction should be provided for lower level EL students to improve EL student achievement (Callahan et al., 2010). Classification as an EL student should not preclude students from fully accessing rigorous courses and having consistent interaction with English-speaking students (Umansky, 2014). Furthermore, ELs need to be placed in advanced college-preparatory courses corresponding with their abilities (Kanno, 2018).

Callahan (2005) also found that teachers have low expectations of students enrolled in ELD courses and that educators choose to expose ELs to less challenging curriculum due to their personal beliefs about ELs' linguistic and academic abilities. Moreover, high school personnel interpreted limited English as limited intelligence and placed students in low-track courses, with

limited exposure to rigorous academic content or the discourse necessary to be prepared to enter post-secondary education (Callahan, 2005). For instance, research indicated that EL students were not provided opportunities to engage in assignments that build critical thinking skills (Kanno & Kangas, 2014). ELs respond to low expectations by underperforming and limiting themselves to meet those expectations (Callahan, 2005). On the other hand, high expectations at the earliest English proficiency levels set a precedent for academic development for ELs (Callahan, 2005). Placing students in courses designated for ELs also hindered students' performance in other academic areas due to a primary focus on language acquisition at the expense of academic content and rigor (Callahan et al., 2010). Rodriguez and Cruz (2009) highlighted how the acquisition of the English language served as a gatekeeper to rigorous courses for ELs. The local definitions of EL status and the use of reclassification to English proficiency as a gateway to mainstream courses serve to intensify the barriers for EL access and inclusion in mainstream courses (Estrada, 2014).

Prior academic achievement is typically used to determine course placement. However, high academic achievement did not play a factor in course placement for ELs (Kanno & Kangas, 2014). Instead, they were continually enrolled in EL courses whether they achieved or struggled academically. Established course sequences for each of the core subjects was a direct factor that limited ELs access to rigorous courses since EL courses led to non-EL remedial level courses that were not part of the rigorous course sequence (Kanno & Kangas, 2014; Kanno, 2018). For example, the academic path of students who were reclassified as English proficient during high school remained the same after reclassification because they followed a sequence of courses based on their ninth-grade schedule (Kanno & Kangas, 2014). Their course sequence following reclassification was not altered as a result of their academic and language acquisition success.

Tracking and placement directly impacts the postsecondary trajectory for ELs. Kanno and Cromley (2015) investigated critical milestones in the college pathway and found that ELs access to four-year universities is extremely limited. ELs do not reach early critical milestones in high school (Kanno & Cromley, 2015): aspiring to earn a bachelor's degree, becoming college qualified, and applying to four-year institutions. As a result, the college application milestone continually serves as a challenge for EL students. Kanno and Cromley (2013) conducted a study on ELs access to and attainment in college compared to English-only speaking students and students who had been reclassified as English proficient. Using national data, they found that ELs advanced to post-secondary institutions at a much lower rate and that ELs were overrepresented in "no post-secondary institutions" while underrepresented in "four-year institutions" (Kanno & Cromley, 2013). This suggests that high-achieving ELs tend to be over prepared for the post-secondary options in which they enroll (Callahan & Humphries, 2016). Consequently, ELs were underrepresented among those who earned a bachelor's degree or higher. Conversely, reclassified status was a positive predictor of access to post-secondary education (Kanno & Cromley, 2013).

EL Access to Rigorous Coursework

Over the past 12 years, our presidential administrations have recognized and included advanced high school courses as an important factor in education. President Bush acknowledged the importance of increasing the number of advanced high school courses and President Obama acknowledged the importance of increasing access to those courses (Long, Conger, & Iatarola, 2012). This is supported by research as the estimated effect of a student enrolling in just one rigorous course, as opposed to none, is associated with an increase in 10th grade math scores and a 7 to 11 percent increase in the student's likelihood of graduating high school and attending a

four-year university (Long et al., 2012). Requiring or encouraging enrollment in at least one rigorous course in the first two years of high school can significantly improve graduation and four-year college enrollment rates, with marginalized students potentially benefitting the most (Long et al., 2012; United States Department of Education, 1997).

English Requirement for College

In California, students are required to enroll in and successfully complete A-G courses with a C or better in order to be considered for admission to the California public university systems. Students are required to take four years of English to meet the “B” requirement of the A-G coursework. The A-G Guide (2015) provided by the University of California Regents specifies that only one year of ESL/English Language Development (ELD) may count toward a student’s four-year English requirement for college admissions. This presents a special challenge to any ELs enrolled in ELD in high school for more than one year. Moreover, the one year of ESL/ELD only counts toward the four-year English requirement if the district has received approval for that course from the University of California Regents and is listed on the UC A-G Guide. Since districts must apply to receive approval for A-G courses by the University of California Regents, not all ELD courses are A-G approved in every district. Students who are enrolled in ELD courses that are not A-G approved are at an even more heightened disadvantage because none of their ELD courses are approved. These students miss the opportunity to have at least one year applied to the four-year requirement. Students who are placed in ELD for more than one year face an uphill, seemingly impossible battle to meet the four-year A-G English requirement. A report for the National High School Center on high school course taking patterns for ELs shows a higher percentage of non-ELs completed one year of college prep math and one year of college prep English by the end of ninth grade than did ELs, with 63 percent compared to

33.8 percent, respectively (Finkelstein, Fong, & Huang, 2009). At the end of twelfth grade, there were a larger number of EL students not completing the required courses for college application than non-EL students. Research demonstrates that systemically, students were often not permitted to take mainstream English courses until they demonstrated a specific level of mastery based on assessments (Kanno & Kangas, 2014), which perpetuates English proficiency as a gatekeeper to rigorous coursework. This creates inequitable opportunities for EL students not only during high school, but in pursuing postsecondary opportunities. The practice of delaying access to mainstream English courses is in direct opposition to the research above regarding placement and tracking of ELs.

Advanced Placement (AP) and Honors Courses

AP courses are offered by the College Board as college-level courses students may take during high school and are considered rigorous courses (College Board, 2018). They are designed to be more demanding than typical high school courses, similar to first-year college courses (College Board, 2018). The completion of an AP course is followed by an optional AP exam, which allows students the opportunity to earn college credits, based on their score (three or higher). Ultimately, granting the college credits is at the discretion of the institution of higher education where the student is accepted. AP courses are typically A-G approved courses and are viewed as higher level courses. Honors courses are also considered rigorous courses. Honors courses typically offer similar curriculum as mainstream classes and include additional topics or an in-depth study of specific topics (College Board, 2018). Honor courses differ from AP courses in that they do not include the opportunity to take an assessment for college credit.

Access to advanced college prep courses for ELs in K-12 is vital for access to and success in college (Nuñez et al., 2016). However, several factors such as placement criteria limit

enrollment for EL students in these courses. Enrollment in AP and honors courses is reserved for students who demonstrated advanced academic performance on state and local standardized assessments (Kanno & Kangas, 2014). ELs typically scored basic or below basic on these tests, which prevented them from being enrolled in AP and honors courses, regardless of their GPA (Kanno & Kangas, 2014). Additionally, teacher input into course placement often resulted in recommendations for remedial courses for ELs (Kanno & Kangas, 2014). This was due to their EL label and because they were viewed as still developing the language skills necessary for engaging in rigorous coursework (Kanno & Kangas, 2014). The amount of reading and writing expected in AP and honors courses was viewed by adults as too overwhelming for EL students, further characterizing ELs as unqualified due to their limited English proficiency (Kanno & Kangas, 2014). Students may have had the opportunity to advocate for themselves and request a higher-level course, but rarely did because students (and in some cases parents) were unaware that they could make such a request (Kanno & Kangas, 2014; Callahan, 2005). ELs were not completely informed about their choice of courses and the impediments that could result from completing one course over another (Callahan, 2005). Furthermore, students and parents often agreed with the school's recommendations related to course placement because many of the parents of ELs did not possess knowledge about college planning in the United States (Kanno & Kangas, 2014).

Math as a Gatekeeper

Math serves as a gatekeeper not only in high school, but also at both two-year and four-year institutions of higher education. While EL students experience challenges in math in the K-12 system, this is also the case in post-secondary education. Enrollment in community colleges is accompanied by placement assessments and research has demonstrated that 70% of students who

take community college placement assessments place into remedial math (Brown & Niemi, 2007 as cited in Bunch & Panayotova, 2008). The remedial math courses are often non-credit bearing courses, or if they are credit bearing, they may not count toward graduation. EL students' lack of access to rigorous courses in high school negatively impacts their placement in post-secondary education. This lack of access in K-12 reaches beyond that system into the higher education system.

Research continues to demonstrate that the highest level of mathematics reached in high school is key in momentum towards college, with the tipping point toward a bachelor's degree set above Algebra 2 (Adelman, 2006). However, not every student has the chance to reach beyond Algebra 2 (Adelman, 2006), or to even reach Algebra 2. Algebra taken early on in high school serves as the gateway to advanced math throughout high school and students who take rigorous math and science courses are much more likely to go to college than those who do not (Adelman, 2006; The United States Department of Education, 1997). The high repetition rates of Algebra I among EL students is concerning (Jacquet & Fong, 2017). As ELs are developing proficiency in English, access to rigorous courses in math is critical, along with ongoing sufficient support in language development to succeed in those courses (Callahan & Humphries, 2016; Jaquet & Fong, 2017; Mosqueda, 2010). Research on math placement in the middle school grades determined that students enrolled in algebra, honors math, or an elective math course in grades sixth through eighth had significantly higher test scores on a standardized assessment compared to students enrolled in standard math courses (Wang & Goldschmidt, 1999). Further, students enrolled in more advanced courses demonstrate greater achievement growth than their peers enrolled in basic courses. Yet, EL immigrant students were more likely to be enrolled in lower level math courses than English speaking immigrants (Wang &

Goldschmidt, 1999, 2006). Language proficiency affects the placement of EL students in math, with EL students significantly overrepresented in remedial courses and conversely underrepresented in advanced courses, especially EL Hispanic students (Wang & Goldschmidt, 2006).

In one of the few studies on EL student success in high school math courses, Thompson (2017) investigated enrollment in Algebra I in eighth grade, repeating any math course in grades eight through tenth (including Algebra I), scoring proficient in Algebra I, and enrolling in an accelerated math sequence among ELs, former ELs, and those who had never been classified as ELs. In the mixed methods case study, Thompson (2017) found that the successful completion of math courses with a grade of C or better impacted enrollment in subsequent math courses. While EL students had the opportunity to learn and were enrolled in rigorous math courses in this study, the success rate was concerning (Thompson, 2017). Of the fourteen students in the case study, ten of the EL students repeated a rigorous math course between eighth and tenth grades. Thirty-six percent of ELs who repeated a math course scored the same or lower on the state assessment during their second year in the course and 61% scored at a proficiency level that was the same or lower on end-of-course assessments (Thompson, 2017), perhaps demonstrating that ELs do not receive appropriate supports for English language acquisition in math courses. Repeating the course, or giving ELs more of the same content, did not prove successful. What Thompson did not address is the EL level of students who were enrolled in and repeated a course, or the grade level of reclassification for those who were reclassified. Lumping all levels of EL into one category limits the deeper understanding of the patterns of enrollment and success in math courses. Similarly, analyzing all reclassified ELs as one homogeneous group overlooks

the possibility of differences based on the time of reclassification. Disaggregating such data could provide important insights into how EL students experience math courses in high school.

Cultural Capital Framework

The theoretical lens guiding the study is Pierre Bourdieu's Cultural Capital Framework. Pierre Bourdieu believed that capital could be extended to all forms of power: material, cultural, social, and symbolic (Swartz, 2012). The lens of cultural capital is aligned to the issues facing ELs in accessing and succeeding in A-G courses for post-secondary opportunities. According to Bourdieu, cultural capital includes verbal facility, cultural awareness, understanding the educational system, and educational credentials (Swartz, 2012). This form of capital can serve as a power resource in society (Swartz, 2012). Children from the dominant culture enter the educational system with certain social and cultural cues that are not natural or familiar to working-class and lower-class children (Lamont & Lareau, 1988). Bourdieu identified cultural capital out of research conducted to determine the difference in academic achievement between students from families with different educational backgrounds (Swartz, 2012). He found that educational success can be determined by the cultural capital passed on by the family to the student more so than by the basis of talent and achievement of the student. Bourdieu posits that the educational system not only transmits but rewards the culture of the dominant class and in order for students to acquire cultural capital, they must be able to receive it and internalize it (Dumais, 2002). This is required of students, but not provided for them (Dumais, 2002).

Bourdieu identified three different states of cultural capital: embodied, objectified, and institutionalized (Swartz, 2012). The embodied state of cultural capital includes exposure to and understanding of music, art, scientific formulas, and popular culture works, which is initiated early in childhood (Swartz, 2012). The objectified state of cultural capital includes books, works

of art, and scientific instruments while the institutionalized state of cultural capital includes the educational credential system (Swartz, 2012). According to Bourdieu, the higher education system has expanded and created a credential market that is instrumental in social class reproduction (Swartz, 2012). Bourdieu posits that due to the expansion of the credential market, parents find it necessary to invest in and provide a good education for their children in order for their children to reap the financial benefit of their jobs (Swartz, 2012). Bourdieu identified this strategy of converting economic capital into cultural capital as one that is more available to the wealthy class (Swartz, 2012). Further, the unequal distribution of objectified and institutionalized states of cultural capital across social classes translates into class inequities in modern society (Swartz, 2012). In comparison to economic capital, cultural capital is characterized as less stable (Swartz, 2012). According to Bourdieu, cultural capital is more unstable in intergenerational transmission and the institutionalized state of cultural capital is non-negotiable (Swartz, 2012). Social capital is closely related to cultural capital and both are not easily converted to economic capital, while the opposite is not the case (Swartz, 2012). According to Bourdieu, economic capital converts much more easily into cultural and social capital (Swartz, 2012).

Acquiring the cultural capital of the dominant class depends on intergenerational transmission and social class (Dumais, 2002). The educational system reinforces the cultural capital of the dominant class and in turn, leaves those in the lower class with a lack of hope of social mobility (Dumais, 2002). Bourdieu suggests that inherited cultural capital can return dividends in the educational system, where those with cultural capital reap benefits and those without are penalized (Swartz, 2012). This is a meaningful lens for the present study because ELs do not possess the cultural capital of the dominant class in the United States. ELs often do not possess the verbal facility to demonstrate English proficiency because they are in the process

of acquiring English. The families and parents of ELs also rarely possess the institutionalized state of cultural capital necessary in the United States to ensure their students have the opportunity to access higher education (Kanno & Cromley, 2013), which is aligned with Bourdieu's belief that those without cultural capital are penalized. This is evident in the low A-G completion rate of ELs. Research has also indicated that ELs and their parents consistently follow the school's recommendations of course offerings (Kanno & Kangas, 2014), suggesting a lack of cultural capital of the dominant class. ELs continue to be limited in the embodied, objectified, and institutionalized states of cultural capital of the dominant class.

Analysis and Interpretation

Lau v. Nichols (1974) specified that linguistic support services should ensure equity in academic access for ELs (Callahan et al., 2010; Hakuta, 2011). More specifically, students placed in courses designated for ELs should experience academic benefits. The literature demonstrates how this is not the reality for ELs.

ELs are placed in lower level courses regardless of their academic success, precluding them from eligibility to attend four-year universities upon graduation. EL students are tracked for high school graduation and are not enrolled in rigorous courses, which establishes and perpetuates low expectations of this student group (Callahan et al., 2010). This cycle is detrimental to the trajectory of ELs as they graduate high school unable to pursue post-secondary options due to their limited high school education. A majority of EL students leave high school unprepared to enter institutions of higher education and although EL students are kept in school, it is not necessarily in a significant way (Callahan, Wilkinson, Muller, & Frisco, 2009). This is a systemic issue for ELs, as they do not reach the early critical milestones in high school as defined by Kanno and Cromley (2015). Therefore, college eligibility is nothing short of a

challenge. The cultural capital of ELs and their families continue to be limited due to this cycle. Their institutionalized state of cultural capital does not have the opportunity to evolve, as ELs are not prepared to enter institutions of higher education due to the systemic inequitable constraints of the K-12 public schools.

ELs do not possess a clear understanding of the United States' educational system, and this is through no fault of their own. Through the lens of cultural capital, ELs have not been taught the inner workings of the educational system, including the impact of enrolling in and completing A-G courses on their postsecondary opportunities. Their access to AP and honors courses is limited by design and ELs are unaware that they are able to request higher-level courses (Kanno & Kangas, 2014; Callahan, 2005). Adults directly impact EL students' limited access to rigorous courses, as adults view AP and honors courses as too overwhelming for EL students (Kanno & Kangas, 2014). Coupling this with the negative assumption that school personnel associate ELs with limited intelligence (Callahan, 2005), Bourdieu's verbal facility aspect of cultural capital provides insight into how EL students are disenfranchised. As ELs are acquiring English, they do not have complete command of the language, exposing some vulnerability, which is mistaken for lack of intelligence. Rather than lack of intelligence, this vulnerability exposes lack of cultural capital in the United States. Assumptions about ELs abilities are made based on their English proficiency, which is not an indication of intelligence. As a result, ELs are not provided with equitable rigorous instruction in rigorous courses. Instead, this is postponed until ELs are viewed as though they can meet the expectations of those courses. However, being that they are more often met with low expectations rather than high expectations, opportunities to enroll in rigorous courses are minimal.

A lack of guidance regarding *Lau v. Nichols* (1974) negatively impacted ELs in the educational system as policies were developed and implemented that appeared to adhere to the ruling, yet continue to marginalize EL students. As a result, ELs continue to be denied equitable opportunities when compared to non-ELs, which was not the intention of the ruling. While EL programs were meant to build the English proficiency of ELs, they have the reverse effect, as they were embedded in a system designed to keep ELs in a state of status quo. The placement of ELs and the resulting inherent lack of access to rigorous coursework for ELs is an educational injustice and long overdue for an overhaul. While *Lau v. Nichols* (1974) intended for ELs to have appropriate linguistic support to provide an equal educational opportunity, the system in which that support is meant to occur is one of oppression and limited opportunities. The systems and processes used by schools to place EL students in courses in attempts to comply with *Lau v. Nichols* (1974) should be interrogated (Callahan et al., 2010). The recently released federal guidance by the U.S. Departments of Education and Justice brings this educational injustice to the forefront and further demonstrates how ELs continue to be precluded from accessing rigorous courses necessary for success beyond high school, for both the workforce and post-secondary education. Wang and Goldschmidt (1999) indicated that it would be problematic if immigrant status and language proficiency were deciding factors in determining course enrollment for students. Yet, research indicates that the typical practice is to use language proficiency over grade point average or previous achievement in courses when placing EL students. Narrowing in on lack of access to rigorous coursework with a focus on math placement-due to the strong connection between enrollment in higher level math courses and the attainment of a bachelor's degree-further highlights the injustices and long-term impact of this issue on ELs. Based on the research above, ELs are routinely excluded from and do not

consistently experience success in higher level math courses. This specific practice, coupled with the lack of access to other rigorous courses required to meet A-G criteria for post-secondary education, solidifies outcomes for ELs before they even set foot on a high school campus. This is guided by unchallenged practices and processes with a clear lack of alignment with the body of research that exists. This continues to be a violation of civil rights, as ELs are being denied access to an education that is equal to the education of their peers.

Conclusion

The current educational outcomes of ELs are an example of continual marginalization of a specific student group regardless of policies and guidance provided by the state and federal governments. ELs are in a vulnerable position, and a change in trajectory is reliant upon the shoulders of social justice leaders who are willing to disrupt the status quo. The *Lau v. Nichols* ruling did not have the expected impact for ELs as placing students in courses designated for ELs continues to hinder students' performance in other academic areas because of the primary focus on language acquisition at the expense of academic content and rigor (Callahan et al., 2010). If policies and practices continue to result in similar constraints for ELs throughout high schools, ELs will continue to be systemically denied the ability to experience the rigorous content and success necessary to gain access to higher education upon high school graduation. Determining the extent to which ELs experience success in math based on their EL proficiency level may provide additional insight into this educational justice issue.

Chapter 3 Methodology

This study focused on one of the three requirements necessary for students to be eligible to apply to a four-year university upon high school completion in a southern California county: A-G completion. The proportion of ELs among A-G completers is disproportionate to their

enrollment in the county. As students are required to successfully complete at least three years of A-G approved math courses to meet the C requirement of the A-G requirements, ELs are situated in an inopportune position because they are placed in lower level courses based on their EL status (Kanno & Kangas, 2014; Umansky, 2016), limiting their opportunities to complete rigorous math courses. Completing algebra early in high school serves as a gateway to higher level math courses, and is also linked to an increased likelihood of going to college (Adelman, 2006; The United States Department of Education, 1997). This study analyzed the patterns of enrollment and success of ELs and former ELs in math courses at the secondary level.

An overview of the research context of this study will be shared followed by the research design and rationale for the approach, the sample, variables included in the study, data collection procedures, data analysis, and limitations. The guiding research questions are:

- 1) How is the classification level of current and former English Learners related to their access to and success in rigorous (A-G approved) math courses in high school?
- 2) How does this vary by EL level and time of reclassification?

Research Context

The study was conducted using secondary data from six districts throughout a southern California county. In 2017-2018, the student population of the county was 403,137 (DataQuest, 2018). In terms of racial background, the student population consisted of 64.9 percent Hispanic or Latino, 15.8 percent White, 8.3 percent African American, 3.7 percent Asian, 2 percent Two or More Races, 1.3 percent Filipino, 0.5 percent American Indian or Alaska Native, 0.4 percent Pacific Islander, and 3 percent Not Reported (DataQuest, 2018). Additionally, the student population was 72.9 percent low-income, 17.2 percent EL, 15.3 percent reclassified (former EL), 12.3 percent students with disabilities, 6.1 percent homeless, and 0.9 percent foster youth

(DataQuest, 2018). Spanish was the primary language of EL students in the county at 92.2% (DataQuest, 2018). The countywide graduation rate for 2017-2018 was 83.4 percent, just above the state average of 83 percent (DataQuest, 2018). The EL graduation rate was 73 percent, above the state average of 67.9 percent (DataQuest, 2018). The county serves 33 districts that include 90 high schools in urban, suburban, and rural communities across 20,105 square miles. There are eleven K-8 districts, 20 K-12 unified school districts, and two union high school districts, one of which serves students in grades sixth through twelfth and the other which serves students in grades ninth through twelfth. Although graduation rates are slightly above the state average, the bachelor's degree attainment rate in this county is low at 12.8 percent for ages 18 and over and 20 percent for ages 25 and over (TownCharts, 2019). This southern California county is an ideal setting to examine barriers to college access for EL students given the high Hispanic and low-income student population coupled with the low bachelor's degree attainment rate. The low bachelor's degree attainment rate is a long-term outcome related to the K-12 educational system and it serves as a symptom of deeper causes within this system that is not providing equitable opportunities for historically marginalized students.

Six of the 20 unified districts serving students from kindergarten through twelfth grade were included in this study. Data from all high schools throughout the six districts was included, for a total of 29 comprehensive and alternative/continuation sites. As seen in Figure 3.1, the districts selected for the study had a minimum of 10 percent K-12 EL enrollment. The 10 percent threshold was below the county average of EL enrollment of 17.2 percent, but allowed for six unified districts to be included in the study, providing a larger sample size for analysis. The standard selection criteria for participating districts provided validity to the results of the study by focusing on districts with similar enrollment demographics.

Figure 3.1 2017-2018 Percent of EL Enrollment by District

The reclassified student enrollment is seen in Figure 3.2, with the lowest rate in District 6 at 11.2 percent and the highest rate in District 3 at 26.7 percent. Reclassified students included in this data are former EL students who have met all of the criteria to be considered Reclassified Fluent English Proficient (RFEP) in the six districts. Combined, the high enrollment of EL and reclassified students in the county provided an appropriate context to conduct a study that disaggregated classification level and status.

Figure 3.2 2017-2018 Percent of Reclassified Student Enrollment by District

Research Design and Rationale for Research Approach

This study included the analysis of student-level data from multiple high schools throughout the county to describe the access and success rates in rigorous math courses of ELs and former ELs. The use of numerical data to describe a phenomenon is the purpose of a quantitative research study design since qualitative research is not typically based on mathematical methods (Mujis, 2010). Conducting a quantitative study allowed for the collection and disaggregation of a large amount of data to determine relationships between variables that would otherwise go undiscovered. Specifically, this quantitative study used statistics to analyze large-scale patterns, allowing for disaggregation of data by current and former EL status as well as by EL level and time of reclassification. The disaggregation of data allowed for patterns to emerge that were not evident in aggregate data.

This study used a correlational research design. Correlational research is a form of nonexperimental research in which the relationship between variables is explored, including information about the condition and strength of the relationship (Creswell & Creswell, 2017; Mujis, 2010; Price, Jhangiani, & Chiang, 2015). Correlational studies are also characterized by little to no effort in controlling extraneous variables or randomly assigning participants to different conditions (Price et al., 2015), and are often characterized by higher external validity that are more likely to reflect real-world relationships (Price et al., 2015). Statistical analysis was used to determine if there are significant differences for current and former ELs with respect to their access to and success in rigorous courses. Additionally, the statistical analysis determined if there was a significant difference on the access to and success in rigorous math courses based on EL level and time of reclassification.

Data Collection Procedures

This study utilized secondary data from participating districts. Requests for electronic de-identified student data were provided in writing to each district with a copy of the approved IRB. This data was maintained on the researcher's laptop secured with a password. Upon completion of the research, the data was destroyed by permanently removing it from the laptop.

In order for students to be on track to complete the three years of rigorous math courses required for the C portion of the A-G requirements, students must complete a minimum of two years of math by the end of the eleventh-grade year. Thus, the data sources included the high school transcript and demographic data for all current EL and reclassified students who were enrolled as juniors during the 2018-2019 school year. Data requested included race/ethnicity, year of enrollment in the district, current grade, EL level as of July 1, 2017, reclassification date (as applicable), A-G math courses attempted through eleventh grade, A-G math courses

completed through eleventh-grade, and final grade in each A-G math course. Only participants who were enrolled in each respective district since sixth grade were included in this study.

Limiting the study to include the student data of those who have been enrolled in a district for at least five consecutive years beginning in middle school will reduce the threat to statistical validity because this criterion will provide consistency for student data used within and among the districts ensuring the conclusions made are sound as a result of the research design (Price et al, 2015). Furthermore, because the variables were not be manipulated in this study, the external validity is high and allows for generalization (Price et al, 2015).

Sample

There were 12 out of the 20 K-12 districts in the county that met the 10 percent of EL enrollment criteria for participation. All 12 districts were invited to participate in the study and received transcript requests. After numerous follow-ups to the initial invitation and request for data, six districts, or 50 percent of eligible districts participated in the study. The six districts included a total enrollment of 149,296 students, of which 5,565 students were current or former EL students. The 38.7 percent ($n=2,154$) of those students who were EL and the 61.3 percent ($n=3,411$) of those students who were former EL, as of July 2017, comprised the final study sample. The EL ninth through twelfth-grade enrollment rates for each district are seen in Figure 3.3 with the lowest EL enrollment rate in District 6 at 7.3 percent and the highest in District 1 at 46.7

percent. The rest of the districts all had rates between 13.1 and 17.0 percent.

Figure 3.3 2017-2018 9th-12th Grade EL Enrollment

Participant transcript data was received from six districts, totaling 29 comprehensive and alternative education high schools, as seen in Table 3.1. Total enrollment in the six districts varied between 139 students in District 1 and 53,027 students in District 5.

Table 3.1
Number of High Schools in Participating Districts

District 1	District 2	District 3	District 4	District 5	District 6	Total
1	5	7	5	9	2	29

As shown in Table 3.2, the overall district enrollment, EL enrollment rate and reclassified enrollment rate by school indicated that School 29 in District 6 had the highest total enrollment at 3,227 students while School 1 in District 1 had the highest EL Enrollment Rate at 46.7 percent and School 22 in District 5 had the highest Reclassified Enrollment Rate at 62 percent.

Table 3.2
Overall, EL, and Reclassified Enrollment by School by District (DataQuest, 2018)

<u>District</u>	<u>School</u>	<u>School Enrollment</u> <u>(N)</u>	<u>EL Enrollment</u> <u>Rate</u>	<u>RFEP Enrollment</u> <u>Rate</u>
1	1	42	46.7%	22.2%
2	2	2,322	18.8%	45.1%
	3	1,956	13.0%	39.8%
	4	2,114	7.6%	22.7%
	5	218	6.4%	34.4%
	6	89	15.7%	16.9%
	7	307	37.5%	30.0%
	8	241	24.9%	27%
3	9	2,229	18.3%	41.4%
	10	2,475	20.9%	51.9%
	11	2,132	13.8%	45.5%
	1	2,035	17.1%	44.9%
	13	2,408	11%	35.5%
4	14	2,419	20%	367%
	15	212	35.8%	22.6%
	16	2,764	17.1%	43.2%
	17	2,385	9.3%	27.8%
	18	80	13.8	26.3%
5	19	2,663	18.5%	55.1%
	20	2,928	5%	29.3%
	21	1,819	16.7%	46.1%
	22	60	0%	62%
	23	1,237	16.7%	34.0%
	24	505	20.6%	21.8%
	25	1,573	17.5%	43.0%
	26	1,977	10.9%	41.1%
	27	434	20.0%	27.9%
6	28	174	14.9%	14.4%
	29	3,227	6.9%	19.9%

As shown in Table 3.3, the percentage of EL students by EL level enrolled in the participating districts indicated that as of the final CELDT administration in 2016-2017, most of the EL students were a Level 4 (34.0 percent) or Level 3 (32.2 percent) (DataQuest, 2018). Another 9.2 percent were at the highest level five (DataQuest, 2018). Overall, EL student enrollment across the districts are similarly distributed when compared to each other, with the exception of district one (DataQuest, 2018).

Table 3.3
District Percentage of EL Students in Each EL Level as of July 2017

District	EL Level 1	EL Level 2	EL Level 3	EL Level 4	EL Level 5
1	0.0%	3.0%	21.0%	48.0%	28.0%
2	11.0%	15.0%	35.0%	31.0%	8.0%
3	12.0%	14.0%	35.0%	31.0%	8.0%
4	11.0%	12.0%	33.0%	34.0%	10.0%
5	13.0%	16.0%	34.0%	29.0%	8.0%
6	12.0%	14.0%	35.0%	31.0%	7.0%
Total	9.8%	12.3%	32.2%	34.0%	9.2%

The six districts offered a variety of A-G math courses from 2016-2019, as shown in Appendix A. Districts 3, 4, and 5 displayed clear changes to the A-G math courses offered over the course of those three years as they transitioned to offering Integrated Math in place of traditional math (Algebra, Geometry, etc.). In the transition, some of those districts did not remove A-G courses that are no longer offered in the district from the University of California's A-G Course Management Portal. It should be noted that while Appendix A displays A-G math courses offered by districts as a whole, there are differences in the courses offered by individual school sites within their respective districts. This disaggregated information is not displayed, as the data gathered from districts did not include site identifiers. However, this does impact the options and access to A-G math courses available for EL students. For example, in District 4, some sites offered Structured English Immersion (SEI) Algebra I, some offered SEI Algebra II, and some did not offer any. While the SEI math courses were A-G approved and designed to provide access to Algebra for students who are EL Levels one and two, this was not provided district wide.

The date of reclassification was also used and disaggregated by grade level and by term of reclassification. Students are able to reclassify during both fall and spring semesters. Districts can determine reclassification eligibility during either semester. Given the timing of assessments,

districts could have reassessed EL students for reclassification following the release of the CELDT and state academic assessment results each fall. Reclassification eligibility may have also included grades for specific courses from the most recent marking period (report cards). For students to have reclassified in the spring, the same CELDT and state academic assessment results would have been used along with grades for certain courses for the most recent marking period. DataQuest (2018) provides overall reclassification information for districts and schools, but does not disaggregate this data by grade level nor time of year. Of the 3,530 reclassified students in the final sample, 87.9 percent reclassified before starting high school, while 12.1 percent reclassified during high school.

Variables

The three independent variables for this study were: 1) EL status, 2) EL level, and 3) reclassification date. EL status was operationalized as 1) Current EL, which included all students who were classified as an EL level one through five based on the former California English Language Development Test (CELDT), and 2) Former EL, which included all students who were reclassified as English proficient by the end of eleventh grade. CELDT levels were used in this study because in the fall of 2017, that was the state required language proficiency assessment to be administered to all EL students. The ELPAC did not replace the CELDT as the summative assessment until spring 2018 with the results available in fall 2018, and thus, CELDT levels were still applicable through spring 2018. The EL Level was coded as a five-point variable reflecting the five CELDT levels, and the reclassification date reflected the grade-level during which an EL student reclassified. The two dependent variables for this study were 1) the number of rigorous math courses accessed, and 2) number of rigorous math courses successfully completed. Access to rigorous math courses includes enrollment in any A-G approved math course in ninth through

eleventh grades offered by the district. Course data was provided in semesters, as indicated on student transcripts. Therefore, two semesters was equivalent to one course. Success in rigorous math courses was defined by a grade of “C” or better in any semester of A-G approved math courses.

Data Analysis

The data for this quantitative study was uploaded and prepared in SPSS. It was analyzed using descriptive statistics, independent samples t-test, ANOVA, and correlation. Descriptive statistics were used to determine the mean as well as the standard deviation for each variable to describe the sample including the number of students per district, number of EL and RFEP students overall and per EL level, number of RFEP and EL students per district, number of students reclassified before and during high school, number of reclassified students by semesters enrolled in school, number of students reclassified in the fall and spring semesters, number of A-G math courses taken overall, number of students who enrolled in at least four semesters of A-G math courses by eleventh grade, number of A-G math courses passed overall, number of students who passed at least four A-G math courses by eleventh grade, and number of students who were reclassified by high school.

Inferential statistics were used to determine significance. Inferential statistics involve determining how far samples are likely to vary from each other and from the population (Lane et al., 2017). To address the first research question, inferential analyses included a series of independent samples t-tests looking at the difference in the number of A-G math courses taken and the number of A-G math courses passed between RFEP and EL students. To address the second research question, ANOVAs were conducted to compare the number of A-G math courses taken and the number of A-G math courses passed between RFEP and all five EL levels.

Posthoc tests were used to determine which groups were significantly different from each other following significant ANOVA results. To answer the third research question, correlations were run to analyze the number of A-G courses taken and the number of A-G courses passed in relation to grade of reclassification. Further, independent samples t-tests were conducted to look at differences in the number of A-G courses taken and the number of A-G courses passed between those who reclassified before and after high school.

Limitations

One of the limitations for this study was related to the accuracy of district coding of courses. The secondary data sets used were not specifically created for this study, but provided by multiple districts throughout the county. The accuracy of coding courses in the student information systems for the purpose of A-G requirements is unknown. This study assumed that course coding for all districts was accurate.

Another limitation of this study was related to the number of semester courses taken by each student in one of the districts. The data was provided for each student for the entire year for grades nine, ten, and eleven. While all other districts provided semester course and grade information for each student, one district provided year-long data for each student. In coding the data for this district, it was assumed that the students earned the same grade in both semesters of each course reported. This may or may not be the case given that students can pass a year-long course without passing the first semester and similarly, students can pass the first semester but not earn a passing grade for the second semester.

The final limitation of this study was related to the data provided by one of the districts. For a subset of students in this district's dataset, the district provided both an EL level of one through five as of July 2017 and a reclassification date that occurred prior to that date were

provided. For the purposes of this study, students with both data points were coded as reclassified given they had a reclassification date.

Chapter 4 Findings

Introduction

The purpose of this study was to identify how the classification level of current and former English Learners is related to their access and success in rigorous (A-G approved) math courses in high school and how this varies by EL level and time of reclassification. For the purposes of this study, rigorous math courses are defined as any A-G approved math course offered by a district. The approved math courses were identified using the University of California A-G Course Management Portal.

The sample for this study included six participating districts with a total of 29 high schools and alternative schools. All six districts served students from grades kindergarten through twelfth. EL enrollment ranged from 10.3 percent to 52.5 percent, with the minimum criteria for participation set at 10 percent. The ninth through twelfth grade EL enrollment ranged from 10.3 percent to 46.7 percent and the largest proportion of the EL students in the sample were an EL level 4 as of the last CELDT administration. The reclassified student enrollment ranged from 11.2 percent to 26.7 percent. This chapter presents descriptive statistics, followed by the results of the inferential analyses presented in the order of the research questions.

Results

Descriptive Statistics

The number of students per district is displayed in Table 4.1, with a total of 5,565 comprising the sample. The majority of the sample is from district 5 at 2,707 students, or 48.6 percent, and the smallest number is from District 1 at eight students, or 0.1 percent of the sample.

Table 4.1

Number of Students Per District

District	Number	Percent
1	8	0.1
2	554	10.0
3	1326	23.8
4	809	14.5
5	2707	48.6
6	161	2.9
Total	5565	100.0

As seen in Table 4.2, a majority-61.3 percent-of the sample were RFEP in July 2017. The remaining 38.7 percent were EL students. There were 109 EL students missing an EL level. These student cases were removed from any analysis pertaining to EL level, resulting in 5,456 students in the sample for those analyses.

Table 4.2

Number of RFEP and EL Students as of July 2017

EL Classification	Number	Percent
EL	2154	38.7
RFEP	3411	61.3
Total	5565	100.0

The data for the number of current RFEP students and EL students as of July 2017, by EL levels one through five, is displayed in Table 4.3. Out of the EL levels one through five, 4.4 percent were level four and 0.3 percent were level five, which resulted in a total of 4.7 percent of the sample potentially eligible for reclassification as of July 2017 based on their CELDT level. As shared in Chapter 2, during this time, criteria for Reclassification to Fluent English Proficient (RFEP) required EL students score a minimum overall level four or five on the CELDT as the language proficiency assessment criteria along with the additional minimal required criteria: teacher evaluation, parent consultation, and comparison of student performance in basic skills against an empirically established range of performance in basic skills of English proficient

students of the same age (California Department of Education, 2019). Districts also had the flexibility to add additional criteria to this state required criteria for ELs to reclassify. EL levels one, two, and three make up 32.8 percent of the sample and were not yet eligible for reclassification as of July 2017.

Table 4.3
Number of EL Students per Level (July 2017) and Current RFEP Students

EL Classification Level	Number	Percent
RFEP	3411	62.5
EL Level 1	1112	20.4
EL Level 2	100	1.8
EL Level 3	579	10.6
EL Level 4	239	4.4
EL Level 5	15	0.3
Total	5456	100.0

As shown in Table 4.4, District 1 has the smallest percentage of RFEP students in eleventh grade, at 42.9 percent followed by District 5 at 46.4 percent. The remaining districts have a large percentage of RFEP students ranging from 74.0 percent to 82 percent. District 1 has the largest percentage of students who were eligible for reclassification in July 2017 out of all the districts at 28.6 percent. District 5 has the largest percentage of students at level 1, at 40.9 percent of EL students.

Table 4.4
EL Level in July 2017 by District

	District					
	1	2	3	4	5	6
RFEP	3	410	1011	648	1207	132
RFEP Percent	42.9	74.0	76.2	80.1	46.4	82.0
Level 1	0	11	20	17	1064	0
Level 1 Percent	0.0	2.0	1.5	2.1	40.9	0.0
Level 2	0	14	47	27	12	0
Level 2 Percent	0.0	2.5	3.5	3.3	0.5	0.0

Level 3	2	61	145	61	295	15
Level 3 Percent	28.6	11	10.9	7.5	11.4	9.3
Level 4	2	53	95	56	21	12
Level 4 Percent	28.6	9.6	7.2	6.9	0.8	7.5
Level 5	0	5	8	0	0	2
Level 5 Percent	0.0	0.9	0.6	0.0	0.0	1.2
Total	7	554	1326	809	2599	161
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0

The number of students in the sample who were reclassified before and during high school is displayed in Table 4.5. Of all students reclassified, a majority of the students achieved this before entering high school at 87.9 percent. Significantly less-12.1 percent of the students- were reclassified during high school. Of note, the number of RFEP students in Table 4.5 is current as of the date of this study compared to the number of RFEP students in Table 4.3, which was current as of July 2017.

Table 4.5

Number of Students Reclassified as Fluent English Proficient Before and During High School

Time Frame	Number	Percent
During HS	426	12.1
Before HS	3104	87.9
Total	3530	100.0

Reclassification of students in the sample occurred in the fall and spring semesters and varied by district and grade level. As shown in Table 4.6, out of all reclassified students, 73.8% were reclassified during the spring semester. This could be due to a few reasons. Some districts may only reclassify students once a year in the spring. This could also be due to districts identifying more students eligible for reclassification following the release of the CELDT and state academic testing results in the fall. These results became available in late fall, often during November, nearing the end of a marking period. For EL students who might have met almost all

of the criteria and may have only needed support with ensuring they earned passing grades in their classes, this provided the opportunity to improve those grades in order to reclassify in the spring. Districts might have also made this information available to the teachers in the fall, allowing them to support these students so that they could reclassify in the spring.

Table 4.6
Semester of Reclassification

Semester	Number	Percent
Fall	925	26.2
Spring	2605	73.8
Total	3530	100.0

Descriptive data analysis also included the number of semesters students were enrolled in school at the time of reclassification. As shown in Table 4.7, 15.5 percent of students were reclassified during fifth grade, with 3.9 percent reclassifying during the fall semester (nine semesters) and 11.6 percent reclassifying during the spring semester (ten semesters). Third grade year had the next largest number of reclassified students with 14.1 percent, comprising 3.4 percent in the fall (five semesters) and 10.7 percent in the spring (six semesters). High school begins with semester 17 and after the last semester of ninth grade (18 semesters), the percentage of students reclassified was extremely low—below one percent through the end of eleventh grade (22 semesters). There were 36.6 percent of students not yet reclassified as of the time of this study, and that is reflected in the table as 2,035 students with zero semesters.

Table 4.7
Number of Semesters in School at Date of Reclassification

Semesters	Frequency	Percent
0	2035	36.6
2	19	0.3
3	4	0.1
4	22	0.4
5	187	3.4
6	595	10.7

7	76	1.4
8	582	10.5
9	215	3.9
10	648	11.6
11	107	1.9
12	245	4.4
13	96	1.7
14	110	2.0
15	66	1.2
16	132	2.4
17	107	1.9
18	160	2.9
19	43	0.8
20	44	0.8
21	24	0.4
22	48	0.9
Total	5565	100.0

The frequency of A-G courses taken is shown in Table 4.8. One A-G course is equivalent to two semesters completed, fall and spring. A majority of students—81.2 percent—took six A-G math semesters in grades ninth through eleventh, which is equivalent to three A-G courses. The least number of A-G math semesters taken was 10 at 0.1 percent. Table 4.8 shows that there were 4,950 students who took six or more semesters of A-G math courses by the end of eleventh grade, allowing these students to meet the C requirement of three years of math in high school—if they passed each of those courses.

Table 4.8
A-G Semesters Taken

Number of Semesters	Count	Percent
0	105	1.9
1	10	0.2
2	47	0.8
3	65	1.2
4	187	3.4
5	201	3.6
6	4516	81.2
7	267	4.8
8	132	2.4

9	28	0.5
10	7	0.1
Total	5565	100.0

A variable for completing four or more semesters by the end of eleventh grade was created using the number of courses taken variable. Taking four or more semesters (2 years) by the end of the eleventh grade puts students on track to meet the C requirement for math. It allows students the opportunity to take one more year of math during their senior year to meet the C requirement of the A-G courses (three years of math). As shown in Table 4.9, 4.1 percent of students did not complete at least four semesters of A-G math courses by the end of eleventh grade. The remaining 95.9 percent of students enrolled in four or more semesters of A-G courses by the end of the eleventh grade year.

Table 4.9
Four or More Semesters Completed by Eleventh Grade

Status	Number	Percent
Not Completed	227	4.1
Completed	5338	95.9
Total	5565	100.0

In addition to analyzing number of courses taken, it was also important to examine the frequency of passing grades in order to determine the rate at which students were successful. As shown in Table 4.10, 29.1 percent of students passed six semesters through the end of their eleventh grade year. That number decreased significantly for passing seven, eight, and nine courses at 0.3 percent, 0.4 percent, 0.1 and 0.0 percent, respectively. On the low end, 14.3 percent of students had not passed any semesters of A-G math, creating a deficit that was nearly impossible to overcome in one year.

Table 4.10
Number of Passing Grades

Passing Grades	Number	Percent
0	795	14.3

1	507	9.1
2	640	11.5
3	614	11.0
4	747	13.4
5	605	10.9
6	1617	29.1
7	18	0.3
8	21	0.4
9	1	0.0
Total	5565	100.0

A variable for passing four or more semesters by the end of eleventh grade was created using the number of courses passed variable. Passing four or more semesters by the end of the eleventh grade ensures students are on track to meet the C requirement of the A-G courses, given that they take and pass one more A-G math course during their senior year. As shown in Table 4.11, 54.1 percent of students passed four or more semesters of A-G math courses by the end of eleventh grade, but 45.9 percent had not done so. Table 4.9 shows that only 4.1 percent of EL and former EL students had not taken at least four semesters of A-G approved math by eleventh grade. The contrast between 45.9 percent of the total sample not passing and only 4.1 percent not taking shows that many students are attempting but are not passing these courses. If students do not pass math courses, they are typically required to repeat the course. If students are placed in a higher course after not passing a lower math course, they may be able to “validate” the math class they did not pass by earning a passing grade in the higher math course. This process of validation is used in the University of California and California State University admissions process. However, district and site policies and practices determine how students are placed after not passing semesters and full courses of math.

Table 4.11
Four or More Semesters Passed by Eleventh Grade

Status	Number	Percent
Not Passed	2556	45.9
Passed	3009	54.1

Total	5565	100.0
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Crosstabs were used to compare the newly created variables, four or more semesters taken and four or more semesters passed. As seen in Table 4.12, 39.7 percent of students who took at least four semesters did not pass at least four semesters by the end of eleventh grade. Almost two-thirds—60.3 percent—of the students who attempted at least four semesters did pass at least four of them, putting them on track to complete the C requirement. However, that only represents 54.1 percent of all students in the sample.

Table 4.12

Enrolled in Four or More Semesters by the End of Eleventh Grade Compared to Passed Four or More Semesters by the End of Eleventh Grade

	<u>Did not Pass</u>		<u>Passed</u>	
	Count	Percent	Count	Percent
Did not Take Four Semesters (n=572)	572	100.0	0	0.0
Took Four Semesters (n=4993)	1984	39.7	3009	60.3

Results for Research Question 1

The results of the two independent samples t-tests comparing current EL and former EL students on the number of semesters taken and the number of passing grades are displayed in Table 4.13. The means of the number of semesters taken for EL and RFEP students differed by 0.99, with RFEP students slightly above EL students. The results also indicate that the mean of passing grades for EL and RFEP students differs by 1.73, with RFEP students again having the larger mean. The greatest standard deviation was for passing grades of EL students at 2.16. This indicated a larger variation in the number of passing grades for EL students, where the mean of passing grades was 2.47. As shown in Table 4.13, there was a significant difference between number of semesters taken for EL and RFEP students. There was also a significant difference between passing grades of EL and RFEP students. RFEP students not only participated

significantly more in A-G courses, but also passed semesters of those courses significantly more than EL students.

Table 4.13

Results of Independent Samples T-Tests Comparing Current and Former EL Students on Number of A-G Semesters Taken and Number of A-G Semesters Passed

		n	Mean	Std. Deviation	t Test
Semesters Taken	EL	2154	4.83	1.87	-25.15*
	RFEP	3411	5.82	1.07	
Passing Grades	EL	2154	2.47	2.16	-30.88*
	RFEP	3411	4.20	1.94	

Note: *p < .05

Results for Research Question 2

A One-Way ANOVA was conducted to determine if there was a significant difference in the number of passing grades and the number of semesters taken based on EL level. As shown in Table 4.14, the p value of the F statistics is lower than .05, indicating a significant difference between at least two of the groups for both number of passing grades and number of semesters taken.

Table 4.14

One-Way ANOVA Results Between Groups for Passing Grades and Semesters Taken

		Sum of Squares	df	Mean Square	F
Passing Grades	Between Groups	4107.17	5	821.43	204.36*
	Within Groups	21906.50	5450	4.02	
	Total	26013.70	5455		
Semesters Taken	Between Groups	1089.68	5	217.93	114.16*
	Within Groups	10404.28	5450	1.91	
	Total	11493.96	5455		

Note: *p < .05

As a result of the significant F statistic for the number of passing grades and the number of semesters taken, a posthoc test was conducted. First, Levene's statistic in the Test of Homogeneity of Variances was analyzed. Levene's statistic was significant, indicating that the

null hypothesis should be rejected because the variances between the RFEP and EL groups are not the same. Due to the significance of Levene's statistic, Dunnett's T3 was the chosen posthoc conducted to determine whether there was any significance between the various EL levels, including RFEP, in the number of semesters taken and number of passing grades.

As shown in Table 4.15, there was a significant difference between the number of semesters taken by RFEP students when compared to all other EL levels, except for EL level five. In addition, EL level one also had a significant difference in courses taken when compared to EL level two and four. Additionally, EL level two was significantly different in semesters taken when compared to EL levels three and four, in addition to RFEP students. Similarly, EL level three showed a significant difference in semesters taken when compared to EL level four. EL level four and five did not indicate any significant difference in the number of semesters taken. EL level five did not indicate any significant difference when compared to all other EL levels.

Regarding number of passing grades, there was a significant difference in passing grades when comparing RFEP students and EL students in levels one through four. There was no significant difference in passing grades between RFEP students and EL students at level five. There were significant differences in passing grades between EL level one and all other EL levels except for level five. There was no significant difference in passing grades for EL level two when compared to EL levels three through five. There was no significant difference in passing grades between EL levels four and five. Consistently, EL level five did not significantly differ in amount of passing grades when compared to all other EL levels.

In summary, RFEP students take more semesters of A-G courses when compared to all EL levels, except for EL level five. Further, EL level one students take more semesters of A-G

courses compared to EL level two, but less when compared to four. Students who are EL level two take less semesters of A-G courses than EL level three. EL levels five and two had no demonstrated significance in number of semesters of A-G courses when compared to the other EL levels. Generally, the lower the EL level, the less semesters of A-G courses taken. The only exception to this is EL level one.

Overall, RFEP students earn more passing grades than all EL levels and EL level one students earn more passing grades than all other EL levels. With the exception of EL level one, this demonstrates a clear disparity in the number of semesters of A-G courses passed based on EL level. There is a clear disparity between the number of passing grades for RFEP students and all EL levels.

Table 4.15

Dunnett T3 Multiple Comparisons of All EL Levels by Passing Grades and Semesters Taken

	1 st Group	Mean	2 nd Group	Mean	Mean Difference
Passing Grades	RFEP	4.20	1	3.01	1.17*
			2	1.86	2.34*
			3	1.88	2.32*
			4	2.16	2.03*
			5	2.40	1.80
	1	3.01	2	1.86	1.17*
			3	1.88	1.15*
			4	2.16	0.87*
			5	2.40	0.63
	2	1.86	3	1.88	-0.02
			4	2.16	-0.30
			5	2.40	-0.54
	3	1.88	4	2.16	-0.28
			5	2.40	-.052
	4	2.16	5	2.40	1.2276
Semesters Taken	RFEP	5.82	1	5.00	0.82*
			2	3.95	1.87*
			3	4.90	0.92*
			4	5.37	0.46*

		5	5.27	0.56
1	5.00	2	3.95	1.05*
		3	4.90	0.10
		4	5.37	-0.37*
		5	5.27	-0.27
2	3.95	3	4.90	-0.95*
		4	5.37	-1.41*
		5	5.27	-1.32
3	4.90	4	5.37	-0.47*
		5	5.27	-0.37
4	5.37	5	5.27	0.10

Note: * Mean difference is significant at 0.05

Grade of reclassification. To determine if there was any relationship between the grade of reclassification and the number of semesters taken and number of passing grades, correlations were first conducted. As displayed in Table 4.16, there was a small negative correlation between the date of reclassification and both variables—number of semesters taken and number of passing grades—as the correlation sizes are between -0.12 and -0.22. This indicated that as the date of reclassification increases, the number of semesters taken and the number of passing grades decreases.

There was a larger positive correlation of 0.55 between the number of semesters taken and the number of passing grades, indicating that as the number of semesters taken increases, the number of passing grades increases or as the number of semesters taken decreases, the number of passing grades decreases.

Table 4.16

Correlation Between RFEP Date and Semesters Taken and Passing Grades

	Reclassification Date	Courses Taken	Passing Grades
Reclassification Date	1	-.12**	-.22**
Semesters Taken		1	.55**
Passing Grades			1

Note: **Correlation is significant at the 0.01 level

An independent samples t-test was conducted to determine if there was a significant difference between students being reclassified before high school and those who were reclassified during high school on the number of semesters taken and the number of passing grades. As shown in Table 4.17, there was a significant difference between being reclassified before and during high school on both the number of semesters taken and number of passing grades.

Table 4.17

Descriptive Statistics of Reclassification Before High School and Semesters Taken and Passing Grades T-Test

		N	Mean	Std. Deviation	t-Test
Semesters Taken	Not Reclass. Before High School	426	5.71	1.19	-5.70*
	Reclass Before High School	3104	5.97	0.86	
Passing Grades	Not Reclass. Before High School	426	3.50	2.04	-7.29*
	Reclass Before High School	3104	4.23	1.94	

Note: *p < .05

The difference in means for number of semesters taken for students not reclassified before entering high school and those who are reclassified before entering high school is relatively small, but still significant based on the results of the independent samples t-test. The difference in means of passing grades for students not reclassified before entering high school and those who are reclassified before entering high school is a bit larger at 0.73, with students who are not reclassified averaging about three passing grades and those who are reclassified before high school averaging about four passing grades, which is the difference between being on track to meeting the C requirement and not being on track.

Next, a correlation was conducted to determine if there was a relationship between the semester of reclassification, which disaggregates the grade of reclassification variable into fall and spring, and the number of semesters of math taken and passing grades. Table 4.18 shows that there was a significant small correlation between the reclassification date and the number of semesters taken ($r=0.22$) as well as reclassification date and the number of passing grades ($r=0.21$).

Table 4.18

Correlations Between Grade of Reclassification, Number of Passing Grades, and Number of Semesters Taken

	Reclassification Grade Including Semesters	Passing Grades	Semesters Taken
Reclassification Date By Semesters	1	.21**	.22**
Passing Grades		1	.55**
Semesters Taken			1

**Correlation is significant at the 0.01 level

Lastly, an ANOVA was conducted to determine if there was a significant difference based on reclassification date on the number of semesters taken and semesters passed. As shown in Table 4.19, there was a significant difference between grades of reclassification on both outcomes. The significant F statistic warranted a post hoc test. The Levene's statistic in the Test of Homogeneity of Variances was again significant and so Dunnett T3, which does not assume equal variances, was chosen.

Table 4.19

One Way ANOVA of Reclassification by Grade Compared to Passing Grades, and Semesters Taken

		Sum of Squares	df	Mean Square	F
Passing Grades	Between Groups	814.60	10	81.46	22.33*
	Within Groups	12835.29	3519	3.65	
	Total	13649.90	3529		
Semesters Taken	Between Groups	87.66	10	8.77	7.40*
	Within Groups	4167.34	3519	1.18	

Total	4255.00	3529
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Note: * $p < .05$

The Post Hoc Test in Table 4.20 indicated significant differences between the number of semesters taken for students who were reclassified in second grade and those who were reclassified in tenth grade. There were also significant differences between the number of semesters taken for students who were reclassified in second, third, and fourth grades compared with those who were reclassified in tenth grade. Significant differences in the number of semesters taken were also evident for those reclassified in third and fourth grades compared to those reclassified in ninth grade.

Table 4.20

Dunnett T3 Post Hoc Test of Grade of Reclassification and Semesters Taken

	1 st Group	Mean	2 nd Group	Mean	Mean Difference
Semesters Taken	1	5.58	2	6.12	-.054
			3	5.94	-.036
			4	5.93	-0.35
			5	5.80	-0.22
			6	5.72	-0.15
			7	5.61	-.003
			8	5.80	-0.23
			9	5.64	-0.06
			10	5.20	0.38
			11	5.40	0.18
	2	6.12	3	5.94	0.18
			4	5.93	0.19
			5	5.80	0.32
			6	5.72	0.40
			7	5.61	0.50
			8	5.80	.031
			9	5.64	0.50
			10	5.20	1.00 *
			11	5.40	0.71
	3	5.94	4	5.93	0.01
			5	5.80	0.14
			6	5.72	0.21

		7	5.61	0.32
		8	5.80	0.13
		9	5.64	0.30*
		10	5.20	0.74*
		11	5.40	0.53
4	5.93	5	5.80	0.12
		6	5.72	0.20
		7	5.61	0.31
		8	5.80	0.12
		9	5.64	0.29*
		10	5.20	0.73*
		11	5.40	0.52
5	5.80	6	5.72	0.07
		7	5.61	0.19
		8	5.80	-0.01
		9	5.64	0.16
		10	5.20	0.60
		11	5.40	0.39
6	5.72	7	5.61	0.11
		8	5.80	-0.08
		9	5.64	0.08
		10	5.20	0.53
		11	5.40	0.32
7	5.61	8	5.80	-0.20
		9	5.64	-0.03
		10	5.20	0.42
		11	5.40	0.21
8	5.80	9	5.64	0.17
		10	5.20	0.61
		11	5.40	0.40
9	5.64	10	5.20	0.45
		11	5.40	0.24
10	5.20	11	5.40	-0.21

Note: * Mean difference is significant at 0.05

The Post Hoc Test displayed in Table 4.21 shows significant differences between the number of passing grades for students who were reclassified in third grade and those who were reclassified in grades fifth through eleventh. Also of significance were the number of passing

grades for students who were reclassified in the fourth grade and those who were reclassified in grades five through eleven. Students who reclassified in second and fifth grades also passed significantly more classes than those students reclassified in tenth grade.

Table 4.21

Dunnett T3 Post Hoc Test of Grade of Reclassification and Passing Grades

	1st Group	Mean	2 nd Group	Mean	Mean Difference
Passing Grades	1	4.16	2	4.65	-0.50
			3	4.78	-0.62
			4	4.50	-0.34
			5	4.01	.015
			6	3.80	0.35
			7	3.60	0.56
			8	3.51	0.64
			9	3.70	0.45
			10	3.07	1.09
			11	3.24	0.92
	2	4.65	3	4.78	-0.12
			4	4.50	0.15
			5	4.01	0.65
			6	3.80	0.85
			7	3.60	1.06
			8	3.51	1.14
			9	3.70	0.95
			10	3.07	1.58*
			11	3.24	1.42*
	3	4.78	4	4.50	0.28
			5	4.01	0.77*
			6	3.80	0.97*
			7	3.60	1.18*
			8	3.51	1.26*
			9	3.70	1.07*
			10	3.07	1.71*
			11	3.24	1.54*
	4	4.50	5	4.01	0.50*
			6	3.80	0.70*
			7	3.60	0.90*
			8	3.51	0.99*
			9	3.70	0.80*

		10	3.07	1.43*
		11	3.24	1.27*
5	4.01	6	3.80	.020
		7	3.60	0.41
		8	3.51	0.50
		9	3.70	0.30
		10	3.07	0.94
		11	3.24	0.77
6	3.80	7	3.60	0.21
		8	3.51	0.29
		9	3.70	0.10
		10	3.07	0.74
		11	3.24	0.57
7	3.60	8	3.51	0.08
		9	3.70	-0.11
		10	3.07	0.53
		11	3.24	0.36
8	3.51	9	3.70	-0.19
		10	3.07	-0.45
		11	3.24	0.28
9	3.70	10	3.07	0.64
		11	3.24	0.47
10	3.07	11	3.24	-0.17

Note: * Mean difference is significant at 0.05

Conclusion

Results indicated that not only do RFEP students have access to A-G math courses at a significantly higher rate than EL students, but they also pass the A-G math courses significantly more than EL students. There were significant differences between the number of semesters of A-G courses taken by RFEP students in comparison with all other EL students, with the exception of level five EL students. This demonstrates systemic exclusion from A-G courses for almost all EL levels. More specifically, EL students level one, two, and three took significantly less semesters of A-G math courses when compared to EL students level four and RFEP students.

The analyses showed that there were significant differences in passing grades between RFEP students and EL students levels one through four. EL students level one showed significantly higher passing grades when compared to EL levels two through four.

Results also indicated that as the grade of reclassification increases, the number of semesters taken and the number of passing courses both decrease. This means that as EL students progress through school and are not reclassified, their chances of accessing and succeeding in A-G math courses diminish. Similarly, analyses showed that when students are reclassified before high school, they access a larger number of A-G courses and pass the classes at a higher rate.

The grade of reclassification is important as related to the number of semesters taken and the number of passing grades. Students who were reclassified in the second, third, and fourth grades access more semesters of A-G courses than those who were reclassified in tenth grade. This is aligned to the results above related to reclassifying in a lower grade and before high school. Students reclassified in third grade have more passing grades in semesters of A-G math courses in high school than students who were reclassified in grades fifth through eleventh. This also applies to students who were reclassified in fourth grade. The implications of these results will be discussed in chapter five.

Chapter 5 Conclusion

Introduction

This study focused on the placement and successful completion of A-G math courses for English Learner (EL) students in a southern California county. The alarmingly low A-G completion rates for ELs demonstrated a need to investigate this issue, paying particular attention to the access and success rates in A-G math courses for current and former ELs, as well as how this varies by EL levels and time of reclassification. Previous empirical research studies have demonstrated that EL students experience lower levels of access and success in math courses when compared to non-EL students. Math courses, specifically Algebra I, serve as the gateway to higher level math and science courses in high school and students enrolled in these courses are much more likely to go to college (Adelman, 2006; The United States Department of Education, 1997).

This study contributes to the literature by delving deeper into the educational justice issue through the examination of patterns of enrollment and success in A-G math courses, taking into consideration students' EL level and time of reclassification using statistical software (SPSS) and analysis. A variety of bodies of literature were reviewed, including state guidance for EL reclassification along with literature on tracking and placement, which provided a foundation and context to understand the origination of the problem being studied. Scholarship about EL access to rigorous coursework related to the English requirement for college and access to advanced courses was also reviewed. Lastly, literature about math serving as a gatekeeper was also reviewed as it identified the importance of EL students accessing rigorous math courses in high school and the connection to eligibility and access to four-year universities in California.

Bourdieu's cultural capital framework was applied as a lens through which the results were analyzed.

This study was conducted to answer the two research questions and address a gap in the literature. The research questions that guided this study were:

- 1) How is the classification level of current and former English Learners related to their access to and success in rigorous (A-G approved) math courses in high school?
- 2) How does this vary by EL level and time of reclassification?

Quantitative Summary

The sample for this study included six K-12 districts with a minimum of 10 percent EL enrollment. There were 29 comprehensive and alternative education high school with a total of 5,565 students. The majority of the sample was classified as RFEP at 62.5 percent and 37.5 percent were EL. Students included in the study had been enrolled in their respective districts since at least sixth grade; students enrolled after sixth grade were not included in the sample.

This study provided a deeper look into the disaggregated student level data for both RFEP and EL students. Descriptive statistics were used to identify the mean and standard deviation for each variable: EL status, EL level, reclassification date, number of semesters of A-G math courses, and number of passing grades. Inferential statistics were employed to determine significant differences in the number of semesters of A-G math courses taken by EL and RFEP students. This was further analyzed to determine any significant differences between EL student levels within the EL student group. The number of passing grades for EL and RFEP students was also analyzed for determine significant differences between EL student levels within the EL group. Further analysis was conducted to determine any significant differences between students

who reclassified before high school and those who reclassified during high school on the number of semesters of A-G courses taken and passed.

The analyses indicated that there was a significant difference between the number of rigorous math courses taken and number of passing grades when comparing EL students and RFEP students. RFEP students take and pass significantly more semesters of A-G math courses than EL students, with the exception of EL level five.

In analyzing the number of courses taken, EL level one and three students took significantly more courses than EL level two students. EL level four students took significantly more courses than EL level one, two, and three. In general, the higher the EL level, the more courses taken, with the exception of EL level one students. There was no significant difference in the number of rigorous math courses accessed for EL level five and RFEP students, meaning these two groups access rigorous math courses at similar rates.

RFEP students had significantly more passing grades than all EL levels, except for level five where no significant difference existed. Overall, RFEP students pass more semesters of A-G math courses when compared to EL students. The differences in the number of math courses passed were not significant between EL levels two through five. Interestingly, EL level one students passed more classes than EL levels two, three, and four. The analysis also indicated that EL level one students access an average of five courses. Since they access more semesters of A-G courses, they have a significantly higher opportunity to pass more semesters of these courses. In general, success in rigorous math courses does not seem to be connected to EL levels.

Further, the data showed that being reclassified prior to high school resulted in access to more A-G math courses and more passing grades. A deeper analysis on the grade level of reclassification and the relationship to access to more math courses and passing grades in high

school showed that those who reclassified in third and fourth grade accessed A-G math courses at a higher rate than those who were reclassified in ninth grade. Similarly, students who reclassified in second, third, and fourth grades accessed A-G math courses significantly more than those who reclassified in tenth grade. In terms of the number of courses passed, the results demonstrated that students who reclassified in third and fourth grade passed significantly more math courses than those reclassified in grades five through eleven. In general, this means that reclassifying students in third and fourth grade will allow students to access and pass more A-G math courses, increasing their opportunity to access post-secondary education in the CSU or UC system. These two grades are critical for reclassification for EL students in terms of accessing and passing rigorous math courses that serve as gatekeepers in high school. This translates into making the difference in meeting the math requirement for the four-year university systems in California.

Interpretations

The results relating to RFEP students accessing and succeeding in A-G math courses at significantly higher rates than EL students demonstrate Bourdieu's theory of cultural capital. Bourdieu theorized that the educational system both transmits and rewards the dominant culture and in order for students to be able to acquire cultural capital, they have to be able to receive and internalize it (Dumais, 2002). EL students who reclassify to RFEP students demonstrate acquired institutionalized (Swartz, 2012) cultural capital. They understand and have effectively navigated the educational system in terms of accessing and passing courses needed to access the UC and CSU systems. Through the reclassification process, these students successfully passed state language assessments, had teachers who provided evaluations of their academic ability and successful language acquisition, demonstrated skills of English proficiency when compared to

students of the same age (California Department of Education, 2019), and often times had additional criteria to meet set forth by the district. Once this cultural capital is acquired, it is internalized and benefits RFEP students in the form of access to and success in A-G math courses. RFEP students in eleventh grade took an average of 5.8 semesters of A-G courses, and passed an average of 4.2 semesters—more than all EL levels. This demonstrates that RFEP students have obtained cultural capital and are employing it to successfully navigate the K-12 system. On the other hand, the undeveloped institutionalized cultural capital among EL students materializes itself in the form of lack of knowledge of the inner workings of the educational system, including the importance of enrolling in and passing A-G courses. It is also in the form of lack of access to AP and honors courses by design of the educational system and the lack of knowledge regarding the ability and right to request advanced courses (Kanno & Kangas, 2014; Callahan, 2005).

Bourdieu believed that those without cultural capital are penalized (Swartz, 2012). This study revealed that EL level four students took significantly more A-G courses than EL level one, two, and three students. Lower level EL students are penalized in the form of significantly less access to A-G courses for a lack of institutionalized cultural capital, at no fault of their own. Generally, the results of the study support Bourdieu's theory of cultural capital. EL level one students appear to be an anomaly given that they accessed an average of five semesters of A-G math courses and passed an average of three semesters.

The results relating to students who reclassify in third and fourth grade accessing and succeeding at significantly higher rates than those reclassified in grades five through eleven also demonstrate penalization for lack of institutionalized cultural capital. This means that EL students who are not reclassified during third or fourth grade will experience less access to

rigorous math courses as well as less success in the courses they are able to access. This determines EL students' trajectory in elementary school before they or their families even realize it. Prior empirical research indicated that the use of reclassification to English proficient is used as a gateway to mainstream courses, which increase the barriers for ELs in accessing mainstream courses (Estrada, 2014). Based on the results of this study, EL students have a very small window of time to acquire institutionalized cultural capital that will not only allow them to reclassify, but will open opportunities to them in high school that they will not necessarily have if they remain EL students. Not only is this window small, but it is an invisible trigger for access to and success in higher level math courses in high school built into the current inequitable K-12 system. Fourth grade serves as a crucial grade for EL students to reclassify because of the significant differences that exist between EL students and RFEP students in placement in high school math courses. This placement is connected to not only more rigorous math courses in high school, but access to four-year universities in California.

The results further support the findings of previous studies of unjust placement criteria. For example, typical practices in schools indicated that language proficiency over grade point average is used to place EL students in courses (Kanno & Kangas, 2014). Consistently, the results of this study demonstrated that while there is a relationship between the amount of access EL students have to A-G math courses and their EL level, there is no clear relationship between EL level and academic success in those courses. While higher EL levels accessed significantly more rigorous math courses than lower level EL students, this was not the case for the number of courses passed. Higher EL levels did not pass significantly more rigorous math courses than lower EL levels. This poses an issue with course placement for ELs. There is a clear lack of access to and success in rigorous math courses for EL students in general. Consistent with the

results of this study, specifically for EL level one students who passed significantly more rigorous math courses than all other EL levels, previous research showed that lower EL level students should be provided rigorous instruction to improve EL student achievement (Callahan et al., 2010).

Recommendations

Recommendations for Policy

EL students are placed in courses more often based on their English proficiency level than their academic ability. Their academic ability is viewed as limited while they are in the process of acquiring English (Callahan, 2005; Kanno & Kangas, 2014). However, research has indicated that lower level EL students should be provided rigorous instruction to improve their achievement (Callahan et. al, 2010). Additionally, research has indicated that simply being an EL student should not preclude access to rigorous courses (Umansky, 2014). The results of the current study support previous research, as they show that EL level is not indicative of success in math courses. Given these results, the first recommendation is the development of a policy at all levels including federal, state, and local that ELs should be placed in higher level courses in alignment with their academic ability, rather than their language proficiency because this increases college going and college completion (Kanno, 2018; Long et. al, 2012). This guidance should specify that EL students are to be placed in courses based on their academic ability, which would require an assessment of their academic performance in previous courses, not standardized academic assessments or the sole use of their EL level. The federal guidance could take the form of the Dear Colleague Letter (2015) issued jointly by the U.S. Department of Justice, Civil Rights Division and the U.S. Department of Education, Office of Civil Rights (OCR) regarding equal and meaningful EL participation in educational programs and services

regarding Gifted and Talented Education (GATE) and Advanced Placement (AP), honors, or International Baccalaureate (IB) courses. Expanding this guidance to include rigorous A-G math courses and making clear the research between these courses and college access. State guidance should be modeled after the federal guidance with the requirement for districts to develop a policy for EL placement in math courses that is aligned to the state and federal guidance.

Recommendations for Practice

The recommendation above warrants the second recommendation of additional professional development for district and site administrators, school counselors, and teachers regarding the difference between academic ability and language proficiency for EL students. Professional development for district and site administrators, school counselors, and teachers on the difference between academic ability and language proficiency would begin to build capacity in understanding that students who are EL level one may have a different language proficiency than EL level five students, but this does not equate to differences in academic ability. Differentiation of instructional lessons for EL level one students would allow them to access the same material that EL level five students access without differentiation. The key is differentiation for language proficiency, not academic ability. The responsibility to understand this and differentiate lessons for language proficiency levels lies with educators—both teachers and administrators—and is supported by *Lau v. Nichols (1974)*, which specified that linguistic support services should ensure equity in academic access for ELs (Callahan, et al., 2010; Hakuta, 2011). This would also serve to address the issue identified by prior research on the acquisition of English serving as a gatekeeper to rigorous courses for ELs (Rodriguez & Crus, 2009). The professional development should take the form of experiential learning to allow educators to experience differentiated lessons designed to support language acquisition for various EL levels.

Professional development in the form of experiential learning may provide a deeper understanding of language acquisition as well as evoke empathy for how students experience lessons in a language they are working to acquire. Additionally, co-teaching and in class model lessons focused on differentiating for language acquisition could further support all educators in effectively planning and delivering instruction for EL students.

The third recommendation is having high expectations for EL students in the classroom and beyond, including post-secondary plans. This is directly connected to the second recommendation above. Teachers often have low expectations of students in ELD courses and connect the timing of exposure to challenging curriculum to beliefs regarding EL students' linguistic and academic abilities (Callahan, 2005). This is both inappropriate and inequitable. In turn, ELs respond to these low expectations correspondingly, by underperforming and limiting themselves to meet the low expectations (Callahan, 2005). Research indicated that when high expectations are set at early language proficiency levels, this serves as precedence for academic development (Callahan, 2005). The professional development on the difference between academic ability and language proficiency discussed above is necessary in order for educators to change their beliefs about EL students and set high expectations for academic outcomes. Educators throughout the K-12 system in all grade spans lack this knowledge, which results in long lasting detrimental effects on EL students in the form of lack of access to and success in rigorous courses in high school. This has a domino effect and negatively impacts the trajectory of their lives beyond high school graduation. Moreover, there should be high expectations for EL students both in the classroom and beyond high school graduation. Every EL student should be supported to develop postsecondary opportunities and plans (Callahan et al., 2010) based on what they would like to pursue. This work should include systemic changes in districts where

this is not in place, including the introduction of a self-interest inventory during the middle school years and building awareness of the various postsecondary opportunities available.

The fourth recommendation is to conduct an A-G transcript analysis for math courses at individual school sites within districts. These transcript audits can disaggregate student demographic data, educational program participation (such as EL), courses taken, and grades for each course and compare the rate of access to and success in rigorous math courses across all student groups. This can be disaggregated further by EL level. The A-G transcript audits identify which courses ELs have or do not have access to, which courses they are successful in, and which courses they pass the least. The A-G transcript audit for math would paint an overall picture of the rate at which EL students are accessing and succeeding in A-G math courses at particular school sites. It would also highlight the inequities identified in this study regarding the percentage of students who have access to rigorous courses versus the much lower percentage of students that actually pass those courses. Students may have access to rigorous courses, however, there is a clear need for support in passing those courses, which connects to the second recommendation regarding providing differentiated instruction to support different levels of language acquisition. The transcript analysis would allow for deeper conversations about policies and practices that are inequitable for and exhibit biases toward EL students, such as the policies and practices that resulted in the collective data of the participating districts in this study. Examining the policies and procedures while understanding of the differences between academic ability and language proficiency level with district and site administrators, counselors, and teachers would be critical in order to enact positive change for EL students.

The fifth and final recommendation is to ensure students are supported to reclassify before high school, ideally by third or fourth grade. The results demonstrated the importance of

reclassifying EL students by third or fourth grade, placing a large importance on these two grades for students to be successful in the future. Supporting kindergarten through fourth grade teachers in planning and delivering differentiated instruction to their EL students should be an emphasis for districts and school sites. These two grades are crucial to the success of our EL students when considering the importance of A-G math courses and postsecondary opportunities. EL students in the primary grades (grades one through three) should be closely monitored for progress on the state language proficiency assessment and passing grades in the core subjects. Students who are not making progress on the assessments or who are not earning passing grades need to be supported with specific intentional plans to increase their proficiency levels and grades. This needs to be a team approach that includes site administrators, classroom teachers, and any teachers on assignments at the site or the district. Determining why these students are not experiencing success and remedying these issues would help to improve reclassification rates of students in the primary grades so they can be reclassified before the end of fifth grade. For those students who are not reclassified before fifth grade, additional efforts need to be made so that the teachers and administrators know exactly who these students are in order to deliver effective instruction and monitor progress. While this study demonstrated the importance of reclassifying in third or fourth grade, it also demonstrated that students who reclassified before high school pass more rigorous math courses than students who remain EL and that the number of semesters of math courses passed decreases after third grade, emphasizing the importance of reclassifying earlier rather than later.

Future Research

Data gathered for this study included the analysis of A-G math courses that EL and RFEP students were enrolled in, but did not include site identifiers for each district. Appendix A

displays the A-G courses for each district, but as shared in Chapter 3, this was not differentiated by site. Future research is warranted to determine how access and success varies by site within each district and the relationship between these and EL enrollment rate and EL levels by school. This would allow analyses to identify where EL students are provided equitable opportunities and where they are experiencing inequities.

Prior to the reauthorization of ESSA, in addition to the state reclassification criteria, districts had the flexibility to add additional criteria. This resulted in inconsistent reclassification criteria across districts, where some only required the state criteria and others included additional locally determined criteria. While the reauthorization of ESSA established the minimum level of proficiency on the new language assessment, the ELPAC, the guidance continues to allow for flexibility within the reclassification criteria. This means districts still have the option to add additional requirements for reclassification as long as it falls within the four criteria established by the state. Future research is warranted to determine how district reclassification guidelines are related to reclassification rates and to access to A-G courses. Given the results of this study, which showed RFEP students have more access to and success in rigorous math courses than EL students, it is important to see if districts with the minimum state reclassification criteria have higher rates of RFEP students than districts that opt to add additional criteria or those that generally have stricter guidelines. Additionally, some districts in California do not permit EL students to reclassify before third grade, even if they meet the minimum state reclassification criteria. Analyzing district reclassification policies in addition to their reclassification criteria would provide more context to the inequities facing EL students in these districts.

Results of the study also indicated that EL level five students performed just as well as reclassified students in rigorous math courses. This naturally leads to the question of why EL

level five students are not yet reclassified. Given that one of the reclassification criteria is teacher recommendation, perhaps teacher bias may pose a barrier to reclassification. Further research is warranted in this area.

In this study, students who were EL level one in eleventh grade comprised 20.4 percent of the sample. These students were either a level one for over six years or regressed to an EL level one over those years. Additional analysis into the types of A-G math courses EL level one students were enrolled in and passed is warranted as well as analysis of the number of students who have remained an EL level one for at least six years compared to those who regressed to an EL level one during that time frame. EL level one students accessed more courses than EL level two students and passed more courses than all other EL levels. Additional research into these results is warranted to determine whether students who remain at EL level one in eleventh grade may have developed resistance to the state language proficiency assessment. Perhaps these students demonstrate a type of resistance capital where they are successful academically throughout the school year, but due to the resistance developed toward the language assessment, they do not demonstrate their true level of language acquisition. Additional research could also focus on the relationships between the teachers and counselors who work with EL level one students. Due to their high academic performance in math, it is worth examining if their positive outcomes are related to the teacher-counselor relationship.

Lastly, bilingual education, including dual immersion programs, is an area of future research related to this study. Given that bilingual programs include instruction provided in English and a primary language of the students in the school, determining the relationship between EL student outcomes of those who participated in bilingual education compared to those who did not would be relevant. Such a study could provide insight as to whether EL students

experience overall higher outcomes in math in bilingual programs due to the asset-based view of their culture and language as compared to the non-bilingual programs where their culture and language is more often viewed as a deficit.

Conclusions

Rigorous math courses serve as a gatekeeper for college access. All districts in this study offer A-G math courses, but the rate of enrollment and passing for EL students is significantly lower when compared to RFEP students. These inequitable outcomes for EL students are educational injustices that need to be addressed. EL students come to the educational system with an asset of speaking a language other than English and through their hard work in a system that is not designed for them, many EL students reclassify. They demonstrate success in a system that stacks the odds against them. We are overdue for improved EL programs and policies where a language other than English is not viewed as a deficit, but as the asset it truly is. While the state can impose policies, this transformation will occur at the local level through advocacy and action of leaders of educational justice. The future of our EL students can be positively impacted, opening up opportunities that can change their trajectory in life for a better future. Education is a public good and our EL students deserve equitable educational and life outcomes.

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Appendix A

Table 3.4

A-G Approved Math Courses Offered in Participating Districts (University of California, 2015)

District	11th Grade (17-18)	10th Grade (18-19)	9th Grade (16-17)
1	Algebra I Algebra II Geometry Integrated Math 1 Integrated Math 2 Integrated Math 3 Precalculus	Algebra I Algebra II Geometry Integrated Math 1 Integrated Math 2 Integrated Math 3 Precalculus	Algebra I Algebra II Geometry Integrated Math 1 Integrated Math 2 Precalculus
2	Algebra I Algebra I Sheltered (Algebra w/Support) Algebra II AP Calculus AB AP Calculus BC AP Statistics Geometry Honor Geometry Honors Pre-Calculus Introductory Statistics Pre-Calculus Advanced Algebra with Financial Applications	Algebra I Algebra I Sheltered (Algebra w/Support) Algebra II AP Calculus AB AP Calculus BC AP Statistics Geometry Honor Geometry Honors Pre-Calculus Introductory Statistics Mathematical Analysis (Trig) Pre-Calculus Advanced Algebra with Financial Applications	Algebra I Algebra I Sheltered (Algebra w/Support) Algebra II AP Calculus AB AP Calculus BC AP Statistics Geometry Honor Geometry Mathematical Analysis (Trig) Advanced Algebra with Financial Applications
3	Algebra I Sheltered Algebra II Algebra II – APEX (online) Algebra II Honors AP Calculus AB AP Calculus AB – APEX (online) AP Calculus BC AP Statistics	Algebra I Sheltered Algebra II Algebra II – APEX (online) Algebra II Honors AP Calculus AB AP Calculus AB – APEX (online) AP Calculus BC AP Statistics	Algebra I Algebra I Sheltered Algebra II Algebra II – APEX (online) Algebra II (H) AP Calculus AB AP Calculus AB – APEX (online) AP Calculus BC AP Statistics Geometry APEX (online) Geometry (H) Geometry Sheltered

Integrated Math I Integrated Math IA and IB Integrated Math I Honors Integrated Math IA/and Integrated Math IB	Integrated Math I Integrated Math IA and IB Integrated Math I Honors Integrated Math IA/and Integrated Math IB	Integrated Math I Integrated Math IA and IB Integrated Math I Honors Integrated Math IA/and Integrated Math IB
Integrated Math I w/Computing & Robotics Integrated Math II Integrated Math IIA and IIB Integrated Math II Honors Integrated Math II w/Computing & Robotics Integrated Math III Integrated Math 3A and 3B Integrated Math III Honors Intro College Math Mathematical Reasoning with Connections Mathematical Studies IB HL 1 Mathematical Studies IB HL 2 Mathematical Studies IB SL Mathematics I – APEX (online) Mathematics II – APEX (online) Mathematics III – APEX (online)	Integrated Math II Integrated Math IIA and IIB Integrated Math II Honors Integrated Math III Integrated Math 3A and 3B Integrated Math III Honors Intro College Math Mathematical Reasoning with Connections Mathematical Studies IB HL 1 Mathematical Studies IB SL Mathematics I – APEX (online) Mathematics II – APEX (online) Mathematics III – APEX (online)	Integrated Math II Integrated Math II Honors Integrated Math III Integrated Math III Honors Mathematical Studies IB SL Mathematics I – APEX (online) Mathematics II – APEX (online) Mathematics III – APEX (online) Plane and Solid Geometry Precalculus

4

Precalculus – APEX (online)	Precalculus – APEX (online)	Precalculus – APEX (online)
Probability and Statistics	Probability and Statistics	Probability and Statistics
Trigonometry/Pre- Calculus	Trigonometry/Pre- Calculus	Trigonometry/Pre- Calculus
Trigonometry/Pre- Calculus Honors	Trigonometry/Pre- Calculus Honors	Trigonometry/Pre- Calculus Honors
		Algebra I – APEX (online)
Algebra I P	Algebra I P	Algebra I P
Algebra II – APEX (online)	Algebra II – APEX (online)	Algebra II – APEX (online)
Algebra II HP	Algebra II HP	Algebra II HP
Algebra IIP	Algebra IIP	Algebra IIP
AP Calculus AB	AP Calculus AB	AP Calculus AB
AP Calculus BC	AP Calculus BC	AP Calculus BC
AP Statistics	AP Statistics	AP Statistics
		AP Statistics – APEX (online)
Calculus P	Calculus P	Calculus P
Geometry – APEX (online)	Geometry – APEX (online)	Geometry – APEX (online)
Geometry HP	Geometry HP	Geometry HP
Geometry P	Geometry P	Geometry P
Intro to College Math	Intro to College Math	Intro to College Math
Math 1A	Math 1A	Math 1A
Math 1HP	Math 1HP	Math 1HP
Math 1 P	Math 1 P	Math 1 P
Math 2A	Math 2A	Math 2A
Math 2B	Math 2B	Math 2B
Math 2HP	Math 2HP	Math 2HP
Math 2P	Math 2P	Math 2P
Math 3HP	Math 3HP	Math 3HP
Math 3P	Math 3P	Math 3P
Math 4HP	Math 4HP	Math 4HP

	Math I B P	Math I B P	Math I B P
	Math 4	Math 4	Math 4
	Math 1 – APEX (online)	Math 1 – APEX (online)	Math 1 – APEX (online)
	Math 2 – APEX (online)	Math 2 – APEX (online)	Math 2 – APEX (online)
	Math 3 – APEX (online)	Math 3 – APEX (online)	Math 3 – APEX (online)
	Mathematical Reasoning with Connections (MRWC)	Mathematical Reasoning with Connections (MRWC)	
	Precalculus – APEX (online)	Precalculus – APEX (online)	Precalculus – APEX (online)
	Precalculus HP	Precalculus HP	Precalculus HP
	Precalculus P	Precalculus P	Precalculus P
	Probability and Statistics – APEX (online)	Probability and Statistics – APEX (online)	Probability and Statistics – APEX (online)
	SEI Algebra I	SEI Algebra I	SEI Algebra I P
	SEI Algebra II P	SEI Algebra II P	SEI Algebra II P
	SEI Geometry	SEI Geometry	SEI Geometry
	Sports Statistics P	Sports Statistics P	
	Statistics P	Statistics P	Statistics P
5	Accelerated Integrated Mathematics 1	Accelerated Integrated Mathematics 1	
	Accelerated Integrated Mathematics 1 H	Accelerated Integrated Mathematics 1 H	Accelerated Integrated Mathematics 1 H
	Accelerated Integrated Mathematics 2	Accelerated Integrated Mathematics 2	Accelerated Integrated Mathematics 2
	Accelerated Integrated Mathematics 2 H	Accelerated Integrated Mathematics 2 H	Accelerated Integrated Mathematics 2 H
	Algebra 1	Algebra 1	Algebra 1
	Algebra 1 C A/B P	Algebra 1 C A/B P	Algebra 1 C A/B P
	Algebra 1 CL A/B P	Algebra 1 CL A/B P	Algebra 1 CL A/B P
	Algebra 1L A/B	Algebra 1L A/B	Algebra 1L A/B
	Algebra 2	Algebra 2	Algebra 2
	Algebra 2 A/B	Algebra 2 A/B	Algebra 2 A/B
	Algebra 2 A/B (H)	Algebra 2 A/B (H)	Algebra 2 A/B (H)
	Algebra 2 L A/B	Algebra 2 L A/B	Algebra 2 L A/B

Algebra 2 MYP A/B P	Algebra 2 MYP A/B P	Algebra 2 MYP A/B P
Algebra I (online)	Algebra I (online)	Algebra I (online)
Algebra II (online)	Algebra II (online)	Algebra II (online)
Algebra Standards 2	Algebra Standards 2	Algebra Standards 2
Algebra Standards 2L A/B	Algebra Standards 2L A/B	Algebra Standards 2L A/B
AP Calculus AB	AP Calculus AB	AP Calculus AB
AP Calculus AB (online)	AP Calculus AB (online)	AP Calculus AB (online)
AP Calculus BC	AP Calculus BC	AP Calculus BC
AP Statistics	AP Statistics	AP Statistics
Calculus	Calculus	Calculus
CCSS Integrated Math 1	CCSS Integrated Math 1	CCSS Integrated Math 1
CCSS Integrated Math 2	CCSS Integrated Math 2	CCSS Integrated Math 2
CCSS Integrated Math 3	CCSS Integrated Math 3	CCSS Integrated Math 3
Geometric Standards 2 A/B	Geometric Standards 2 A/B	Geometric Standards 2 A/B
Geometric Standards 2L A/B	Geometric Standards 2L A/B	Geometric Standards 2L A/B
Geometry (online)	Geometry (online)	Geometry (online)
Geometry	Geometry	Geometry
Geometry L A/B	Geometry L A/B	Geometry L A/B
Geometry A/B (H)	Geometry A/B (H)	Geometry A/B (H)
Geometry A/B (H) P	Geometry A/B (H) P	Geometry A/B (H) P
Geometry A/B P	Geometry A/B P	Geometry A/B P
Geometry MYP A/B P	Geometry MYP A/B P	Geometry MYP A/B P
Mathematical Studies IB SL	Mathematical Studies IB SL	Mathematical Studies IB SL
Mathematics I (online)	Mathematics I (online)	Mathematics I (online)
Mathematics IB SL	Mathematics IB SL	Mathematics IB SL
Mathematics II (online)	Mathematics II (online)	Mathematics II (online)
Mathematics III (online)	Mathematics III (online)	Mathematics III (online)

Precalculus Honors	Precalculus Honors	Precalculus Honors
Precalculus (online)	Precalculus (online)	Precalculus (online)
Statistics A/B P	Statistics A/B P	Statistics A/B P
Statistics and Probability	Statistics and Probability	Statistics and Probability
Trigonometry/Pre- Calculus A/B	Trigonometry/Pre- Calculus A/B	Trigonometry/Pre- Calculus A/B
Trigonometry/Pre- Calculus A/B (H)	Trigonometry/Pre- Calculus A/B (H)	Trigonometry/Pre- Calculus A/B (H)
Trigonometry/Pre- Calculus A/B (H) P	Trigonometry/Pre- Calculus A/B (H) P	Trigonometry/Pre- Calculus A/B (H) P