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Implications for Educational Equity Due to Master Scheduling Decisions Made by Site

Administrators

By
Rachel Pittman

Claremont Graduate University

2022

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APPROVAL OF THE DISSERTATION COMMITTEE

This dissertation has been duly read, reviewed, and critiqued by the Committee listed below, which hereby approves the manuscript of Rachel Pittman as fulfilling the scope and quality requirement for meriting the degree of Doctor of Philosophy in Education.

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ABSTRACT

Implications for Educational Equity Due to Master Scheduling Decisions Made by Site

Administrators

By

Rachel Pittman

Claremont Graduate University: 2022

It is well documented that excellent teachers are not equitably distributed among students in traditional public high schools. Research shows teacher labor market economics and the micropolitics of schooling significantly facilitate the migration of excellent teachers between districts and schools and within schools so the teachers may secure course assignments that house the most academically successful students. No study has yet addressed within-school assignment of teachers made by site administrators through the mechanism known as the Master Schedule. This dissertation examined the factors that influence teacher–course pairing decisions made by site administrators in traditional high school settings in California and how these factors affect educational equity at the site level as pertains to the distribution of high quality teachers. This study provides groundbreaking evidence on the role of site administrators in teacher–course pairing, and by extension, teacher–student pairing, while exploring three distinct phenomena and their interactions: (a) teacher assigned specific courses at the site level based on site–administration decision making, (b) student sorting at the site level based on site administrator decisions on which teachers are assigned specific courses, (c) and the mechanism (i.e., the Master Schedule) that merges both types of sorting.

The investigation in this study employed an explanatory sequential mixed methods design with a sample drawn from the population of 965 site administrators serving as principals in traditional California public high schools offering Grades 9–12 inclusive. The respondents consisted of 114 high school administrators: (a) 99 principals, and (b) 15 assistant principals. A total of 33 of these site administrators also participated in one-on-one interviews. This study provided pioneering empirical evidence of similarities in Master Schedule practices and outcomes throughout California. This is evidenced by data analysis in this study with respect to decision making factors made by site administrators; these factors include (a) potential challenges faced by site administrators in Master Schedule creation, (b) stakeholder influence on site administrators, (c) reasons site administrators match specific teachers to specific courses, and (d) site administrator perceptions of teacher quality. Suggestions to reimagining the prevalent high school experience into other meaningful higher education and the workforce pathways are illuminated in this study. Findings can guide state, county, and district administrators in providing site administrators extensive and ongoing professional development in Master Schedule creation and implementation. Additionally, this study pointed to evidence that established university entrance criteria and state-mandated graduation requirements significantly mold the day-to-day schooling experience of all public school students such that high school site administrators may have very limited ability to alter Master Schedules. Future areas of research include examining the extent to which administrators can make changes on Master Schedules to reveal any existing systematization that inhibits educational equity with respect to the distribution of excellent teachers.

DEDICATION

To my children and husband, the loves of my life.

To my parents, immigrants who toiled and sacrificed so that I might have greater opportunities
for success.

To my former students and students everywhere, for whom I will continue to relentlessly
advocate improving educational systems so that they and their progeny may have greater
opportunities for success.

ACKNOWLEDGEMENTS

At the American Educational Research Association Centennial Symposium, I had the opportunity to hear Mike Rose read his speech, “Writing Our Way Into the Public Sphere.” He had an impact on me when he said, “Writing acts on a reader and . . . the writer can do things that influence that response. Writing [is] craftwork and social act.” The problems in education are complex. It is my sincere hope that my contribution will advance the ways educational practitioners and scholars can best address the needs of students, particularly as they pertain to alleviating generational poverty.

I have many people to thank for their support in this journey. I wish to extend my deepest gratitude to my advisor, Dr. Thomas Luschei, for his guidance and for sharpening my academic ability with his profoundly insightful feedback. He is a learned, level-headed scholar who serves as my academic role model. His course on teacher quality and teacher labor markets and his contribution to research literature on these topics influenced the development of my research questions. I also wish to thank the professors who have played a major role in helping me along the way. Dr. June Hilton’s perspective as a practitioner with similar roots (we share in the uniqueness of having both served as rare credentialled physics teachers and following that, site administrators), and the conversations we have had have been tremendously beneficial and encouraging. Dr. DeLacy Ganley’s leadership at the Claremont Colleges has been inspirational. I appreciate her enthusiasm during our interactions, and the high bar she holds with academic rigor for students in the Claremont Graduate University. I also wish to thank Dr. Susan Paik, whose course on research methods and design served as the framework for the process I took to structure my dissertation.

I must also acknowledge my participants who were generous with their time in sharing their experiences despite the demands of leading schools.

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Most importantly, I could not have accomplished this work without the love and support of my family. I especially want to thank my husband, Anthony, whose erudition has served as an exemplar for the manner in which I approach learning and strategy. I am grateful as well for the space and time he created for me to engage in this work by taking on additional responsibilities with our children and home. I wish to thank my dearest friend Bianca for her active encouragement, availability for writing sessions, and critical feedback. Lastly, I want to express loving gratitude to Cora for her enduring companionship during the long and enlightening hours I dedicated to writing this body of work.

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CHAPTER 1: INTRODUCTION

Statement of the Problem

California’s education system has undergone significant policy shifts in preceding decades with a focus on increasing local control in funding decisions, improving the rigor of curriculum, and expanding the frequency and content of state assessments. Although these reforms aim to impact the lowest performing and highest need student groups, students who spend time with excellent teachers are most likely to succeed academically in K–12 settings. The specific characteristics attributed to excellent teachers are not agreed upon by researchers, but a constellation of high-quality characteristics—including a teacher’s academic ability, credentials, and teaching experience—commonly correlate with students’ academic success and future employment (Chetty et al., 2014a, 2014b; Guarino et al., 2006; Horng, 2009; Jackson, 2009; James & Wyckoff, 2020). It is well documented that teachers with high-quality characteristics have a direct impact on the educational achievement of students (Aaronson et al., 2007; Chetty et al., 2014b; Isenberg et al., 2013; Rivkin et al., 2005).

High levels of educational attainment correlate strongly with positive fiscal, social, and economic outcomes, including better overall physical and mental health, higher earnings, and family stability. It follows that high-demand teachers possess a combination of characteristics perceived by their employers to increase student academic success. Unfortunately, it has become harder for employers to recruit and retain teachers with high-quality characteristics in high-needs schools for a variety of economic and social reasons. As a result, district leaders across the United States struggle to fill classrooms and often resort to doing so with those who are underprepared and underqualified. Classrooms with hard-to-fill teaching positions typically

house high-need students who experience poverty. These students are often placed into low-track courses from the onset of entry into the public school system (Oakes, 2005, 2008). The result is high-need students receive the lowest quality instruction available (Akiba et al., 2007; Hanushek et al., 2005), resulting in a decreased likelihood of attaining a college degree or becoming a career teacher. This self-perpetuating cycle causes a shortage of teachers who would otherwise be willing to improve the lives of high-need students, as most educators elect to teach close to where they grew up (Boyd et al., 2005; Killeen et al., 2013). The ebb-and-flow phenomenon of teacher supply has occurred throughout California's history mostly due to economic factors (Commission on Teacher Credentialing, 2011); yet, the issue lends itself to the ecosystem found in schools that govern which teachers are selected to teach specific courses and by extension, specific groups of students.

Background

The complexities of teacher labor markets are at the core of how and why teachers are assigned specific classrooms. Teacher sorting is the manner in which teachers select the schools where they work, and teachers are assigned courses they teach in those schools by site administrators. Across districts, teacher sorting is governed by the laws of supply and demand. At this level, economic motivators vary by differences in salary between districts, living and housing conditions, and the reputation of districts and their schools. These incentives not only drive teachers to compete for positions in districts, but also between schools in districts. This phenomenon provides more affluent districts a robust candidate pool from which districts can hire teachers (Gagnon, 2015; Jacob, 2007). Studies have found teachers in affluent districts have stronger educational backgrounds, more years of experience, and better mastery of teaching techniques compared to teachers in poor urban or rural districts (Boyd et al., 2003; Darling-

Hammond, 2010; Kalogrides & Loeb, 2013; Miller, 2012b). Likewise, more experienced teachers and those who have stronger academic backgrounds migrate to schools with fewer numbers of high-need and socioeconomically disadvantaged (SED) students, and fewer students with low math and reading scores (Clotfelter et al., 2006; Cohen-Vogel, 2011; Johnson et al., 2012; Miller, 2012a). Teacher preference plays a large part in the selecting schools; teachers tend to self-select into classrooms with students who have fewer social–emotional developmental needs, are of higher economic status, are high achieving, and are similar culturally to them (Bacolod, 2007; Boyd et al., 2013; Grissom et al., 2015; Jeong & Luschei, 2019; Kalogrides & Loeb, 2013; Luschei & Jeong, 2018). In schools, experienced teachers have an integral voice in teacher assignment. Studies have shown experienced teachers vie with their less experienced or less educated counterparts for better working conditions. Namely, they lobby to be matched to the highest performing students unlikely to prompt behavioral concerns (Grissom et al., 2015; Kalogrides et al., 2013). The combination of salary and teacher preference for working conditions makes it difficult to interpret the demand of a particular teaching assignment. This phenomenon was further evidenced by Goldhaber et al.’s (2015) study, which showed the pervasive, inequitable distribution of teachers with high-quality characteristics across K–12 schools in Washington State. Additionally, Luschei and Jeong (2018) analyzed teacher distribution across 32 countries and found within-school assignment explains more variance in teacher quality than across-school variance. Across school sorting and within school assignment vary; the latter occurs largely according to fiscal and nonpecuniary incentives, whereas the former by administrator approval of teachers’ preferences for teaching certain groups of students. Jeong and Luschei (2019) found across schools and within schools, inequitable teacher sorting and assignment patterns are pronounced specifically with more experienced teachers less likely

to teach high-needs students. Even in affluent schools, teachers with perceived high-quality characteristics are assignment to teach high-track students. It is through teacher sorting the achievement gap is compounded. Through teacher assignment and student tracking, it is perpetuated.

Oakes's (2005) seminal work on the subject defined student tracking as the process whereby students are divided into categories based on their perceived ability level so they can be assigned to groups, then placed in various classes. Students are placed in courses according to the perceived rate at which they learn, what seems most appropriate to their future lives, and rarely, classes students themselves choose. Students perceived to be fast learners who are college bound are typically placed in high-track classes. Those who are perceived to learn at average, or slow speeds, and destined for vocational work after high school are placed in low-track courses. Oakes (2005) found tracking takes place at most schools and students are placed in track levels for multiple classes rather than having separate placement decisions made for each subject area. This finding indicated high-track students are assumed to be good at all academic subjects, which may not be the case. Placing already tracked students into all available high-track content areas takes away opportunities from other students to enter into high-track classes. Seating in high-track courses is scarce when compared to low-track counterparts leading to a perpetual confinement of SED and high-need students to low-track classrooms that do not feed the college pipeline (Burris & Garrity, 2008; Conger, 2005; Gamoran, 1987; Oakes, 2005, 2008).

School site administrators are responsible for creating high- and low-track course offerings, and for assigning teachers into these courses. The assumption about varying levels of tracked courses is although students are tracked, every student will be exposed to the same knowledge and curriculum as they proceed through school with the expectation that the level of

learning information may vary. Unfortunately, this assumption has remained unsubstantiated; research shows low- and high-track classes are provided with vastly different content and markedly different learning opportunities (Argys et al., 1996; Cohen-Vogel, 2011; Domina, 2016; Isenberg et al., 2013; Oakes, 2005). When well-meaning, intelligent, hard-working students are not provided equal access to excellent teachers, the widely held belief that education is the great equalizer becomes a myth.

No Child Left Behind (NCLB) and the Elementary and Secondary Education Act (ESEA) do not address the educational inequity highlighted by the difference in quality between teachers assigned low- and high-track courses. Instead, these policies and more recent federal initiatives—such as Race to the Top and Common Core—concern themselves with increasing the quality of teachers entering the profession and implementing more rigorous curricular standards. However, increased new teacher quality and standards improvement does not directly remedy the varying instructional effectiveness and academic content taught in high- versus low-track classes, nor would it necessarily alter the teacher–course pairing decisions made by site administrators.

Between districts and schools, and schools in districts, the hierarchy of teachers is such that those with high-quality characteristics are sorted with high-track students. Despite forward movement in policy, high-need students across California who are generally placed in low-track courses are still overwhelmingly taught by teachers who lack high-quality characteristics (Betts et al., 2000; Darling-Hammond, 2004).

Purpose of the Study

The availability of teachers with high-quality characteristics is in short supply. This supply issue is evidenced by low national performance indicators, high teacher turnover, and the

glut of recent educational policy initiatives aimed at improving student academic gains, particularly in California, the state of focus in this study. One way to improve the academic success of high-need students is to expose them to excellent teachers already part of the educational system. Exposure to excellent teachers could be accomplished more equitably by distributing low-track students with teachers currently assigned in high-track courses. The distribution of teachers within schools to specific courses is under complete authority of site principals who often co-lead placement decisions with assistant principals. As such, this study illuminates the factors that influence the teacher–course pairing decisions made by these site administrators.

The instrument or mechanism by which site administrators match teachers and courses, and which available course offerings are delineated, is called the *Master Schedule*. The courses in the Master Schedule support providing instruction to students in organized clusters through academic tracking that begins early in a child’s education. Initial placement decisions in early elementary are driven largely by a teacher’s opinion of a student’s scholastic ability and temperament. In short order, student placement becomes increasingly tracked, necessitating a Master Schedule generated by site administrators to keep track of which teachers provide varying levels of academic instruction in specific courses. Most students in prekindergarten to fifth grade typically have one teacher. Nonetheless, students are often tracked into high- and low-track courses between available teachers.

Often by sixth grade, students begin to rotate between several content-specialized teachers in assigned clusters. This rotation sets the stage for middle and high school, when students on traditional period schedules visit six to seven different classes per day. From elementary to middle school, and then high school, students are stratified further into special

education, intervention, low-track (often coded as “college prep”) courses, and high-track courses. Starting at the middle school level, but certainly due to tracking well before that, these high-track courses are typically prerequisites for high school honors, Advanced Placement (AP), and International Baccalaureate (IB) courses. The high school Master Schedule is the most complex in its offerings and accounts for greater volumes of students attending various tracked course offerings throughout the day when compared to their elementary feeder schools. The ultimate decision maker in facilitating teacher–course (and by extension, teacher–student) pairing decisions falls entirely in the hands of the site principal. This authority is vested in principals irrespective of the size of the student population at a school per the contractual language of Collective Bargaining Agreements (CBAs). Further, principals decide which high- and low-tracked courses are offered, and often work with their administrative team of assistant principals to match teachers whom they feel would best meet the learning needs of students in specific courses.

Student tracking has been the focus of volumes of education research (Burris & Garrity, 2008; Conger, 2005; Cohen-Vogel, 2011; Gamoran, 1987; Kettler & Hurst, 2017; Oakes, 2005, 2008; Richardson et al., 2016); yet, little, if any research, is devoted to the decisions made by site administrators on teacher assignment. Currently, research does not exist on the ubiquitously used Master Schedule. As such, this study aimed to fill the gap in the literature on how and why site administrators distribute teachers in low- and high-track courses *vis-à-vis* the Master Schedule.

Significance of the Study

Research on student tracking focuses on what students experience in schools. This study provides a view of factors that influence site administrators to assign teachers high- or low-track courses, and contributes to existing literature by providing evidence explaining how within-

school teacher assignment occurs. Further, this study explores the role site-level administrators play in maintaining the division between high-needs students and teachers with high-quality characteristics through the Master Schedule. The opinion of the researcher is site administrators care deeply for those they lead, and they aim to positively impact the education experience of students. For that reason, inequities are likely not upheld intentionally nor maliciously, and the possible impetus for persisting inequities can be found in exploring the training site administrators receive related to creating and implementing Master Schedules.

Despite the hurdles presented by equitably distributing excellent teachers in the Master Schedule, this study aims to influence policy at all levels toward more equitable teacher and student Master Schedule assignments. A central objective is to allow a larger population of students to be exposed to teachers with high-quality characteristics. This research accomplishes this goal by uncovering the driving factors that influence administrative decision making in assigning teachers to specific cohorts of students, highlighting the need for providing site administrators with support in improving access to teachers with high-quality characteristics.

Theoretical Framework

Although individual schools and districts are examined to identify trends in teacher–student pairings, the teacher labor market must be explored as a whole to tackle these complexities. Marshall (1890) transformed classical interpretations of the *market* economy founded on the collective works of Adam Smith, Thomas Malthus, James Mill, and David Ricardo to one intended to predict human behavior via a *labor market*. Marshall described human labor as a service that is bought and sold and its wage; the suppliers are individual workers and the buyers are organizations. The teacher labor market in California is unlike the traditional labor market because the government hires the greatest number of teachers. The

California state government is therefore a “monopsony” of teachers’ services (Dolton, 2010). This scenario makes a noncompetitive market, generating an inverse relationship between wage and number of teachers demanded or hired. On the supply side, the teacher labor pool becomes more competitive to attract new teachers if teacher wages increase, or less competitive if teachers’ incomes do not compete with occupations requiring similar levels of education. These are the primary relationships that govern teacher demand and supply. Of course, this model of teacher labor markets assumes all teachers are equivalent in their demand for them, whereas in reality some teaching positions are more in short supply than others. In the same state, for instance, there may be teacher shortages in certain geographical regions and oversupply in other locations (Dolton, 2020).

Teachers must follow stringent credentialing requirements set forth by the California Department of Education (CDE) and upheld by the California Commission on Teacher Credentialing (CTC) to qualify for teaching in a traditional public school. Once appropriately credentialed, teacher wages are determined by a district salary schedule predicated on both the education level and increasing experience calculated by number of years in the profession. State and local policymakers struggle with incentivizing teaching, as it is notoriously difficult to measure how well teachers perform on the job or how to measure teacher quality (Dolton, 2020). All of these legal state and contractual requisites result in teacher salaries not varying much across grade levels or settings, making teaching a noncompetitive profession which in turn fuels inequities that arise from teacher migration across districts, schools, and within schools (Lankford et al., 2002). The phenomenon leads districts and schools with high socioeconomic status (SES) to have a larger pool of teachers with high-quality characteristics from which to hire. In this case, city amenities and the promise of securing a course with high-achieving

students becomes the driving force of competition. Conversely, the ability to fill demand for teachers at schools with low SES becomes constrained by too few teachers with high-quality characteristics willing to work in challenging conditions and with high-need students (Boyd et al., 2003; Boyd et al., 2005; Ingersoll et al., 2012; Ingersoll et al., 2021; Killeen et al., 2013; Loeb & Reininger, 2004).

Teacher distribution driven by the labor market fuels across-school teacher sorting. To combat across-school teacher sorting challenges, administrators have proposed various incentives to attract those teachers with desirable characteristics to work at hard to staff schools and districts.

Fiscal Incentives Beyond Salary

Administrators who want to compensate teachers they feel have the appropriate combination of high-quality characteristics that positively affect student outcomes often do so by assigning them stipends for running clubs and coordinating programs. At the secondary level, they also do so by providing additional income in the form of full-time equivalent (FTE) compensation, or by creating an additional class in lieu of providing a preparatory period during the day. Another fiscal incentive available to teachers is *differentiated compensation*, or so-called “combat pay,” in which they are awarded more for teaching difficult subjects or for working in high needs settings (Santibañez, 2020).

Strunk and Zeehandelaar (2011) found California school districts financially incentivize teachers by their degree attainment and experience in the classroom for all teaching positions, irrespective of the grade taught or type of degree, and rarely provide additional fiscal incentives for hard-to-staff math and science teaching positions. This finding is troubling, considering Guarino et al. (2006) found those teachers in difficult-to-staff positions are more likely to leave

teaching than teachers in other fields. In the past, districts with high academic performance index (API) scores tended to offer fewer incentives for special education and bilingual credentials, suggesting high-SES districts and schools do not service high-needs students in the same capacity as low-SES districts and schools. Strunk and Zeehandelaar (2011) also found very few districts in California implement policies designed to attract science and math teachers with hard science backgrounds, or teachers who are willing to teach in challenging areas. Districts that have a particularly difficult time recruiting teachers due to high numbers of high-need and disadvantaged students with low achievement scores tend to target incentives for subject credentials instead of incentives that retain teachers with high-quality characteristics. Strunk and Zeehandelaar's research found incentives in California are largely given for having (a) years of experience, (b) varying degrees of educational attainment, (c) National Board Certification, (d) a doctorate, (e) bilingual/ESL certification, or (f) special education certification. Research literature reveals the lack of excellent teachers entering and remaining in high-needs schools and being matched to high-needs students is a direct reflection of a lack of incentives delineated in the teacher labor market model (Dolton, 2020; Ladd, 2007; Lankford & Wyckoff, 2010). However, Marianno et al. (2018) corroborated the lack of incentives in California to teach in hard-to-staff schools and extended their analysis to include similar findings in Washington and Michigan. Although differentiated compensation may offer a partial remedy for the problem of matching high-need students to teachers with high-quality characteristics in high-need subject areas, it is not extensively offered, implying policymakers may not believe it serves as an efficacious strategy. Further, Santibañez (2020) found when fiscal incentives have improved student learning, the results are short-lived, and not always due to improved teaching practices or effort. Also, to increase the efficacy of incentives and better measure their impact, it is important

to delineate well-defined measures of teacher performance that include long- and short-term objectives prior to offering incentives.

Nonpecuniary Incentives

Incentives beyond fiscal compensation often attract teachers to specific districts; for example, Jacob (2007) and Gagnon (2015) cited increased competition for teaching jobs is due to whether a district is located in a city with high levels of urbanicity and affluence. Their work examined how teachers with high-quality characteristics from rural areas tend to migrate to cities that offer better amenities, whereas urban districts generally pay teachers only enough to adequately cover the cost of living in more populated areas with higher levels of commerce. Due to teaching conditions and other factors, these teachers generally migrate from low-performing schools with a high population of high-need and low-SES students to high-performing urban or suburban schools, suggesting more qualified teachers are found in high-SES schools and districts. Miller's (2012a) work supported research showing rural districts have a much more difficult time recruiting excellent teachers, as affluent urban areas can generally out-compete rural districts in both salary and city amenities. Suburban schools and districts draw the greatest number of teachers with high-quality characteristics due to attractive city amenities or school facilities (Gagnon, 2015; Jacob, 2007).

The decision for a teacher to remain in the profession is a balance of those incentives and determining whether they believe seeking employment as a teacher relative to another career is worth the salary tradeoff. Some teachers have more mobility options driven by salary than other teachers. For instance, high school teachers who teach math and science are more likely to migrate or leave given how the salary for teachers compares to the salaries of competing occupations (Goldring et al., 2014; Gray & Taie, 2015; Ladd, 2007). Districts are limited in what

they can fiscally provide newly recruited teachers while retaining their faculty from competing forces. Amid teacher labor market economics, budget cuts, and limited resources, site administrators recruit and retain excellent teachers by providing nonpecuniary incentives in the form of school-level perks, primarily by offering teachers the opportunity to teach students in high-track courses (Clotfelter et al., 2004; Clotfelter et al., 2006; Johnson et al., 2012; Kalogrides & Loeb, 2013; Kalogrides et al., 2013). Although these incentives support administrators in recruiting and retaining teachers, they shortchange underprivileged students due to the lack of access to teachers with high-quality characteristics. As illustrated in this study, decisions California site administrators make to incentivize teaching through within-school sorting typically underserve broad swaths of high-need and SED youth. The following two questions guided this research, with the theory underlying these questions developed in the literature review.

Research Questions

The first question related to Master Schedule decision making by California site administrators with a spotlight on exogenous and endogenous factors, and administrator-level variables. The second question aimed to nuance how these factors and variables influence educational equity as pertains to all students accessing teachers with high-quality characteristics.

1. What are the factors that influence Master Schedule decisions made by site administrators in traditional high school settings in California?
2. How do these factors affect educational equity in California high school settings?

Definitions of Terms

Collective Bargaining Agreement (CBA): A collective bargaining agreement is a contract written and negotiated between district representatives and the union representing employed teachers.

Educational Equity: Educational equity is a complex topic with broad interpretations, every nuance of which extends beyond the scope of this study. In this study, however, educational equity is used to describe the need for all students to have greater access to teachers with high-quality characteristics.

High-Needs Students: In this study, high-needs students are those who are SED, have social-emotional developmental needs, are foster youth, English Language Learners, and/or receive special education services.

High-Quality Teacher. In this study, a high-quality teacher is an education professional in a public school setting who teaches at least one cohort of students, and who possesses high-quality characteristics such as strong academic ability, appropriate credentials, and extensive teaching experience. Despite some evidence to the contrary, this paper referred to those with an abundance of high-quality characteristics as excellent teachers to align with the perception of their employers (i.e., principals and assistant principals who are traditionally part of teacher interviews).

Site Administrator. A site administrator is the principal and any assistant principal(s) working at a public school. These district employees possess either a preliminary or clear administrative services credential.

Stakeholders. Stakeholders are organizational leaders and/or educational partners (e.g., teachers, counselors, parents, business partners, and community groups) who support the public education system.

Summary

Studies have examined various teacher characteristics to identify which lend themselves most strongly to excellent teaching and academic gains of students (Goldhaber et al., 2015;

Guarino et al., 2006; James & Wyckoff; 2020; Loeb et al., 2014). It is important to elaborate on the concept of high-quality teacher characteristics and their ultimate effects on student outcomes. The following literature review discusses these characteristics, including exploring how teachers are distributed across districts, schools, and classrooms in schools. Further, the review describes how high-quality teacher characteristics factor into student–teacher pairings through the micropolitics of schooling, and how they affect teacher–course pairing through the Master Schedule.

CHAPTER 2: LITERATURE REVIEW

A Profile of Teachers and Students in the United States and in California

Excellent teachers are in high demand and have greater choice to select the schools where they work and the classes they teach; however, teachers in California with high-quality characteristics increasingly choose not to teach in high-need schools, and this phenomenon is supported by the teacher labor market model and seniority transfer rights in collective bargaining agreements (CBAs; Cohen-Vogel & Osborne-Lampkin, 2007; Koski & Horng, 2007). To begin understanding how teachers enter into the profession and why they choose to migrate out of classrooms with low-income or high-need student populations, it is useful to begin by examining the teacher and student population in the United States, and compare that information to California's students and teachers.

The National Center for Education Statistics (2021a) reported in the 2017–2018 academic year, approximately 24% of all K–12 public school teachers in the United States were men and 76% were women. The Educational Data Partnership (2018) reported in the 2017–2018 academic year, approximately 27% of all K–12 public school teachers in California were men and 73% were women. The data also showed there were 3.5 million teachers in the United States in the 2017–2018 school year and 306,261 taught in California. Nationally, approximately 79% of teachers were White, 7% were Black, 9% were Hispanic, 2% were Asian, fewer than 1% were Native Hawaiian/Pacific Islander, 1% were American Indian/Alaska Native, and 2% were of two or more races. Comparatively, in California, approximately 62% of teachers were White, 4% were Black, 21% were Hispanic, 6% were Asian, fewer than 1% were Native Hawaiian/Pacific Islander, fewer than 1% were American Indian/Alaska Native, 4% did not report their race, and 1% were of two or more races. To discern the data further, Ingersoll et al. (2021) illuminated the

national pool of teachers becoming larger and outpacing student growth. Moreover, trends showed teachers being older; less experienced; more female; more racially and ethnically diverse; more consistent in academic ability; and more unstable due to high turnover, mobility, and attrition rates. These trends have implications for the educational attainment of students as is discussed throughout this paper.

In addition, there are discrepancies between teacher demographics and the students they serve both nationally and in California. The National Center for Education Statistics (2021b) reported 50.7 million K–12 students attended public schools in 2017–2018 across the United States, where approximately 47% of students were White, 15% were Black, 27% were Hispanic, 5% were Asian, fewer than 1% were Native Hawaiian/Pacific Islander, 1% were American Indian/Alaska Native, and 4% were of two or more races. In California, 6.2 million students attended public schools in the 2017–2018 academic year, where approximately 23% of students were White, 5.5% were Black, 54% were Hispanic, 9% were Asian, 2.5% were Filipino, fewer than 1% were Native Hawaiian/Pacific Islander, fewer than 1% were American Indian/Alaska Native, fewer than 1% did not report their race, and 3.5% were of two or more races. In California during the 2017–2018 academic year, 60% of students were eligible for free-or-reduced-price meals and 20% were classified as English Language Learners. Given the high levels of poverty and English language attainment needs of students, it is critical for excellent teachers to more frequently interact with these high-need students, as they constitute the majority of learners who engage in the workforce and contribute to society.

An Introduction to Teacher Distribution Across Districts, Schools, and Classrooms

Educational research identifies teachers as having a significant impact on student achievement; excellent teachers play a meaningful role imparting to the nation's youth the skills

needed to move the country forward with groundbreaking industry and enterprise (Chetty et al., 2014a, 2014b; Clotfelter et al., 2006; Elmore, 1996; Guarino et al., 2006; Hattie, 2009; James & Wyckoff, 2020; Rivkin et al., 2005). Teachers with high-quality characteristics are a critical component in provisions for educational opportunity. As a result, policy initiatives, research, and media attention has been devoted to understanding how to recruit and retain them. A student's continual exposure to high-quality teaching can make the difference between years or months of learning academic subjects (Goldhaber, 2010; Guarino et al., 2006), making recruitment and retention of excellent teachers one of the nation's highest priorities (Chetty et al., 2014b; James & Wyckoff, 2020). Unfortunately, consensus on the characteristics of excellent teachers has not been agreed upon by researchers or practitioners (Dolton, 2020). Definitions range from those focused on pedagogical ability to prior preparation and years of experience. The lack of agreement makes teacher quality a difficult concept to define, and consequentially, measure (Dolton, 2020; Gitomer, 2007; Ingersoll et al., 2012; Ingersoll et al., 2021). However, researchers and practitioners alike are proponents for increasing the number of excellent teachers that interface regularly with students.

Teachers are currently distributed across California public school districts, across schools in districts, and across classrooms in schools such that socioeconomically disadvantaged (SED) students have less access to teachers with high-quality characteristics (Goldhaber et al., 2015). Jeong and Luschei (2019) found across schools and across classrooms within schools in the United States, inequitable teacher sorting patterns are pronounced specifically with more experienced teachers less likely to teach high-needs students. Lankford et al. (2002) found in New York State, teachers are sorted according to the income and achievement levels of students. Given the number of underprepared and underqualified teachers in high-need California public

school classrooms, Darling-Hammond (2004) warned the distribution of teachers with high-quality characteristics is so severely in favor of socioeconomically advantaged students that basic human rights of underprivileged and underserved students in obtaining an education is under threat of perpetuating generational poverty. Teacher distribution has important implications for student educational outcomes, including high-need and low-socioeconomic status (SES) students not feeding the teacher workforce pipeline (Reininger, 2012).

Conceptions of High-Quality Teacher Characteristics

Some teachers are more effective than others; however, educators with high-quality characteristics—or characteristics thought to lend themselves to excellent teaching—are found in academically high-track classes both domestically and internationally (Allensworth et al., 2009; Goldhaber et al., 2018; Jeong & Luschei, 2019; Luschei & Chudgar, 2011). Teachers with high-quality characteristics are simply not matched frequently enough with the preponderance of high-needs students to determine what truly matters for improving student academic gains.

Additionally, there is an unclear definition of teacher effectiveness compounding this lack of clarity and consensus (Goldhaber et al., 2015; James & Wyckoff; 2020). Although research shows excellent teachers effectively address high-need and heterogeneously mixed groups of learners (Lockwood & McCaffrey, 2009; Loeb et al., 2014), retaining teachers with high-quality characteristics remains an issue plaguing the profession (Dolton, 2020; Guarino et al., 2006; Ingersoll et al., 2012; Ingersoll et al., 2021; Miller, 2012a, 2021b).

In an exploration of the Trends in International Mathematics and Science Study (TIMSS) 2003 data, Luschei and Chudgar (2011) found in the United States and internationally, there is a lack of identified teacher characteristics to measure excellent teachers, presenting a problem for researchers who want to explore how teacher characteristics contribute to student educational

outcomes in countries. Further, they asserted teacher characteristics (e.g., experience and education level) are preferred idiosyncratically by country. This finding is supported by the fact that educational scholars strictly studying teachers in the United States present conflicting outcomes on the impact teacher characteristics have on the academic attainment of students. This lack of cohesion is embroiled in questions about what education is designed to accomplish, who it is designed for, and how success is measured. There is no definitive list of characteristics proven to make an excellent teacher; yet, academic ability, appropriate credentialing, and teaching experience have often been used by the research community as proxy variables for the constellation of characteristics described as “teacher quality” (Dolton, 2020; Gitomer, 2007; Ingersoll et al., 2012; Ingersoll et al., 2021). Although these characteristics show they have some impact on the educational attainment of students, excellent teaching had a gradation largely driven by context and learning environment, making it difficult to quantify.

Characteristic: Academic Ability and Credentials

Research scholars, policymakers, administrators, parents, and business leaders have been largely in agreement with conventional wisdom that hiring teachers with strong academic ability can lead to adequately preparing the next generation of students to succeed in college and the workforce. Guarino et al. (2006) identified several notable studies that found college graduates with higher measured test scores and grades were less likely to become teachers than their less academically proficient peers. They acknowledged this finding was especially the case for elementary teachers, who represent the lion’s share of the teacher workforce. New elementary teachers generally score lower on national tests than peers in other fields (Ingersoll et al., 2012; Ingersoll et al., 2021). Those entering elementary level teaching positions have lower SAT scores than average for college graduates; however, that is not the case for those pursuing mathematics

or science subject-matter credentials (Clotfelter et al., 2006). Further, college graduates in the top grade point average (GPA) percentiles compared to peers generally do not become teachers (Henke et al., 2000). Teachers who graduate from selective universities with math and science backgrounds are in short supply and high demand (Clotfelter et al., 2006; Hill, 2007; Murnane & Steele, 2007). Teachers with high-level math and science ability have been measured as more likely to leave the profession (Guarino et al., 2006; Ingersoll et al., 2012; Ingersoll et al., 2021).

Although teachers with strong academic ability are in high demand, Aaronson et al. (2007) used administrative data from Chicago public high schools and found the educational background, certification, quality of college attended, and undergraduate major of teachers was loosely related to estimated teacher quality. Gitomer (2007)'s research corroborated this finding, but highlighted the need for those in elementary, special education, and physical education teacher pools to show competency in at least one academic content area—particularly for those who teach elementary levels, as they constitute the largest group of credentialed teachers. Clotfelter et al. (2006, 2007) supported research on academic ability not being a predictor of quality, but differed in their conclusion about the impact of teacher licensure. Using administrative data from North Carolina, they presented compelling evidence that teacher credentials and license scores impact student achievement in policy-relevant ways, particularly as it pertains to the math achievement of fifth-grade students and SED students at all grade levels. They also showed teachers who have low credentialing test scores tend to teach greater numbers of high-need students, fewer students whose parents attended college, and greater numbers of students who receive lower standardized test scores.

Conversely, in analyzing selected studies linking teacher licensure to student achievement—including the Clotfelter, Ladd, and Vigdor (2007) and Clotfelter, Ladd, Vigdor,

and Wheeler (2007) studies—Goldhaber (2011) found teachers’ credentials are not a predictor of teacher quality and concluded licensure program requirements have the potential to dissuade talented prospective teachers from entering the profession, thereby lowering the quality of the workforce. Goldhaber (2011) cited modest effect sizes and a lack of empirical specifications from student fixed effects in Clotfelter’s conclusions. Further, Goldhaber’s (2011) meta-analysis may have identified the idiosyncratic realities of district recruitment and retention pressures due to larger labor market conditions, particularly for SED school and district administrators who already face difficulties in recruiting and retaining teachers. Unlike their affluent counterparts, SED school and district personnel may need to hire teachers who have not met all of their credential requirements to adequately staff their schools due to a lack of qualified applicants in their hiring pool (Dolton, 2020). The added pressure of filling teacher vacancies in hard-to-staff schools further hinders recruitment of high-quality teachers if licensure or credentialing is complex to attain.

Despite high-quality characteristics, such as strong academic ability and appropriate licensure attributed to excellent teachers, these characteristics do not readily nor definitively lend themselves to great instruction. Education attainment and licensure studies draw focus on the lack of evidence about the impact these characteristics have on district hiring practices, and how district hiring officials select teacher candidates.

Characteristic: Teaching Experience

In addition to strong academic ability and appropriate licensure, years of teaching experience is often a characteristic that policymakers, administrators, and parents believe lends itself to better teaching ability. An overview of the experience level of teachers provided by the National Center for Education Statistics (2021a) showed that in the 2017–2018 academic year

for all K–12 teachers, approximately 9% had less than 3 years of experience, 28% had 3–9 years of experience, 40% had 10–20 years of experience, and 23% had over 20 years of experience. Ingersoll et al. (2021) cautioned a critical look at these percentages by illustrating a much larger pool of novice teachers when compared to previous decades. Their study showed a dramatic increase in the number of new teachers in the United States contrasting with approximately 84,000 1st-year teachers in the 1987–1988 academic year to approximately 300,000 1st-year teachers in the 2017–2018 academic year. Similarly, there were approximately 1 million teachers (roughly 37%) in 1987–1988 who had 10 or fewer years of teaching experience. Conversely, there were over 1.8 million teachers (roughly 44%) in 2017–2018.

Ingersoll et al. (2021) revised the often cited, rough estimate figure that 40%–50% of all new teachers leave the profession in the first 5 years of entry with data from the Baccalaureate and Beyond survey. Data analysis for the decade between 1993–2003 showed roughly 44% of all novice teachers leave the profession in the first 5 years with roughly 12% leaving their 1st year. Using longitudinal data from the 1988–1989 to 2012–2013 Teacher Follow Up Survey (TFS), Ingersoll et al. (2021) found the percentage of public school teachers who left the profession after their 1st year of teaching was between 7.7% and 11.1%. The researchers presented the data to support the notion of similarly high percentages of attrition for teachers who leave the teaching profession in their first 5 years.

Ingersoll et al. (2021) discussed several implications for the “greening” of the teaching profession, including a potential influx of new perspectives and ideas about the education of young people given the proliferation of technology use. Further, studies have shown student academic achievement improves significantly during the first few years a teacher begins their career. Using a dataset with end-of-course exams for North Carolina students, Henry et al.

(2012) found the effectiveness of novice high school science and mathematics teachers increased rapidly from the onset of teaching, with diminished returns after a teacher's 4th year. Kane et al. (2008) supported this finding by using mathematics and English exam score data for fourth through eighth grade students in New York public schools. They concluded a teacher's performance their first 2 years is a more reliable measure of future effectiveness. Coincidentally, in California, public school teachers are not granted tenure until after their first 2 years teaching. At that time, they are eligible to join a teacher's union and become tenured. Promotion into a tenured position after 2 years of successful employment in a public school position grants teachers a slew of contractual protections from employment termination.

On the other hand, an increased number of fledgling educators in the teaching profession has been documented as negatively impacting student achievement as a whole. In exploring the assignment of teachers in individual schools, Kalogrides and Loeb (2013) used anonymous datasets from three large urban school districts in the Southeast, Midwest, and Western parts of the United States and found novice teachers are typically assigned higher rates of high-needs and SED students when compared to veteran teachers in the same schools. Several research studies have corroborated the finding that SED students are typically assigned less experienced teachers (Boyd et al., 2003; Domina et al., 2016; Jeong & Luschei, 2019) and novice teachers are matched in greater proportions to high-need students (Clotfelter et al., 2004; James & Wyckoff, 2020). Novice teachers also tend to have students who achieve overall lower state test scores (Kalogrides et al., 2013; Kettler & Hurst, 2017; Knight, 2020; Ronfeldt et al., 2013).

Having a large pool of novice teachers with a high turnaround rate prompts instability in schools. Studies have found in tracking teacher migration across different schools, teachers migrate away from classrooms with low-performing students as they gain experience to either

classrooms with higher achieving students, or higher achieving schools (Betts et al., 2000; Hanushek et al., 2004; Hanushek et al., 2005; Lankford et al., 2002). Less experienced teachers are more frequently found to teach low-performing, high-need pupils, whereas students who have advantages such as parental involvement in educational attainment or higher SES are taught in greater numbers by veteran teachers (Clotfelter et al., 2004; Lankford et al., 2002).

Experienced teachers tend to migrate away from schools with many disadvantaged students and stay in schools with higher percentages of socioeconomically advantaged students with fewer needs (Clotfelter et al., 2006; Johnson et al., 2012). The preferential migration exhibited by teachers who gain experience, compounded by high teacher turnover rates, generally leaves high-poverty, high-need schools and districts in a cycle of frequent vacancies filled with novice, underprepared, and underqualified teachers. However, teaching experience is not a clear indicator of teaching ability. James and Wyckoff (2020) drew attention to research literature documenting the misdistribution of high-quality teacher characteristics; specifically, teachers with greater years of experience and higher educational attainment than their peers are sorted, or self-sort, into schools with high concentrations of SED and high-need students. The researchers concluded this phenomenon points to teacher *effectiveness* being loosely linked to those two characteristics despite how frequently they are used subjectively in identifying excellent teachers. The poor academic performance of students at low-performing schools supports their claim that less effective teachers are simply sorted or self-sort into schools with higher concentrations of high-need and SED students. This conclusion has powerful implications for the profession and teacher hiring practices.

Teacher Sorting Across Districts and Across Schools in Districts

Obtaining an education has largely been cited as the great equalizer of the human condition; however, public education institutions routinely and maintain a system that inequitably distributes teachers as resources, and by extension do not provide equitable access to excellent teachers. Research shows trends of inequitable distribution of teachers with high-quality characteristics across districts and across schools in districts. Goldhaber et al. (2018) framed the phenomenon as the teacher quality gap (TQG). They proposed an economic and historical view of the issue in which students lack adequate exposure to teachers with these characteristics, exacerbating the achievement gap. Their analysis follows in the wake of the U.S. Department of Education's Excellent Educators for All initiative that directed every state's education department to develop and submit a plan describing how high-need and low SES students will be taught by teachers with high-quality characteristics at the same rate as high SES privileged students (Delisle, 2014). The TQG study used extensive longitudinal data from North Carolina and Washington to reveal that disadvantaged students have been historically matched to underprepared and underqualified teachers (i.e., fewer than 5 years of experience or licensure test scores in the lowest quartile of the distribution). In each year dating back to 1980, disadvantaged students were more likely to be exposed to an underprepared and underqualified teacher.

Goldhaber et al. (2015) emphasized TQG findings vary depending on the source of the gaps. On the one hand, Washington state districts appear to have TQGs driven by difficulty attracting and retaining high-quality instructors, evidenced by differences of teacher quality across districts. North Carolina, on the other hand, appears to have TQGs driven by variability in districts. These researchers also cited prominent segregation by student disadvantage across North Carolina districts and schools in districts when compared to Washington. Findings also

suggested North Carolina seniority transfer rights across schools given by provisions in CBAs could be a contributing factor to teacher quality gaps. Further, the authors found districts in North Carolina without these CBA provisions have greater rates of in-district TQGs. Due to these findings, researchers expressed concern that a state-level plan that does not address reasons for specific TQGs risks being ineffective. Knight (2020) showed TQGs create a policy problem driven by teacher sorting across district and schools in districts depending on how “teacher quality” is defined. Goldhaber et al. (2018) provided a rationale for organizational leaders and educational partners at the state, county, and district levels to look closely at the reasons for teacher quality gaps prior to formulating a comprehensive plan to better educate their highest needs students.

The subject of which district and school a teacher chooses to teach at is central to the discussion of excellent teacher distribution. The seemingly perpetual confinement of SED and high-need students to classrooms that do not feed the college pipeline suggests such distribution may be one reason there is a shortage of teachers. Excellent teachers' preferences for assignment in high-track courses and with students that have minimal behavioral concerns is further evidenced by the fact that the skills needed to navigate the gauntlet of the K–12 educational system and succeed in higher education teacher preparation programs are often not taught to high-needs pupils (Oakes, 2005, 2008; White et al., 2013). The well-documented issue is problematic, as research shows teachers have homophilic preferences. This term means teachers elect to work near their hometowns and prefer to teach students who closely mirror themselves both demographically and in learning ability (Boyd et al., 2005; Engel & Cannata, 2015; Killeen et al., 2013; Loeb & Reininger, 2004; Reininger, 2012). In the employment process, this preference is further exacerbated as site administrators favor hiring educators who grew up near

or in the school's city. The reciprocated preference of proximity to a school site between administrators and teachers perpetuates a labor market model game theorists labeled *two-sided school-level matching* (Boyd et al., 2013). This model is stable if agents from both sides of the market—supply and demand—favor a similar outcome through their arrangement.

Those in the public education system who become teachers typically do not have much in common with students who are SED and have a higher degree of needs, as disadvantaged students are less likely than their advantaged peers to become teachers (White et al., 2013). As evidenced by the labor market trends analyzed by Ingersoll (2012) and Ingersoll et al. (2021), novice teachers may view their teaching assignments as temporary until they can secure a more permanent, homophilic arrangement. The research described migration (i.e., teachers who move to other schools) and attrition (i.e., teachers who leave the profession) departures as evenly distributed among the profession. If students who graduate from disadvantaged schools do not receive excellent instruction, those districts and schools by default generate a less academically vibrant teacher pool from which to draw employees. Having a homogenous teacher pool is problematic for these school sites, as it leads to issues with recruiting and retaining teachers who can make an impact on the highest need students in consistent and meaningful ways. Excellent teachers who work in SED and high-needs schools are distributed in their schools with similar sorting patterns found across districts and across schools.

Teacher Assignment Within Schools

Naturally, teachers are at the center of intense scrutiny given they play a major role in cultivating the minds of the nation's youth. The reality is at the site level, public school employees, students, and families uphold and participate in structuring inequalities on the assignment of teachers within schools. There are a variety of complex and interwoven reasons

this inequality persists. Generally speaking, *micropolitics of schooling* refers to actors in individual schools who engage in the allocation of site resources (Grissom et al., 2015; Luschei & Jeong, 2018; Malen, 1994). In their analysis of Miami-Dade County Public Schools, Grissom et al. (2015) drew upon work of previous scholars to describe the micropolitical perspectives of school actors pursuing their own interests in a school based on their level of formal authority, social influence, and capacity to provide needed services and supports. The authors asserted some researchers believe understanding these dynamics illuminates the innerworkings of schools either due to or irrespective of district, state, and federal policies. Whereas much of the movement of teachers across districts and across schools in districts is governed by teacher labor market economics, the decision to stay or leave at a particular site is largely dependent upon a teacher's ability to navigate the politics that result in the courses they are assigned, and by extension, the students they serve.

Teacher-course pairing decisions are driven largely by employees in schools. Site administrators have the strongest voice in the process of course and student assignment, second to veteran teachers (Tubbs & Beane, 1982). Kalogrides et al. (2013) found experienced teachers work very closely with administration to cultivate their preference in courses they want to teach and students they want to populate those courses. Preretirement teacher attrition is largely driven by dissatisfaction with teaching positions or the profession. In California, attrition is estimated to account for 88% of annual demand, particularly in high-need schools (Darling-Hammond et al., 2018). As site administration has few fiscal incentives to offer teachers to stay, one retention strategy consists of providing more desirable class assignments. These assignments usually entail pairing the teacher to a high-track course (Goldhaber, 2011; Kalogrides et al., 2013); however, site administrators often offer a fiscal incentive in the form of providing a teacher an additional

course to teach. Additional courses in the contracted working day are referred to as full-time equivalent (FTEs) and provide teachers with fiscal compensation to the tune of up to 20% of their negotiated salary depending on the number of periods or blocks they are contracted to teach. The caveat to earn compensation for an additional FTE is the teacher must give up their preparatory (i.e., prep) period, or time delineated in their negotiated salary in which they do not have students in their classroom and instead are expected to prepare for their course load. There are site-based practices for allocating FTEs to teachers that range from mapping, to CBAs for creating an equitable rotation selection process, to assigning based on the principal's discretion. In some cases, principals decrease a teacher's course load by one or more FTEs so they can serve in another capacity (e.g., coach or instructional leader). Typically, site administrators plan course offerings so they can control and leverage FTE allocation as a teacher retention strategy.

There are important educational partners other than teachers in the within-school assignment paradigm. In many cases, department chairs are asked by site administrators to assign teachers in their department specific courses to teach, with site administrators having final approval. Predictably, department chairs are often veteran teachers and assign themselves and other veteran teachers the preponderance of high-track courses. Although Oakes (2005) asserted counselors exert the largest influence over administrators in teacher-course matching, teachers who participated in the Grissom et al. (2015) study indicated assistant principals often have more say than principals on assignment decisions, followed by teachers, and school counselors with, students and parents have the least involvement in the process. Woods and Domina (2014) found counselors in large schools are more familiar with high-tracked students and regularly provide them with scholarship guidance and internship opportunities when compared to low-track

students. This familiarity also includes vigilant tracking to ensure a public school counselor's perceived best match between students and teachers.

Another critical voice in the conversation is that of parents of students in high-track courses who demand specific course offerings, teacher–student pairings, and the decision for which teachers teach specific courses. Parents of students who actively select their children's teachers are incredibly motivated to separate their children into classes with other high-achieving students (Ball, 2003). These involved parents recognize the scarcity of resources and aggressively track their students into the classrooms of teachers with what they perceive as high-quality characteristics. Few students compared to the general population have access to these high-track prestigious courses and prestigious teachers. Disproportionate socioeconomic and racial representation in these types of courses is attributed to lack of parental involvement and students not sharing similar culture with their teachers (Denzler & Wolter, 2009). Moreover, parents of high-tracked students overwhelmingly want their children to have the greatest educational opportunities so their families do not lose social status. Schools accommodate high-achieving students with educational advantages (Oakes & Guiton, 1995). Students who are motivated and have few, if any, behavior concerns are typically assigned to the most experienced, academically successful, and most qualified educators. This practice leads to a perpetual confinement of low-SES and high-need students to classrooms that do not feed the college pipeline. However, infusing a school with teachers who have an excess of high-quality characteristics can only go so far in tackling the uneven distribution of teachers in classrooms if teachers with a preponderance of high-quality characteristics continue to be selected for high-track courses (Grissom et al., 2015). More must be done by site administrators in ensuring

equitable teacher–course matching decisions to expose greater numbers of students to teachers with high-quality characteristics.

Student Tracking

Students in school settings are disaggregated by various metrics denoting achievement level. The compartmentalization of academic and behavioral ability results in well-behaved students who are perceived as high achievers typically matched to teachers with the greatest combinations of high-quality characteristics. Instead of placing heterogeneously mixed groups of learners in courses with equitably distributed excellent teachers, clusters of peers become increasingly homogeneous as children transition from elementary, to middle school, and on to high school (Burris & Garrity, 2008; Conger, 2005; Gamoran, 1987; Oakes, 2005, 2008). This process reaches its zenith in high school, when courses become differentiated by academic level into classes such as college prep, honors, advanced placement (AP), and international baccalaureate (IB). Gifted and Talented (GATE) programs at the elementary levels typically feed into AP and IB programs in high school (Kettler & Hurst, 2017). Although each school’s Master Schedule of teacher–course assignments and student-teacher assignments is different, Oakes (2005) found commonalities in both middle and high school settings on student tracking. One common assumption made was irrespective of course level taken, students in schools are exposed to the same concepts, facts, resources, and knowledge as someone in a different track in the same school. However, students in low-track courses are given markedly different opportunities to learn facilitated in larger proportion by underprepared and underqualified teachers. In this way, school officials exacerbate the learning gap and through tracking, these academic differences are facilitated.

Oakes (2005) presented a compelling narrative that empirically identifies these outcomes. The contribution of her work lies in its exploration of what students experience as they are tracked from kindergarten to the time they graduate high school. Findings were consistent with other studies on academic tracking that poor and high-need students are most likely to be placed in the lowest levels of the schools sorting system (Luschei & Jeong, 2018). Oakes (2005) highlighted the reasons tracking persists by presenting an analysis of major tracking patterns found across U.S. schools. The relationship between race, gender, SES, and high- or low-track classes, and teacher quality were all examined. Oakes suggested public education provides upward mobility more readily for students who are socioeconomically advantaged and do not present behavioral concerns.

If all teachers possessed high-quality characteristics, however, student tracking may still pose inequities; differences between curricular content wildly fluctuates between classes of varying levels. Despite research indicating there is a statistically significant difference between the academic achievement of students in high- and low-track classes (Argys et al., 1996; Cohen-Vogel, 2011; Oakes, 2005), students are placed in track levels for more than one class rather than having separate placement decisions made for each subject area (Oakes, 2005). This trend shows high-track students are assumed to be good at all subjects, when in fact that may not be the case. As the method of placing students in courses stands, blanket placement across subject areas for either high- or low-tracked courses takes away opportunity from other students to enter into a limited number of high-track courses, and likely a teacher with high-quality characteristics. The inequitable lack of access is apparent in the graduation rates of students who take AP classes being much higher than SED, high-needs students (Kettler & Hurst, 2017; Richardson et al., 2016).

Maintaining tracked systems has historically been perceived by the educational community as serving students' best interests and easing the teaching task (Argys et al., 1996; Oakes, 2005); however, pervasive selectivity maintains educational inequality in measurable ways. Nearly all students remain at assigned track levels until they graduate high school; even at schools with mobility, movement is usually from high-track classes to low-track classes. Oakes (2005) addressed at both middle school and high school levels, the degree of stratification and the rigidity of the tracking system is not associated with the size of the school, its location, the SES of its students, or ethnicity of students. This finding implies there is something much more endemic about why student tracking decisions are made. Luschei and Jeong (2018) explored within school tracking by using data from the 2013 Organisation for Economic Co-operation and Development (OECD)'s Teaching and Learning International Survey (TALIS). This survey was administered to school leaders and teachers in 32 countries, reaching a total of 170,000 teachers and 9,000 school leaders. Their analysis revealed teacher sorting appears in all countries and may very well be a global phenomenon with greater assignment inequality within-schools rather than sorting across-schools. The researchers analyzed U.S. public school data for their study, using survey results for 98,625 teachers and 8,078 school leaders across several variables related to teacher quality and specific classroom information. Their study found within-school inequality in the United States as measured by the overall teacher quality factor is prevalent, albeit lower than most countries. Further, the study suggested existing inequalities are driven by the preponderance of ability grouping in schools in the United States.

Student tracking—and by extension, teacher–course matching—in schools is central to the discussion of student educational attainment. The Master Schedule is the vehicle used by school site administrators to facilitate pairing students segregated by ability grouping to specific

teachers. The factors that drive site administrations' decisions in pairing teachers to courses, and therefore cohorts of students, has been overlooked by educational researchers. The Master Schedule is part of the grammar of a school and by nature, a foundational element of educational equity.

The Master Schedule

A prominent feature of educational settings has focused on students accumulating knowledge through lessons that build upon prior understanding. As evidenced by curriculum structure and course sequencing in U.S. public schools, this academic model has dominated Western culture. A student's public school experience can be summarized as progressing through a series of sequenced high- and/or low-track courses, where course placement is determined by a variety of reasons. These reasons include (a) student assessment of academic performance; (b) student behavioral compliance; (c) site resource availability; and (d) holistic factors, such as parents requesting their child be matched to specific teachers or given an athletic period at the end of the day to participate in sports or music. At the start of a term, students in middle and high school settings are provided a schedule that delineates the courses they will participate in while attending school and who their various teachers will be. Before student can receive their schedules, site administrators must finalize their site's Master Schedule.

Fundamental Elements of Master Schedules

A principal's decisions on both within-school teacher assignments and corresponding courses offered at the site are represented on the site's Master Schedule, a mechanism ubiquitously used in public middle and high school settings. The design of a Master Schedule is a matrix of classes offered at a school site that balances the availability of faculty and facilities with curricular needs of that school's student population (Devilbiss, 1947; Kruse & Kruse,

1995). Master Schedules are often organized by principals into rows clustered by course content (e.g., English, math, electives) or by teacher last name. These organizational groupings are then expanded by columns denoting the number and types of classes offered. (e.g., English 9, Integrated Math III honors, Math Intervention). Further organizational factors include labeling columns by periods or blocks, and color-coding course content for ease of viewing the Master Schedule document. Master Schedules increase in complexity with greater numbers of courses, teachers, and/or students. Over decades, the process of creating Master Schedules has stayed consistent (Devilbiss, 1947; Linderman, 1975; Sparacio, 1973) despite the availability of technological platforms. Master Schedules have become increasingly difficult to modify due to the more recent policy mandates regarding graduation and university entrance requirements (California Department of Education, 2021), teacher credential requirements, and instructional minutes (California Department of Education, 2020).

Although the focus of this study centered on decisions made by site administrators on within-school teacher assignment, a concomitant topic that has far-reaching implications on student access to teachers with high-quality characteristics is course offerings are also under the purview of site principals. Modular units of seat time represented by courses offered on a Master Schedule are called FTEs. The FTE unit is historically rooted in the Carnegie Standard and is the term used to equate the length of a course to credit for completion (Kruse & Kruse, 1995). For instance, in a traditional 6-period day, one FTE represents 1 hour of a teacher's instructional load for one assigned class, and one sixth of their instructional load *per diem*. Principals are allocated FTE funding from their district generally so they can create cost-effective Master Schedules that meet state and local policy mandates. District human resources administrators and high school principals are aware that the California Education Code has established minimum course

requirements for graduation through Education Code (California Department of Education, 2020), and ninth through 12th grade students must spend 180 days per year receiving instruction for a total of 1,080 instructional hours (California Department of Education, 2021). High school principals must comply with Education Code in their site's Master Schedules, and often include district-specific graduation requirements (e.g., minimum GPA, additional course requirements such as completing a Career Technical Education [CTE] course). Other inclusions may consist of additional University of California or California State University (UC/CSU) entrance criteria known as A–G subject requirements in history, English, mathematics, science, a language other than English, visual and performing arts, and a college preparatory elective. Factors negotiated in CBAs that must be considered include accurately scheduling the number of instructional minutes for which teachers are contracted, including prep periods into a teacher's day, scheduling lunch breaks, and limiting the amount of preps (or types of classes) a teacher is assigned contractually.

Often programs offered at high schools create additional layers of complexity to Master Schedule creation and finalization. Sports, music, and particularly science AP courses are often scheduled at the end of the school day in traditional 6–7 period days so program facilitators (i.e., teachers) can schedule additional time with students to engage in course content afterschool. Student cohorting—also referred to as a pathway—is sometimes used by site administrators as a strategy to ensure groups of students move between classes together for the purposes of completing a specific program such as International Baccalaureate or Linked Learning. Pathways courses are often coded as an independent cluster in the Master Schedule and present a challenge, as creating “pure cohorts” (i.e., only students who are in the pathway are in a given course) is difficult amid limited teacher availability. Further, unique single-section courses known as “singletons” present challenges with Master Schedule course balancing for a variety of

reasons, including that a teacher is bound that period or block to deliver topical content in lieu of other courses needed for a broader swath of students (e.g., teaching one section of Intro to Coding instead of one section of Integrated Math II).

Bell Schedules as Instruments of Master Schedule Innovation

Principals must balance FTEs to meet state and local policy mandates, support student entrance into the college pipeline, and meet their district, site, or personal initiatives intended to support the needs of their students. Innovative daily scheduling is often a principal's answer to effectively structuring time for students to benefit most from their classes. There are many types of bell schedule arrangements used in secondary settings, such as:

Standard period: In a standard period, the daily schedule is arranged so five to eight courses are planned in a given day, and courses are equal time periods just under 1 hour in length. Students visit each of their teachers daily.

Rotating period: Rotating period schedules are similar to standard period schedules, but first period of the day rotates cyclically on a daily basis with the sequence of periods staying the same. For example, if a bell schedule has six periods per day, the first period course would be the first class students attend on the 1st day; the second period course would be the first class students attend the 2nd day; and so on, until the 6th and final day of the cycle when the sixth period course is the first class of the 6th day.

Block schedule: In a block schedule, the daily schedule is arranged so that four to eight courses, each block of time up to 90 minutes long, alternate throughout the week.

Students do not visit each teacher daily with this scheduling arrangement. As an example, the 4x4 block schedule is a strategy where the school day is divided into four class periods that alternate every other day.

Rotating block: Rotating block scheduling is similar to block scheduling, but first block of the day rotates cyclically on a daily basis with the sequence of blocks staying the same until the cycle is fully repeatable. Block schedules that alternate half of an even number of blocks every other day are known as an A/B rotation.

Intensive block: Instead of having five or more classes in a given week, students take one to three classes for up to 3 months in an intensive block schedule, then begin with a new course load.

Modified block: A modified block consists of a hybrid of standard periods and block scheduling.

Flexible schedule: This type of schedule has embedded in it periods and/or blocks that allow for student self-directed learning. This time can be used by students to work independently or in small groups on coursework, receive academic interventions, participate in enrichment activities, engage in CTE courses for an extended amount of time, or explore careers through internships or part time employment opportunities. Flexible schedules can be a modified or made hybrid to includes periods or blocks. Flexible scheduling can also allow for an intersession; a stint of accelerated learning in one solid block for full course credit.

Each of these arrangements has its strengths and advantages that focus on daily instructional time, frequency of exposure to teachers, bolstering school culture, and implementing courses to meet site priorities (e.g., strategic blocks of time for intervention blocks, cohort programs, and advisory or homeroom periods). Master Schedules are typically designed to facilitate semester-long courses, making the academic year consist of four quarters. Of those rare few that support trimester-long courses, their Master Schedules are typically five

periods per day with about 70 minutes per course. If there are multiple high schools in a given district, those schools typically have the same Master Schedule structure.

Principal Oversight of the Master Schedule

According to the National Association of Secondary School Principals (2011):

The Master Schedule is to a school what grading policies are to teachers and classrooms.

It reveals the true beliefs, attitudes, values, and priorities of the school. The school's Master Schedule is like looking at an MRI of the inner workings of a school. It is the window to the soul of the school. (para. 1)

Historically, there has been very little focus on developing best practices by policymakers and county and district leaders in designing and implementing Master Schedules. The site principal is responsible for Master Schedule oversight and finalization, which is often developed and adopted with relatively little feedback from organizational leaders and/or educational partners. In public school settings, the courses offered must match district curriculum guidelines, map to a teacher with specific credentials, and comply with CBA contractual obligations for teachers. These CBA provisions include the maximum number of students allotted per class and the maximum number of students a teacher can teach in a given day. A teacher's contractual obligation is they will be assigned specific courses to teach by the site principal. This statute is called *Right of Assignment* and is stipulated in CBAs for teachers employed in California public schools. However, teacher-course assignment decisions are made by principals and their designees based on teacher credentials, teacher seniority, teacher popularity, and site politics (Cohen-Vogel & Osborne-Lampkin, 2007; Koski & Horng, 2007). Through their use of Right of Assignment, school leaders at the site level are in a unique position to play a role in improving the opportunity for students to learn by closely examining the distribution of their most valuable

resource: teachers with high-quality characteristics. Principals drive hiring decisions for teachers that they inevitably match to courses at their respective sites. Either a site principal or assistant principal should theoretically generate the Master Schedule on a yearly basis to guide instruction which best supports student learning. However, Chenoweth (2016) points out that, "Building a master schedule is complicated, but far too many principals treat it simply as a logistical exercise rather than the heart and soul of teaching and learning" (para. 26).

Master Schedule Training for Site Administrators

Guiding text available to practitioners on the topic of building Master Schedules is often an extensive list of informal tenets that focus on theoretical considerations for (a) setting clear deadlines; (b) working with the administrative team; (c) gathering information needed to build the schedule (e.g., student course needs for all levels of learners, strategic prep period allocation, student and teacher course requests, and budgeted FTEs); (d) developing the Master Schedule in the confines of schedule builder software; (e) identifying any double course booking or imbalances in numbers of students per course with a conflict matrix; and (f) once the schedule is built, locking in the course sections and teacher assignments (College & Career Academy Support Network [CCASN], 2006; Kussin, 2007; Sparacio, 1973). This pattern is also found in trainings provided to site administrators. In each case, there is mention of creating a plan in the student's best interest, but how to do that is left to the site-administrator's discretion. In California, types of Master Schedule trainings fall into several categories. The first is provided by professional organizations for site and district administrators. They are typically full-day long optional and fee-based trainings. These professional organizations for school leaders are usually independent from school districts and do not provide ongoing Master Schedule mentorship to administrative teams at school sites. Technical support for software used in building the Master

Schedule is entirely absent in these trainings, as districts do not all use the same software to build these schedules. Although examples of correcting or creating mock Master Schedules might be a part of these training programs, they are not designed to for site administrators to engage specifically with details on the Master Schedule of their site (Association of California School Administrators, 2019).

The second type of training is purely technical and typically provided by districts so their site administrators and counseling technicians can correctly create and code courses using Master Schedule software licensed to districts. Little-to-no emphasis is placed on the theoretical aspects of creating Master Schedule during these trainings, as is the case with trainings offered by professional organizations. Further, there is little-to-no mentorship provided to site administration by districts on Master Schedule creation and implementation. These piecemeal Master Schedule professional development opportunities are consistent with Sutchter et al.'s (2018) findings that administrative training in California lack the components of high-quality professional development identified by research literature.

The third type of training occurs at the site level. Typically, veteran administrators, counselors, and classified staff with Master Schedule experience specific to their site's idiosyncrasies provide training for novice administrators at their site. Site administrators often work with these faculty and staff members to finalize the Master Schedule, but are on their own to work out its intricacies. Many site administrators elect to maintain the *status quo* on Master Schedules, as heated dissent from school stakeholders tends to follow changes made or even proposed. Master Schedule changes have the potential to alter who teaches courses, thereby failing the expectations of teachers and parents alike. Moreover, such changes may impact the time classes are taught, modifying when teacher breaks and prep periods are scheduled. This

issue can partly be explained by Hess's (1998) assertion that day and time calendar reforms have low visibility yet generate high controversy. Master Schedules, therefore, reveal the legacy of long past administrations. Although Master Schedule trainings underscore that this mechanism must primarily serve the needs of students, the dogmatic consistency in maintaining traditional structure makes this axiom ring hollow (Devilbiss, 1947).

Site Administrators as Agents of Within-School Teacher Assignment

Well-meaning principals and assistant principals who wish to implement reforms through the Master Schedule may not be prepared to take on the challenges of this improvement strategy. In addition to general proficiency in facilitating challenging conversations, a site administrator must have constituent endorsement to make fundamental changes to the innerworkings of their school. This level of support usually comes from a strong tenure and prior years of successful leadership at their site; however, school administration as a profession is plagued by high attrition and migration, making this prerequisite difficult to obtain. The school leader labor market is a microcosm of the teacher labor market, with even less known about the recruitment and retention of school leaders (Loeb & Myung, 2020). Loeb et al. (2010) revealed some of what is known by analyzing Miami-Dade County Public Schools. Much like teachers, principals who have stronger educational backgrounds and who have more years of experience work in more affluent districts. Like the teacher labor market, the researchers found principal migration and attrition occurs because of preference with have fewer numbers of SED and high-need pupils. Grissom and Bartanen (2018) found other similarities to the teacher labor market such that over half the number of principals in California are in their first 3 years on the job in a low-performing school compared to a quarter being in an affluent school their first 3 years as a

principal. These findings suggested principals serving in high-needs schools are in greatest need of targeted interventions and leadership support to best implement initiatives and reforms.

Irrespective of this evidence, all public school principals are authorized to use Right of Assignment, and are responsible for teacher hiring decisions for their respective sites. Principals take this role very seriously and research bears out they are skillful as a whole at identifying excellent teachers. In their study of a midsize school district located in the western United States, Jacob and Lefgren (2008) found principals are better at identifying teachers who have the least and the greatest impact on student achievement; yet, they are less skilled at identifying teachers in the middle of the distribution on illustrating teacher impact. They also found principals are influenced by a number of nonperformance factors, including how well a teacher gets along with students and staff. Further, principals' subjective teacher rating is a better predictor of future parent requests for that teacher than objective teaching characteristics (e.g., academic ability, credentials, education level). Site administrators play a critical role in matching teachers to students. Although a case for improving educational equity can be accomplished by examining teacher sorting across schools, teacher assignment in a school at the classroom-level represents a direct measure of whether disadvantaged students are given equal access to teachers with high-quality characteristics when compared to their more advantaged peers (Luschei & Jeong, 2018).

Implications

Although much of the research in this literature review claimed educational inequity persists in schools, the included studies also demonstrated the greatest resource difference across district, across schools in districts, and within schools is that of excellent teachers. Responsive state, county, and local administrators can leverage trends in the teacher labor market to improve generating and recruiting teachers with high-quality characteristics. Further, there can be a

concerted effort at the site level on more equitable teacher–course pairings to improve the academic outcomes of students, ultimately leading to a stronger pool of eligible teachers. Master Schedules in public high school settings structure inequality despite the best intentions of site administrators to support the academic success of students. The reason for this is socioeconomically disadvantaged and high-need students are paired with the preponderance of underprepared and underqualified teachers who generally teach the least rigorous classes. These pairing decisions make it difficult for students from impoverished backgrounds and who have high needs to enter the teacher workforce. It is no wonder the availability of excellent teachers who can engage in their communities and improve outcomes for future generations is lacking. Further exploring how and why site administrators make decisions on assigning teachers to specific courses could lead to answers that mitigate educational inequity, bolster the proliferation of excellent teachers, and improve training practitioners receive for organizing Master Schedules to foster deeper learning and equitable support all students.

This study sought to contribute to the lack of existing research on the factors that influence California high school site administrators’ decisions on teacher–course pairing via the Master Schedule, and how these factors affect educational equity on the human resource allocation of excellent teachers. A lack of consensus on teacher quality by researchers and practitioners alike is a significant component of what drives teacher–course matching decisions and one main reason tracking persists despite ample evidence that student–teacher pairings structure inequality. This study provides groundbreaking evidence on the role of site administrators in teacher–course pairing, and by extension, teacher–student pairing, while exploring three distinct phenomena and their interactions: (a) teacher assigned specific courses at the site level based on site–administration decision making, (b) student sorting at the site level

based on site administrator decisions on which teachers are assigned specific courses, (c) and the mechanism (i.e., the Master Schedule) that merges both types of sorting. Chapter 3 presents the methodology used to identify the high school administrator practice of assigning teachers into classes through placement in the Master School, and the implications administrative decision-making has for educational equity.

CHAPTER 3: METHODOLOGY

Purpose Statement and Overview

The purpose of this study was to uncover systemic underpinnings of student tracking and teacher assignment by identifying factors that influence the decisions California site administrators make as they create and finalize their site's Master Schedule, particularly at the high school level. The researcher selected this topic because information about this fundamental aspect of how schools operate was absent from existing research literature despite existing research on student tracking and within-school teacher assignment.

This study approached research questions through an explanatory–sequential mixed methods model (Creswell, 2014). This two-phase analytical method first involved collecting quantitative data, followed by qualitative data to interpret quantitative findings. The findings from this study can be used by California K–12 administrators and policymakers to better equalize the distribution of teachers with high-quality characteristics across classrooms and improve Master Schedule creation practices. This study also provides a basis by which future areas of research can be identified.

This chapter revisits the study's research questions and provides an overview of the research design, information about the population and sampling plan, a statement on the protection of human subjects, an examination of instrumentation, an outline of the data analysis, and analysis of study limitations.

Research Questions

1. What are the factors that influence Master Schedule decisions made by site administrators in traditional California high school settings?
2. How do these factors affect educational equity in California high school settings?

These research questions were central to this study because of the gaps identified in literature on the within-school teacher placement vehicle professionally known as the Master Schedule. Prior to conducting the study, the researcher hypothesized that answers to Research Question 1 would include the following factors as influencing Master Schedule decisions made by site administrators: (a) the pressure of potential conflict from veteran teachers, (b) the technical constraints on high school schedules prompted by mandated requirements to provide courses that ensure graduation and university entrance criteria, and (c) the need for greater numbers of teachers with high-quality characteristics. The researcher hypothesized that Research Question 2 would support the conclusion that the inertia of previous years' schedules and the micropolitics of schools' support and maintain systemic barriers that prevent students from receiving high quality instruction from an equitable distribution of a site's best teachers.

The researcher hypothesized high school Master Schedules are more alike than high school administrators realize despite prevailing differences among the culture and needs of localities. Additionally, these similarities are driven by (a) the inertia of past practice in local educational agencies, (b) lack of comprehensive training on how to accomplish the technical work of creating a Master Schedule, and (c) challenges around the leadership work of making instructional changes to improve student educational outcomes. The researcher also postulated K–12 administrators have good intentions and care a great deal about making a difference in the lives of students through their work on the Master Schedule. However, teacher placement in traditional high school Master Schedules ultimately reveals a prescription for large percentages of students being funneled out of a University of California or California State University (UC/CSU) track and/or without solid workforce training. Site administrators and education policymakers have the obligation to students to ensure their many years in a school setting lead

to a college and/or a workforce pathway. Mapping the factors leading to administrator Master Schedule decision making can lead to more strategic creation and implementation to that end.

Target Population

The target population was a homogeneous, purposive sample of California high school administrators (Grades 9–12 inclusive) serving in California public schools who, at the time of this study, (a) oversaw their site’s Master Schedule, (b) worked in schools with traditional Master Schedules, and (c) were not on year-round tracks. The researcher’s understanding of the management hierarchy of schools came from their own administrative work in the field of education. Although site administrators receive assistance from certificated and classified staff members in finalizing the Master Schedule, the site-level administrator is ultimately contractually responsible for all teacher–course placement decisions. For that reason, only principals and assistant principals at traditional high schools in California were surveyed. The reason this population was chosen was due to the researcher’s professional experience serving as a California high school administrator. This sampling approach was designed to provide a good representation of those directly responsible for decision making around the focus of the study and who held expert knowledge on the topic (Creswell, 2008; Krathwohl, 2009).

The study initially targeted California middle school site administrators with the same criteria to pilot the survey and interview questions. The reason a pilot was possible was due to California middle school administrators using Master Schedules much in the same manner as high school administrators (Casillas, 2018). The differences largely entail the number of students served in traditional middle schools typically being smaller than high schools, resulting in fewer teachers staffing a middle high school campus when compared to traditional public high schools. Fewer teachers can mean less diversity in teaching credentials, effectively reducing the

availability of course offerings. Course offerings at the high school level are therefore generally greater due to higher enrollment numbers and the prevalence of student tracking being at its apex. Courses offered range from self-contained special education classes, to regular-level courses, to prestigious honors, such as Advanced Placement (AP) and International Baccalaureate (IB) tracks. Another similarity is at both the middle school and high school level; courses offered are approved by district education boards and are accompanied by course descriptions created by district curriculum committees that delineate the grade level a class should be taught, and the credential requirement of faculty to teach courses.

Research Design

This study employed an explanatory–sequential mixed methods design to assess the salience of administrative decision making with respect to matching teachers to courses through the Master Schedule. The quantitative survey component intended to produce an empirical understanding of the extent to which administrator perceptions of teacher capabilities and beliefs about the purpose of education influence Master Schedules. The qualitative interview component was intended to provide rich and nuanced data of high school administrator practices in traditional public school settings. Both the quantitative and qualitative approaches sought to provide a breadth of understanding on high school administrators’ practices. Administrator interview data were obtained from a subsample in the sample of those secondary school administrators who took the survey to add both context and depth to survey data findings. A more complete examination of the research questions emerged from combining survey data that detailed the specific reasons for teacher–course matching choices and interview data that expanded on decision-making preferences.

Data Collection Procedure

The data gathered by the researcher to explore within-school assignment were analyzed through the study's theoretical framework. The theoretical framework used in this study served as a model of teacher distribution across districts and schools. The researcher hypothesized it could also be used to conceptualize within-school assignment. Both the theoretical framework and the complexity of within-school teacher assignment illustrated through the gathered data serve as the nexus for developing policy, research, and site-based practices that can lead to more equitably distributing excellent teachers to greater numbers of students. The research questions in this study align to the theoretical framework, as they highlighted decisions made by relatively few key administrative decisionmakers in the process of creating and finalizing high school Master Schedules, and by extension, hiring practices.

A list of principals serving in California public schools in the 2019–2020 academic year was extracted from public data on the California Department of Education (CDE) webpage. That year, there were 311 middle schools serving seventh through eighth grade students, and 965 high schools serving ninth through 12th grade students. These schools each had administrators who met the eligibility criteria for this study. Given the 965 California high school principals serving inclusive ninth through 12th grade students in 2019–2020, the target sample size for the quantitative portion of the study was 143 survey participants to have a 10% margin of error with a 99% confidence level (Healey, 2015). To meet this goal, the study was divided into five phases:

- The first phase entailed the researcher conducting a pilot study of the survey with middle school administrators. A total of 30 middle school administrators responded to pilot survey recruitment emails. A total of 22 administrators completed the pilot

survey and eight administrators started the pilot survey but did not complete it.

Approximately 9.65% of the middle school administrator population completed the pilot survey. Pilot study survey completers were issued the \$10 Starbucks card incentive.

- The second phase involved contacting middle school administrators for follow-up pilot interviews if they agreed when asked in the pilot survey. Of the 22 pilot survey completers, 16 agreed to the pilot study interview and were contacted about scheduling one. Of the 16 administrators who were contacted, eight set up a pilot interview; due to scheduling conflicts, however, only five participated in a pilot interview. Approximately 22.7% of middle school pilot survey completers participated in the pilot interview. Those who completed the pilot interview were provided another \$10 Starbucks card incentive.
- In the third phase of the study, the researcher revised the survey and interview instruments based on the pilot study to prepare for the full study with high school administrators. The pilot test prompted refinement of a few survey and interview questions for clarification, adding questions that would better facilitate answering the research questions, and incorporating additional selections for ranking answers in some survey questions. The pilot study also revealed interview permission should be obtained during the end of the survey as a time saving measure. The remaining phases of the study followed the same protocol and incentive system as the pilot study.
- In the fourth phase, 127 high school administrators responded to survey recruitment emails. A total of 114 administrators completed the 20–25 minute survey and 13 administrators started the survey but did not complete it. Due to similarities in

executive oversight of the Master Schedule, principals were invited to send the survey to assistant principals. Of the 114 high school administrators, 99 served as principals and 15 served as assistant principals (some in the same schools as the principals who participated in this study) in California during the 2019–2020 academic year.

Approximately 10.3% of the high school administrator population who served as principals completed the survey. Survey completers were issued the \$10 Starbucks card incentive.

- The fifth and final phase involved contacting high school administrators for follow-up interviews if they agreed when asked in the survey. Of the 114 survey completers, 72 agreed to the interview and were contacted about scheduling one. Of the 72 administrators who were contacted, 33 set up and participated in an interview that ranged between 30–60 minutes. Approximately 28.95% of high school survey completers participated in the interview. A total of 29 principals and four assistant principals serving as site administrators participated in the survey. Those who completed the interview were provided another \$10 Starbucks card incentive.

The pilot survey with middle school administrators was conducted in November 2018 and the pilot interviews in January 2019. The study’s survey was issued when high school administrators typically began planning the Master Schedules for their site’s upcoming school year—in this case, the 2020–2021 academic year. The survey window was late January 2020 through early February 2020. The study’s interviews were conducted from mid-April 2020 to mid-May 2020, shortly after COVID-19-related school closures took place in California public K–12 schools in mid-March 2020. The pandemic did not negatively impact the researcher’s

ability to schedule nor conduct interviews, as public school site administrators were required to report to their sites during the remote learning period following school closures.

Instrumentation

The survey was developed to answer the first research question, and the interview was developed to answer the second research question. Both quantitative and qualitative data was gathered in this study with interviews explicating survey responses.

Survey Tool

The survey tool used in this study was a 27-question survey developed by the researcher and administered electronically through Qualtrics, hosted by Claremont Graduate University (see Appendix A). The survey included three survey prerequisite questions, nine demographic questions, seven questions about administrators' Master Schedule knowledge acquisition and skill levels, three questions about school micropolitics, and five questions about administrators' perception of teacher quality and educational equity. At the end of the survey, participants were invited to participate in the follow-up interview and sign the interview consent form for ease in scheduling interviews. Several questions about the factors that influence administrative decision making on the Master Schedule were on a 5-point Likert scale, where the choices were *disagree strongly*, *disagree*, *agree*, *agree strongly*, and *I don't know*. Several questions asked survey participants to select and rank from the most significant to the least significant factors believed to play a role in (a) teacher–course pairing decisions, (b) teacher quality perception, and (c) administrator understanding of generating the Master Schedule.

Interview Tool

The interview tool used for this study was a semistructured, open-ended interview consisting of 12 questions. Three questions were demographic in nature, one question asked for

technical details of the participants’ site Master Schedule, five questions explored participants’ answers to survey questions, and the remaining three questions explored participants’ beliefs about Master Schedule creation. Appendix B includes the complete list of interview questions.

Question Matrix

There were a total of 27 survey questions and 12 interview questions used in this study. Table 1 shows which survey or interview questions addressed specific research questions. The survey questions were used to answer Research Question 1, and the interview questions were used to answer Research Question 2. The remaining survey and interview questions not listed in Table 1 are demographic in nature and described early in Chapter 4: Findings.

Table 1

Matrix of Research Questions Mapped to Questions in the Survey and Interview Instruments

Research question	Survey questions
1. What are the factors that influence Master Schedule decisions made by site administrators in traditional high school settings in California?	18. What three words would you use to describe Master Schedule creation? (exact answers) 19. Rate from (1) Disagree Strongly to (4) Agree Strongly each of the potential challenges for MS creation. <ul style="list-style-type: none"> • The Collective Bargaining Agreement poses too many restrictions such as number of students allowed in each class or number of hours teachers work each day, etc. • I don’t have the technical ability to start the Master Schedule from scratch each year. • I don’t have the time to start the Master Schedule from scratch each year. • I have no idea how I would alter the Master Schedule to anything other than what is currently being offered. • The pool of quality teachers is low at my site. • There are not enough students available for diverse course offerings. • There are not enough teachers with credentials that allow for diverse course offerings. • Making changes on the Master Schedule generates too much conflict with teachers. • Making changes on the Master Schedule generates too much conflict with counselors. • Making changes on the Master Schedule generates too much conflict with parents. • Making changes on the Master Schedule generates too much conflict with students. • I do not want to have difficult conversations about changes that need to be made with the Master Schedule.

Research question	Survey questions
	<ul style="list-style-type: none"> • I do not have time to have difficult conversations about changes that need to be made to the Master Schedule. • The limited number of 0.2FTEs available prevent needed changes to the Master Schedule. <p>20. Site administrators can offer faculty compensation for teaching a course during their prep period; this is often referred to as a 0.2 Full Time Equivalent (FTE). The majority of additional 0.2FTEs allotted to my site are (select all that apply):</p> <ul style="list-style-type: none"> • As an incentive for teachers who make a positive contribution to site-based culture and climate. • To faculty who are willing to teach intervention courses for at-risk students. • On a rotating basis as outlined in the Collective Bargaining Agreement (CBA). • Program coordinators (i.e. ASB, AVID, etc.) and/or coaches. • Other (specify): <p>21. Rate from (1) Disagree Strongly to (4) Agree Strongly the degree to which stakeholders exert influence on Master Schedule decisions specifically by vocalizing their opinion(s) at any time to site administrators regarding what needs to change and/or stay the same on the Master Schedule.</p> <ul style="list-style-type: none"> • Veteran Teachers • New Teachers • Department Chairs • Counselors • Students on high academic tracks • Students on low academic tracks • Parents of students on high academic tracks • Parents of students on low academic tracks • Parents and advocates of students receiving special education services. • Students receiving special education services • Any site administrator • Administrators from feeder schools • District Administration • Other stakeholder(s) not listed: <p>22. Please drag and drop the top four (4) factors you believe played a role in site administration matching specific teachers to specific courses (i.e. accelerated, regular, remedial, elective, etc.) in the Master Schedule, ranking those top four characteristics in order of importance (1 = highest in significance).</p> <ul style="list-style-type: none"> • Administrator's perception of a teacher's ability level with challenging academic subjects. • Administrator's perception of a teacher's ability level with behaviorally challenging students. • Administrator's level of comfort manipulating the course offerings. • Teacher credential considerations. • To keep the current Master Schedule as close to last year's Master Schedule as possible. • The need to align common prep times to allow for faculty collaboration. • Having to include district-mandated course offerings. • Confrontation potential from specific stakeholder(s) (list them here): • Other important factor(s) not listed here (please specify): <p>24. Please drag and drop the four (4) characteristics you believe play the most significant roles in teacher quality, ranking those top four characteristics in order of importance (1 = highest in significance).</p> <ul style="list-style-type: none"> • Teacher has high academic ability themselves. • Teacher helps to improve student standardized test scores.

Research question	Survey questions
	<ul style="list-style-type: none"> • Teacher is credentialed in high-need area (i.e. Special Education, CTE, STEM, etc.) • Teacher is the same gender as students. • Teacher is the same race and/or ethnicity as students. • Teacher has a significant amount of classroom experience. • Teacher is similar to me in traits and values. • Teacher has a positive relationship with other faculty and staff. • Teacher has a positive relationship with students. • Teacher is willing to adapt instruction to respond to the needs of students and increase their engagement. • Teacher has excellent classroom management skills. • Teacher is bilingual. • Other characteristics you believe contribute to teacher quality: (exact entry) <p>25. In your opinion, approximately what percentage of teachers at your site possess all four of the characteristics you identified in the previous question for teacher quality?</p> <p>26. In this study, the highest need students are defined as being in any of the following circumstances:</p> <ul style="list-style-type: none"> •Receiving special education services. •Designated foster youth. •In the lowest quartile of socioeconomically disadvantaged (SED) students •Failing the majority of their classes. •Scoring in the lowest quartile on state assessments. <p>What percentage of the teachers you identified as having all four characteristics of teacher quality are assigned to the classes that contain a majority of high-need students?</p> <p>27. Briefly state what you believe would help you to have greater success generating and finalizing the Master Schedule for the coming academic year (2020-21).</p>

Research question	Interview questions
2. How do these factors affect educational equity in California high school settings?	<p>5. In the survey portion of this study, the three words you used to describe Master Schedule creation at your site were: <list them here>. Can you elaborate further on why you chose these words?</p> <p>6. On the survey portion of this study, you rated several challenges in MS creation highly (score of <i>Agree</i> or <i>Agree Strongly</i>): <list them here>. Can you elaborate further on why these situations present challenges for administration in MS creation and/or implementation?</p> <p>7. On the survey portion of this study, you rated highly that the following stakeholders have influence over Master Scheduling decisions (score of <i>Agree</i> or <i>Agree Strongly</i>): <list them here>. Can you elaborate further on what impact their influence has?</p> <p>8. On the survey portion of this study, you listed the factors you believe played a role in matching specific teachers to specific types of courses (i.e. accelerated, regular, remedial, elective, etc.) made to the Master Schedule were: <list them here>. Can you elaborate further on why these factors played a role in administration matching specific teachers to specific types of courses?</p> <p>9. The site Principal has the final say on which teachers are assigned specific classes on the Master Schedule; this is also known contractually as <i>Right of Assignment</i>.</p> <ul style="list-style-type: none"> •Do you believe this contractual right is necessary? Is so, why? If not, why not? <p>10. Briefly describe what you believe to be the intended purpose of a Master Schedule and how you define an effective the Master Schedule.</p>

Research question	Survey questions
	<p>11. On the survey portion of this study, you listed the following characteristics as playing a role in teacher quality: <list them here>. You also stated that <x>% of the faculty at your site have all four of these characteristics.</p> <p>a) On your Master Schedule this year, which types of courses (i.e. advanced, regular, or remedial core classes, electives, SpEd courses, CTE, etc..) have you or the previous administration assigned the highest quality teachers?</p> <p>b) Outside of credential requirement to teach certain subjects, what factors influenced the decisions you or the previous administration made in pairing high-quality teachers with these courses?</p> <p>c) On the survey you stated that <x>% of high-quality teachers you identified as having all four characteristics are assigned to the classes that contain a majority of high-need students. Is there anything that would help increase your ability to evenly distribute these high-quality teachers at your site to greater numbers of high-need students?</p> <p>12. What types of decisions would you need to make on next year's Master Schedule in order to ensure high-quality instruction is provided for <i>all</i> students at your site?</p>

Protection of Human Subjects

The study received full Institutional Review Board (IRB) approval from Claremont Graduate University and was determined exempt from supervision (see Appendix E). Informed consent was obtained from all participants prior to engaging in both the survey and interview. Informed consent was embedded in the online Qualtrics survey as a forced-choice response, meaning participants were not able to access the survey questions without giving full consent (see Appendix D). Participants were only contacted to set up a phone interview if they volunteered to be interviewed and provided informed consent, which was available in a digital format at the end of the Qualtrics survey (see Appendix E). The survey did not provide anonymity, as the researcher asked participants to provide both their district of employment and school site for data analysis, and contact information for the participation incentive. The interview did not provide anonymity because participants were asked to provide their contact information to schedule an interview and for the participation incentive.

As participants were asked to respond to sensitive questions about their workplace experiences, values, beliefs, and viewpoints through both the survey and interview instruments,

data collected were kept confidential. Survey data were collected through the researcher's password-protected Qualtrics account, then downloaded to the researcher's password-protected file storage system for analysis. Interviews were recorded and transcribed using the third-party service, *Rev*, where all data files were kept private and protected from unauthorized access. Recordings and transcripts were uploaded to the researcher's password-protected file storage for analysis. All data collected from survey and interview participants were stored in secure locations and were destroyed at the completion of this study.

Data Analysis

The following sections described the quantitative and qualitative analyses conducted in this study. Data analysis and results are organized according to the research questions, with survey responses used to answer the first research question and interview responses used to answer the second research question.

Analysis of Survey Data

Survey participant responses were used to answer Research Question 1. Descriptive statistics were used to describe the participant sample. The variables used for the inferential statistical analysis were (a) district contexts (e.g., urban or rural, and socioeconomically high or low resource); (b) administrator's characteristics, such as experience and education level; and (c) micropolitical factors, such as administrators' perceptions of teacher quality. Quantitative data were exported from *Qualtrics* into a *Microsoft Excel* spreadsheet and analyzed using both *Excel* data organization features and *Stata* software. The researcher estimated the reliability of the survey instrument based on responses from the 114 site administrator participants in this study. The Cronbach's alpha of the 14-item potential challenges to Master Schedule creation was calculated at 0.79 (N = 114). For the stakeholder influence scale, the alpha was calculated as 0.73

(N = 114) for the 13-items. The results each indicate adequate reliability for the survey instrument (Huck, 2012). A total of 99 participants from the population of 965 completed the survey; therefore, there was a 12.3% margin of error with a 99% confidence interval for the survey portion of this study (Healey, 2015).

Analysis of Interview Data

Interviewee responses were used to answer Research Question 2. When different interview participants began providing similar or redundant answers, the researcher determined saturation of data had taken place and terminated further interviews (Creswell, 2008). The 31 interview participants who participated in the interview were a self-selecting sample from those who completed the survey (Krathwohl, 2009). Interviews were recorded and transcribed via the third-party service, *Rev*. Transcripts were read by the researcher to verify accuracy and then coded using *NVivo* to group themes. The interview data were coded by hand using Creswell's (2014) six-step process and Krathwohl's (2009) coding processes. Both analytical methods involved processing interview data into central themes, further nuancing themes into groups, and finally operationalizing groups into key variables. These key variables were used to further explore survey results.

Analysis of Differences Between Groups

An important question was whether factors that influence administrative decision-making occurred due to administrator characteristics or the context of their school sites. As shown in Table 2, t-tests and ANOVA were used to examine these differences.

Table 2*Analyses of Differences in Influencing Factors by Site Context and Administrator Characteristics*

Independent variable	Statistical analysis	Dependent variables
<i>Site context</i>		<i>Influencing factors</i>
School Location <ul style="list-style-type: none"> • Rural • Urban • Suburban 	ANOVA	Potential challenges (all items) <ul style="list-style-type: none"> • The Collective Bargaining Agreement poses too many restrictions such as number of students allowed in each class or number of hours teachers work each day, etc. • I don't have the technical ability to start the Master Schedule from scratch each year. • I don't have the time to start the Master Schedule from scratch each year. • I have no idea how I would alter the Master Schedule to anything other than what is currently being offered. • The pool of quality teachers is low at my site. • There are not enough students available for diverse course offerings. • There are not enough teachers with credentials that allow for diverse course offerings. • Making changes on the Master Schedule generates too much conflict with teachers. • Making changes on the Master Schedule generates too much conflict with counselors. • Making changes on the Master Schedule generates too much conflict with parents. • Making changes on the Master Schedule generates too much conflict with students. • I do not want to have difficult conversations about changes that need to be made with the Master Schedule. • I do not have time to have difficult conversations about changes that need to be made to the Master Schedule. • The limited number of 0.2FTEs available prevent needed changes to the Master Schedule.
Achievement Level SBAC ELA <ul style="list-style-type: none"> • Exceeds • Met • Nearly Met or Not Met 	ANOVA	
Title I Funding <ul style="list-style-type: none"> • Yes • No 	t-test	
<i>Administrator characteristics</i>		
Tenure as an Administrator with Clear Administrative Services Credential <ul style="list-style-type: none"> • Entry Level • Intermediate • Mid-Level • Senior 	ANOVA	Stakeholder influence (all items) <ul style="list-style-type: none"> • Veteran Teachers • New Teachers • Department Chairs • Counselors • Students on high academic tracks

Independent variable	Statistical analysis	Dependent variables
		<ul style="list-style-type: none"> • Students on low academic tracks • Parents of students on high academic tracks • Parents of students on low academic tracks • Parents and advocates of students receiving special education services. • Students receiving special education services • Any site administrator • Administrators from feeder schools • District Administration <p>Matching teachers to courses (top ranked items)</p> <ul style="list-style-type: none"> • Administrator’s perception of a teacher’s ability level with challenging academic subjects. • Administrator’s perception of a teacher’s ability level with behaviorally challenging students. • Teacher credential considerations. • The need to align common prep times to allow for faculty collaboration. <p>Perceptions of teacher quality (top ranked items)</p> <ul style="list-style-type: none"> • Teacher has a positive relationship with other faculty and staff. • Teacher has a positive relationship with students. • Teacher is willing to adapt instruction to respond to the needs of students and increase their engagement. • Teacher has excellent classroom management skills.

Limitations

This study included limitations inherent in self-reported data, including the impossibility to know the accuracy of what participants reported. In both the survey and interview, participants were asked to self-report their attitudes and beliefs that lead to their decision making in teacher–course pairing decisions. Perceptions are highly subjective, and participants had different perspectives on high-quality characteristics of teachers and the purpose of the Master Schedule. Because the survey results were not directly mapped to site Master Schedules, a comparison of

administrator responses and the inner workings of their site Master Schedule could not be made. The researcher made every effort to mitigate this limitation by asking for site Master Schedule details during interviews about both English and mathematics courses offered. The survey tool used in this study gathered descriptive data on a variety of factors that lead to administrative decision making on Master Schedules.

Another limitation was, despite recruitment efforts for study participants, nonrespondents to the survey decreased the study's internal validity. The researcher made three attempts to solicit answers to the survey from the target population during the survey window. For the survey to have had a 99% confidence interval with a 5% margin of error, 395 survey participants would have been needed instead of the 114 who participated. Participants from this study were only located in California, which limits generalizability to Master Schedules creation in other states. Additionally, the study only examined traditional public high school site administrators, leaving out all other ninth through 12th grade site administrators at private, charter, and alternative public schools who oversee teacher–course matching. However, the overall number of students who attend these schools is significantly smaller by comparison (National Center for Education Statistics, 2021c, 2021d, 2021e). The result is that high school site administrators that serve the bulk of students who attend California high schools participated in this study. Data obtainable from the California Department of Education are for site principals only. The researcher asked principals contacted for the study to send the survey to assistant principals they knew who may be eligible to participate. For that reason, there was not a large representation of assistant principals in this study.

It was not possible to assess the reliability of the survey instrument and interview protocol prior to the study, because all California administrators who actively oversaw the

Master Schedule were included in the population. To minimize this threat to internal validity, survey and interview tools were pilot tested with middle school administrators prior to being issued to high school administrators. The reason for this pilot study was middle school Master Schedules are very close in structure to high school Master Schedules with respect to students visiting multiple teachers every day and being placed in high- and low-tracked courses.

Finally, the researcher served as a California public high school site administrator who, at one time, would have met the criteria to participate in this study. The researcher was employed as a high school physics teacher for 7 years with 2 years in a private school setting and 5 years in a public school setting. As a public school site administrator, the researcher was employed for 6 years, with 3 years in a high school setting and 3 years as a middle school site administrator. The entire 13-year tenure at school sites was primarily served in high-need, low socioeconomic status settings. The background and experiences of the researcher as a practitioner in the field of education not only shaped this study and colored the interpretation of findings, but also made it impossible to remove all bias.

CHAPTER 4: FINDINGS

This study was explanatory and descriptive, aiming to lend insight to the innerworkings of schools by exploring the relationship between administrative decision making and within-school teacher assignment via the Master Schedule. The study highlighted the importance of future research that investigates the causal relationship between the impact of administrative decision making and within-school teacher assignment and student academic achievement. The strategy the researcher used to answer the research questions began with descriptive statistics of the sample. Following that strategy, answers provided by survey participants addressed the first research question and answers provided by interview participants answered the second research question. Table 1 illustrates this framework in a matrix that aligned research questions with quantitative and qualitative research tools used in analyses throughout this chapter. To highlight the importance of findings, data presented in tables, figures, and mentioned in text are coupled with a description of the most salient points that addressed the research questions.

Descriptive Statistics of the Sample Population and Districts

The target population of 965 California site administrators comprised individuals serving as principals in secondary settings with (a) students in Grades 9–12 inclusive, and (b) executive control of the Master Schedule in the 2019–2020 academic year. Due to the similarities in executive oversight of the Master Schedule, the researcher invited principals to send the survey to assistant principals. A total of 127 individuals who met the survey criteria responded to survey recruitment emails. Of that, a total of 114 administrators completed the survey. A total of 99 principals (86.8%) and 15 assistant principals (13.2%) serving in California during the 2019–2020 academic year responded to the survey. Approximately 10.3% of the high school administrators serving as principals in the target population of 965 principals completed the

survey. Of the target population, 72 individuals agreed to the interview and 33 successfully set up and participated in an interview. Approximately 28.95% of high school survey completers participated in the interview. Twenty-nine principals and four assistant principals serving as site administrators participated in the interview.

A total of 64 site administrators (56.1%) identified as male and 50 site administrators (43.9%) identified as female. The majority (71.6%) identified as White, followed by 12% Hispanic or Latino, 6.9% two or more races, 3.4% Asian, 2.6% Black of African American, and 1.7% declined to state. A total of 16 people who identified as male (48.5%) and 17 people who identified as female (51.5%) comprised the 33 interview participants whose demographic information as a whole closely matched the survey participant group. The highest level of education for survey participants was as follows: bachelor of arts or bachelor of science (5.2%), master of arts or master of science (73.3%), both master of arts and master of science (0.9%), doctor of education (EdD; 16.4%), doctor of philosophy (PhD; 0.9%), and working on completing their doctoral degree (1.8%). Table 3 presents the roles site administrators have held in the field of education.

Table 3

Descriptive Statistics for Site Administrator-Level Factors of the Sample

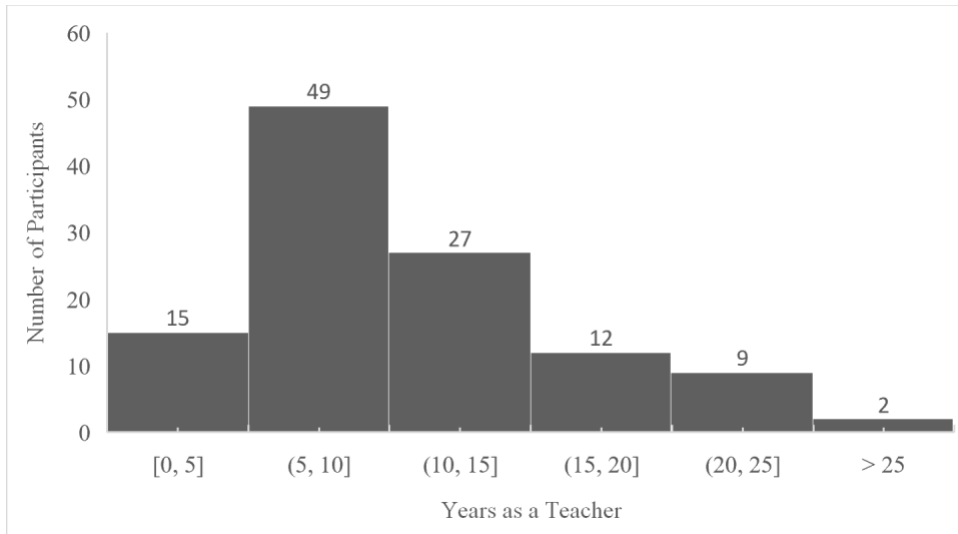
Site administrator-level factors	<i>n</i>	Min	Max	Mean	<i>SD</i>
Years of experience as a teacher with a clear teaching credential	111	3	33	11.69	5.90
Years of experience as a counselor with a clear pupil personnel services credential	8	1	17	8.63	5.13
Years of experience as an administrator with a clear administrative services credential	114	0	25	10.7	5.44
Years actively participating in Master Schedule creation at current site	113	1	28	5.89	4.82
Years overseeing the Master Schedule at all previous sites	114	0	28	6.22	5.27

Of the 114 survey participants, 111 had clear teaching credentials, eight had clear pupil personal services credentials, and five had both clear pupil personal services and clear teaching credentials. A large number of participants in the survey portion of this study served as teachers prior to becoming site administrators, and fewer by comparison served as school counselors. A total of five site administrators had the unique experience of serving both as teaching and school counselors prior to serving as site administrators. Survey participants who served as teachers with clear teaching credentials prior to becoming site administrators did so for an average of 11.69 years. Survey participants who served as school counselors with clear pupil personnel services credentials prior to becoming site administrators did so for an average of 8.63 years. Principals and assistant principals served an average of 10.65 years as site administrators with clear administrative services credentials at the time they completed the survey. Participants averaged 5.89 years overseeing the Master Schedule at their site, and averaged 6.22 years in participating in Master Schedules oversight as site administrators at previous sites. All participants were employed by public school districts in California during the time they completed the survey.

Survey participants ranged in experience level—both in their years serving as administrators and the position(s) they held previously. Of those who served as teachers or school counselors, Figure 1 shows the survey participants' previous teaching experience.

Figure 1

Site Administrators' Previous Years of Teaching Experience (n = 111)

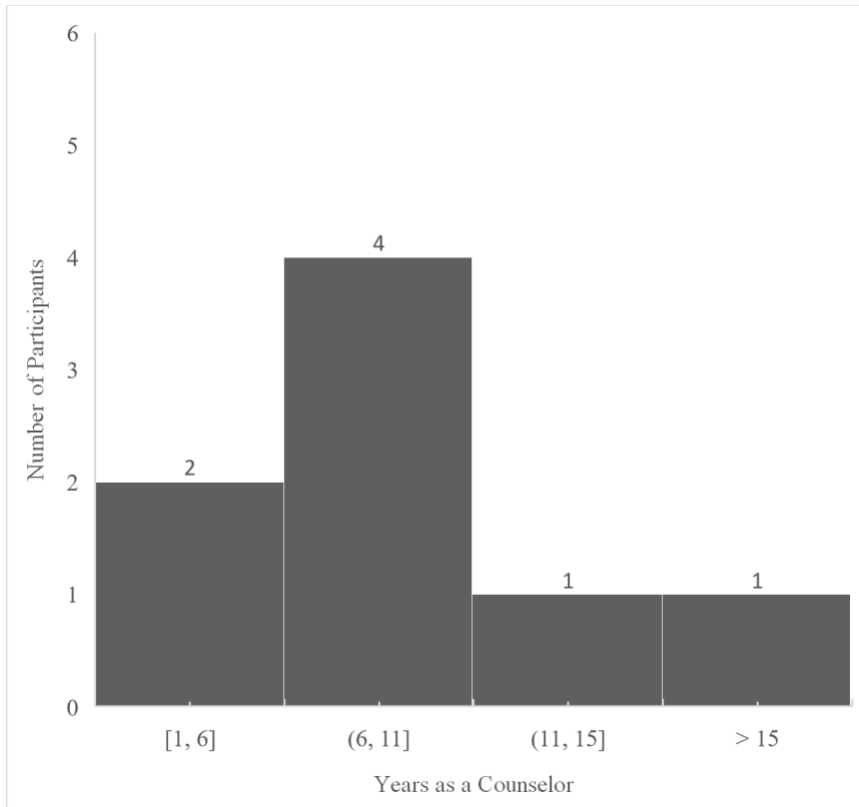


Note. The x-axis annotation (i.e., [x, y]) illustrates the minimum and maximum quantity for each bin with brackets representing numbers included in the bin, and open parentheses representing numbers that are not included.

Site administrators' previous years teaching while on a clear credential is summarized as follows: 13.5% (15 participants) of site administrators with up to 5 years of experience, 44.1% (49 participants) with 6 to 10 years, 24.3% (27 participants) with 11 to 15 years, 10.8% (12 participants) with 16 to 20 years, 8.1% (9 participants) with 21 to 25 years, and 1.8% (2 participants) with more than 25 years of teaching experience. Most of the site administrators who participated in the survey had between 6 and 10 years of teaching experience. Figure 2 shows the survey participant's years of counseling experience, if any.

Figure 2

Site Administrators' Previous Years of Counseling Experience (n = 8)

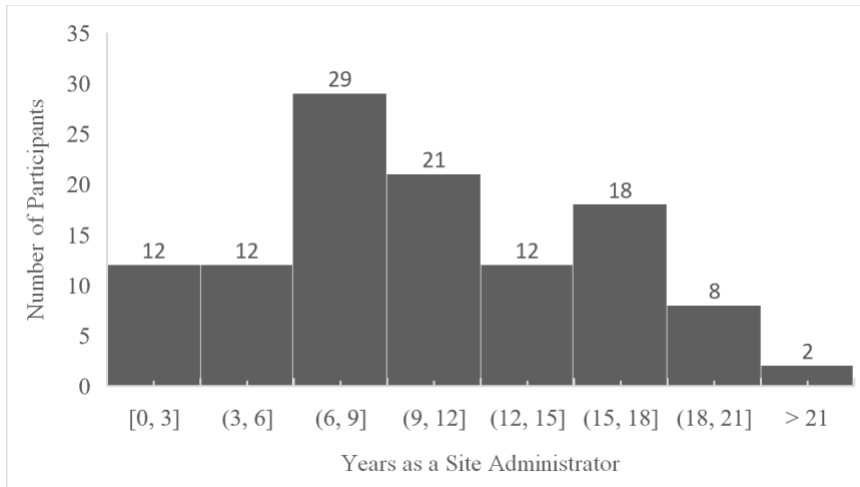


Note: The x-axis annotation (i.e., [x, y]) illustrates the minimum and maximum quantity for each bin with brackets representing numbers included in the bin, and open parentheses representing numbers that are not included.

When compared to most of the survey participants, a scant number of site administrator were previously employed as school counselors with clear pupil personnel services credentials. For those 8 participants: (a) 25% (2 participants) of site administrators had up to 5 years of experience, (b) 50% (4 participants) had 6 to 10 years, (c) 12.5% (1 participants) had 11 to 15 years, and (d) 12.5% (1 participant) had more than 15 years of school counseling experience. A total 5 of site administrators had both teaching and school counseling experience. Figure 3 illustrates the number of years survey participants had served as site administrators with clear administrative services credentials.

Figure 3

Years of Administrative Experience (n = 114)

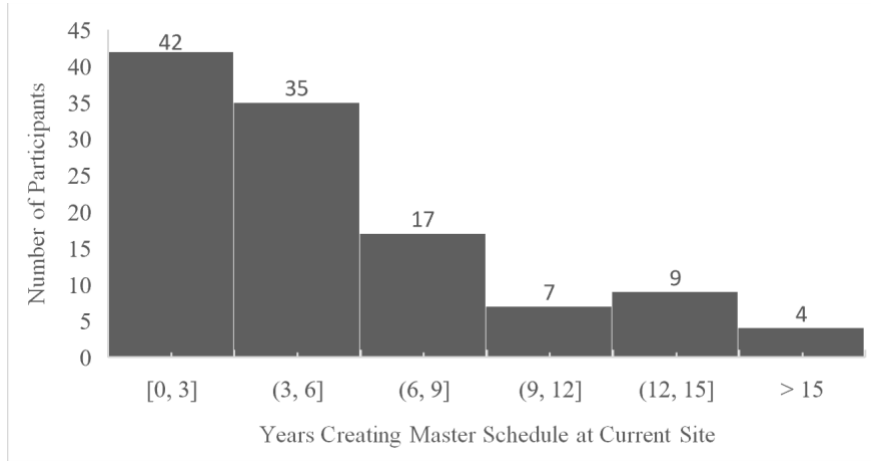


Note. The x-axis annotation (i.e., [x, y]) illustrates the minimum and maximum quantity for each bin with brackets representing numbers included in the bin, and open parentheses representing numbers that are not included.

For this study, a site administrator who had served with a clear credential for 3 or fewer years was considered entry level, 4–9 years was considered intermediate, 10–15 years was considered midlevel, and 15 years or greater was considered senior level. The years of experience level of site administrators was delineated as follows: (a) entry level (10.53%), (b) intermediate (35.96%), (c) midlevel (29.82%), and (d) senior (23.68%). Most site administrators who participated in this study were at the intermediate level, followed by those who were midlevel. Figure 4 shows the number of years survey participants had been actively involved in Master Schedule creation at their sites.

Figure 4

Years Actively Participating in Master Schedule Creation at Current Site (n = 114)

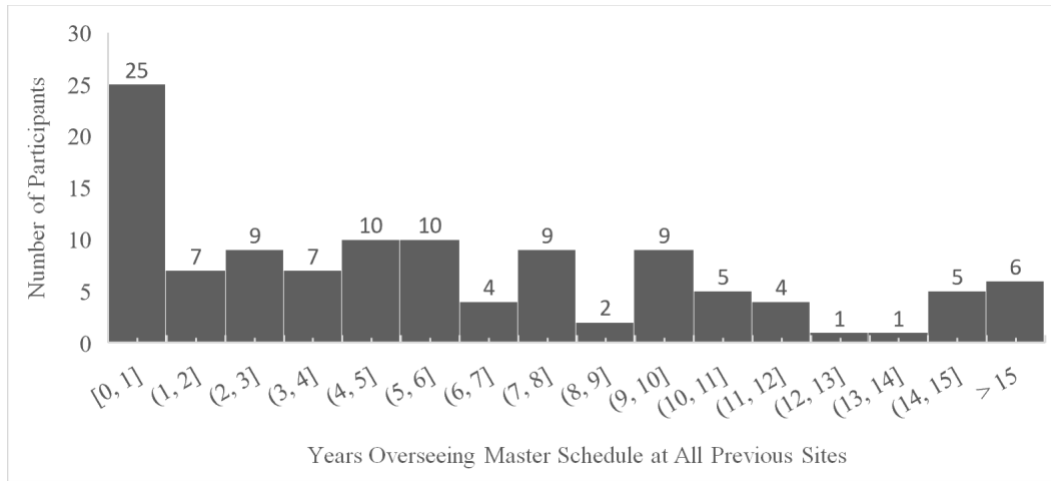


Note. The x-axis annotation (i.e., [x, y]) illustrates the minimum and maximum quantity for each bin with brackets representing numbers included in the bin, and open parentheses representing numbers that are not included.

Site administrators' number of years practicing Master Schedule creation at their sites are summarized as follows: (a) 36.8% (42 participants) of site administrators with up to 3 years of experience, (b) 30.7% (35 participants) with 4 to 6 years, (c) 14.9% (17 participants) with 7 to 9 years, (d) 6.1% (7 participants) with 10 to 12 years, (e) 7.9% (9 participants) with 13 to 15 years, and (f) 13.5% (4 participants) with more than 15 years of experience. The majority of participants had fewer than 6 years of experience creating Master Schedules at their sites, and by extension, have had their position for less than 6 years. Most of these site administrators had less than 4 years of experience (roughly 37%) creating Master Schedules at their sites. Figure 5 shows the number of years site administrators had been part of Master Schedule oversight at previous sites.

Figure 5

Years Overseeing the Master Schedule at All Previous Sites (n = 114)



Note. The x-axis annotation (i.e., [x, y]) illustrates the minimum and maximum quantity for each bin with brackets representing numbers included in the bin, and open parentheses representing numbers that are not included.

The average number of years site administrators participated in Master Schedule oversight in all previous sights was 6.3 years. Many site administrators (21.9%) had at least 1 year of oversight in another school, and 59.6% had at least 6 years of Master Schedule oversight experience. This data implies most of the principals who participated in this study have up to 6 years of experience serving as either assistant principals, or a combination of experience as a site principal or assistant principal in the 6 years leading up to what their assignment was when they participated in this study.

Site administrators learn the process of creating a Master Schedule in order to fulfill their assigned duties. Participants were asked to rank the top four learning methods that played a role in their understanding of how to generate a Master Schedule. The highest ranked factors are listed in Table 4 in order of importance both in and across ranking.

Table 4*Learning Methods That Played a Role in Understanding How to Generate a Master Schedule*

Rank 1 factor	<i>n</i>	% Frequency	Rank 2 factor	<i>n</i>	% Frequency
Self-taught	24	21.05	Self-taught	26	22.81
Training by a professional organization	17	14.91	School counselor guided you	16	14.04
On-site assistant principal guided you	15	13.16	On-site assistant principal guided you	12	10.53
School counselor guided you	14	12.28	On-site principal guided you	11	9.65
On-site principal guided you	12	10.53	Taught in another district or by a county office	9	7.89
In-district training	8	7.02	Training by a professional organization	8	7.02
Taught in another district or by a county office	6	5.26	In-district training	7	6.14
TOTAL (<i>N</i> = 112)	96	84.21	TOTAL (<i>N</i> = 108)	89	78.07

Rank 3 factor	<i>n</i>	% Frequency	Rank 4 factor	<i>n</i>	% Frequency
Self-taught	24	21.05	In-district training	15	13.16
School counselor guided you	14	12.28	School counselor guided you	13	11.40
On-site principal guided you	12	10.53	Training by a professional organization	12	10.53
In-district training	8	7.02	Self-taught	11	9.65
Training by a professional organization	8	7.02	On-site principal guided you	10	8.77
On-site assistant principal guided you	7	6.14	A teacher guided you	5	4.39
TOTAL (<i>N</i> = 92)	73	64.04	TOTAL (<i>N</i> = 81)	66	57.89

The most prominent learning methods consistently ranked highly were: (a) self-taught, (b) guidance from a school counselor, and (c) guidance from an onsite assistant principal or principal. In subsequent ranking of factors, training by a professional organization was prominent. Although survey participants were asked to rank in order four learning methods they believed played a role in their understanding of how to generate a Master Schedule, many participants selected fewer factors. A total of 112 participants ranked their top learning method,

and this number decayed until only 81 of 114 participants provided their fourth ranking. These findings show only 71.1% of site administrators experienced four learning methods. Only the most frequently occurring learning methods are reported in Table 3 and other factors that were not as prevalent were not included.

Further analysis of the survey data showed exactly half of the participants reported building the schedule from the ground up (50%), and the other half mostly used what was in place (50%). Site administrators were asked to describe their district as rural, suburban, or urban. Consistent with publicly available California public school data, the researcher assumed rural districts had smaller student populations and fewer teachers than suburban or urban districts. Further, the researcher assumed rural and urban districts served the largest populations of socioeconomically disadvantaged (SED) and high-needs students. The location of districts were described by the survey participants as follows: (a) urban (28.99%), (b) suburban (42.1%), or (c) rural (28.95%). Rural and urban locations are roughly evenly distributed across survey participants with the greatest number of respondents serving in suburban schools. Table 5 illustrates teacher distribution by location.

Table 5

Teacher Totals by District Location

District location	n _{schools}	Min	Max	Mean	SD
Rural	31	5	121	41.02	29.11
Suburban	44	14	150	85.61	27.29
Urban	31	14	150	81	39.71

The average number of faculty members who taught at survey participants' sites was approximately 71, with a standard deviation of 37.2. The site with the fewest faculty members employed five teachers, and the site with the greatest number of teachers had a faculty of 150

teachers. Faculty totals varied by school location. Approximately 41 teachers on average were employed in rural schools, an average of 86 teachers were employed in urban schools, and an average of 81 teachers were employed in urban sites. These teachers are assigned in Master Schedules course loads and students. Every public high school site administrator relies on a Master Schedule to organize the day-to-day operations of a school involving student-teacher assignment. Closely associated with Master Schedules are bell schedules which govern the daily time-allocation of classes. Survey participants were asked to describe the bell schedule at their site (see Table 6).

Table 6

Frequency of Bell Schedule Types at Sites

Master schedule type	Frequency	%
Block schedule	37	32.5
Modified block	9	7.89
Rotating block	2	1.75
Rotating period	1	0.88
Standard period	65	57.0
Total	114	100

The most common bell schedules reported in this study were the standard period (57%) followed by the block schedule (37.5%). The pervasiveness of standard period bell schedules has implications for time constraints in the operation of schools beyond classes offered. All bell schedules dictate the time students must commute (e.g., be driven, or bussed, or walk) to and from school, when meals and snacks are served, and when classified (i.e., secretarial, custodial, security) and support staff (i.e., cafeteria, transportation) report to and leave work. If there is ever a fundamental change in a bell schedule at a site, such as a late start, or switching to different bell schedule type, it will likely cascade into a chain reaction of daily schedule changes affecting all stakeholders. Additionally, the data show that bell schedule types are evenly distributed

among district locations with few exceptions. This finding points to systematized practices that mold the day-to-day experience of all site stakeholders.

As there is socioeconomic variability in districts, the researcher asked participants a question about whether their site received Title I funding. Title I funding is federal financial assistance to compensate for the socioeconomic disadvantages of a school community. A total of 58.8% of participants reported their site received Title I funding, and 41.2% reported their site did not receive Title I funding. Schools receive Title I funding as follows: (a) 19.8% rural, (b) 18.1% suburban, and (c) 19.83% urban. As is the case statewide, the majority of schools receiving Title I funding were rural and urban districts.

To determine the achievement level of schools, the researcher gathered California Assessment of Student Performance and Progress (CAASPP) data of the distance from standard (DFS) scores in English and math for the Smarter Balanced Summative Assessment (SBAC) for each site. These data are publicly available and were collected from the California School Dashboard website. The DFS score is calculated by adding the scale score of each student on an SBAC exam, then using that sum to calculate an average of student scores. The average of the student scores indicates a difference between scoring and a benchmark number that represents meeting or exceeding the standard for a particular grade level (California Department of Education, 2019). In high school, testing in English and math is administered only in 11th grade. The degree to which the testing average of high school students at a site needs to improve depends on the range in which students receive the achievement level “Standard Met” or “Standard Exceeded.” In English language arts, students must obtain a DFS score between 30 to 74.9 points to receive the achievement level “Standard Met” and 75 or more points for the achievement level “Standard Exceeded.” In mathematics, students must obtain a DFS score

between 0 to 24.9 points to receive the achievement level “Standard Met” and 25 or more points for the achievement level “Standard Exceeded.” In this study, a school was considered high achieving if the site’s DFS in either math or English denoted the achievement level “Standard Met” or “Standard Exceeded.” Table 7 provides an overview of the achievement level of the schools where survey participants served as site administrators at the time they participated in the survey.

Table 7

Summary of Achievement Level of Participants’ Sites

ELA met or exceed standard	Math met or exceeded standard			
	No	Yes	Missing	Total
No	68 59.7%	0 0%	0 0%	68 59.7%
Yes	28 24.6%	17 14.9%	0 0%	45 39.5%
Missing	0 0%	0 0%	1 0.88%	1 0.88%
Total	96 84.2%	17 14.91%	1 0.88%	114 100%

Roughly 15% of school sites met or exceeded the SBAC standards in both ELA and math. Approximately 25% of schools met the standard on ELA, but not math and none of the schools that failed to pass standards in ELA passed them in math. As most schools in California are challenged to meet or exceed standards in mathematics, the data analysis in this study used performance on the ELA SBAC to denote a site’s overall academic performance. Table 8 breaks down the achievement level of schools by school location and socioeconomic level.

Table 8*Summary of Achievement Level of Sites and District Location and Socioeconomic Level*

ELA achievement level	Title I funding			District location			
	No	Yes	Total	Rural	Suburban	Urban	Total
Exceeded standard	12 10.5%	2 1.75%	14 12.3%	2 1.8%	10 8.8%	2 1.75%	14 12.3%
Met standard	18 15.8%	13 11.4%	31 27.2%	8 7.02%	18 15.8%	5 4.4%	31 27.2%
Nearly met or standard not met	16 14.0%	52 45.6%	68 59.7%	23 20.2%	19 16.7%	26 22.8%	68 59.7%
Missing	1 0.88%	0 0%	1 0.88%	0 0%	1 0.88%	0 0%	1 0.88%
Total	47 41.2%	67 58.8%	114 100%	33 28.9%	48 42.1%	33 28.9%	114 100%

A greater percentage (15.8%) of schools that did not receive Title I funding exceeded the ELA standard when compared to those that do (1.75%). A greater percentage of schools that receive Title I funding (45.6%) nearly met or did not meet the standard in ELA when compared to schools that do not receive Title I funding (14.0%). Fewer schools met or exceeded the standard (39.5%) than not (59.7%). Suburban schools had the greatest number of students meet the standard in ELA (24.6% of total schools). Interestingly, all district locations had roughly equivalent numbers of students nearly meet or not meet the standard in ELA (between 16.7% and 22.8%).

Responses to the survey questions (see Appendix A) facilitated answering the first research question, and responses to the interview questions (see Appendix B) provided depth needed to answer the second research question. What follows are findings by research question.

Factors that Influence Administrative Decision Making

Research Question 1 asked: What are the factors that influence Master Schedule decisions made by site administrators in traditional high school settings in California?

Survey questions did not ask participants to provide their definition of a factor. Instead, the researcher initially inferred the factors and refined them through the pilot study given to middle school site administrators. The rationale for this analysis is to gain insight into how site administrators perceive the task of creating a Master Schedule, and to learn more about what might lead to the best possible experience. When asked to provide words to describe Master Schedule creation, participant answers clustered into eight themes (see Figure 6). The themes that emerged in order of greatest to least number of associated terms were: Challenging (81), Student-Centered (61), Analytical (56), Leadership (55), Balanced (34), Creative (26), Collaborative (20), and Budgetary (4).

Figure 6

Themes from Terms Used to Describe Master Schedule Creation From Survey Participants

Balanced	34	Creative	26	Leadership	55	Challenging	81
Actual Staffing	1	Artistry	1	Bold Decisions	1	Avoid Scheduling Conflicts	1
Adaptable	1	Creative	9	Communication	2	Challenge	2
Balance	4	Creativity	2	Compromise	1	Challenging	19
Balanced	5	Curiosity	1	Core	1	Chaotic	2
Balancing	1	Exciting	2	Critical	3	Complex	13
Capacity	1	Fun	7	Crucial	1	Complicated	5
Constraints	1	Innovative	1	Decision-Ridden	1	Consuming	1
Constricted	1	Interesting	1	Decisions	1	Cumbersome	1
Contractual	1	Intriguing	1	Delicate	1	Daunting	1
Credential	1	Spectacular	1	Drives	1	Difficult	6
Credentialing	1			Essential	1	Diligent	1
Dynamic	1	Analytical	56	Experience	1	Frustrating	2
Efficient	1	Analytical	1	Goal-Centered	1	Hard Work	1
Flexibility	1	Calculus	1	Humbling	1	Imperfect	1
Flexible	1	Chess	1	Important	6	Intense	2
Fluid	2	Comprehensive	2	Influential	1	Involved	2
Institutionalized	1	Data Driven	1	Integral	1	Long	1
Limitations	2	Detailed	3	Intentional	1	Messy	1
Loads	1	Diagnostic	1	Interconnectedness	1	Not Fun	1
Logistics	1	Exact	1	Multidimensional	2	Painstaking	1
Singletons	2	Intervention	1	Ongoing	1	Rumbling	1
Staff-Considerate	1	Intricate	1	Open	1	Stressful	4
Teachers	1	Iterative	1	Opportunities	3	Tedious	6
Tight	1	Jenga	1	Options	1	Time Consuming	5
		Layered	1	Organic	1	Torturous	1
		Logic-Based	1	Personal	2		
Student-Centered	61	Matrix	1	Plan	1	Collaborative	20
Access	2	Methodical	1	Political	1	Collaborate	1
Accessibility	1	Numbers	2	Potential	1	Collaboration	1
Equitable	2	Organization	1	Powerful	1	Collaborative	13
Equity	7	Organized	2	Priorities	3	Inclusive	2
High Need Students	1	Puzzle	24	Priority	1	Input	1
Meet Other Needs	1	Rewarding	3	Selfish	1	Team Effort	1
Need Based Needs	2	Strategic	3	Thoughtful	1	Teamwork	1
Needs Of School Site	1	Systematic	1	Traditional Methodology	1		
Student Achievement	1	Well-Planned	1	Transparent	1	Budgetary	4
Student Based Student Centered	18			Vision	2	Budget	2
Student Driven	6			Visionary	1	Budget Based	1
Student Interest	1			Vital	2	Fiscally Responsible	1
Student Needs	4						
Students	11						

All of these themes lend themselves to understanding the beliefs and experiences of site administrators as they engage in the work of generating Master Schedules. Overwhelmingly, participants perceived the task of creating Master Schedules as challenging. The data imply site administrators may not want to make changes that would facilitate more equitable distribution of teachers by virtue of the process to make changes being complex. The second-most prominent theme (student-centered) shows site administrators’ desire to ensure what is in the best interest of students despite the challenges to Master Schedule creation. The themes “analytical” and “leadership” lend themselves to the dual demand of technical expertise needed to create the schedule, and diplomacy required to facilitate important decisions in the face of potential conflict.

To provide depth to understanding the intricacies of Master Schedule creation, data were gathered on the reported challenges, stakeholder influences, teacher–course matching factors, and teacher quality perceptions of site administrators. Table 9 shows the ranking of the potential challenges for Master Schedule creation by site administrators according to the highest average response in agreement. The mean represented the average score from participants ranking each of the potential challenges for Master Schedule creation from (1) *Disagree Strongly* to (4) *Agree Strongly*.

Table 9

Potential Challenges to Master Schedule Creation

Potential Challenge	<i>n</i>	Mean	<i>SD</i>	% Disagree strongly	% Disagree	% Agree	% Agree strongly	% did not answer
The limited number of 0.2FTEs* available prevent needed changes to the Master Schedule.	108	2.51	0.94	14.70	31.00	32.80	14.70	6.90
The Collective Bargaining Agreement poses too many	114	2.36	0.81	12.90	44.80	32.80	7.76	1.72

Potential Challenge	<i>n</i>	Mean	<i>SD</i>	% Disagree strongly	% Disagree	% Agree	% Agree strongly	% did not answer
restrictions such as number of students allowed in each class or number of hours teachers work each day, etc.								
There are not enough students available for diverse course offerings.	114	2.28	0.99	25.00	33.60	26.70	12.90	1.72
There are not enough teachers with credentials that allow for diverse course offerings.	113	2.22	0.87	19.80	44.80	24.10	8.62	2.59
Making changes on the Master Schedule generates too much conflict with teachers.	114	2.17	0.66	13.79	55.17	28.50	0.86	1.72
Making changes on the Master Schedule generates too much conflict with students.	114	2.03	0.70	19.80	58.60	17.20	2.59	1.72
I don't have the time to start the Master Schedule from scratch each year.	112	1.96	0.86	32.80	38.80	20.70	4.30	3.45
The pool of quality teachers is low at my site.	113	1.90	0.82	33.62	50.00	15.50	4.31	2.59
Making changes on the Master Schedule generates too much conflict with parents.	114	1.89	0.61	23.30	62.90	11.20	0.86	1.72
Making changes on the Master Schedule generates too much conflict with counselors.	113	1.86	0.65	26.70	59.50	9.48	1.72	2.59
I do not have time to have difficult conversations about changes that need to be made to the Master Schedule.	114	1.75	0.70	37.90	49.10	9.48	1.72	1.72
I do not want to have difficult conversations about changes that need to be made with the Master Schedule.	113	1.67	0.69	43.10	44.00	9.48	0.86	2.59
I have no idea how I would alter the Master Schedule to anything other than what is currently being offered.	113	1.57	0.61	47.40	45.70	3.45	0.86	2.59
I don't have the technical ability to start the Master Schedule from scratch each year.	113	1.56	0.72	54.31	33.62	7.76	1.72	2.59

*Note. 0.2FTEs is equivalent to paying a teacher for working one additional course per day.

**Note. No one answered “I don't know” to the survey question asking participants to rank potential challenges to Master Schedule creation.

The survey question did not ask participants to describe whether a challenge in creation would be faced before or after a schedule is finalized because Master Schedules are typically populated with courses and teachers prior to the start of the fall semester. However, there is inevitably some movement to courses or teachers that need to be made throughout the academic year, so in a real sense, a Master Schedule is a living document. The challenges most often cited by site administrators throughout Master Schedule creation were (a) there are a limited number of FTEs available to create flexibility in the creation process, (b) collective bargaining agreements (CBAs) pose many restrictions to creating Master Schedules, (c) a campus that houses a small number of students cannot schedule diverse course offerings due to course balancing, (d) teachers lack credentialing needed for diverse course offerings, and (e) making changes to the Master Schedule generates too much conflict with both teachers and students. Overall, site administrators believed they had both the technical ability to generate a Master Schedule and ideas for how to do so despite challenges in its creation. Several participants commented on the number of singleton classes offered in smaller schools can be excessive, posing an ironic challenge to making changes in Master Schedules by restricting the types of classes students are able to take. Participants also noted balancing sections between the morning and afternoon in traditional period schedules makes Master Schedule changes a challenge due to afternoon periods often being earmarked for sports and advanced placement (AP) courses.

Site administrators generally felt there are a limited number of FTEs available to facilitate changes in Master Schedules; the factors involved in why site administrators allocate them can be found in Table 9.

Table 9*Factors for Site Administrators in Allocating FTEs*

FTE allocation reason	nResponses	% Frequency
As needed (e.g., student need and/or course balancing).	42	30.0
Program coordinators (e.g., ASB, AVID) and/or coaches.	23	16.4
On a rotating basis as outlined in the Collective Bargaining Agreement (CBA), or by seniority.	21	15.0
To faculty who are willing to teach intervention courses for at-risk students.	19	13.6
As an incentive for teachers who make a positive contribution to site-based culture and climate.	14	10.0
Do not offer FTEs.	11	7.9
To incentivize willingness to do so during a prep period when there is a lack of interest expressed by faculty.	7	5.0
To offer Career Technical Education (CTE) and/or elective courses	3	2.1
TOTAL	140	100.0

Although it was not provided as a selection, overwhelmingly participants submitted the typed response “as needed” in the option to provide reasons for FTE allocation. Following that response, the findings indicated most site administrators selected factors that impacted their decisions on which teachers receive FTEs. These factors were: (a) whether a teacher is a program coordinator or coach, (b) whether they are up for selection of this added income through a rotating system established by CBAs or seniority, and (c) whether teachers are willing to work with at-risk youth. There is some evidence that when a site administrator creates electives or Career Technical Education (CTE) courses in the Master Schedules, they do not appear to need FTEs to do so.

When examining differences potential challenges to Master Schedule creation by school location, achievement level, and socioeconomic level of schools’ one-way ANOVAs and t-tests indicated there were some statistically significant differences between groups. Findings revealed there were no statistically significant differences between a school's location or if they receive Title I funding on potential sources of conflict. However, there was a statistically significant

difference in the belief that the pool of quality teachers is low at a site and a school's achievement level on the SBAC ELA assessment ($F(3, 108) = 5.48, p = 0.0015$). A Tukey post-hoc analysis for multiple comparisons revealed this potential source of conflict in Master Schedule creation is different between schools that do not meet the ELA standard and those that exceed it ($p = 0.001, 95\% \text{ C.I.} = [1.39, 0.29]$). One-way ANOVA for potential challenges revealed a statistically significant difference in the belief that there are not enough students available for diverse course offerings and a school's achievement level on the SBAC ELA assessment ($F(3, 109) = 4.34, p = 0.006$). A Tukey post-hoc analysis for multiple comparisons revealed this potential source of conflict in Master Schedule creation is different between schools that do not meet the ELA standard and those that exceed it ($p = 0.041, 95\% \text{ C.I.} = [1.38, 0.024]$). For the same item on the belief that there are limited number of 0.2 FTE's available, a one-way ANOVA for school achievement level on the SBAC ELA exam showed a statistically significant difference ($F(3, 103) = 3.44, p = 0.0042$). A Tukey post-hoc analysis showed a difference between schools that do not meet the ELA standard and those that exceed it ($p = 0.006, 95\% \text{ C.I.} = [1.49, 0.203]$). A one-way ANOVA revealed there was no statistically significant differences between an administrators experience level and potential challenges to Master Schedule creation.

The micropolitics of schooling are evident when site administrators match teachers to courses. Table 10 illustrates which site-level stakeholders site administrators believed exert influence over their Master Schedule decisions by vocalizing their opinion at any time during its creation or implementation. None of the survey participants selected "I do not know" as a response to the survey question. The mean in Table 10 represents the average score from participants ranked from (1) *Disagree Strongly* to (4) *Agree Strongly* for each of the stakeholders who influence site administrators in Master Schedule creation.

Table 10*Stakeholder Influence in Master Schedule Creation Decisions Made by Site Administrators*

Influence from stakeholder(s)	<i>n</i>	Mean	<i>SD</i>	% Disagree strongly	% Disagree	% Agree	% Agree strongly	% did not answer
Any site administrator	114	3.51	0.69	1.72	6.03	31.03	59.48	1.72
Department chairs	113	3.41	0.72	3.45	2.59	42.24	49.14	2.59
Counselors	112	3.22	0.79	2.59	13.79	40.52	39.66	3.45
Veteran teachers	113	2.90	0.68	2.59	19.83	59.48	15.52	2.59
Students on high academic tracks	114	2.77	0.83	6.03	29.31	43.97	18.97	1.72
District administration	114	2.69	0.88	9.48	29.31	41.38	18.10	1.72
Students receiving special education services	114	2.50	0.83	12.07	34.48	42.24	9.48	1.72
Parents of students on high academic tracks	113	2.46	0.87	15.52	47.41	25.86	9.48	1.72
Parents and advocates of students receiving special education services	114	2.39	0.81	10.34	48.28	30.17	9.48	1.72
Students on low academic tracks	114	2.30	0.85	13.79	35.34	37.93	10.34	2.59
New teachers	113	1.95	0.71	26.72	49.14	21.55	0.00	2.59
Parents of students on low academic tracks	114	1.90	0.704	27.59	54.31	14.66	1.72	1.72
Administrators from feeder schools	114	1.68	0.63	39.66	50.00	8.62	0.00	1.72
Other (text response)	10	3.00	1.054	0.86	1.72	2.59	3.45	91.38

**Note.* No one answered “I don’t know” in the survey question asking participants to describe stakeholder influence in Master Schedule creation.

The rationale for asking participants to rank the influence of stakeholders to identify the political forces that govern the decision-making of site administrators. Participants reported other administrators at a site as having the most influence on the decision making on Master Schedule creation. In other words, principals are most influenced by assistant principals in making Master Schedule decisions and vice versa. Department chairs and school counselors lend an important voice in the teacher–course pairing process, as they were the second and third highest group identified by survey participants as influential to their decision making on Master Schedule

creation—even more so than veteran teachers as a whole. Also prominent was the influence of students on high academic tracks. Those with the least influence included parents and advocates of students receiving special education services, students on low academic tracks, new teachers, and parents of students on low academic tracks.

When examining differences in stakeholder influence by school location, school achievement level, and socioeconomic level of schools, one-way ANOVAs indicated there were no statistically significant differences between groups. Findings also revealed there were no statistically significant difference between site administrator experience and the influence of stakeholders. This is especially interesting as the data imply statewide trends in the micropolitics of schooling. Central to the discussion of Master Schedules was the practice of matching specific teachers to specific courses. Site administrators were asked to identify the factors they believed played a role in teacher–course matching; those factors are delineated in Table 11.

Table 11

Factors That Play a Role in Site Administrators’ Matching Teachers to Courses

Rank 1 factor	nResponses	% Frequency	Rank 2 factor	nResponses	% Frequency
Teacher credential considerations.	60	52.63	Administrator’s perception of a teacher’s ability level with challenging academic subjects.	29	25.44
Administrator’s perception of a teacher’s ability level with challenging academic subjects.	23	20.18	Teacher credential considerations.	26	22.81
Having to include district-mandated course offerings.	7	6.14	The need to align common prep times to allow for faculty collaboration.	18	15.79
Administrator’s level of comfort manipulating the course offerings.	5	4.39	Having to include district-mandated course offerings.	11	9.65

The need to align common prep times to allow for faculty collaboration.	5	4.39
Administrator's perception of a teacher's ability level with behaviorally challenging students.	3	2.63
To keep the current Master Schedule as close to last year's Master Schedule as possible.	3	2.63
TOTAL (N₁₁₃)	106	92.98

Administrator's perception of a teacher's ability level with behaviorally challenging students.	10	8.77
Administrator's level of comfort manipulating the course offerings.	6	5.26
To keep the current Master Schedule as close to last year's Master Schedule as possible.	3	2.63
TOTAL (N₁₁₃)	103	90.35

Rank 3 factor	nResponses	% Frequency
Administrator's perception of a teacher's ability level with behaviorally challenging students.	22	19.30
Administrator's perception of a teacher's ability level with challenging academic subjects.	21	18.42
The need to align common prep times to allow for faculty collaboration.	20	17.54
Teacher credential considerations.	14	12.28
Administrator's level of comfort manipulating the course offerings.	8	7.02
Having to include district-mandated course offerings.	8	7.02
To keep the current Master Schedule as close to last year's Master Schedule as possible.	2	1.75
TOTAL (N₁₀₄)	95	83.33

Rank 4 factor	nResponses	% Frequency
Administrator's perception of a teacher's ability level with behaviorally challenging students.	21	18.42
The need to align common prep times to allow for faculty collaboration.	15	13.16
Administrator's level of comfort manipulating the course offerings.	12	10.53
Having to include district-mandated course offerings.	12	10.53
Teacher credential considerations.	8	7.02
Administrator's perception of a teacher's ability level with challenging academic subjects.	6	5.26
To keep the current Master Schedule as close to last year's Master Schedule as possible.	4	3.51
Confrontation potential from teachers	4	3.51
TOTAL (N₈₆)	82	71.93

Participants were asked to rank their top four factors in matching teachers to courses by order of importance. The highest ranked reasons are listed in Table 11 in order of importance both in and across ranking. The most prominent factors that influence administrative decision-making on teacher–course matching and were consistently ranked highly were: (a) teacher credential considerations and (b) administrators’ perceptions of a teacher’s ability level with challenging academic subjects. In subsequent ranking of factors in order of importance, administrators’ perceptions of a teacher’s ability level with behaviorally challenging students and the need to align common prep times to allow for faculty collaboration were prominent. Although survey participants were asked to rank in order four factors they believed played a role in teacher–course matching, many participants selected fewer factors. A total of 113 of 114 participants ranked their top two factors. Following that, 104 participants ranked the third factor and 86 participants ranked their fourth factor. Only the most frequently occurring factors are reported in the Table 11. The rationale for asking site administrators about factors that play a role in their matching teachers to courses is that those factors map directly to hiring decisions.

When examining differences in factors that play a role in matching specific teachers to specific courses by school location and achievement level, one-way ANOVAs indicated there were some statistically significant differences between groups. Findings revealed there was a statistically significant difference in teacher credential considerations being a factor by district location ($F(3, 104) = 6.02, p = 0.0008$). A Tukey post-hoc analysis for multiple comparisons revealed that this factor differs between urban and rural schools ($p = 0.031, 95\% \text{ C.I.} = [1.168, 0.44]$). When examining differences in factors that play a role in administrators matching specific students to teachers by school socioeconomic and achievement level, one-way ANOVA and *t*-tests indicated there were no statistically significant differences between groups.

One-way ANOVAs also revealed there were no statistically significant difference between site administrator experience and factors that play a role in matching teachers to specific courses. However, site administrators’ perceptions of teacher quality factors into teacher–course matching and hiring decisions. Instead of including teacher quality as a factor in survey questions, the survey asked participants to rank the top four characteristics they believed played a role in teacher quality (see Table 12). The researcher made this decision to determine if there was alignment between the research literature and perceptions of survey participants and to answer the first research question, as site administrators’ perceptions of teacher ability levels mapped directly to the types of courses in Master Schedules they assigned teachers.

Table 12

Factors That Play a Role in Site Administrators’ Perception of Teacher Quality

Rank 1 factor	nResponses	% Frequency
Teacher has a positive relationship with students.	60	52.63
Teacher is willing to adapt instruction to respond to the needs of students and increase their engagement.	37	32.46
Teacher has a positive relationship with other faculty and staff.	5	4.39
Teacher has excellent classroom management skills.	4	3.51
Teacher is credentialed in high-need area	3	2.63
Teacher has a high academic ability themselves.	2	1.75
<i>TOTAL (N₁₁₃)</i>	<i>111</i>	<i>97.37</i>

Rank 2 factor	nResponses	% Frequency
Teacher is willing to adapt instruction to respond to the needs of students and increase their engagement.	47	41.2
Teacher has a positive relationship with students.	36	31.6
Teacher has a positive relationship with other faculty and staff.	10	8.8
Teacher has excellent classroom management skills.	10	8.8
Teacher is credentialed in high-need area	5	4.4
Teacher has a high academic ability themselves.	4	3.5
<i>TOTAL (N₁₁₃)</i>	<i>112</i>	<i>98.2</i>

Rank 3 factor	nResponses	% Frequency
Teacher has excellent classroom management skills.	34	29.82

Rank 4 factor	nResponses	% Frequency
Teacher has excellent classroom management skills.	23	20.2

Teacher has a positive relationship with other faculty and staff.	20	17.54	Teacher has a positive relationship with other faculty and staff.	22	19.3
Teacher is willing to adapt instruction to respond to the needs of students and increase their engagement.	20	17.54	Teacher has a high academic ability themselves.	12	10.5
Teacher has a positive relationship with students.	9	7.89	Teacher has a significant amount of classroom experience.	11	9.6
Teacher has a high academic ability themselves.	8	7.02	Teacher is credentialed in high-need area	10	8.8
Teacher is credentialed in high-need area	8	7.02	Teacher helps to improve student standardized test scores.	7	6.1
<i>TOTAL (N₁₁₀)</i>	99	86.84	<i>TOTAL (N₁₀₀)</i>	85	74.6

Participants were asked to rank the top four factors that play a role in their perception of teacher quality by order of importance. There were 12 selections for participants to choose from, including the option to submit an optional entry. The highest ranked reasons are listed in order of importance in Table 12 both in and across ranking. The most prominent factors consistently ranked highly were that the teacher (a) had a positive relationship with students, (b) was willing to adapt instruction to respond to student needs and increase their engagement, and (c) had a positive relationship with other faculty and staff. In subsequent ranking of factors in order of importance, teachers having excellent classroom management skills, a high academic ability, and being credentialed in high-need area were prominent. Although survey participants were asked to rank in order four factors they believed played a role in teacher quality, many participants selected fewer factors. A total of 113 of 114 participants ranked their top two factors. Following that, 110 participants ranked the third factor and 100 participants ranked their fourth factor. Only the most frequently occurring factors are reported in Table 12. This finding suggests either survey fatigue or many participants felt strongly about fewer than four factors that play a role in their perceptions of teacher quality. When examining differences in perceptions of teacher

quality by school location, achievement level, and socioeconomic level of schools, one-way ANOVAs and *t*-tests indicated there no statistically significant differences between groups. Findings also revealed there was no statistically significant difference between site administrator experience and perceptions of teacher quality. The data imply statewide trends in the micropolitics of schooling.

To further nuance participants' beliefs about high-quality teachers at their schools, they were asked about their perceptions of faculty at their site. The rationale for asking site administrators their perception of the number of high-quality teachers is to understand with greater depth how this perception ties back to factors that influence administrative decision-making. This analysis provided insight to answering the first research question, as site administrators' perceptions of teacher quality guide their decisions to assign teachers specific courses in their site's Master Schedule. Figure 7 shows a comparison of the perceived number of high-quality teachers by achievement and socioeconomic level of participants' schools.

Figure 7

Summary of Participants’ Perceptions of High-Quality Teacher Distribution at Respective Site by Socioeconomic and Achievement Level of Schools

Perceived Percentage of High-Quality Teachers

Site Achievement Level (SBAC ELA)	0–25%	36–50%	51–75%	76–100%
Met or Exceeded	5 4.39%	9 7.89%	19 16.7%	12 10.5%
Nearly Met or Did Not Meet	8 7.02%	15 13.2%	29 25.4%	16 14.0%

Title I School

Yes	7 6.14%	16 14.04%	28 24.56%	16 14.04%
No	6 5.26%	8 7.02%	20 17.5%	13 11.4%

District Location

Rural	5 4.39%	8 7.02%	16 14.0%	4 3.51%
Suburban	3 2.63%	9 7.89%	18 15.8%	18 15.8%
Urban	5 4.39%	7 6.14%	14 12.28%	7 6.14%
Total	13 11.4%	24 21.1%	48 42.1%	29 25.4%

Interestingly, site administrators from schools with high achievement levels on the SBAC ELA (39.6% of schools) exam reported fewer numbers of high quality teachers than those from schools who nearly met or did not meet ELA standards (59.6% of schools). The same pattern was found in schools that received Title I funding as opposed to those that did not. Suburban schools (15.8% of schools) reported the greatest percentage of teachers at their sites. Both rural

and urban schools reported similar numbers of high-quality teachers. Participants were asked to state what percentage of their high quality teachers are assigned to the highest need students.

High needs students were defined in the survey as being in any of the following circumstances:

(a) receiving special education services, (b) designated foster youth, (c) in the lowest quartile of socioeconomically disadvantaged students, (d) failing the majority of their classes, or (e) scoring in the lowest quartile on state assessments. Figure 8 shows a comparison of the distribution of perceived high-quality teachers to high-needs students by achievement and socioeconomic level of participants' schools.

Figure 8

Extent to Which Respondents Consider That High-Quality Teachers Are Assigned Students With the Greatest Needs

Perceived Percentage of High-Quality Teachers Assigned to High-Needs Students				
Site Achievement Level (SBAC ELA)	0–25%	36–50%	51–75%	76–100%
Met or Exceeded	14 12.28%	12 10.53%	6 5.26%	13 11.04%
Nearly Met or Did Not Meet	13 11.40%	23 20.18%	9 7.89%	22 19.30%

Title I School				
Yes	14 12.28%	22 19.30%	10 8.77%	21 18.42%
No	13 11.40%	14 12.28%	5 4.39%	14 12.28%

District Location				
Rural	4 3.51%	12 10.53%	3 2.63%	14 12.28%
Suburban	14 12.28%	17 14.91%	6 5.26%	11 9.65%
Urban	9 7.89%	7 6.14%	6 5.26%	10 8.77%
Total	27 23.68%	36 31.58%	15 13.16%	35 30.70%

Not only did site administrators from schools with high achievement levels on the SBAC ELA exam report a smaller percentage of high-quality teachers overall than site administrators from schools that nearly met or did not meet ELA standards, but they also reported a lower percentage of high-quality teachers assigned to their highest need students. This finding suggests site administrators from high-performing schools either do not believe they have many high quality teachers overall, tend to distribute their highest-quality teachers to highest performing

students, or do not believe there are many high needs students at their sites that warrant an alternate distribution pattern.

Similar trends were found for schools that received Title I funding, and those that did not. Site administrators from schools receiving Title I funding reported half or fewer of their best teachers are assigned to high-needs students. Administrators from all school district locations reported the majority of their teachers possessed the high-quality characteristics they ranked in earlier parts of the study. However, suburban site administrators reported fewer numbers of high-needs students matched to teachers with high-quality characteristics. Rural site administrators stated their highest needs students were typically matched to their best teachers. This finding is especially interesting as the data suggests differences in site administrators' perceptions of teacher quality based on school location. Rural site administrators reported their best teachers are typically attached to their highest needs students which, along with overall lower achievement levels, seems to suggest these site administrators are more focused on ensuring their highest need students are engaged in other important benefits of attending school. This finding also suggested site administrators from academically low-performing schools feel pressured to compete with high-performing schools and allocate their best teachers with the relatively few numbers of students in academic high-tracks to do so.

The first research question was designed to map to the study's theoretical framework to illuminate factors that influence administrative decision making on public high school Master Schedules in California. Having a greater understanding of who influences site-administrator decisions, potential challenges that factor into administrative decision-making, site administrator's perceptions of teacher quality, why teachers are matched to specific courses, and how site administrators are trained to take on the challenges of creating a Master Schedule can

reveal forces within the teacher supply and demand model. Findings from the first research question were discussed in this section. The next section will cover answers to the second research question which was designed to provide greater depth to survey responses by illuminating areas that administrative decision-making directly impacts educational equity.

Educational Equity with Respect to Teacher Distribution

Research Question 2 asked: How do these factors affect educational equity in California high school settings?

The interview questions were designed to provide possible answers to the second research question. These interview questions stemmed directly from those asked in the survey and drew upon the participants' survey answers to further examine survey responses. The concept of educational equity as it pertains to distribution of teachers with high-quality characteristics was the focus of study; as such, the researcher developed the interview questions to help explore this nuanced topic. The interview participants comprised a sample of survey completers. Approximately 27.2% of those who completed the survey participated in an interview, for a total of 29 principals and four assistant principals serving as site administrators. The following sections explore factors outlined in the survey portion of the study that were discussed further during participant interviews. For the purposes of this study, educational equity referred to the need for all students to have equal access to teachers with high-quality characteristics.

Potential Challenges to Master Schedule Creation

In the survey portion of the study, the potential challenges most often cited by site administrators that present themselves during Master Schedule creation were (a) there are a limited number of FTEs available to create flexibility in the creation process, (b) CBAs pose

many restrictions to creating Master Schedules, (c) a campus that houses a small number of students cannot schedule diverse course offerings due to course balancing, (d) teachers lack credentialing needed for diverse course offerings, and (e) making changes to the Master Schedule generates too much conflict with both teachers and students. Interview participants elaborated on these factors by nuancing them with particularities of their sites, but focused largely on sources of conflict with veteran teachers. All participants who served at rural schools expressed difficulty in their ability to hire qualified candidates by virtue of the small population of their communities. Participant 8 stated the Master Schedule at the high-performing school where they were employed was “etched in granite.” As a new site administrator, this participant explained the parent community is very involved to the point of asking about who will replace retirees and having a say in who new teachers should be, which they found frustrating. Participant 10 expressed the teachers at their site show “possessiveness” toward fellow faculty and site administration about the courses taught. Participant 14 stated, “People get very attached to their programs. In some cases, they are the program.” This finding illustrated both the manner in which veteran teachers hold their ground on their assignments, and CBA-supported credentialing barriers. Teachers in this position are likely the only one on campus with the credential required to teach the course(s) they have taught for years. This credential is likely for an elective course a site administrator wants to eliminate, or site administration would prefer the teacher be assigned to another course. The lack of the teacher’s credential diversity does not permit reassignment. In this case, the course persists in the Master Schedule and effectively creates a drain on resources as both the teacher must be paid, and students must be assigned the courses in what is essentially an overstaffed program. Participant 21 stated this challenge created by CBAs makes it “impossible to eliminate programs.” Participant 32 echoed this sentiment,

stating, “The Master Schedule is a numbers game, and a situation can be alleviated if people had more diverse credentials.”

Participant 15 explained she works closely with department chairs to decide who will be assigned the “trench-level class that nobody wants to teach.” Several participants, including Participant 19, felt it was important for them to make strides toward building Master Schedules around high-needs groups (e.g., special education students) instead of “the top 10% of performers.” Participant 11 stated, “The challenge is communicating with teachers who are not used to getting what they are not used to.” This participant also reflected what many other participants expressed when they said challenges are “just part of the process”. The influence stakeholders have on administrative decision-making facilitates fewer percentages of students access to excellent teachers as conflict inevitable occurs when veteran teachers are not able to teach courses they prefer. Namely, those with greater numbers of high-track students.

Influence of Stakeholders

In the survey, stakeholders most cited by site administrators as influencing Master Schedule creation were other site administrators (i.e., principals and/or assistant principals), department chairs, counselors, and veteran teachers. Participants tended to describe technical or site-specific scenarios regarding the impact of various stakeholders. Circumstances and idiosyncratic scenarios aligned with participants' views on other factors explored in this study such as potential challenges in Master Schedule creation, teacher–course matching decisions, and site administrator perceptions of high quality characteristics. Participant 25 expressed the “delicate balance” of bringing stakeholders to the conversation of Master Schedule creation and implementation because “certain numbers need to be met.” Findings suggested some site administrators would prefer not to involve a large variety of stakeholders for any number of

reasons, including not having the ability to satisfy everyone, avoiding conflict, and/or intentionally positioning themselves as unpopular to make changes that would necessitate more equitable distribution of teachers. The finding illuminates barriers faced by site administrators that prevent more broadly distributing excellent teachers to greater numbers of students.

Participant 12 attempted to preempt conflict at their site by hosting a virtual meeting with 50 faculty who voluntarily met to watch the Master Schedule being created. Before hosting this meeting, the interviewee loaded all constraints on Master Schedule software, then identified conflicts and asked teachers for their input. Participant 12 felt many potentially contentious conversations were averted once the faculty witnessed just how restrictive it was to create the Master Schedule. Participant 12 faced the common challenge of upsetting teachers with the uncommon approach of involving them as a group to problem solve finalization. The majority of interview participants discussed the influence of stakeholders in such a manner that illustrated they mostly worked alone in generating their site's Master Schedules. Participants 10, 13, 15, 16, 27, 28, and 32 also discussed the prevalent role of department chairs in administrative decision-making and how important it was to ensure their understanding of why decisions are made and to "do what is best for kids." Participant 30 stated "what's best for the kids" is what is done at their site; to let the department chairs be the central contact point for Master Schedule creation at site administrator approval for finalization. None of the interviewees discussed how they measured whether their decisions are what is best for kids.

Teacher–Course Matching and High-Quality Teacher Characteristics

In the survey portion of the study, the most prominent and highly ranked factors influencing administrative decision making on teacher–course matching were teacher credential considerations and administrators' perceptions of a teacher's ability level with challenging

academic subjects. In subsequent ranking of factors in order of importance, administrators' perceptions of a teacher's ability level with behaviorally challenging students and the need to align common prep times to allow for faculty collaboration were prominent. Interview participants discussed they cannot avoid the credential requirement for teacher–course matching; yet, after that initial bureaucratic check, placement becomes highly political. Some teacher–course placements are locked in by virtue of credential requirements. Participant 7 stated, “It’s not always worth the fight,” due to their experience in having veteran teachers storm out of meetings or sobbing because they were informed they were going to teach low-track courses. Participant 15 expressed a desire to challenge veteran teachers’ notions of the course(s) they believed they were entitled to teach by asking if they had “squatter’s rights” and expressing teacher–course matching must be an administrative decision to create educational equity. Dolton’s (2020) research on teacher supply that evaluated 38 member countries of the Organisation for Economic Co-operation and Development (OECD) which explores the global phenomenon of sorting teachers and student tracking, and found that consistent with the finding in this study, the challenge of teacher supply is to match teachers to classes that they may not be interested in teaching.

Several site administrators stated their perceptions of whether a teacher was capable of teaching a specific course was an important factor for course matching decisions, as was whether a teacher expressed a desire or an interest regarding teaching a specific course. This finding indicates either the majority of teachers defer to department chair requests to administration regarding teacher-course matching even if it is in conflict with their course preferences and that speaking to department chairs as the primary contact point for scheduling teachers perpetuates the micropolitical dynamics at sites wherein new teachers are assigned “trench courses.”

Participant 15 felt high-track student perceptions also lead to administrative decision-making, stating, “Some teachers are better than others. Students recognize expertise.” Participant 25 explained developmentally there is a significant difference between ninth, 10th, 11th, and 12th grade students, and teachers should be “the right fit” for a grade level, academic level, and behavioral level. Further, Participant 25 stated it was their job to “find the right fit for teachers so they can be their best selves.”

Per collective bargaining agreements (CBAs), the site principal has the final say on which teachers are assigned specific classes on the Master Schedule; this practice is contractually known as Right of Assignment. Participants were asked if they believed this contractual right is necessary, and overwhelmingly the participants stated they think it is. One site administrator captured this by stating:

There will always be some teacher who walks away not liking when a class is offered, how it impacts their personal life, how many preps they get. . . . When you make a change to one person’s schedule it will impact another person then the dominos start to fall. There has to be a ‘buck stops here’ at some point.

Despite the overwhelmingly agreed upon belief that Right of Assignment is a necessary provision in CBAs, many administrators would rather build Master Schedules without the use of dictatorial measures. Participant 14 eloquently stated, “Authority is your weakest position,” and many participants expressed mandating change was not their go-to leadership style; rather, they would prefer to have conversations with their teachers about the need for change. However, when asked if there was anything that would aid site administrators in increasing their ability to evenly distribute these high-quality teachers at their sites to greater numbers of high-need students, most participants expressed feeling stuck. This sentiment was mostly due to the belief

that inheriting an existing faculty limits their ability to make changes. Interviewees also expressed the belief they would need to wait for retirements so they can hire their way to excellence. Many participants also stated they have attempted to have conversations with veteran teachers about serving high-needs students. However, as Participant 11 stated, veteran teachers feel they “served their time” in reference to undesirable teaching assignments early in their careers, and this makes them hold their ground on more desirable placements.

Findings suggested school counselors play an active role in teacher–course matching. Participant 15 relayed school counselors at her site “influence placement away from certain teachers.” Participant 21 mirrored this sentiment by stating her counselors do not want “their kids” (i.e., students they are assigned to provide academic counseling) to be paired with whom they perceive to be poor teachers. Participant 3 used feedback from counselors to determine which courses should be matched to specific teachers. Many participants expressed the importance of building their academic program around passionate educators who are well liked by students. For those who are not, participants described the manner in which they maneuver them to courses where they can, as Participant 18 stated, “do the least harm.” Participant 13 stated their strategy was to assign senior students to the weakest teachers at their site, because their belief is students will learn regardless of who is teaching, and assign the best teachers to students in AP courses. For teachers perceived to not have high-quality characteristics, Participant 12 asked, “Where can we hide this teacher?” This participant stated the “rockstar teachers” typically have many responsibilities and are provided FTE compensation. Participant 23 eloquently captured the need for teachers to have a dynamic personality, noting, “Kids are going to gravitate towards teachers irrespective of content. This is a human enterprise we are in.”

Perceived Purpose of a Master Schedule and Measures of Effectiveness

Interview participants were asked to describe what they believed to be the intended purpose of a Master Schedule and how they defined an effective Master Schedule. Participant 26 articulated the purpose by stating the framework is “the backbone of all culture on campus.” There were similar patterns among responses with facilitating college readiness and focusing on courses that ensure students meet graduation requirements, which was overwhelmingly stated as the purpose of a Master Schedule. Participant 12 captured this notion by insightfully stating, “The Master Schedule is a tool, not a strategy.” Participants also stated the purpose was to give students the courses they want, which appeared incongruous to survey findings in this study that illustrated students do not have much of an influence on Master Schedule decisions made by site administrators. Since state and district graduation requirements further hamstring students' ability to choose courses, Master Schedules do not appear to be built with their choices in mind, but what how they met the prerequisites. Most interview participants cited balancing the distribution of students between classes and minimal course conflict as a measure of an effective Master Schedule. Matching students to teachers was referenced as both the purpose and measure of effectiveness of Master Schedules. Participant 12 captured this notion by stating, “You understand shortcomings of staff and how to accommodate them in the Master Schedule.” Some administrators also stated “meets student needs” to describe both the purpose of and whether a Master Schedule is effective. Participants did not discuss how need was determined and whether students and their parents participated in voicing their needs; however, Participant 17 felt the delineation of courses “makes kids competitive if they follow the program.” One challenge to this logic is that for students to be competitive and prepared for attending a Cal State or UC, they must be in high-track courses including honors and Advanced Placement (AP). It is difficult to

make kids competitive with a relatively low percentage of high-track courses available to students and reported by survey participants.

Summary

The key findings of the first research question are discussed in the following sections and include site-administrator ranked potential challenges in Master Schedule creation, stakeholder influence, teacher-course matching factors, and perceptions of teacher quality. Greater depth to findings from the first research question were illuminated during participant interviews aimed at answering the second research question. Implications for educational equity as pertains to teacher distribution within-schools are discussed in the sections that follow.

Potential Challenges to Master Schedule Creation

On the 15 item potential challenges survey question, those most often cited by site administrators in highest ranked order were: (a) there are a limited number of full-time equivalents (FTEs) available to create flexibility in the creation process, (b) collective bargaining agreements (CBAs) pose many restrictions to creating Master Schedules, (c) a campus that houses a small number of students cannot schedule diverse course offerings due to course balancing, (d) teachers lack credentialing needed for diverse course offerings, and (e) making changes to the Master Schedule generates too much conflict with both teachers and students. Although it was not provided as a selection, overwhelmingly participants submitted the typed response “as needed” in the option to provide reasons for FTE allocation. During the interviews, what was gleaned about this response is that FTEs are used to problem solve issues when administrators are stuck on some part of the Master Schedule creation process. Interviewees also discussed the conflict making changes creates, particularly with teachers who come to feel entitled to teach in perpetuity high-track courses they are assigned. When examining differences

to answers provided about potential challenges by site administrators based on their school location, school achievement level, and school socioeconomic level, one-way ANOVAs and *t*-tests indicated there were some statistically significant differences between groups. The differences were between site administrators who served in schools where students exceeded the ELA standard, and those that nearly met or did not meet the standard. These challenges were: (a) limited number of 0.2 FTE's available, (b) the pool of quality teachers is low at a site, and (c) there are not enough students available for diverse course offerings. When asked to provide their own words to describe Master Schedule creation, participant answers were clustered into eight themes. The most frequently referenced theme was Challenging, followed by Student-Centered, Analytical, Leadership, Balanced, Creative, and Collaborative, with Budgetary as the least frequently referenced theme.

Influence of Stakeholders

Site administrators are under a lot of pressure and pulled in many different directions with the desires of varying stakeholder groups. The ranked influence of stakeholders cited by site administrators were (a) any site administrators, (b) department chair, (c) school counselors, (d) veteran teachers, and (e) students on high academic tracks. This is an interesting finding as research literature identifies veteran teachers as having a great amount of influence, yet this study identified that department chairs hold greater influence. Of course, department chairs tend to be veteran teachers, but this distinction illustrates their power within a hierarchical structure in their departments and speaks again to the micropolitical forces within schools, especially as it pertains to teacher course assignments. When examining differences on the influence of stakeholders to Master Schedule creation by school location, achievement level, and socioeconomic level of schools, one-way ANOVAs and *t*-tests indicated there were no

statistically significant differences between groups, nor was there between administrator experience level.

Teacher-Course Matching

In the 9 item survey question, participants ranked the following factors as the most influential that lead to matching specific teachers to courses: (a) teacher credential considerations, (b) administrators' perceptions of a teacher's ability level with challenging academic subjects, (c) administrators' perceptions of a teacher's ability level with behaviorally challenging students, and (d) the need to align common prep times. When examining differences in factors that play a role in matching specific teachers to specific courses by school location and achievement level, one-way ANOVAs indicated there were some statistically significant differences between groups. Teacher credential consideration were between rural and urban site administrators. It follows from these findings that other site administrators and department chairs share what principals believe are the factors that influence matching teachers to specific courses as they are influencing Master Schedule decisions made by site administrators.

High-Quality Teacher Characteristics

Site administrators ranked the following 13 item survey question as the most important factors that lend to their perception of teacher quality: (a) had a positive relationship with students, (b) was willing to adapt instruction to respond to student needs and increase their engagement, and (c) had a positive relationship with other faculty and staff. When examining differences of perceptions of teacher quality of site admin by school location, achievement level, and socioeconomic level of schools one-way ANOVAs and *t*-tests indicated there were no statistically significant differences between groups. In other words, most site administrators feel this way. Interestingly, extensive classroom experience, diverse credentialing, and having high

academic ability were not ranked highly either despite the number of notable studies that used those teacher characteristics as proxy variables for high-quality teacher characteristics.

Another finding is that schools with high achievement levels on the SBAC ELA exam reported fewer numbers of high-quality teachers than those from schools who nearly met or did not meet ELA standards. The same pattern was found in schools that do not receive Title I funding and are generally higher performing. Not only did site administrators from schools with high achievement levels on the SBAC ELA exam report a smaller percentage of high-quality teachers overall, but they also reported a lower percentage of high-quality teachers assigned to their highest need students. This finding suggests that site administrators from high-performing schools either do not believe they have many high-quality teachers overall, tend to distribute their highest-quality teachers to highest performing students, or do not believe there are many high needs students at their sites that warrant an alternate distribution pattern. Similar trends for participant answers were found for schools that do not receive Title I funding.

Equitable Teacher Distribution

Rich details were discussed by interviewees that illustrated how educational equity is affected by preventing the assignment of excellent teachers to greater numbers of students. Potential challenges site administrators face in creating Master Schedules affect educational equity as challenges stifle site administrator's ability to expose greater numbers of students to excellent teachers. Many interviewees stated they believed their practice working with these ranked stakeholders is “what is best for the kids,” but none of the interviewees discussed how they measure what is best for kids. Interviews illustrated that given the seemingly similar influence of stakeholders across sites, there is an opportunity to improve or possibly dismantle systematized practice that does not support equitable teacher distribution at the site level. Site

administrator beliefs on the most important factors that lead to teacher-course matching were also elaborated on during participant interviews and what was found is the beliefs translate into widespread practices that perpetuate inequitable teacher distribution. During interviews, many site administrators described they felt the teacher quality traits they identified build positive school culture and are what is needed to help students best learn.

The implications of the findings in this study will be discussed in greater detail in the following chapter.

CHAPTER 5: DISCUSSION

Implications and Recommendations

This mixed-methods study involving practicing site administrators from California public high schools examined the administrative decision-making factors that influence within-school sorting through the instrument known as the Master Schedule. Survey responses from 114 site administrators provided a broad perspective on common practices used to match specific teachers to specific courses, and by extension, groups of students in the tracking paradigm. Interviews with 33 of the administrators who participated in the survey allowed a deeper examination of how those decisions affect educational equity in California public schools. Analysis of the survey and interview data with regard to the two research questions suggested several key findings with implications for policy, practice, and future research. This chapter maps the findings of this study to the literature review, which provided an overview of (a) teacher labor market economics, (b) high-quality teacher characteristics, (c) within-school teacher assignment, and (d) the role site administrators play in distributing excellent teachers within schools.

This chapter returns to key elements of the literature review in mapping the findings of this study in the context of California public high schools and the need to move beyond conceptions of factors that influence administrative decision-making to research areas, policy shifts, and changes in practice. The similarity in responses by both survey and interview participants lend to solutions that have the potential to make a significant impact on the manner in which teachers are assigned to classes. Of course, documenting what principals say they do is not the same as knowing for a fact. This study represents a springboard to further evaluate existing Master Schedules and how factors that determine decisions site administrators make on

this mechanism directly impact student achievement. This study has also proven to be an exercise in dialectical thinking by contrasting the opinion of boots on the ground administrators and policymakers who rarely set foot on high school campuses. This study also contrasted the opinions of researchers who attempted to uncover which combination of characteristics are found in high-quality teachers and what site administrators perceive to be high-quality characteristics.

Recommendations to Research

Student tracking has been the focus of volumes of education research, as has teacher sorting across districts and across schools. Little, if any, research is devoted to the decisions made by site administrators on teacher assignment to specific courses and by extension, specific groups of students. Currently, research does not exist on the ubiquitously used Master Schedule. Master schedules which capture teacher assignment and student tracking. This study aimed to fill the gap in the literature on how and why site administrators distribute and assign teachers in low- and high-track courses.

Extent of Allowable Master Schedule Changes

A teacher's assignment at the high school level is largely dependent upon courses offered at a site. Most courses are either mandated by Education Code as graduation requirements or university entrance criteria, and additional courses required for graduation posed by local districts. Researchers would benefit from investigating how established university entrance criteria, and state and locally mandated graduation requirements mold the day-to-day schooling experience of all public school students. As such, exploring how much of school operations is truly driven by locality versus policy mandate is critical for there to be a clear understanding of what site principals can control, and what they cannot. Further research into existing Master Schedules may reveal any new courses that could be offered or mandated would be pigeonholed

into the matrix instead of serving as a vehicle for restructuring it. This study revealed similar patterns in Master Schedules despite the diverse environments of public high schools. In this study, a large portion of administrators emphatically explained during interviews and selected on the survey they made decisions based on “student need.” The interviews did not reveal how administrators define nor measure “student need,” but alluded it could mean enjoyment of course topics, meeting graduation requirements, preparation for college, and/or preparing for the workforce. Researchers who analyze the reasons behind why existing Master Schedules are so uniform in nature may uncover systematized practice that should be further questioned to be potentially revised or dismantled altogether to better measure and subsequently meet needs of students. As provided by answers from participants, the redundancy with respect to the structure and implementation of Master Schedules in this study reveal extraordinary potential for a paradigm shift in the way schools conduct day-to-day business. To fully leverage this opportunity, future areas of study must aim to better understand the work of and actively engage with site administrators. Researchers would benefit from spending a good deal of time speaking to site administrators prior to conducting a study on the profession.

Measuring the Impact of Master Schedule Training

This study posits the inequitable distribution of teachers in schools is perpetuated by site administrators who sort teachers across classrooms within schools. Future areas of research could determine the strength of the relationship between a targeted Master Schedule training program aimed at better distributing a site's best teachers among student groups, their decisions on Master Schedules, and student outcomes aimed at a variety of metrics. Future research on the role of department chairs in Master Schedule creation, and ultimately teacher assignment, would also illuminate how current practice drives market trends. Site counseling teams are typically

responsible for manually inputting hundreds or thousands of student records into a software application that generates student schedules. These individual student schedules map to courses in the Master Schedule. Two distinctions between scheduling software and a site's Master Schedules are that Master Schedules (a) are first created on either on a magnetic board or spreadsheet and tend to be housed there for a quick reference, and (b) delineate courses and teachers assigned to those courses rather than specific students in those courses. Counselors assist site administration in the technical aspects of entering students into the scheduling software, balancing courses, ensuring students on counselors' caseloads are in correct courses, and by extension, placing students into specific teachers' courses based on space available. Further research could reveal the extent to which school counselors' biases with respect to perceptions of specific teachers factor into teacher-student pairing decisions. These areas of study can also examine how to close the between how site administrators and researchers define teacher quality, and how that concept can be further operationalized by researchers.

Outcomes of Innovative Bell Schedules

Finally, the report published by the National Education Commission on Time and Learning (1994) called learning in the United States a "prisoner of time" due to the solidly ensconced time structure most students experience while in school; namely, the traditional period schedule. The report called out the structure as an "unacknowledged design flaw in American education" (National Education Commission on Time and Learning, 1994, p. 6) and highlighted little change in the length of the school day and school year given repeated and revolutionary changes in the economy, technology, and demographics in the United States spanning the 20th century. The report suggested innovative scheduling may hold the key to students best learning academic content and engaging in arts and civics. Further, changes to the structure of the school

day can (a) allow teachers to plan and deliver more robust, meaningful content; (b) families can better organize their lives; and (c) site administrators can revolutionize in their role overseeing their schools. Future areas of research can include examining whether schools with similar demographics and varying bell schedules yield higher student achievement gains. This area of research would tie directly back to Master Schedules; the mechanism would still be used to map students to teachers, but given new and innovative uses of time, might provide high-needs students more exposure to teachers with high-quality characteristics. This change to the day-to-day operation of schools has the potential to support students so they receive higher achievement results on the SBAC ELA and math exams. This change may also challenge site administrators' perceived notions of teacher quality, given a change in seat time generally changes lesson planning and classroom routines entirely.

Recommendations to Policy

This study found conventional wisdom about recruiting excellent teachers into the workforce may be the wrong diagnosis and the wrong set of prescriptions. Retaining public school teachers is difficult and teacher turnover is high. Recruitment and retention challenges may be exacerbated by the characteristics teachers are expected to have to enter the door, which are at odds with the characteristics site administration expects them to have to stay. State-mandated credential requirements that largely entail proving academic proficiency through schooling and content competencies. This study illuminated the disparity between policy mandates and their execution such that there is room to better align state expectation and site-level practice.

Recruitment and Retention

Whereas site administrators in this study were more concerned with a teacher's ability to get along with their students and other school employees, the prerequisites for public school employment are largely academic in nature. Interestingly, high academic ability was one of the least frequently cited factors in perceptions of teacher quality in this study. Existing Master Schedules influence a site principal's hiring decisions, teacher-course matching decisions, and course offerings. Oftentimes, existing Master Schedules are immutable for a variety of reasons explored in this study, therefore it follows that when given the opportunity, site administration would find a new hire with high emotional intelligence to be a better fit for a campus than one who solely portrays content mastery. It is far from hyperbolic that administrators directly impact the teacher labor market due to their preferences for qualities in new hires. Further, Master Schedule placement decisions are well within their purview. This study's findings suggested high school site administrators from suburban school districts have different notions of high-quality characteristics for teachers, an important difference that district personnel will need to account for, should they have more than one high school in their district. To support the work of site administrators, policymakers or a state-level task force could establish an updated framework for the California Standards for the Teaching Profession (CSTPs) that includes overarching themes to better encompass high-quality characteristics identified by site administrators in this study. In a similar vein, the California Teaching Performance Assessment (TPA) and induction programs can better emphasize high-quality characteristics identified by site administrators as lending themselves to teacher quality. It appears important for site administrators at low-performing schools to train the teachers typically assigned the most academically successful students classroom management and content differentiation skills that

would allow them to create the best possible learning environment for high-needs students. James and Wyckoff (2020) concluded improving the skills of teachers already in high-poverty schools is the most likely path to improving teacher effectiveness with high-needs students. Given the high amount of turnaround at schools at these schools, perhaps frontloading all new teachers in with the skills they need while in teacher preparation programs could be a way to tackle this issue at scale.

Collective Bargaining Agreements

A state-level examination of Collective Bargaining Agreements (CBAs) with respect to how they can better support principals in staffing their schools was an outcry from survey respondents in this study. Participants overwhelmingly expressed that these contractual documents imposes too many restrictions on Master Schedule decision-making. When providing reasons for full-time equivalent (FTE) allocation in the survey portion of the study, participants submitted the typed response “as needed.” This finding suggests site administrators may use FTEs to resolve otherwise difficult situations or unique circumstances that inevitably arise in balancing schedules, and directly involve CBAs and credentialing challenges. To more equitably distribute teachers in schools, local district leaders could bargain with teachers unions’ contractual stipulations that decrease barriers to equitably sorting teachers within schools, and better support schools that are segregated within district boundaries by socioeconomic status.

Recommendations to Practice

Although some studies have suggested centralization of teaching assignments as a possible solution to more equitably distributing teachers as is practiced in some countries (Akiba et al., 2009), a government-led solution to address inequitable teacher distribution may not best support improvement in the California teacher labor market. Studies cited in this study’s

literature review indicated teachers in the United States prefer to work near their hometown (Boyd et al., 2005; Engel & Cannata, 2015; Killeen et al., 2013; Loeb & Reininger, 2004; Reininger, 2012). As another layer of complexity to that solution is that some countries include in their handling of teacher placement mandatory assignment rotation (Jeong & Luschei, 2019), yet in many cases still sort their best teachers in high-track courses. Centralization of teacher distribution and/or training would be a radical shift to current economic models. So much so that it might not appeal to those interested in entering the profession, and it may impede alternative pathways into teaching. Similarly, if site administrators suddenly decided to equitably distribute teachers with high-quality characteristics across all schools in California—or drop the notion of tracking altogether—there may be an outcry from those who appear to benefit most from and currently have the most power to lend their voice to current Master Schedule creation practices (i.e. department chairs, school counselors, veteran teachers, and students on high academic tracks). This extreme pivot would likely prompt the involvement of teachers’ unions and advocacy groups and erode public trust in public education.

The Master Schedule as a Tool, Not a Strategy

As explained by research discussed in the literature review, the concept of teacher sorting is a global phenomenon and a radical shift in publicly held opinions on justice would need to take place prior to making large-scale changes. However, local principals can make strides toward more equitably distributing their best teachers by setting the stage with data illuminating the need for reaching underserved students. Such initiative would make the case for distributing teachers that includes support for teachers learning to adapt instruction to respond to the needs of students and develop rapport with them, and opportunities for frequently collaborating across content areas and grade levels to develop positive relationships with other faculty and staff.

Organizational leaders and educational partners (i.e., stakeholders) who work collaboratively can improve teaching and learning by implementing data-driven, research-based programs, services, and instructional methods (DuFour et al., 2016; Hattie, 2015; Hough et al., 2018; Muhammad, 2009).

Moving Toward Equitable Teacher Distribution

As suggested by Knight (2020), site administrators should consider revising site-based teacher and student classroom assignment policies. His study explored recent data from Texas public schools and found sorting in schools and districts explained a statistically significant proportion of the teacher quality gap (TQG), particularly in urban areas and those districts with highest occurring segregation. Future areas of research include analyzing the effects of redistributing teachers with high-quality characteristics to high-need students in various district settings (i.e., rural, suburban, and urban). Concurrently, teachers would need to be provided with training needed to meet site-administrators' expectations for high-quality characteristics. Such training could include how to: (a) adapt instruction to respond to the needs of students and develop rapport with them, and (b) facilitate opportunities for frequent collaboration across content areas and grade levels for the benefit of students and foster development of positive relationships with other faculty and staff. Site administrators would also need training in effectively building Master Schedules, including how to best respond to the outcropping of challenges identified in this study that inevitably arise.

Defining Core Practices in Master Schedule Creation

The work to improve instructional practice cannot be done without changing the fundamental structure of students' school experience. Pisoni and Conti (2019) suggested the following to address inequities that arise in Master Schedule creation:

It's time to embrace not only the potential, but the essential role of operations in furthering the pursuit of educational equity. When overlooked or underestimated, school-level processes can inhibit access to rigorous, high-quality teaching and learning. But when harnessed correctly with equity at the core, school operations have the power to improve every student's experience—and to catalyze all other efforts to enhance pedagogy, rigor, and engagement. (p. 13)

A good place to begin the established practice of distributing teachers with high-quality characteristics to all learners may be to formally define core practices in Master Schedule creation. As this study illustrated, Master Schedule decisions are usually generated and finalized with minimal input from a myriad of stakeholder groups. Consistent with the research literature, participants in this study felt veteran teachers exerted a great amount of influence on which courses they teach. However, there is evidence from participant data to suggest department chairs have an even greater influence. Typically, the department chair role is filled by veteran teachers and there are often several department chairs at a comprehensive high school site—one for each content area in English, mathematics, physical education, visual and performing arts (VAPA), among others. Department chairs are often tasked with submitting to the administrative team their preferences for which teachers in their respective departments should teach specific courses. There are several reasons administrators lean on department chairs for this task. One reason is that placing the responsibility on departments mitigates conflict site administrators must deal with regarding who should teach various courses. Another reason is that putting the onus of responsibility on department chairs for pairing selections grants them *de facto* power which can serve as a non-pecuniary incentive for taking a leadership role. In actuality, site administration *de jure* can at any time override department chair envisioned pairings.

Predictably, schools that operate this way in implementing Master Schedules do not often receive pushback from site administrators. This study illustrated that when site administrators defer to department chairs teacher–course matching decisions, the inertia of previous year’s Master Schedules continues.

Participant interviews showed that teachers migrate between districts and schools and within schools to “ease the burden of teaching;” thus, securing the department chair seat can allow the holder to largely influence their course placement and that of all those in their department, including themselves. This manner of doing business speaks to a hierarchical structure in content departments that is a microcosm of the micropolitical environment at a site as a whole. Therefore, the newest teachers have the least say in their placement and, as aligned to research literature, are typically matched with socioeconomically disadvantaged and high-needs students. This finding was further evidenced by new teachers being reported as having little influence on site administrator decision-making on Master Schedules. Site administrators selected responses in this study that showed they believe in and desired to make decisions in the best interests of students. Therefore, it does not follow they would truly be making decisions in the best interest of students if they leaned heavily on department chairs to influence their decisions.

With the preponderance of site administrators in this study who referenced terms that could be categorized under the theme “student-centered” when describing Master Schedule, it is interesting that findings seemed to indicate a discrepancy in planning and influencing Master Schedule creation. Participants in this study ranked students on low academic tracks and their parents have the least influence on site administrators on Master Schedule decision-making, specifically on these groups vocalizing their opinions. The findings implied the highly unlikely

scenarios that site administrators (a) do not consider students on low tracks, or (b) feel the need to make tracking decisions on their behalf. These findings suggest that site administrators do not actively seek out the opinions of low-track students and their parents. As public schools largely serve socioeconomically disadvantaged (SED) and/or high-needs students, it may be a critical oversight to make decisions on behalf of these groups, or neglect to garner feedback from them in an ongoing manner. What site administrators appear to be doing is matching individual teachers whom they perceive have the most appropriate personalities with student cohorts whom they feel would have the greatest benefit.

Site Administrator Master Schedule Training

Jeong and Luschei (2019) concluded the most effective way to reduce within-school teacher sorting inequities is to better integrate students across all courses, effectively decreasing the differences in teaching conditions so that teachers have fewer options to sort across. This study suggests site administrators could facilitate that scenario with training and support. It is alarming that California high school site administrators share the experience of being “self-taught” at Master Schedule creation. The evidence needed to justify a comprehensive administrative training that encompassing both theory and technical aspects of creating a Master Schedule is amply provided in this study. Site administrator training should include best practices in providing students and parents a voice to better understand how to “meet student needs” and make Master Schedules more “student centered.” Support from superintendents is critical as findings revealed conflict with stakeholder groups may be inevitable.

Conclusion

Given the unprecedented and unplanned changes to learning taking place virtually as a response to the COVID-19 global pandemic, the topic of when and with whom students should

participate in learning is more important than ever. Hibbeln (2020) aptly drew attention to long-standing issues facing Master Schedule creation by stating:

Ironically, school schedulers face the same choices today as they did in the pre-coronavirus world: They can take the same one-size-fits-all approach to structuring the [upcoming school] year[s]. Or they can use this time to shore up the cracks in the foundation and align the schools' calendars, instructional days, and resources with their mission statements. (para. 26)

Public school administrators at all levels should support a reimagined model of education—one in which greater numbers of students are exposed to their site's best teachers, bell schedules support what is known about the way youth learn, and teachers are provided with training programs that focus on practical aspects of connecting with students, running a classroom, and working collaboratively with colleagues. Indeed, the California public education system must do more than meet these goals; they should set them for the nation. The realities of the economy make it difficult for capable, university trained people to find meaningful work, and today's world no longer allows the poorly educated to rely on securing a productive, unskilled job. The stakes are far too high, particularly for the majority of pupils in California who are socioeconomically disadvantaged. In an era where swift propagation of information and state of the art technology are cornerstones of expansion for all businesses in the global economy, preparing students for the changing landscape of the modern workforce should be essential to any educational institution's measurable program outcomes.

This study is a call to action for public school administrators, policymakers, and researchers to reimagine the day-to-day operation of public high schools and rally around a meaningful, operationalized definition of high-quality teachers to support the work they do for

public school students. High school principals should harness their executive authority over Master Schedule at the site-level to increase student exposure to excellent teachers through intentional and collaboratively planned within-school teacher distribution, and by unlocking time using innovative bell schedules. This work cannot be done without the full support of district superintendents and public school teachers. High school principals must be innovative, courageous, and compassionate to ameliorate decades-old, ineffective Master Schedule practices in order to attenuate generational poverty for public school students.

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APPENDICES

APPENDIX A

Survey - 27 Questions

CRITERIA TO SUBMIT RESPONSES

1. I am a site administrator at a traditional public high school. (Yes or no)
2. I am a/an:
 - Principal
 - Assistant Principal
 - Neither
3. The role of overseeing the Master Schedule is the domain of site Principals. However, this survey is **not** intended for Principals who only oversee the process of Master Schedule completion. **It is** intended for either (1) Principals or (2) Assistant Principals who have three or more of the following roles at a site. (Please select all that apply to you.)
 - Collaborating with other site administrators and faculty to generate drafts of the Master Schedule.
 - Performing course balancing (i.e. number of students teachers interact with during the school day) per district CBA restrictions.
 - Adding or eliminating courses, assigning teachers additional courses based on student needs, and/or assigning teachers to courses based on a rotation schedule.
 - Generating drafts of and finalizing the Master Schedule electronically and/or physically (such as utilizing a magnetic board).
 - Providing active support to office staff on inputting courses and students into district-supported software in order to meet deadlines outlined by the district CBA.

If **you are** responsible for at least three of these roles, proceed to completing this survey. If not, please forward this survey to the site administrator who does. Thank you!
(If all three criteria were met, the participant was asked to electronically sign a consent form at this stage of the survey.)

DEMOGRAPHIC INFORMATION

4. Gender: (dropdown menu)
 - Male
 - Female
 - Transgender
 - Non-binary/ third gender
 - Prefer to self-describe as:
 - Decline to state
5. Race and Ethnicity. (dropdown menu)
 - American Indian or Alaska Native
 - Asian
 - Black or African American

- Hispanic or Latino
 - Native Hawaiian or Other Pacific Islander
 - White
 - One or more
 - Decline to state
6. Highest level of education:
- BA/BS
 - MA/MS
 - Ed.D./Ph.D.
 - Other:
7. Please indicate which of the following roles you have experience with (mark All the apply)
- As a teacher with a clear credential:
 - As a counselor with a clear credential:
8. How many years of experience do you have doing the following (enter just the number, i.e. 10, 7.25, 3.5, etc.):
- As a teacher with a clear credential:
 - As a counselor with a clear credential:
9. How many years of experience do you have as an administrator in California with a clear credential? (enter just the number, i.e. 10, 7.25, 3.5, etc.):
10. Please list the following:
- Current district: (exact entry)
 - Current school site: (exact entry)
11. I would describe my district as:
- Urban
 - Suburban
 - Rural
12. Does your school site currently receive Title I funding? (Yes, No, I don't know)

MASTER SCHEDULE: KNOWLEDGE ACQUISITION AND SKILL LEVEL

13. Please enter the number of years you have done the following (enter NA if a prompt does not apply to you):
- Number of years actively participating in Master Schedule (MS) creation at current site
 - Number of years overseeing the Master Schedule (MS) at all *previous* sites
14. How many years did the *previous* Administrator overseeing the Master Schedule have that role?
- Years:
 - Not sure
15. Did you recreate the Master Schedule from the ground up this year or mostly use what was in place last year? (Select either “Ground up” or “Mostly use what was in place”)
16. Describe your bell schedule:
- Traditional, 6 or 7 periods
 - Block schedule.

- Other:

17. Please drag and drop the top four (4) learning methods you believe played a role in **your understanding of generating the Master Schedule**, ranking them in order of importance (1 = most significant).

- Self-taught
- Taught in another district or by a county office
- Training by a professional organization
- In-district training
- On-site Assistant Principal guided you
- On-site Principal guided you
- Off-site Assistant Principal guided you
- Off-site Principal guided you
- School counselor guided you
- On-site counseling secretary or technician guided you
- A teacher guided you
- Others (please specify):

18. What three words would you use to describe Master Schedule creation? (exact answers)

19. Rate from (1) *Disagree Strongly* to (4) *Agree Strongly* each of the potential **challenges** for MS creation:

Statements	(1) Disagree Strongly	(2) Disagree	(3) Agree	(4) Agree Strongly	I don't know
The Collective Bargaining Agreement poses too many restrictions such as number of students allowed in each class or number of hours teachers work each day, etc.					
I don't have the technical ability to start the Master Schedule from scratch each year.					
I don't have the time to start the Master Schedule from scratch each year.					
I have no idea how I would alter the Master Schedule to anything other than what is currently being offered.					
The pool of quality teachers is low at my site.					
There are not enough students available for diverse course offerings.					
There are not enough teachers with credentials that allow for diverse course offerings.					
Making changes on the Master Schedule generates too much conflict with teachers.					
Making changes on the Master Schedule generates too much conflict with counselors.					
Making changes on the Master Schedule generates too much conflict with parents.					
Making changes on the Master Schedule generates too much conflict with students.					
I do not want to have difficult conversations about changes that need to be made with the Master Schedule.					
I do not have time to have difficult conversations about changes that need to be made to the Master Schedule.					
The limited number of 0.2FTEs available prevent needed changes to the Master Schedule.					

Other challenge(s) not listed:

MICROPOLITICS OF SCHOOLS

20. Site administrators can offer faculty compensation for teaching a course during their prep period; this is often referred to as a 0.2 Full Time Equivalent (FTE). The majority of additional 0.2FTEs allotted to my site are assigned (select all that apply):

- As an incentive for teachers who make a positive contribution to site-based culture and climate.
- To faculty who are willing to teach intervention courses for at-risk students.
- On a rotating basis as outlined in the Collective Bargaining Agreement (CBA).
- Program coordinators (i.e. ASB, AVID, etc.) and/or coaches.
- Other (specify):

21. Rate from (1) *Disagree Strongly* to (4) *Agree Strongly* the degree to which stakeholders exert **influence** on Master Schedule decisions specifically by vocalizing their opinion(s) at any time to site administrators regarding what needs to change and/or stay the same on the Master Schedule.

Stakeholders	(1) Disagree Strongly	(2) Disagree	(3) Agree	(4) Agree Strongly	I don't know
Veteran Teachers					
New Teachers					
Department Chairs					
Counselors					
Students on high academic tracks					
Students on low academic tracks					
Parents of students on high academic tracks					
Parents of students on low academic tracks					
Parents and advocates of students receiving special education services.					
Students receiving special education services					
Any site administrator					
Administrators from feeder schools					
District Administration					
Other stakeholder(s) not listed:					

22. Please drag and drop the top four (4) factors you believe played a role in site administration **matching specific teachers to specific courses** (i.e. accelerated, regular, remedial, elective, etc.) in the Master Schedule, ranking those top four characteristics in order of importance (1 = highest in significance).

- Administrator’s perception of a teacher’s ability level with challenging academic subjects.
- Administrator’s perception of a teacher’s ability level with behaviorally challenging students.

- Administrator’s level of comfort manipulating the course offerings.
- Teacher credential considerations.
- To keep the current Master Schedule as close to last year’s Master Schedule as possible.
- The need to align common prep times to allow for faculty collaboration.
- Having to include district-mandated course offerings.
- Confrontation potential from specific stakeholder(s) (list them here):
- Other important factor(s) not listed here (please specify):

ADMINISTRATOR PERCEPTION OF TEACHER QUALITY AND EDUCATIONAL EQUITY

23. Total number of teachers at your current school site: (exact entry)
24. Please drag and drop the four (4) characteristics you believe play the most significant roles in **teacher quality**, ranking those top four characteristics in order of importance (1 = highest in significance).
- Teacher has high academic ability themselves.
 - Teacher helps to improve student standardized test scores.
 - Teacher is credentialed in high-need area (i.e. Special Education, CTE, STEM, etc.)
 - Teacher is the same gender as students.
 - Teacher is the same race and/or ethnicity as students.
 - Teacher has a significant amount of classroom experience.
 - Teacher is similar to me in traits and values.
 - Teacher has a positive relationship with other faculty and staff.
 - Teacher has a positive relationship with students.
 - Teacher is willing to adapt instruction to respond to the needs of students and increase their engagement.
 - Teacher has excellent classroom management skills.
 - Teacher is bilingual.
 - Other characteristics you believe contribute to teacher quality: (exact entry)
25. In your opinion, approximately what percentage of teachers at your site possess all four of the characteristics you identified in the previous question for teacher quality?
26. In this study, the **highest need students** are defined as being in any of the following circumstances:
- Receiving special education services.
 - Designated foster youth.
 - In in the lowest quartile of socioeconomically disadvantaged students
 - Failing the majority of their classes.
 - Scoring in the lowest quartile on state assessments.

What percentage of the teachers you identified as having **all four** characteristics of teacher quality are assigned to the classes that contain a **majority of high-need students**?

27. Briefly state what you believe would help you to have greater success generating and finalizing the Master Schedule for the coming academic year (2020-21).

Interview Inquiry: Would you be willing to participate in an follow-up phone interview regarding administrative decision making on Master Schedules with the researcher of this study? Participants' identification and district information will remain confidential and will not be disclosed in the study.

- No
- Yes

If Yes: Thank you for your willingness to participate in a follow-up interview. Please provide your contact information below and electronically sign the interview consent form. You will be contacted soon to schedule the interview.

- Name
- Best contact number
- eSign the Interview Consent form

Incentive: Thank you for completing this survey! Please provide your district email address so that you can be contacted about receiving a \$10 electronic Starbucks card.

APPENDIX B

Interview - 12 Questions

1. Please state your name, current position, school site, and district.
2. How long have you been in this position?
3. What administrative positions did you hold prior to this one and how long were you in each?
4. Please have a look at your site's current Master Schedule. What follows are questions specifically about core courses in English and math offered at your site.
 - How many are regular sections of math? English?
 - How many are remedial sections of math? English?
 - How many are honors, accelerated, AP, and/or IB sections of math? English?
 - Roughly how many students attend your school?
5. In the survey portion of this study, the three words you used to describe Master Schedule creation at your site were: <list them here>. Can you elaborate further on why you chose these words?
6. On the survey portion of this study, you rated several **challenges** in MS creation highly (score of *Agree* or *Agree Strongly*): <list them here>. Can you elaborate further on why these situations present **challenges** for administration in MS creation and/or implementation?
7. On the survey portion of this study, you rated highly that the following **stakeholders** have influence over Master Scheduling decisions (score of *Agree* or *Agree Strongly*): <list them here>. Can you elaborate further on what **impact** their influence has?
8. On the survey portion of this study, you listed the factors you believe played a role in **matching specific teachers to specific types of courses** (i.e. accelerated, regular, remedial, elective, etc.) made to the Master Schedule were: <list them here>. Can you elaborate further on why these factors played a role in administration **matching specific teachers to specific types of courses**?
9. The site Principal has the final say on which teachers are assigned specific classes on the Master Schedule; this is also known contractually as *Right of Assignment*.
 - Do you believe this contractual right is necessary? If so, why? If not, why not?
10. Briefly describe what you believe to be the intended **purpose** of a Master Schedule and how you define an **effective** the Master Schedule.
11. On the survey portion of this study, you listed the following characteristics as playing a role in **teacher quality**: <list them here>. You also stated that <x>% of the faculty at your site have all four of these characteristics.
 - a. On your Master Schedule this year, which **types** of courses (i.e. advanced, regular, or remedial core classes, electives, SpEd courses, CTE, etc..) have you or the previous administration assigned the highest quality teachers?
 - b. Outside of credential requirement to teach certain subjects, what factors influenced the decisions you or the previous administration made in **pairing high-quality teachers with these courses**?

- c. On the survey you stated that <x>% of high-quality teachers you identified as having all four characteristics are assigned to the classes that contain a majority of high-need students. Is there anything that would help increase your ability to evenly distribute these high-quality teachers at your site to greater numbers of high-need students?
12. What types of decisions would you need to make on next year's Master Schedule in order to ensure high-quality instruction is provided for *all* students at your site?

APPENDIX C

Informed Consent for the Survey



INFORMED CONSENT/QUANTITATIVE RESEARCH

AGREEMENT TO PARTICIPATE IN THE SURVEY PORTION OF *THE IMPLICATIONS FOR EDUCATIONAL EQUITY DUE TO MASTER SCHEDULING DECISIONS MADE BY SITE ADMINISTRATORS* (IRB # 3605)

You are being asked to take part in a research project that is led by Rachel Pittman, a PhD candidate at Claremont Graduate University, who is being supervised by Professor Thomas Luschei.

To participate in this study, you must be an administrator (i.e. Principal or Assistant Principal) at a traditional high school that serves students in grades 9 through 12 inclusive. You will be compensated in the form on a \$10 electronic Starbucks card mailed to your district email address for participating in this study (1) if you meet the eligibility requirements and (2) after answering at least 90% of the questions in the **survey**. Additionally, if you choose to participate in the follow up interview and are selected to be interviewed, you will receive an additional \$10 Starbucks gift card.

During this study, you will be asked to complete a digital survey which will take approximately 10 to 12 minutes. The survey will be administered online via Qualtrics and data will be collected by the researcher. The purpose of this study is to two-fold in that it aims to provide (1) a nuanced view of the factors that lead site administrators to sort teachers into high or low-track courses, and (2) contribute to existing literature by providing evidence for how within-school teacher sorting occurs. As the result of the findings the goal of this study is to provide a body of research that district administrators and policymakers can use to increase the educational equity at secondary sites by guiding the distribution of teachers and improve teacher professional development.

The risks that you run by taking part in this study are minimal. To the best of my knowledge, participation in the survey have no more risk of harm than you would experience in everyday life. If you agree to participate, you may choose not to answer any given questions, and you may withdraw your consent and discontinue your participation at any time. Confidentiality will be provided to you and your individual privacy will be protected in all papers, books, talks, posts, or stories resulting from this study. I will not use the data I collect for future research, nor share it with others. I am collecting (1) your district email address to provide you with compensation for your participation in this study and (2) the name of the district you work for to further develop data needed to do statistical analysis in my study. In order to protect the confidentiality of responses, I will use random ID codes for districts and keep data with your email address on a thumb drive that is not accessible to online tampering. I will delete the data files and destroy the thumb drive one year after the successful defense of my dissertation. Claremont Graduate University's human subjects protection staff members have reviewed the study and determined it to be exempt from IRB supervision.

You are not likely to have any direct benefit from participating in this research study. This study will benefit me by helping me to complete my dissertation research and earn my PhD. This study is also intended to benefit the field of Education as it will provide new knowledge which may potentially contribute to future educational policy and governing decisions.

This study has been certified as exempt from Institutional Review Board coverage. You may contact the CGU Board with any questions or issues at (909) 607-9406, or at irb@cgu.edu. If you have any questions or would like additional information about this study, please contact Rachel Pittman at rachel.pittman@cgu.edu. You may also contact my dissertation chair at thomas.luschei@cgu.edu.

By signing this box you are indicating that you understand the information on this form, that someone has answered any and all questions you may have about this study, and that you voluntarily agree to participate in it.

Signature of Participant _____ Date _____

APPENDIX D

Informed Consent for the Interview



INFORMED CONSENT/QUALITATIVE RESEARCH

AGREEMENT TO PARTICIPATE IN THE INTERVIEW PORTION OF *THE IMPLICATIONS FOR EDUCATIONAL EQUITY DUE TO MASTER SCHEDULING DECISIONS MADE BY SITE ADMINISTRATORS* (IRB # 3605)

You are being asked to take part in a research project that is led by Rachel Pittman, a PhD candidate at Claremont Graduate University, who is being supervised by Professor Thomas Luschei.

To participate in this study, you must be an administrator (i.e. Principal or Assistant Principal) at a traditional high school that serves students in grades 9 through 12 inclusive. You will be compensated in the form of a \$10 electronic Starbucks card mailed to your district email address for participating in this study (1) if you meet the eligibility requirements and (2) after answering at least 90% of the questions in the **interview**.

During this study, you will be asked to take part in an interview, which will take approximately 20 to 30 minutes. The interview will be over the phone and will be recorded. The purpose of this study is to two-fold in that it aims to provide (1) a nuanced view of the factors that lead site administrators to sort teachers into high or low-track courses, and (2) contribute to existing literature by providing evidence for how within-school teacher sorting occurs. As the result of the findings the goal of this study is to provide a body of research that district administrators and policymakers can use to increase the educational equity at secondary sites by guiding the distribution of teachers and improve teacher professional development.

The risks that you run by taking part in this study are minimal. To the best of my knowledge, participation in the survey have no more risk of harm than you would experience in everyday life. If you agree to participate, you may choose not to answer any given questions, and you may withdraw your consent and discontinue your participation at any time. Confidentiality will be provided to you and your individual privacy will be protected in all papers, books, talks, posts, or stories resulting from this study. I will not use the data I collect for future research, nor share it with others. I am collecting (1) your district email address to provide you with compensation for your participation in this study and (2) to reach out to you about participating in the interview. You will be assigned a number. All of your responses will be associated with that number. If the data from this study are presented or published, it will be as grouped data; your identity will not be divulged in any way. Audio recordings will be erased after transcribing, coding, and summarizing have been completed in order to further ensure your privacy. Claremont Graduate University's human subjects protection staff members have reviewed the study and determined it to be exempt from IRB supervision.

You are not likely to have any direct benefit from participating in this research study. This study will benefit me by helping me to complete my dissertation research and earn my PhD. This study is also intended to benefit the field of Education as it will provide new knowledge which may potentially contribute to future educational policy and governing decisions.

This study has been certified as exempt from Institutional Review Board coverage, You may contact the CGU Board with any questions or issues at (909) 607-9406, or at irb@cgu.edu. If you have any questions or would like additional information about this study, please contact Rachel Pittman at rachel.pittman@cgu.edu. You may also contact my dissertation chair at thomas.luschei@cgu.edu

By signing this box you are indicating that you understand the information on this form, that someone has answered any and all questions you may have about this study, and that you voluntarily agree to participate in it.

Signature of Participant _____ Date _____

APPENDIX E

IRB Exemption Status



Dear Rachel,

Thank you for submitting your research protocol to the IRB at Claremont Graduate University for review. On 10/29/2019, based on the information provided for Protocol #3605, we have certified it as *exempt from IRB supervision* under CGU policy and federal regulations at 45 CFR 46.101(b)(2). A waiver of informed consent has not been granted for this study, because suitable justification for such a waiver was not provided.

Exempt status means that so long as the study does not vary significantly from the description you have given us, further review in the form of filing annual Renewal or project Closure forms is not necessary. You may specify in relevant study documents, such as consent forms, that CGU human subjects protection staff members have reviewed the study and determined it to be exempt from IRB supervision. The IRB does not "approve" (or disapprove) studies that are exempt, so kindly avoid use of this verb.

Please note carefully that maintaining exempt status requires that (a) the risks of the study *remain minimal*, that is, as described in the application; (b) that *anonymity or confidentiality* of participants, or *protection* of participants against any higher level of risk due to the internal knowledge or disclosure of identity by the researcher, is maintained as described in the application; (c) that *no deception* is introduced, such as reducing the accuracy or specificity of information about the research protocol that is given to prospective participants; (d) the research *purpose, sponsor, and recruited study population* remain as described; and (e) the principal investigator (PI) continues and is not replaced.

Changes in *any such features* of the study as described may affect one or more of the conditions of exemption and would very likely warrant a reclassification of the research protocol from exempt status and require additional IRB review. If any such changes are contemplated, please notify the IRB as soon as possible and before the study is begun or changes are implemented. If any events occur during the course of research, such as unexpected adverse consequences to participants, that call into question the features that permitted a determination of exempt status, you must notify the IRB as soon as possible.

Please note that a series of suggestions may also be attached to this email. These are suggestions to develop or improve your research protocol. These suggestions are highly recommended but not required. You do not need to send anything back to the IRB.

If Applicable: Most listservs, websites, and bulletin boards have policies regulating the types of advertisements or solicitations that may be posted, including from whom prior approval must be obtained. Many institutions and even classroom instructors have policies regarding who can solicit potential research participants from among their students, employees, etc., what information must be included in solicitations, and how recruitment notices are distributed or posted. You should familiarize yourself with the policies and approval procedures required of you to recruit for or conduct your study by listservs, websites, institutions, and/or instructors. Approval or exemption by the CGU IRB does not substitute for these approvals or release you from assuring that you have gained appropriate approvals before advertising or conducting your study in such venues.

The IRB may be reached at (909) 607-9406 or via email to irb@cgu.edu. KGI personnel with questions about their exempt status should contact KGI's Office of Research and Sponsored Projects at (909) 607-9313 or irb@kgi.edu. The IRB wishes you well in the conduct of your research project.

Sincerely,

Andrew Conway,
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