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Equity and Ability Grouping: A Study of Whole-School Practices and Reflections on Vocal Music Education

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Abstract

This co-authored dissertation is a macro-level case study of a public high school tracking system and a micro-level autoethnography from a music educator about vocal music placement practices. The case study sought to comprehensively describe and analyze the characteristics of a tracking system in all core subjects at a single school, including the extent of differentiation of levels, placement practices, student mobility, teacher tracking, and inclusiveness by race, class, and gender. It also used network analysis software to map more than 75,000 connections among students created by their course-taking; it used this to quantitatively identify student communities, which then were analyzed for demographic trends. Paired with the case study, the autoethnography examined the assumptions and placement practices in high school vocal music and in educator preparation programs. The case study found limited student mobility, complex placement practices that differed from one subject area to another, extensive segregation in nearly all subject areas, and limited evidence for teacher tracking. It also revealed several student communities that function as segregated schools-within-a-school. The autoethnography revealed the impact of teachers as evaluator on the leveling and ability grouping practices within vocal music education and specifically highlights bias through the lens of Critical Race Theory. Recommendations for policy reform are provided.

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—Daniel and Drew

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—Drew

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—Daniel

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Chapter One

Introduction

Both of the researchers for this study believe it is important to understand the context of our work. While we have some important differences, we share the privilege of Whiteness, and we enter this phase of our work after years of study about effecting social justice.

Daniel was drawn to this work by more than a decade in the classroom watching the system produce the same results, year in and year out, for the same kinds of students. Over and over again the schools where he worked lamented that Black and Brown children were simply not enrolling in advanced classes, all the while keeping gatekeepers in power and systems in place to maintain the status quo. He himself was part of that very gatekeeping, recommending students for certain classes but not others, and he admits to being complicit in the hoarding of educational opportunity. This dissertation is not enough to amend the harms done by decades of tracking practices, but he holds in his heart that one who moves mountains does so by carrying away a stone at a time.

For Andrew, this work grew out of his own need for community and belonging within the music classroom. As a high school and collegiate music student navigating his own membership in a marginalized community, he not only found refuge but a sense of community in choral ensembles. Now as a choral music educator himself, he has noticed that the ensembles he directs and the music classrooms he teaches do not truly represent the diverse communities that he serves. Since the music classroom, specifically the high school ensemble setting, relies heavily upon the evaluative practices and consequently the ability grouping assignments by its director, he believes that reflecting on his tenure as a

vocal music educator may reveal insight into systems that limit the participation of Black, Indigenous people of color. The goal of this dissertation is for him to contemplate his own experiences not only as a means of self-growth but to embolden other White music educators to reflect on their own practices of community, inclusion and access.

Schools have used ability grouping and tracking for more than a century to provide greater learning opportunities for some students and to limit the advancement of countless others (Oakes, 1985). While its popularity has waxed and waned, it remains embedded within the fabric of American high schools of nearly every size and status and in nearly every village and city (Kohli, 2014). In the wake of court-ordered desegregation in the 1960s and 1970s, many schools implemented grouping in their high schools to circumscribe the benefits of schooling to a chosen few; even today, more than fifty years later, they continue to do so in ways both subtly and obviously harmful (Doughty, 1978; Darby & Rury, 2018). Vocal music education likewise continues to reproduce inequity; since the 1970s, vocal music educators have claimed they are immune from implicit bias in their selection of students (Helwig & Thomas, 1973). Despite these claims, listening for Whiteness and racial bias are endemic within the classroom practices of many vocal music educators (Koza, 2017). Researching and understanding the whole-school dimensions of ability grouping and the selection of students into vocal music groups are key to dismantling systems of oppression.

Researchers have identified time and again that ability grouping has meant classrooms segregated by race and class, with low and self-fulfilling teacher expectations, and low teacher quality and low achievement for many students (Darby & Rury, 2018; Reglin & Chisom, 1992; Wheelock, 1992; Braddock & Dawkins, 1993; Donelan et al.,

1994). Researchers have found its detrimental effects are concentrated and magnified for Black students, Latino students, immigrants, and children living in poverty (Donelan et al., 1994; Oakes & Guiton, 1995). The Sorensen (1970) model of ability grouping provides a framework for understanding the characteristics of a whole-school ability grouping system, and subsequent researchers have used it to analyze the differentiation, inclusiveness, scope, and selection methods of grouping systems (Kelly, 2007; Domina et al., 2019). In addition, researchers have identified the importance of analyzing the characteristics of teachers within an ability grouping system (Talbert & Ennis, 1990; Reglin & Chisom, 1992; Gamoran, 1992).

Two recent articles in choral music education journals have highlighted common practices within the field that create greater marginalization and perpetuate stereotyping through practices such as ability grouping and adjudication. Maunu (2018) discussed choral elitism and the pressures that directors are under to create top performing ensembles with a very specific sound and timbre. The author questions who these practices are excluding. Koza (2017) specifically gives this practice a name: listening for Whiteness. Koza (2017) found glaring inequity in post-secondary music education settings during adjudicated admissions auditions. Koza noted these practices greatly limited access for students of color and were potentially detrimental to potential music educators of color. However, the research specifically focusing on audition practices, adjudicator bias, and racialized ability grouping practices in choral music education is sparse. In response to the Civil Rights Movement of the 1960s, research emerged in the early 1970s (Helwig & Thomas, 1973) showing integration of students of color in secondary music education programs as proof of non-bias educational practices. Merely

having students present was enough. It appears that this status quo has been maintained and bias is very rarely, if ever, addressed when discussing ability groupings and class placements in music classrooms. Recent research work has begun to underscore the need for more socially just practices in the classroom; however, this has focused primarily on the content being studied or performed, not how students are being assessed, recruited, selected, or placed into choirs by ability groupings.

Problems and Audience

Despite the extensive literature involving ability grouping, no studies as far as we are aware combine analysis of the macro-level practices of a school along with micro-level placement decisions within an elective subject area. Literature related to whole-school ability grouping practices also lacks a robust understanding of how communities of students emerge as a result of grouping practices, which is at the heart of the scope dimension of the Sorensen model of understanding grouping systems in schools. The traits of informal tracking systems have been understudied as well; this study aims to fill the gap in literature in both of these cases. Lastly, music education literature lacks research to understand the practices of selection for advanced vocal music courses. The placement of students is generally managed by a single educator, based on an adjudicated experience in which specific Eurocentric musical characteristics are listened for, and performed in environments in which adjudicators make no attempt to suppress bias or discriminatory behaviors that plague vocal music as a whole. While there has been some research that problematizes listening for Whiteness, few studies examine the specific vocal music classroom practices that reify the judgment sung by famed Black blues musician Big Bill Broonzy that “they says, if you was White, you’d be alright, if you was

Brown, stick around, but as you's Black, oh brother, get back" (Broonzy, 1956/2000, track 18).

The primary audience of this research were the teachers and policymakers at the respective sites, with a particular emphasis on meeting the needs of those educators interested in effecting social justice. Aiding them in evaluating the practices that work to produce more equitable classrooms is critical for making valuable contributions to the field. This research also seeks to effect change by reaching other researchers and activists who might be considering evaluating the ability grouping systems and the music grouping practices at other schools. Unfortunately, there are far too many schools that continue to practice plantation schooling and that remain sites of torture and oppression for the body and the soul (Jones, 2005). The field is open for others to till the soil of their practices and investigate what is happening, and we welcome others to join us and extend upon this research.

Purposes and Research Questions

This study had two related purposes: first, we examined the grouping practices that reproduce systemic racist, classist, gendered, and intersectional inequities. To that end, we conducted a research case study and an autoethnography. For the case study, the research site was a comprehensive public high school in the Midwest with approximately 900 students and 80 staff members. The school offered a wide array of courses at multiple levels, and it used different methods of grouping students within different subject areas. The case study specifically sought to answer the question: What are the characteristics of the ability grouping system at a comprehensive high school in the post-tracking era? As part of this question, we asked the following sub-questions:

1. What is the extent of vertical levels and course choices at the school?
2. How are students grouped, and how much mobility occurs after placement?
3. How inclusive are the groupings in terms of race, gender, disability status, economic status, and residency?
4. What student communities exist as a result of the groupings, how much do they interact, and how do they evolve over time?
5. To what extent do teacher traits correspond to the levels of courses taught by teachers?

Although the autoethnography did not seek to address specific research questions, it presents narratives about grouping practices in the single, often-overlooked content area of vocal music. Although the teacher writing the autoethnography did not work at the same site as the whole-school case study, the purpose of the autoethnography was to provide a human context to the numbers and statistics within the case study. The author of the autoethnography, Drew Cowell, has 15 years of teaching experience in a variety of public and private educational settings. Drew offers insight on his experiences encompassing an array of methods of grouping students within vocal music ensembles.

While we make no claim to solving the problems that plague our schools, and we accept that a cycle of reform and retrenchment is an inevitability, we also believe there are reforms that can and should be made. We adopt a transformative worldview; we recognize the marginalization of our students, and we hope our work helps to confront and dismantle the systems of power that oppress our students.

Terminology

The vocabulary used to describe ability grouping varies in the literature. For this study, ability grouping is defined as the placement of students into separate courses with students with purportedly similar levels of skill or achievement (Bryson & Bentley, 1980). The practices and policies related to grouping at high schools are the primary focus of this research. Tracking is a distinct but related phenomenon in which students are assigned to a group of courses, known as a track, with students of similar skills and achievements; formal tracking typically entails a narrowing of the range of coursework choices for a student depending on the track to which they are assigned (Bryson & Bentley, 1980). While formal tracking is increasingly uncommon in high schools, informal tracking continues in that students assigned to a particular course level in one subject area are assigned to the same level in another subject area (Friedkin & Thomas, 1997; Loveless, 1999; Lucas et al., 2010).

Likewise the vocabulary used to describe ability grouping in vocal music varies greatly. Ability groupings in vocal music education classrooms usually consist of select or auditioned ensembles. Select ensembles are defined as ensembles in which students are selected for their participation in the ensemble by the classroom's teacher either through assigned criteria or assessment (Phillips, 2003). In the vocal music classroom, audition and performance assessment can be used interchangeably. In this autoethnographic research, the terms ensemble director, music educator, and conductor are used interchangeably. Two terms are very specific to this research: timbre and blind audition. Timbre is defined as the quality of a sound that distinguishes one voice or instrument from another (Dell'Antonio et al., 2016). For the purpose of defining blind

auditions we used Goldin & Rouse's (2000) examples of blind audition: an audition environment in which the true identity of the auditionee is concealed from the adjudicator.

Chapter Two

Literature Review

Theoretical Framework

Our theoretical framework adopted two critical theories: first, we recognize the primacy of race in understanding educational inequity as described by critical race theory (CRT), described in more detail in the following section. Second, we agree with Kendi (2019) that "it is impossible to know racism without understanding its interaction with capitalism" (p. 156). Following our review of CRT, we therefore connect our work to theories of the racialized class system of the United States, which posit that schools reproduce a racist, classist, and gendered hierarchy. As part of our framework, we also briefly trace the origins and history of ability grouping. Following the framework is an in-depth literature review in two parts; the first describes research related to the characteristics of ability grouping at the whole-school level, while the second is a review of research related to grouping practices in music education.

Critical Race Theory

Two significant themes of CRT inform our work: first, racism is endemic, normalized, and ordinary within American society (Delgado & Stefancic, 2001; Ladson-Billings & Tate, 1995). Second, we view educational inequity through the lens of key tenets of CRT, namely, interest convergence, the reform-retrenchment cycle, and the property functions of Whiteness (Bell, 1980; Crenshaw, 1988; Harris, 1993).

Before we examine CRT in depth, we must acknowledge that we as two White men do not possess a unique voice of color that can disrupt dominant narratives in the same way as Black, Latino, and Asian voices. We cannot experience the oppression of

racism. The history of American life, from the development of schools to the construction of highways to expanding homeownership, has been marked by an investment in Whiteness (Lipsitz, 1995). We know that our Whiteness has privileged us in ways large and small, and in ways known and unknown to us. We also note that a deliberate reflection upon our Whiteness is critical to dismantling oppression; as Howard (2004) noted, "it is necessary to lay bare discourses of Whiteness and racial dominance" if we are to understand the workings of racism. Thus, in addition to CRT, our work is informed by the emergent field of Critical Whiteness Studies, which seeks to examine the "source and location of the problem of racism" (Howard, 2004). We hope to heed the wisdom of Howard (2004), who noted:

> It is vitally important that racially dominant bodies that would take up anti-racist work and live out oppositional Whiteness realize that their choice to do so does not stop the privilege of Whiteness from converging upon their bodies, nor does it guarantee that they have escaped the looming possibility that Whiteness will find expression through their bodies and work. Dominant antiracist scholars need to consciously and continuously take responsibility for their implication in Whiteness regardless of their personal politics. Without a constant swimming against the tide of Whiteness the fallback position in their lives will always be one of White privilege. (p. 75)

Thus, while we cannot generate counter-narratives nor do we seek to appropriate narratives of people of color, we hope our research uplifts those who are marginalized in our communities.

In terms of the tenets of CRT, we agree that racism is endemic, normalized, and ordinary within American society (Delgado & Stefancic, 2001; Ladson-Billings & Tate, 1995). Racism does not only describe individual discriminatory or prejudicial actions, nor is it a general hostility based on race; it is a structural or systemic oppression (Kendi, 2016). This oppression is often perpetuated unconsciously through institutional policies and procedures or via implicit biases of individual actors (Lawrence, 1987; Yancy, 2018; DiAngelo, 2018). CRT demands we recognize the significance of race in American educational inequity; however, it does not put forth a hierarchy of oppression, and it acknowledges the utility of the lenses of class and gender in analyzing inequity (Ladson-Billings & Tate, 1995, p. 51). Intersectionality therefore is a foundational component of CRT analysis (Crenshaw, 1989).

CRT also challenges the dominant narrative that America has moved beyond race by pushing back against "traditional claims of legal neutrality, objectivity, color-blindness, and meritocracy as camouflages for the self-interest of dominant groups in American society" (Delgado in Ladson-Billings & Tate, 1995, p. 52). Purportedly race-neutral policies undeniably effect real harm on Black Americans; as Crenshaw (1988) argued, the perception of a race-neutral legal system contributes to the illusion that racism is no longer relevant in the perpetuation of a Black under-class. Americans are encouraged to assume that inequitable outcomes for the poor and people of color are the result of individual or group defects rather than a system of unequal opportunities. That there are Black Americans who are successful lends credence to the argument that equal opportunities exist while racism does not; similarly, the presence of academically successful Black students gives ammunition to those who argue the achievement gap

between Black and White students is due to cultural or innate deficiencies of Black children rather than of the system itself (Crenshaw, 1988; Darby & Rury, 2018).

A second key theme of CRT is understanding inequity through the analytical frames of interest convergence, the reform-retrenchment cycle, and the property functions of Whiteness. We adopt in our framework the concept that policy changes are often a result of interest convergence between the oppressed and the oppressor. Legal scholar Derrick Bell first described interest convergence as a framework for understanding racial progress or a lack thereof (Bell, 1980). Bell (1980) argued that the landmark Brown decision was best understood as an example of the "principle of 'interest convergence' [which] provides: the interest of Blacks in achieving racial equality will be accommodated only when it converges with the interests of Whites" (p. 523). Interest convergence explains the challenges of achieving equity for students in the post-Brown era; without the alignment of the oppressor's interests with those of the oppressed, progress is slow at best (Guinier, 2004; Dixson & Rousseau-Anderson, 2017). However, interest convergence is not a strategy to be adopted by the oppressed; it is an analytical frame to describe the occurrence of progress. It is not always possible or preferable to converge interests between the White supremacist hierarchy and the interests of the oppressed (Dixson & Rousseau-Anderson, 2017).

The concept of interest convergence connects to a second key concept of CRT that informs our work, the reform-retrenchment cycle. We must recognize that change "that moves us a few steps forward hits obstacles that often move us a couple steps back" (Zamudio et al., 2011, p. 34-37; Crenshaw, 1988). The reform of school integration driven by interest convergence, although never fully realized, was followed by

retrenchment driven by interest divergence (Guinier, 2004). The promise of integration was predicated on ending segregation's psychological and physical damage to Black children, but it "did not offer poor Whites even an elementary framework for understanding what they might gain as a result of integration," and it failed to show that "segregation had offered elites an important means of exercising social control over poor and working-class Whites" (Guinier, 2004, p. 102). The retrenchment that took place in the 1960s and beyond included ability grouping and tracking, and it was an effect of increasing White racial consciousness of that era (Crenshaw, 1988). Characterizing progress toward educational equity as inevitable represents a liberal perspective that does not reflect reality (Crenshaw, 1988; Ladson-Billings, 1998); those committed to equity would be wise to recognize the reform-retrenchment cycle when considering practical reforms of disciplinary, special education, and grouping practices.

The last concept of CRT that we use to inform our work is that of the property functions of Whiteness (Harris, 1993). According to CRT, Whiteness has a functional equivalence to private property in several ways that are important for understanding school inequity (Harris, 1993). The legal field views property rights as inclusive of the right to possess, use, or dispose of the property; Whiteness also possesses these traits (Harris, 1993). Additionally, just as property owners "use and enjoy" their possessions, so too do Whites with Whiteness as a form of "status property" (Harris, 1993, p. 1734). As part of its status property, "private identity based on racial hierarchy was legitimated as public identity in law" (Harris, 1993, p. 1736). The law itself also fueled the creation of a national racial hierarchy; the original naturalization statutes of the United States limited citizenship to White people, and race-based immigration laws and federal cases

continue to shape Americans' understanding of Whiteness and its value (Haney-Lopez, 2006). The last aspect of Whiteness as property is the right to transfer it and exclude others from it; while Whites cannot convey ownership directly of Whiteness, this quality enhances the value of Whiteness (Harris, 1993), and the process of certain immigrant groups becoming White was time-consuming and difficult (Roediger, 2005).

Considering the property functions of Whiteness allows us a greater understanding of school inequity issues. This frame in particular is useful for explaining the persistence of racist school and legal policies (Ladson-Billings & Tate, 1995). Ladson-Billings and Tate (1995) note that the curriculum taught in predominantly White institutions is a form of Whiteness-derived intellectual property. Schools derive funding from local property taxes, creating inequitable resource allocation tied to real property; reforms that drive toward more equitable allocation often clash with the desire of Whites to maintain control or ownership of what they view as their schools. Several researchers have used this framework to understand educational inequity (Dixson and Rousseau-Anderson, 2017).

Social Reproduction Theories

CRT connects to a second critical theory we adopt as a guide for our work, that the racialized class system of the United States is reproduced by schools (Warner et al., 1944; Rist, 1970; Schafer & Olexas, 1971; Bowles & Gintis, 1976; Wise, 2015). There is a long and rich history of critical theory surrounding the relationship of schools to the American racialized class system. First, we ground our work in theory which argues that schools reproduce a gendered, racist, and classist hierarchy. Second, we acknowledge the lens that posits that schools often are unwitting participants in discrimination, and

decisions that reproduce inequity are sometimes made due to logistical or budgetary constraints rather than intentional discrimination (Kilgore, 1991; Garet & Delany, 1998). Last, we agree with synthesis theories which acknowledge both the intentional discrimination of schools and unintentional discrimination due to exigent budgetary or bureaucratic circumstances, while noting that the latter is all-too-often a result of our racialized class system (Oakes & Guiton, 1995).

Anti-racist activist and author Tim Wise provides a bridge between our use of CRT and social reproduction theories rooted in class analysis (Wise, 2015). Wise (2015) noted that it is no "strange departure" to investigate the role of class when racism is a defining characteristic of American life (p. 12). Indeed, considering social class reproduction theories has a natural connection to racism; as Wise (2015) wrote, "the class system in the United States has a very different provenance than class systems in other societies, and much of that difference concerns the unique role of racism and White supremacy in the development of America's economic hierarchy" (p. 12). Thus, for our framework, we choose to bridge the gap between critical race theory and social reproduction theory.

Our research is informed by the long tradition of viewing schools as class sorting mechanisms that reproduce the socioeconomic and racial hierarchy of the United States (Warner et al., 1944; Rist, 1970; Schafer & Olexas, 1971; Bowles & Gintis, 1976; Wise, 2015). Theorists in the social reproduction tradition maintain that schools are tools of the elite, used to hoard opportunities for advancement or status; while Bowles and Gintis (1976) are perhaps the most well-known of such theorists, their work echoes today in the writing of Reeves (2017), who notes that those in the top fifth of the wealth and income

of America limit access to opportunities through control of educational and political institutions. Researchers in ability grouping frequently adopt these theories (Rosenbaum, 1976; Alexander & McDill, 1976; Alexander & Eckland, 1976; Alexander et al., 1978; Oakes, 1982; Vanfossen et al., 1987). Both the Blau-Duncan and the Wisconsin models of social reproduction posit that an individual's social status, as described by their educational and occupational attainment, is causally dependent on parental social status (Haller & Portes, 1973).

We acknowledge but reject the functionalist school theorists, who argue that schools meritocratically sort students with the goal of preparing them for the workforce (Jencks, 1972; Rehberg & Rosenthal, 1978; Heyns, 1974; Haller & Davis, 1981; Alexander & Cook, 1982). A key assumption of these theorists is that sorting decisions are fair, that is, based on actual student ability or achievement, and that they promote growth for students appropriately. These theories also assume that meritocratic systems are themselves fair and just (Haller & Davis, 1981); however, we challenge this assumption given that a system of so-called meritocracy harms both those at the top and the have-nots (Markovits, 2019), and it has "long been used by the rich for self-justification" of their wealth and power (Reeves, 2019, para. 7). Instead of working within this functionalist school, we argue that schools are both witting and unwitting participants in reproducing inequity.

We also consider exigent circumstances theory, which argues that schools unintentionally reproduce racial and social inequity due to external constraints (Kilgore, 1991; Garet & Delany, 1998). In particular, such theorists note that schools face limited teacher expertise, for example, only one teacher who is qualified to teach advanced

mathematics, and limited budgets, both of which constrain the opportunities for students (Kilgore, 1991). Researchers have shown that tracking and grouping decisions are often determined by multiple, unconnected issues rather than a singular and intentional effort to segregate and reproduce inequity (Garet & Delany, 1998). However, we note that these issues that unintentionally contribute to inequitable outcomes are in large part a result of intentional decisions by racist and capitalist elites to hoard opportunities and resources. Thus, we adopt the synthesis framework described by Oakes and Guiton (1995), who argue that schools' reproduction of our racialized class system is driven both by exigent circumstances and by intentionally discriminatory policies.

History of Grouping

Before turning to research related directly to the characteristics of whole-school and music ability grouping practices, we briefly outline the history of ability grouping in schools. Originally, ability grouping emerged in the early 20th century in response to an increasingly heterogeneous high school population (Oakes, 1985). Increasing high school enrollment, especially of immigrant children, many of whom were viewed as academically and racially deficient, led high schools to begin grouping students during the Progressive era (Weimar, 1928; Clinton, 1931; Cremin, 1961; Kirp, 1973). Many of these efforts were rooted in racist and classist perspectives that were common for the time, including the view that European Whites were subdivided into races which possessed different temperaments, and that a wide variety of skills and abilities were heritable (Ripley, 1899; Davenport, 1911; Roediger, 2005). By the 1930s and 1940s, however, researchers studying ability grouping found that it typically offered few benefits to students, and they noted the undemocratic if not racist and classist underpinnings of

the system (Coxe, 1932; Eash, 1961; Cremin, 1961). Additionally, immigration was dramatically restricted with the passage of the Immigration Act of 1924, and the Whitening or Americanization of the children of immigrants led to declining pressure to separate purportedly racially deficient children (Roediger, 2005). Importantly, few Black children attended high school during this era, eliminating a factor that later would sustain grouping (Snyder, 1993).

In the 1950s and 1960s, two forces began to pressure schools to reintroduce ability grouping of students. First, American high schools expanded their course offerings and levels in response to the efforts of James Conant, a widely known former president of Harvard University and diplomat. In his landmark 1959 report, Conant argued high schools should expand their ability-grouped course offerings, particularly in required academic courses and in popular electives (1959, p. 49). Conant's report was among the most significant education reports of the 20th century, and his report was rooted in anticommunism and a notion that American national defense required marshalling the resources of academically talented students (Johnston, 1959; Hampel, 1983). The report had a major impact on school organization, and the high school examined in this case study actually hired one of Conant's research assistants as its principal in August 1958 (Gardner, 1965). Conant himself frequently came to the school and met with his researcher-turned-principal to discuss school organization practices (Gardner, 1965).

The second factor contributing to a resurgence of grouping in the 1960s was the emergent desegregation of American public schools. Many schools embraced their role in the reproduction of racist and classist hierarchies by assigning Black students to low-level groups and formal tracks en masse (Findley & Bryan, 1971). When combined with intact

busing, ability grouping and tracking prevented meaningful desegregation in high schools, and the latter provided a convenient pretext for continued separation by claiming that students were unprepared for more rigorous academic coursework (Mills & Bryan, 1976). Recent research has connected these racialized tracking practices with both Black underachievement in the post-Brown era and Black students' perceptions that academic achievement is akin to acting White (Tyson, 2011).

Despite repeated findings by researchers that grouping was creating and sustaining inequity, efforts to rein in its use only partially succeeded (Mills & Bryan, 1976). By the 1990s, an anti-tracking movement had emerged among researchers and educators, and by the early 2000s, formal tracking had waned in popularity (Loveless, 2013). Despite this decline, informal tracking through ability grouping remains widespread into the 21st century (Loveless, 2013). The following section outlines research pertaining to five dimensions of whole-school ability grouping practices, followed by a section describing research specific to vocal music ability grouping.

School-wide Grouping Literature

The original Sorensen (1970) model for understanding ability grouping systems includes four dimensions: differentiation, placement practices, inclusiveness, and scope. Differentiation is subdivided into two elements, horizontal and vertical, the former describing the degree that schools offer wide or narrow curricula within subjects and the latter describing the presence of levels of courses or a sequence of courses in a subject area. Placement practices include three elements: electivity, which is the degree of student choice in levels and the selection instruments used to place students into levels; mobility, which is the degree of movement of students among levels; and selectivity,

which is the degree of student ability homogeneity within each group. Inclusiveness is the extent that levels include large or small proportions of students; for example, the percentage of 12th grade students who are enrolled in honors-level English classes might be large or might be relatively small. Scope describes the likelihood of a student sharing classes with a similar group of students over time. High scope occurs when students spend most of their time with the same students in small communities within a school, while low scope occurs when students have dissimilar classmates and larger communities within a school. In addition to the four dimensions described by Sorensen (1970), subsequent authors have found that teacher characteristics also are an important aspect of ability grouping systems (Finley, 1984; Gamoran & Berends, 1987; Talbert & Ennis, 1990). In this section, literature related to these five elements of ability grouping is reviewed.

Vertical Differentiation

Vertical differentiation is the most easily recognized form of ability grouping systems, and it is reflected in the presence of levels of courses of the same type or a course sequence within a subject (Sorensen, 1970). For example, schools often offer remedial, regular, and advanced levels of the same mathematics classes, for example, Foundations of Algebra, Algebra, and Honors Algebra, or a sequence of courses in world languages, for example, Spanish I, Spanish II, Spanish III. Generally, studies examining vertical differentiation focus on the former rather than the latter form, although many schools combine both types.

The practice of vertical differentiation purportedly leads to beneficial pacing and pedagogy for all students; however, multiple studies have found that students in advanced

classes exhibit more achievement growth than students in remedial classes (Gamoran, 1987; Van Houtte, 2004). Supporters of vertical differentiation specifically claim that it benefits students in advanced classes (Kulik, 1992), and that eliminating the practice might reduce achievement growth rates in mathematics for these students (Loveless, 1999). Research using the National Educational Longitudinal Study of 1988 found that students placed in advanced classes gained from their placement via significantly greater expectations for further education (Karlson, 2015). Specifically, being labeled as advanced or honors students led students to change their self-concept of ability, which affected their educational goals and academic behaviors, thus becoming a self-fulfilling prophecy (Karlson, 2015). Additionally, students in advanced classes benefit from preferential policy treatment by school administrators and teachers compared to students in remedial classes (Demerath et al., 2008).

On the other hand, enrollment in remedial level courses not only correlates with but also contributes to lower achievement growth rates (Braddock & Dawkins, 1993). Regardless of race or class status, students placed in remedial classes expressed lower academic self-concept, lower academic goals, and weaker academic behaviors, subsequently lowering their actual achievement (Braddock & Dawkins, 1993). In addition, vertical differentiation harms students in remedial classes through lower quality instructional resources and teachers (Donelan et al., 1994). Resource inequity is pervasive in vertically differentiated systems; Heck, Price, and Thomas (2004) found that remedial classes have fewer and lower quality physical resources than advanced classes at the same sites. These harms are particularly pronounced for Black, Latino, and low-SES

students (Donelan et al., 1994). Last, Ben-Ari and Kedem-Friedrich (2000) argued that reducing vertical differentiation can benefit all students through a diversity of thinking.

Researchers have documented that vertical differentiation correlates strongly with racial and socioeconomic stratification (Darby & Rury, 2018), and that support for the practice is often related to community culture and politics surrounding race and class (Oakes & Wells, 1998). Schools with more heterogeneous socioeconomic status student populations typically exhibit higher degrees of vertical differentiation (Lucas & Berends, 2002). Crosby and Owens (1993) found that teachers often support vertical differentiation because of familiarity and tradition, particularly when instructional materials and techniques presume the practice. Parent groups and school boards are often found as the strongest supporters of the practice (Oakes & Wells, 1996). Oakes and Wells (1996) found that parents of college-bound students in particular drive support for the practice, especially for generating a pipeline of Advanced Placement (AP) coursework for their students. The practice is most often supported by those with "conventional conceptions of intelligence, ability, and giftedness" (Oakes & Wells, 1998, p. 41). Loveless (1999), a supporter of tracking, concedes it is typically high-SES parents who support vertical differentiation.

Horizontal Differentiation

Horizontal differentiation is a measure of the breadth of curricula offered to students in a school (Sorensen, 1970); in most comprehensive high schools, this includes practical arts, performing and visual arts, and academic courses. Originally, high horizontal differentiation indicated multiple tracks, e.g. college preparatory, vocational-technical, etc.; since the 1990s, however, formalized horizontal differentiation with

separate tracks for vocational and academic preparation have been eliminated at many high schools (Lucas, 1999). Instead, informal ability grouping systems have replaced these tracks (Lucas, 1999). In spite of the flexibility associated with these systems, these groups often are similar to the tracks they have replaced (Lucas & Berends, 2002; Lee & Ready, 2009). Wilson and Rossman (1993) observed that eliminating vocational tracks and enrolling all students in a college preparatory sequence with a goal of reducing disproportionate horizontal distribution of students led to greater use of vertical differentiation and subsequent disproportionate vertical distribution. That is, a student required to take more units of mathematics and fewer units of vocational courses would experience a reduction in horizontal differentiation, but very well might be placed in remedial mathematics and experience little gain. One student interviewed at an urban, low-performing school noted, “There’s not too much you can take here. You just take what [the counselors] give you so you can get your diploma” (Wilson & Rossman, 1993, p. 68). In an analysis of three high schools in southern California, Oakes and Guiton (1995) observed differences in horizontal differentiation based on the socioeconomic status and student body of the schools. Compared to lower socioeconomic status communities, higher socioeconomic status schools emphasize academic course offerings and offer smaller but well-resourced vocational course offerings.

Placement Procedures

Placement describes three related characteristics of ability grouping systems: the selection instrument for placing students into groups and degree of student choice (electivity), the degree of mobility of students between groups (mobility), and degree of homogeneity of students within the groups (selectivity) (Sorensen, 1970; Gamoran,

1992). Although this study focuses only on electivity and mobility, we review literature on all three aspects here.

Electivity.

The degree of student choice and the selection instruments for placing students into groups are described by electivity (Sorensen, 1970). Low electivity generally reflects little student choice, while higher electivity describes greater student input. Sorensen observed that schools in the 1960s often granted more electivity within tracks, i.e. horizontally differentiated groups such as which world language to study or which vocational course to pursue, and less choice in vertically differentiated groups, i.e. remedial or advanced mathematics.

In terms of selection instruments, Kelly (2007) found that schools rely on various criteria outside of student input such as teacher recommendations, performance on content achievement tests, cognitive ability tests, and grades in previous courses. Sorensen (1987) additionally theorized that placement depends on the availability of seats in classes or of qualified teaching personnel. Both Kelly (2007) and Bernhardt (2014) found that schools often use vague and subjective judgements as part of their selection instruments, including teacher recommendations. Multiple studies have concluded that even purportedly objective instruments are questionable in terms of their value in placing students in classes appropriate to their pacing or pedagogical needs. Lucas (1999) and Mickelson (2001) found that instruments based on tests, whether content or cognitive ability, are not as meritocratic as they appear, or not meritocratic at all, given widespread test bias. Yonezawa, Wells, and Serna (2002) found that unclear institutional procedures about enrollment had the effect of acting as barriers to advanced classes for many

students. From student interviews, Wilson and Rossman (1993, p. 78) described three categories of such barriers: first, key institutional actors such as counselors and teachers discourage enrollment even for objectively qualified students; second, test scores often are misinterpreted and qualified scores are not clearly established; and third, prerequisite coursework requirements serve to prevent students from enrolling even when they achieve well enough on tests. Oakes and Guiton (1995) supported the first conclusion by finding that school personnel often discouraged Black, Latino, and English-language learners from enrolling in advanced classes despite meeting all other placement guidelines. Likewise, counseling staff encourage high socioeconomic status students to enroll in advanced classes, even when the students do not meet the established criteria (Cicourel & Kitsuse, 1963). High status students often have more connections with key institutional agents who contribute to their enrollment in advanced classes (Stanton-Salazar & Dornbusch, 1995; Bernhardt, 2014). However, low teacher expectations plague Black students and contribute to Black students' continued disproportionate distribution into remedial courses (Lewis & Cheng, 2006).

Student input or choice often only manifests minimally, such as through parental overrides of school placement choices (Gamoran, 1990). However, although most schools permit families to override school recommendations, it is rarely used in practice (Gamoran, 1990). It is important to note that in most cases, overrides are from a remedial to a regular class or from a regular to an advanced class. In a study of counseling staff, Cicourel and Kitsuse (1963) found that counselors are more likely to approve of overrides from high socioeconomic status families than from lower status families. Three decades later, Gamoran (1992) found that parents mirror these expectations: high status

parents more often challenge placement decisions, while lower status parents more often accept them. Oakes and Guiton (1995) extended this finding along racial lines, finding that White and Asian parents more often challenge placement, while Black families do not. Wilson and Rossman (1993) found that in schools with greater student input into vertical placement, there were less horizontally differentiated options, reducing student choice overall. Additionally, Oakes (1983) found that when given a choice among horizontally differentiated groups, Black and Latino students often chose low-skill vocational classes while Asian and White students chose high-skill vocational classes. When interviewed about their choices, students report they choose not to enroll in advanced classes or high-skill classes in part out of a desire to learn in places of respect (Yonezawa et al., 2002; Demerath et al., 2008).

Despite these challenges, research indicates that more student choice is beneficial for students. Students' perception of their control of their environment, that is, classes they enrolled in, had the strongest correlation with student achievement of any non-cognitive factor measured in the Coleman report (1966). In a study of prison conditions and inmates, Seeman (1963) found that individuals with a perceived high level of control over their lives had greater motivation and retention of learned material. Additionally, they had improved post-institutional outcomes and fewer disciplinary incidents while incarcerated (Seeman, 1963).

Mobility.

A second key element of analyzing placement involves examining the mobility of students among vertical levels (Gamoran, 1992; Kelly, 2007; Kelly & Price, 2011). Although generally focused on students changing among remedial, regular, and advanced

classes, McFarland (2006) argued that analyses of mobility should also examine the frequency with which students leave school, either through graduation or dropping out, and the frequency of students stopping coursework in a subject or repeating classes. Analyses of mobility take two forms: the first is descriptive statistical analysis of students' changing vertical levels, while the second involves describing the policies that relate to mobility. Taking the latter approach, Kelly and Price (2011) examined ways that schools restrict mobility, such as by denying schedule changes or the ability of students to take multiple courses within a certain time period, for example, enrolling in both Algebra and Geometry in a single year. They also used course prerequisite analysis to determine at which point students could not reach the end of a sequence in a subject area.

Other studies have directly observed mobility, and several have found that schools typically have low overall mobility (Braddock, 1990; Schiller, 1999; Ayalon & Gamoran, 2000; Yonezawa et al., 2002; Kelly, 2007). Oakes and Guiton (1995) and Rosenbaum (1976) both found that mobility when present is typically downward. Rosenbaum (1976) described a tournament style of mobility in which students are progressively eliminated from advanced classes. Hallinan and Sorensen (1987) and Oakes (1987) found that students in remedial or regular classes are prevented from moving to regular or advanced classes because of a lack of prerequisite knowledge or skills. Hallinan (1996) extended these findings to race, noting that Black students in particular are less likely than other racial groups to be moved upward to advanced classes from regular classes. Gamoran (1992) noted that the few schools that do have higher upward mobility produce higher mathematics achievement gains and smaller gaps between levels in English and mathematics achievement scores. No reviewed literature used Sankey diagrams to

describe flows among levels, although Rosenbaum's (1976) quantitative mobility analysis was extensive and disaggregated by race and class.

Selectivity.

The third element of analyzing placement practices is an examination of the selectivity of the system; this describes the homogeneity of the student abilities or achievement within group levels. It is largely dependent upon the degree of vertical differentiation and the validity and strength of the selection instrument (Sorensen, 1970). Few studies directly examine the variation of students within group levels, instead choosing to view it through a report of the number of course paths or vertical levels (Kelly & Price, 2011). Mathematics typically exhibits higher selectivity, that is, more homogeneity, than other subject areas; in an enrollment data study of more than 18,000 students in 30 high schools, Schmidt and McKnight (2012, p. 107-118) found 286 distinct courses in mathematics and a median of more than 30 courses in mathematics at each high school. Kelly (2007) and Schmidt and McKnight (2012) also argue that English and science exhibit similar patterns, while the latter suggest that reducing the selectivity would improve student outcomes by ensuring key concepts are present in every course.

However, greater heterogeneity might be present than otherwise suggested by the number of courses in a subject area; that is, despite the assumption that advanced classes have advanced students, this is not always the case. Alexander, Cook, and McDill (1978) found that 40% of selection influence is due to student ability, achievement, or aspirations, while 60% of their placement is due to other, unexplained factors. Many studies find that race and socioeconomic status strongly correlate with selection into ability group levels. Black and Latino students are disproportionately assigned to

remedial levels, while White and Asian students are disproportionately assigned to advanced levels (Alexander & McDill, 1976; Oakes, 1990; Braddock, 1990; Hallinan, 1992; Catsambis, 1994). In mathematics, cultural expectations of teachers and staff also limits both female and non-White enrollment in advanced classes (Catsambis, 1994). Similarly to race, socioeconomic status plays a role in the heterogeneity of classrooms; when examining students whose placement did not reflect their ability, high status students are more often placed into advanced classes than lower status students (Alexander et al., 1978). Several studies have found that lower status students are disproportionately enrolled in remedial classes, while higher status students are disproportionately enrolled in advanced classes (Vanfossen et al., 1987; Braddock, 1990; Oakes, 1990). Socioeconomic status also correlates with teacher ratings of student academic performance and teacher expectations, which strongly contribute to selection into levels (Vanfossen et al., 1987; Oakes & Guiton, 1995; Lewis & Cheng, 2006).

Inclusiveness

The third dimension of ability grouping systems is inclusiveness, which measures the proportion of students included within vertical levels in the system (Sorensen, 1970). In the context of tracked schools, Sorensen (1970) originally intended that inclusiveness was a measure of how many students completed the highest track compared to the overall population. This would provide a measure of how much of the student population was included (Sorensen, 1970). Rosenbaum (1976) observed through his research that the population within each track is not static, and as stated previously, exhibits a tournament-style elimination pattern. Unfortunately, few studies have examined inclusiveness rigorously since the decline of formal tracking procedures in the late 1990s.

Garet and Delany (1988) found inclusiveness varies widely among schools, and it often depends on the relative achievement of students compared to their peers within the same school. That is to say, students who scored at a certain percentile on a mathematics exam had much higher likelihood of enrolling in advanced mathematics classes if their school had relatively few students at that level compared to a student who earned the same score at a school with relatively many students at that level (Garet & Delany, 1988). Another factor affecting inclusiveness is the socioeconomic status of the school; schools with many high socioeconomic status students often exhibit higher inclusiveness than schools with lower socioeconomic status populations (Kelly, 2004; Spade et al., 1997).

In terms of its consequences, inclusiveness often affects student achievement, expectations, and enrollment patterns. Higher inclusiveness correlates with higher achievement for all students and smaller inter-level differences in achievement scores (Gamoran, 1992). Lower inclusiveness, on the other hand, leads to an environment of lower expectations for students in remedial and regular levels, which contributes to lower achievement scores (Reglin & Chisom, 1992; Wheelock, 1993). Within such systems, Black students in advanced classes report feeling socially isolated and oppressed (Tyson, 2011; Chapman et al., 2014). When considering enrollment, promoting higher inclusiveness had the unintended consequence of some teachers undermining students who they did not believe belonged in advanced classes (Oakes & Guiton, 1995). Teachers and counselors created informal, unsanctioned levels within advanced classes that effectively capped achievement for these students (Oakes & Guiton, 1995).

Scope

A fourth aspect of ability grouping systems is scope, which describes the likelihood of a student sharing courses with a similar group of students throughout the day and their time in high school (Sorensen, 1970). High scope describes the situation when students spend most of their time in classrooms with similar students, while low scope exists where students have experiences with many students. An analogous description of high scope is when schools have many, smaller communities of students with fewer connections among those communities, while low scope occurs when schools have fewer, larger communities of students with more connections among the communities.

High scope often occurs as a result of school policies, such as connecting placement in one subject area to placement in another area (Heck et al., 2004). Typically, schools with larger populations and schools with more student socioeconomic diversity exhibit higher scope given logistical issues with scheduling (Oakes & Guiton, 1995). Relatedly, schools with more racially diverse populations and larger numbers of students in advanced classes also have higher scope and a perception of multiple schools at one site (Solorzano & Ornelas, 2002). This perception of a school-within-a-school and the reality of higher scope harms students in remedial and regular classes because of lower college acceptance rates (Solorzano & Ornelas, 2002). Additionally, higher scope contributes to racially segregated classes because of perceptions that students do not belong in particular classes or levels; it also reproduces socioeconomic class distribution and harms students' opportunities for advancement (Mickelson & Everett, 2008).

Teacher Characteristics

A final consideration of ability grouping systems involves analyzing the characteristics of teachers within the ability groups. Although this is not part of the original framework of ability grouping proposed by Sorensen (1970), subsequent research indicates that ability grouping also creates groups of teachers which often differ in instructional quality (Finley, 1984; Gamoran & Berends, 1987; Talbert & Ennis, 1990; Oakes & Guiton, 1995; Darling-Hammond & Berry, 1999). Teacher assignment to classes is nonrandom and teacher expertise correlates strongly with being assigned to advanced classes (Heck et al., 2004). Several studies have found that advanced classes have more enthusiastic, more motivated, and more experienced teachers, all of which contribute to greater learning for students (Conforti, 1992; Reglin & Chisom, 1992; Gamoran, 1992). Schools' assignment of their expert teachers to advanced classes is a key factor in maintaining an inequality of opportunity for all students (Darling-Hammond, 1994). Ability grouping also creates a hierarchy of teachers in subject areas, and this hierarchy benefits teachers assigned to teach advanced classes (Finley, 1984). These teachers typically performed more bureaucratically significant tasks such as curriculum writing or committee work, maintained relationships with advanced-level students and their families, and viewed teachers of remedial and regular courses as subpar educators (Finley, 1984). Likewise, remedial and regular course teachers frequently doubted their own abilities or distrusted the system that rewarded certain teachers with advanced classes (Finley, 1984).

Music Education Grouping Literature

The National Association for Music Education (NAfME) is one of the largest arts education advocacy organizations in the world. In the United States this organization represents a driving force in the conception and implementation of the National Standards for Arts Education (National Association for Music Education, para. 2). The Journal of Research in Music Education is the quarterly, peer-reviewed research journal administered by NAfME including a wide range of topics relevant to the pedagogy and practice of instrumental, vocal, and general music education at all age levels. Likewise, the American Choral Directors Association (ACDA) represents the leading organization for content specifically tailored to choral music educators. The organization "exists to inspire excellence in choral music through education, performance, composition, and advocacy" (American Choral Directors Association, para. 1). Having a membership of over one million singers and conductors across the United States, the ACDA represents choral conductors in all facets of professionalism: public and private education, early childhood through senior high school, at levels of post-secondary, and even in community settings including places of worship. With NAfME and Journal of Research in Music Education representing the dominant voice for music educators in America and the ACDA and Choral Journal specifically representing vocal music directors, it is important to review and evaluate their research in the areas of audition and placement practices, diversity and inclusion, and ability grouping and course selection.

Audition Practices: Perpetuating Elitism

Shifting the focus from students to that of teachers, two recent articles in The Choral Journal highlight how music teachers are confronted with subjectivity and

measurability within their professions. Perkins (2018) and Maunu (2018) are excellent examples of autoethnographic reflection on the elitist culture perpetuated in the choral classrooms and performance halls. Recalling their own experiences among not just with students but with their own colleagues, these authors address how conductors and students alike are constantly subjected to critical observation and evaluation (Maunu, 2018; Perkins, 2018). Maunu (2018) goes as far to say that it affects how we listen to ourselves, our students, and other choirs sing: "an elitist mentality would encourage us to try to listen for every possible flaw" (p. 62). Perkins (2018) exemplifies this elitist mentality when recalling and interaction with a student whose cultural upbringing and musical experiences were different than his own: "I realized that until he assumed the specificities of my choral culture and the audition performance criteria, I did not critically question who was auditioning or why he wished to sing" (Perkins, p. 30).

Musical Elitism

Choral and musical elitism represents the unwillingness to actively listen to and create space for musical understandings beyond our own dominant perceptions. Music educators are indoctrinated with this cultural elitism their entire singing experience. As Maunu (2018) readily points out, choral directors have been experiencing it since their own first experiences as choristers on the risers singing themselves. Choral music has generally accepted standards and practices which define it as a unique culture in of itself. These standards center specifically on the performative, product-based, and competitive nature of school music programs (Kanellopoulous, 2015). Singing voices are typically trained and evaluated using the *bel canto* style of singing which is based on the vocal standards of the Italian opera of the 16th century. *Bel canto* literally translates to mean

beautiful singing. This style of singing characterizes the sound created by the singer and is most identifiable by the shape of the singing apparatus during phonation (Davids & LaTour, 2020). Standards for vocal production during singing along with ensemble structure, choral literature appropriateness, choral placement and audition techniques, and even standards in performance attire for choristers are all directly addressed in choral methodology at the collegiate level (Phillips, 2003). This framework creates a status culture that without a specific elite knowledge base forces many students to self-exclude if they do not accept feeling ostracized (Wright, 2015).

Auditioning and Listening for Whiteness

Research focusing on younger students shows that elementary and middle school students' successes in singing aptitude success can be affected by numerous factors. How their instructors in formative years scaffolded for these or even provided feedback, whether individually or in the private setting, determines a student's success in singing assessments (Nichols, 2016). Students with the means and opportunity to have taken private lessons also display higher ability since students in this private setting have individualized attention not afforded them in the ensemble setting (p. 318). Demorest et al. (2017) assert the importance of musical self-concept amongst students being assessed as a crucial indicator of personal success. This self-concept is greatly molded by choir teachers. "Music teachers need to know more about how their interactions with students could help or hinder the development of a positive music self-concept" (p. 417). Within choral music pedagogy there is a recognition that auditioning creates an opportunity for both bias from adjudicators and additional points of failure for marginalized communities within the choir classroom. Such is the case with young tenor voices especially given

that female singers represent the majority in the vocal music classroom (Sieck, 2016). Like with tenors, choral directors are clearly able to label identifiers in each singer's voice and these identifiers are crucial in placement within voice types in the choir (Sieck, 2016).. Similarly, such care must be taken with transgender choristers (Miller, 2016). A precedence is then set to analyze the standards for all students individually when assessing students for placement in choral ensembles. Goldin & Rouse (2000) offer an archival data analysis of major symphony orchestras and their audition and hiring practices specifically around women. Symphony orchestra management teams and the professional musicians that fill these prestigious musical ensembles have existed in a male dominated and elitist space in which hiring practices were dominated by favors and backroom deals. That was until musicians' unions began to demand active participation in auditioning and hiring principal players within their own ensembles obviously to curb nepotism (Goldin & Rouse, 2000). However, Goldin's & Rouse's (2000) analysis of historical audition data show that male dominance continued until in the 1970s and 1980s when blind-auditions became standard practice in the major symphony halls of America. Their data found a strong correlation between the hiring of female musicians and fully blind auditions. Koza (2008) directly identifies choral elitism and its attack on Black bodies specifically focusing on the undergraduate audition assessment process. The human voice represents the ultimate embodiment of the body: both physical and spiritual. However, during adjudication, the human noice's unique and identifiable characteristics means that students of color may be grouped or binned together and not be taken seriously. Even the music selection criteria for undergraduate auditionees establishes an

environment in which Black voices and the voices of all marginalized peoples are not welcome and are isolated (Koza, 2008).

Diversity and Inclusion in Music

Since 2014, the majority of articles in both *Choral Journal* and *Journal of Research in Music Education* that focus on relevant topics, are aligned to issues of diversity and inclusion. Centered on diversity and pedagogical impact, Howard (2018) stated that it is clear that when students are able to effectively navigate sociohistorical and sociocultural meanings of music through the lens of their own biases, a music education curriculum is a formidable tool. Focusing on sociohistorical meanings, the performance of African American spirituals has become a primary focus for infusing multiculturalism and diversity into many schools' choral repertoire but that does not always mean the "progress in performance practice and availability of information on the topic has not met the demand" (Barber, p. 24). Looking at the lives and the bodies of work of great contemporary African-American spiritual arrangers/composers such as William Levi Dawson or William Grant Stills offers insight to more authentic and culturally aware means to perform such works (Huff, 2014; Webb, 2016: Williams, 2018). However, Guenther (2017), pointed out this may mean a deeper study and understanding of the atrocities of slavery: "Knowing the circumstances that gave rise to the songs allows us insight into the slaves' lives, their fears, their longings, their joys, and their sorrows" (Guenther, p. 69). By more fully understanding these concerns, one gains an appreciation for the ways their concerns intersect with our own today. This creates a situation in which students and choral directors alike must grapple with their own history and privilege (Guenter, 2017). This is affirmed by Stone's (2019) call for music-makers

and audiences alike to "expand their knowledge of the African American experience in America," asserting that this leads to empathy and enduring hope (p. 45).

Focusing on sociocultural meanings, music becomes a specific cultural marker, especially vocal music with lyrics represented through language, that is relatable and develops musical appreciation (Britten, 2014). Moreover, ensemble singing itself forms community, and this community membership becomes an identifiable element of a student singer's identity (Parker, 2014). Whether it be about gender identity and LGBTQIA+ rights (Blaisdell, 2018; Boerger, 2018) or race and basic human rights (Boerger, 2018; Swanson, 2015), sociocultural issues and identities are a relevant and necessary topic for focus within choral music, and vocal music educators have a myriad of techniques at their disposal to affirm these identities. However, research shows that music teachers either: 1.) do not have a clear understanding or working definition of social justice (Paetz et al., 2020) or 2.) do not receive adequate pre-service education or professional development to navigate sociocultural issues around justice (Kelly-McHale & Salvador, 2017).

Culturally Responsive Pedagogy (CRP) and the Music Classroom

With the realization that musical elitism affects those marginalized by the dominant European canon of music theory, music history, and performance technique, music educators have begun looking to social justice frameworks for answers (Jorgenson, 2015). Social justice implications in educational settings are numerous; however, the work of Gloria Ladson-Billings (2009) directly links to music education because of its strong link to the human experience. Ladson-Billings (2015) herself, long after developing culturally responsive pedagogy, began researching and writing on the highly

developed and sociopolitical powers of hip-hop music and culture. Ladson-Billings' work focuses on educational stakeholders in the classroom to become socio-politically aware of how they and others exist within that time, moment, and place.

> We have draconian rules about managing schools and disciplining teachers and students. We claim to want parents to engage and yet we set up schools as places that are totally unfriendly to parents. We are developing the most highly technological and sophisticated society the world has ever seen, but we expect our students to do the same mundane curriculum we did 50 years ago. We mistakenly think we can fit a hip-hop generation into a 1950s crooner-sweater-vest life. (Ladson-Billings, 2015, p. 418).

This reiterates the notion that if music truly represents a culture's ultimate unifying voice, music education should represent the experiences of the people making that music, not the music of our colonizing ancestors that destroyed the worth of the Black body and culture making music from Black voices and of Black hands less than or viewed as otherness (Ladson-Billings (2015).

Unfortunately, social justice is not always clearly defined. Given its roots in socio-political awareness, some music educators struggle to adapt social justice practices such as CRP to their classrooms. Survey studies coupled with statistical analysis have revealed that they function under antiquated frameworks that confuse terms such as justice vs. equity or acceptance vs. full-affirming (Kelly-McHale & Salvador, 2017). These views are considered difference-blindness; this is the notion that people should not see skin color and that everyone should be treated equally. Color-blindness only works in a system where color does not create marginalization. Here we see teachers falling short

of the possible positive impacts CRP can have on the music classroom (Kelly-McHale & Salvador, 2017). In an extensive ethnography researching the characteristics of activist musicians, Hess (2019) asserted that music education can observe and adapt powerful attributes such as radical imagination, mindfulness, and intentionality to reshape music education practices to ensure social change (p. 164). This ethnography emphasizes that "this political moment requires youth who will deeply consider the discourses they encounter, recognize the humanity in all, and lift up their voices when they deem it important" (p. 167).

As CRP makes its way into the music classrooms of America and internationally, research has begun to materialize that aims to record, analyze, and interpret the impact of this social justice framework on the profession of music education. With an emphasis on choral music and CRP, one such researcher is Julia Shaw. Three of Shaw's studies stand out as superlative examples of reimagining choral music education within a CRP framework. In "The Skin That We Sing: Culturally Responsive Choral Music Education," Shaw (2012) developed a review of literature to make a case for three areas of CRP inclusion in the music classroom:

1.) music selection
2.) rehearsal technique that values the student
3.) developing socio-political competencies

Shaw (2015) used an extensive case study of four urban teachers who embodied CRP engagement in the classroom through their music selections, intentionally designed instruction, community engagement, and student empowerment through sociopolitical development. Shaw (2016) pulled from a multiple-site illustrative case study, following

three students and a teacher in a community-based children's choir, a unique setting that afforded her a diverse sampling of cultures including ethnicity/race, religious, and socioeconomic. Shaw (2016) found that cultural integration into all settings of a music ensemble may be difficult given time restraints or resource limitation and warning that content integration, if not done appropriately, can lead to some students feeling more marginalized. Gregoire, Norward, & Sceptor-Stone (2018) synthesized a narrative of choral directors of color reimagining vocal music education. The opening lines of this article speaks strongly to the impetus of this research study: "Social justice work typically challenges us to cross-cultural fluency. Our formal (European-derived) training as choral conductors too seldom equips us to meet this challenge" (Gregoire et al., p. 32).

None of the studies researched have explored the implications of CRP specifically to performance auditions as assessment and ability groupings. This step is crucial since we are now applying CRP to these ensembles through music selection and sociopolitical maturation practices having never looked fully at how we are assigning students to said ensembles.

Ability Grouping & Course Selection: Student Input

A long-standing argument amongst music educators is the measurability and subjectivity of performance assessment. Common approaches in performance assessment such as analyzing for the inter-rater reliability lack the sophistication to show a complete picture of the student's ability coupled with only having one single rater or adjudicator. "Stated in psychometric terms, adjudication's measurement concerns (some of the more pressing at least) involve the extent to which a single performance represents a given performer's actual state of achievement, that is, his or her hypothetical true score"

(Bergee, p. 345). This study revealed that even with the student's best efforts, there is the "possibility of substantive measurement error among raters" (Bergee, p. 356). In this case, raters represent those music educators that score students personal performance assessments. In retrospect, other studies have also been student-centered but with a focus on the contributing attitudes of the student subject to their participation in honors ensembles which is an example of ability groupings in choral music. A variety of factors contribute to a student's choice to participate in afterschool extracurricular honors ensembles and can be broken down into two subcategories: musical reasons and/or social reason. A majority of students participate in leveled ensembles for musical reasons such as another opportunity to perform and develop improved musical skills. Only one of the top reasons belonged in the social realm: recreational purposes/to have fun revealing that students bring their own reasoning or bias linked input to the process of performance assessment and ability groupings (Silveira, 2013).

Research has correlated socioeconomic status as a key determining factor in the enrollment of students in music courses (Kinney, 2019). Music educators wanting to counter these factors "should make a conscious and deliberate effort to recruit and retain minority students especially of a low socioeconomic status which will strengthen enrollment in ensemble courses" (Kinney, p. 40). Evidence shows that teachers who have implemented these strategies that make musical learning experiences relevant to underserved populations in the choir room have seen greater retention in the vocal music programs (Kinney, 2019). Another mitigating factor in class enrollment is the selection factors that music educators use when sorting students into prospective classes (Alegrado & Winsler, 2020). The retention of marginalized music education students is affecting

even the post-secondary collegiate music program, which directly affects the number of Black teachers available to teach our students. “Students from traditionally marginalized populations may have experiences with the process of preparation for, admission to, and retention within music education degree programs that differ in substantial ways from their peers” (Fitzpatrick et al., 2014). Recent research shows that on average, Black students make up less that 14% of students in high school choirs (Abril & Elpus, 2019). Given the institutional barriers placed on most marginalized students, students not selected to participate in auditioned ensembles may have their self-worth greatly affected (Shaw, 2017). “Audition processes intended to provide valid assessments of singers’ current ability for the purpose of placing them within an appropriate ensemble may have the unintended consequence of sorting students into stratified groups reflecting their SES” (Shaw, 2017, p. 29).

Chapter Three

Methodology

In this section, we outline the methodology of the whole-school case study, followed by the autoethnographic methodology. Briefly restated, the case study sought to answer the question: what characterizes the ability grouping system at a comprehensive public high school in the post-tracking era? Included within this question are five sub-questions:

1. What is the extent of vertical levels and course choices at the school?
2. How are students grouped, and how much mobility occurs after placement?
3. How inclusive are the groupings in terms of race, gender, disability status, economic status, and residency?
4. What student communities exist as a result of the groupings, how much do they interact, and how do they evolve over time?
5. To what extent do teacher traits correspond to the levels of courses taught by teachers?

The autoethnography that follows the case study reflects on the grouping practices of vocal music, an often-overlooked field in tracking literature.

Case Study Methodology

The first portion of the research, the case study, was designed to answer what characterizes the ability grouping system at a comprehensive public high school in the post-tracking era. This study analyzed the practices of the school in English, mathematics, science, and social studies in terms of vertical and horizontal differentiation, placement procedures, inclusiveness, scope, and teacher traits. To analyze

differentiation and placement practices, the subject area practices were described using qualitative data collected from curriculum and enrollment guidebooks. For the dimensions of inclusiveness, scope, and teacher characteristics, each subject area's practices were described and analyzed using student enrollment data and teacher demographic data. In terms of personally identifiable information (PII), no direct identifier data was collected (e.g. name, address, phone numbers); however, student enrollment data based on race, gender, residency status, and economic status was collected. This information was used to describe the dimensions of the grouping system at the school, particularly the inclusiveness of each subject area's groupings.

Setting and Participants

For the school grouping case study, the setting was a public comprehensive high school in the Midwest (see Table 1: Demographic profile of each grade and the school). The school had approximately 900 students and 100 staff members, of whom 51 were classroom teachers in English, mathematics, science, or social studies. Students at the school consistently earned high test scores, with more than 70% of graduates scoring above the national average on the ACT, and the school has a 100% graduation rate. The average teacher's salary at the school was more than $78,000, 60% higher than the state average teacher's salary; teachers at the school had an average of nearly 17 years of experience, and nearly 95% of teachers had master's degrees at the school. All teachers at the school were highly qualified.

Data Collection

Data collection for the school grouping case study involved the collection of three data sets: curriculum information from publicly available school sources, student

enrollment data for approximately 900 students, and teacher characteristics data for the 51 classroom teachers.

First, curriculum and course enrollment prerequisites information were gathered from the counseling department, and the selection instruments for placing students into classes were gathered from department chairs. The subject areas at the school were divided into departments, and data was gathered from English, mathematics, science, and social studies. This information already was publicly available and distributed by the school to students and families in curriculum documents, student guidebooks, and course registration forms.

Second, course-taking information for currently enrolled students was collected. The data collected did not include students' names, grades in courses, test scores, addresses, or other directly personally identifiable information. Data collected included the 2019-2020 courses taken by all students then enrolled at the school and the courses completed by all of the 12th grade students. Data also included demographic information to cross-reference with course-taking patterns, including student grade level, race, gender, disability status, economic status via free or reduced-price lunch status as proxy, and residency status. For race, we adopted the school's demographic identifiers, which included Asian, Black, multiracial, Native American, Hispanic of any race, and White. For the purposes of statistical analysis, we combined multiracial, Native American, and Hispanic of any race into one subgroup. For gender, we adopted the school's demographic identifiers of male and female. In terms of disability status, students with either an individualized education plan (IEP) or a Section 504 plan (504) were counted as students with disabilities for the purposes of our analysis. For lunch status, we combined

the population of students receiving free or reduced-price lunches into one subgroup. In terms of residency status, the addresses of individual students were not collected or used; however, the residency status of students was collected. This data was tracked by the school with six identifiers: residents (students who live within the district boundaries), tuition-paying (students who pay tuition to attend the school), tax-credit (students whose families own property in the district), employee-child (students whose parents are employed by the district), voluntary transfer (students who reside in St. Louis and who transfer into the district), and statutory tuition (students who live in a district which lost state accreditation and who are permitted to attend schools outside their home district). For the purpose of analysis, resident, tuition-paying, and tax-credit students were considered as one group; school district employee children were considered as a second group; and students transferring into the district were considered as a third group. All of the course-taking and demographic information was already collected by the district in an electronic database; access was provided by the school administration. All student data collected was securely stored offline in an encrypted format.

Last, data was collected about teacher characteristics for the 51 classroom teachers in the subject areas listed previously. Data collected included teacher names, current courses taught, base salary, current educational attainment, the number of years of experience in public schools, and number of years of experience in the district. All of this information was already collected by the school and the state education department in an electronic database, and access was publicly available from the state education department website.

Possible threats to the school, students, and teachers at the case study site included disclosure of potentially undesirable information related to grouping practices and disclosure of personally identifiable information (PII). Minimization of the former was accomplished in two ways: first, by anonymizing the identity of the school, and second, by contextualizing the information related to grouping and providing the school with recommendations to remedy potentially inequitable practices. In terms of student PII, no direct identifier information was collected; indirect identifier information was collected but not reported in disaggregated form. In terms of teacher PII, although teacher names and current courses were collected to facilitate analysis, we only reported information in aggregate at the department level and in terms of general course levels, such as remedial, regular, or advanced. The researcher gained access to the setting and data through obtaining permission and access from administration at the school.

Data Analysis

For the whole-school case study, the data was analyzed using the structure of the Sorensen (1970) model framework dimensions of differentiation, placement, inclusiveness, scope, and the additional dimension of teacher characteristics.

First, the curriculum guidebooks and registration documents were analyzed to determine the degree of vertical and horizontal differentiation in the school. The course description and title of each course within each subject area was analyzed, and each course was coded as advanced, regular, or remedial level. Within each subject area, the number of vertical levels of coursework was identified and described. For horizontal analysis, the number of options for students within each subject area at each grade level

was identified and described. We also constructed curriculum structure diagrams to aid in this analysis.

Second, the curriculum documents and student enrollment data were used to determine the placement procedures and mobility in each subject area. The selection instruments for placing students into groups were described and analyzed. Depending on the subject area, these selection instruments included counselor or teacher recommendations, grades in prior coursework, having completed prerequisite coursework, attaining a specific grade level, and scores on achievement or ability tests. Given that context, the degree of choice students had in selecting their coursework also was described for each subject area. Last, the degree of mobility of students between levels was analyzed; this required descriptive statistical analysis of course-taking of the 12th grade students who were enrolled continuously at the school. The courses of 12th grade students from the beginning of their enrollment at the high school were coded as remedial, regular, or advanced, and for each subject area, we described the flow of students from each placement level into placement levels in subsequent years. We constructed Sankey diagrams for each subject area to model the flow of students as well as provide data tables. Last, we examined the proportion of the cohort that moved or remained in the same level at each of the three mobility points: 9th to 10th, 10th to 11th, and 11th to 12th grades.

Third, the inclusiveness of the coursework and groupings was described and analyzed in four ways. First, for each subject area, a demographic profile of each vertical level in each department was generated and analyzed for trends. To do this, the number of students in each subgroup who enroll in each level, for example, Black students in

advanced 9th grade English, was divided by the total number of students enrolled in that level, such as the total students in advanced 9th grade English. Next, for each demographic group, a profile of each group's enrollment was generated and analyzed for trends. To do this, the number of students in each subgroup, for example, female students in advanced 9th grade English, was divided by the number of students from that group in the grade level, that is, total female students in 9th grade. Third, we examined and analyzed the extent to which the students were included in the advanced level sequence; this reflected the traditional understanding of inclusivity (Sorensen, 1970). To do this, we determined the number of students in each level, for example, total students in advanced 9th grade English, and divided by the number of students in the grade level, that is, total students in 9th grade. Last, we used chi-square tests to determine whether statistically significant differences existed between an expected number of students from each group and the observed number enrolled. An expected number of enrollments was generated for each vertical level by determining the group's proportion of the grade level, for example, the number of male students in 9th grade divided by the number of students in 9th grade, then multiplying this by the total number of students enrolled in the vertical level. For example, if 100 students were enrolled in advanced 9th grade English, and 45% of students in 9th grade were male, we expected 45 male students in advanced 9th grade English. We then compared this value to the actual number of students enrolled. Chi-square tests were conducted to determine whether the actual and expected enrollments demonstrated statistically significant disparities in the subgroups. A p value significance level of .05 was adopted for all chi-square test results. Post-hoc tests were conducted if

statistically significant results emerged in race and residency status; standard residuals and resultant p values were used to determine the contributing variables.

Fourth, the scope of the system was described in three ways: first, through detection of student communities that emerged from course-taking patterns within each grade level; second, by analyzing the connections among these communities; and third, by analyzing the evolution of students' memberships in communities over time. This study represents the first time that network analysis software has been used to conduct student community identification and analysis of course-taking patterns, filling an important gap in the research on tracking and grouping practices.

First, student communities were detected using a statistical algorithm within an open-source network analysis software known as Gephi. Although Gephi includes three community detection algorithms and the option to use other, downloaded algorithms as plugins, this study used the Leiden method to detect communities of students. The Leiden algorithm improves significantly upon the Louvain method, itself one of the most popular algorithms for community detection (Traag et al., 2019). The Leiden algorithm generates communities that are mathematically proven as connected and, when applied iteratively, guarantees that all individuals are optimally assigned to communities. The Leiden algorithm can detect communities based on two quality functions; the most common method of community identification relies on modularity (Traag et al., 2019). Modularity identifies communities based on identifying groups of students in which the difference between the number of shared courses is maximized compared to an expected number of shared courses in a randomly generated network of the same size. The modularity function requires users to specify a resolution; lower resolution detects fewer

communities, while a higher resolution finds more communities. For this study, the Leiden method analysis was used with a resolution of 1.0 and 100 iterations. The Leiden method was used to detect communities within the entire school and within each grade level. The communities were described demographically and compared to the population of the school and grade level in terms of race, class, gender, disability status, and residency status. As critical theorists, we acknowledge the historical and contemporary bias of quantitative research in education, and statistics are too often used to reify a so-called achievement gap; instead of being used in this way, this study's numbers are contextualized and used as the powerful tool that they are, not to oppress but to liberate (Covarrubias & Velez, 2013). Although we correctly hypothesized that the identified communities would be racially and economically segregated, this is not an inevitable fact of education. The segregation that students experience reflects what critical race theorists and Marxian theorists have been telling us all along: our systems are reflections of ourselves, and even when they lack intentional discrimination, they perpetuate inequity (Ladson-Billings & Tate, 1995; Dumas, 2013).

For the second point of scope of analysis, connections between communities and within communities were examined. Gephi allows users to examine intra-community and inter-community links; these were identified and described for each student community in the whole school and within each grade level. The overall median, mean, and standard deviation of the number of intra- and inter-community links was determined; these were compared with each community's intra-links and with each community's inter-links to other communities.

The final aspect of scope analysis examined the evolution of student memberships in communities over time. This required examining the course-taking patterns of 12th grade students from the beginning of their enrollment at the high school, using the same data as used to examine mobility. The Leiden algorithm again was used for community identification; communities were identified for each year of the 12th grade students' enrollment in high school. After community detection in each grade level, the students were coded by community: 9th-A, 9th-B, 9th-C, 10th-A, 10th-B, etc. Last, students' community codes were analyzed to determine whether they remained or changed communities during their time in high school.

For the final aspect of the whole-school analysis, teacher characteristics were analyzed using descriptive statistics. Specifically, within each subject area and for the whole school, we analyzed the educational attainment, salary, and years of experience of teachers of remedial, regular, and advanced classes to determine whether disparities existed among teacher assignments to different levels of courses. Teachers' highest educational attainment was coded numerically: Bachelor's degree=1, Bachelor's plus 15 graduate hours=2, Master's degree=3, Master's degree plus 15=4, Master's degree plus 30=5, Doctorate=6. For each course level within each subject area, the median, mean, and standard deviation of educational attainment, teachers' years of experience, both at the school and overall experience, and salaries were analyzed. While we acknowledge that these are not always strong predictors of teacher quality, years of experience, educational attainment, and certification status are proxies for teacher quality (Skrla et al., 2009). Given that all of the teachers at the school were highly qualified and possessed

regular certification, this was not a factor in our analysis, although it would be in another setting with a different population.

Autoethnographic Methodology

The second part of this research was qualitative in design; however, it used the autoethnography research model to critically describe ability grouping practices specifically in secondary vocal music education. Through both storytelling and personal reflection, I, Drew Cowell, examined the practice of grouping students by ability in vocal ensembles through the lens of social reproduction. Research focused on my collegiate undergraduate experiences as well as professional experiences involving both middle and high school students as well as my professional choral music colleagues. Using critical race theory and its tenets such as Whiteness as property and institutionalized racism, I offered my own experiences, those of a privileged White male teacher, as a tool to deeply dissect practices of choral elitism which bar singers of color from having their voices represented in the vocal music classroom. Since music reflects the people and time for which it was created, I also employed elements of popular culture, including music and current events, to actualize a separate narrative. This final narrative chronicles the beauty and the power of the voice of otherness, the voice of the marginalized, and the voice of the youth. I created a composite voice that recognizes race in the music and culture that students are experiencing and how it has intersected with my teaching experience.

The purpose of this study was to examine how I have been both a product of and an agent of change within the racialized practice of ability grouping in vocal music education. There is a realization that while quantitative research can illustrate generalizations about these practices on a larger scale, it lacks an understanding of the

humanity of the data's effects. As stated by Adams et al., (2013), "What quantitative research is less adept at is accounting for or describing the particular, the micro, and the situated elements of our lives" (p. 25). I collected my data through reflective writing, journaling, and also trusting memories of these poignant interactions with both students and colleagues. There was also a realization, as a privileged White male, that I cannot provide the perspective of the students of color I am discussing. There is a strength in the words these students within my own narratives; however, these narratives are not meant to co-opt their experiences. For that reason, I have developed my own experiences into a narrative, a crucial element of CRT, for the purpose of creating counter-stories that challenge other music educators and administrators to break from the status quo (Bergerson, 2003, p. 56). Using autoethnography as my research method allowed me to see where I have been and where I am now in understanding how race and my own privilege impacts my work as an educator and choral director. "Reflexivity consists of turning back on our experiences, identities, and relationships in order to consider how they influence our present work" (Adams, Ellis, & Jone, 2015, p. 28). This collection of narratives represents pivotal moments in my continuing journey towards understanding race and its impact on my life both personally and professionally. My role as a choral ensemble director is very important to me, and it defines who I am as a person. My scholarly pursuit to understand racism and its impact on education have allowed me to now reflect on crucial episodic moments that have greatly impacted that development. These moments and my continued scholarship have also made me more aware of the voices within pop culture representing the unheard and marginalized. Unpacking these moments and scrutinizing their personal impact has allowed me to answer the research

focus: what are the effects of vocal music ability and grouping practices that have impacted my professional experience?

Participant/Researcher's Role

Autoethnography is a self-narrative. As stated by Chang (2008), autoethnography shares the storytelling feature with other genres of self-narrative but transcends mere narration of self to engage in cultural analysis and interpretation. For this research, I served as both the subject and researcher. As a researcher, I was obligated to honestly portray the narrative of the subject. As the subject, I was obligated to provide truthful insight into my personal experiences. Utilizing autoethnography afforded me the circumstance to fill both roles.

Setting

For the purposes of this study, there are three settings that must be defined within which this research takes place. The first setting requires an understanding of my pre-service undergraduate experience. I primarily attended two universities for completion of my undergraduate degree in vocal music education between the years of 1998 to 2006. I attended a smaller state-school in the South from 1998 to 2001 and stopped pursuing my degree shortly after. I returned to school in 2004 and completed my degree at a local St. Louis extension of a state-school, located within predominantly Black communities of North St. Louis County. This setting is important to note because the university, more specifically the music department, was not representative of the community it called home.

The second setting required an understanding of my current school district located in Illinois. Less than twenty minutes from downtown St. Louis, I teach in a

geographically large district which is composed of two high school campuses. The district's student body is 49% White, 40% Black, and 11% Multi-Racial or other ethnicities. The high school campus I teach at is 46% White, 40% Black, and 14% Multi-Racial or other ethnicities. The district, because of its large geographic area, borders the communities of predominantly Black communities to the west and predominantly White communities to the east with my district and school located between. These communities are important to discuss. This specific Black community is marked with a history of economic strife and downturn, race riots, and governmental corruption that have seen populations drop to 25% of what it was at its height as generational wealth allowed White populations to relocate leaving the Black community to deal with urban abandonment and decay. These specific White communities to the south and east of my district represent small rural farming communities which also dealt with polarized. Many communities in southern Illinois were historically unwelcome to Black people, often creating laws that they could not be in town after dark and resorting to brutality in the enforcing of such racist policies whether they were on the books or simply understood (Loewen, 2005). These two polar opposite communities represent the borders of my very diverse district.

The third and final setting was that of popular culture. This research was written amidst the world's dealing with the COVID-19 pandemic, which has been incredibly divisive and polarizing for the United States. Amid the politicizing of the health crisis, another Black man, George Floyd, died at the hands of police. On May 25, 2020, Floyd's death, all 8 minutes and 46 seconds, was captured on video and shared to the internet. It galvanized the national conversation around race just like the death of Michael Brown on August 9, 2014. Both before and after these incidents, there are still more people of color

who have died at the hands of police (George Floyd: Timeline of Black deaths caused by police, 2020). Just like, when on February 14, 2018, a lone gunman opened fire on Marjory Stoneman Douglas High School in Parkland, Florida, killing 17. We often forget Columbine, Colorado, where on April 20, 1999 two gunmen killed 15. There were many schools between. There were many schools before and after (Keneally, 2019). Given the access provided to today's youth by the internet and social media, we can see counterculture creating its own narrative to which music is an integral component. While it is impossible to discuss all of the ways that popular culture reflects or counters, elements of popular culture show the prevalent thought of a place, time, and people (Costanza-Chock, 2012). American society at large, like Afrofuturism's links to science fiction and jazz, and its pop culture can create a narrative that reimagines whose voice is heard. These re-imaginings can "address otherness dead-on, while some simply give life to the stories that dance in their mind" (Womack, 2013).

Limitations and Delimitations

In choosing to complete this research as an autoethnography, I accepted inherent limitations such as validity and reliability because I know such results are difficult to replicate. However, I was also aware that this is the risk of such a qualitative research methodology. I considered the narrative nature of the autoethnography and ensure that each account is thorough, engaging, and concise. While the research community may not offer consensus on specific criteria for assessing validity and reliability in autoethnography, I countered limitations with honest portrayal of related research (Merriam & Tisdell, 2016, p. 240).

Since this research method was grounded solely on my own experiences, I needed to take into consideration my personality and social interactions with students and colleagues. As a 41-year-old White male, I cannot always relate or empathize with my younger students or conversely with colleagues with 10 or 20 more years of experience teaching. I had to be keenly aware of this in my writing and make sure I spoke solely to my own experience in the narratives.

Ethical Issues

Since the narratives I have shared in this autoethnography are of true events, I used "composite stories so that individuals cannot be identified" (Creswell & Poth, 2018, p. 55). Names of students, colleagues, institutions, and organizations have been changed to ensure anonymity. I used pseudonyms, including pronouns, for all individuals involved and intentionally used non-binary pronouns consistently throughout the work. With autoethnography, I understood the risk of those around me being identifiable in the research, and I did everything in my power to mitigate this risk while still ensuring the veracity of my research. These issues in qualitative research "ask us to consider ethical considerations involving our roles as insiders/outsiders to the participants, assess issues that we may be fearful of disclosing [and] acknowledge whose voices will be represented in our final study" (Creswell & Poth, 2018, p. 53). I was mindful of these ethical issues and was diligent in ensuring my own professional safety and the well-being of those around me.

Chapter Four

Case Study Results

In this chapter, we present our case study results, divided into sections based on the dimensions of differentiation, placement procedures, inclusiveness, scope, and teacher traits. Conclusions and recommendations related to these findings follow in Chapter 6.

Differentiation

In the present era of informal tracking, analysis of vertical differentiation is a complex undertaking. In the following section, we described the differentiation structure of each subject area at the school both in terms of vertical levels and horizontal choices available to students. Curriculum maps were generated to aid in comparison of subject areas, and they are provided in the Figures section at the end of the dissertation.

English

The English curriculum was characterized by few horizontal choices and three vertical levels (see Figure 1, Curriculum map for English and Appendix A, List of English courses). The sequence for all three levels included one course each in all four grades, going from an English I to an English IV course. The levels were distinguished generally by pacing, amount of content covered, the skills taught, and assessments. Like the other departments, English used coded language to distinguish between the vertical levels, with terms such as Honors, College Prep, and AP or Advanced Placement. We coded courses into remedial, regular, and advanced by using these terms and after examining the content, skills, and pacing of the courses. In the following paragraphs we summarize the sequences and distinguishing features of each of the three vertical levels.

The remedial English sequence included four courses, English I through English IV. The remedial classes were not standalone sections; instead, the department placed students enrolled in remedial coursework into regular-level class sections. Typically few students were enrolled in remedial coursework, and it was common for the content, pacing, skills, and assessments to be individualized to the students' needs. Because of their placement with their peers, we counted students in remedial courses with the regular-level classes when considering inclusiveness and scope, but we kept them separated when considering placement and mobility.

As with the remedial sequence, the regular-level sequence included four courses, English I through English IV. In each course, teachers taught required core texts and supplemented with material of their choice. In the English I course, core literature included four texts: Homer's *Odyssey*, Golding's *Lord of the Flies*, Shakespeare's *Romeo and Juliet*, and Gladwell's *The Tipping Point*. The English II course core material included five texts: Wright's *Black Boy*, Orwell's *1984*, Salinger's *The Catcher in the Rye*, selections from the Bible, and a work of Shakespeare, typically either *Macbeth* or *Othello*. In some years, *The Things They Carried* by Tim O'Brien was also used as a core text. The English III course typically focused on American literature, with four core texts: Twain's *Huckleberry Finn*, Morrison's *Song of Solomon*, Fitzgerald's *The Great Gatsby*, and the *Narrative of the Life of Frederick Douglass*. In 12th grade, students in English IV engaged with two core texts: Shakespeare's *Hamlet* and Atwood's *The Handmaid's Tale*. Students also engaged in a second-semester capstone research project with a primary focus on developing a research question, thesis, and effecting change. Within each regular course, students also participated in ten one-on-one conferences with their teacher

focused on composition and discussing projects. This conferencing was also part of the remedial coursework.

The advanced-level sequence included five courses, beginning with advanced English I and concluding with either AP English Literature or AP English Language. All five courses required summer reading, unlike the regular-level classes. In addition to the core literature of English I, the advanced English I course included a second work by Shakespeare and Sophocles's *Oedipus the King* and *Antigone*. The advanced English II course used Aristotle's Poetics as a teaching frame for the year's course, and in addition to the regular English II materials, students studied *Persepolis* by Satrapi. In advanced English III, students completed the same core content as English III, but they additionally completed an intensive research project focused on the works of any American author of critical merit. In 12th grade, students in the advanced sequence could choose one of two AP courses: AP English Literature or AP English Language. In addition to the two core texts in English IV, the AP English Literature course sometimes included Ellison's *Invisible Man*, Faulkner's *As I Lay Dying*, Conrad's *Heart of Darkness*, Kafka's *The Metamorphosis*, Austen's *Pride and Prejudice*, or Beckett's *Waiting for Godot*. They also completed a second author's project, similar to advanced English III. In AP English Language, additional texts included Cullen's *Columbine*, Finkel's *Thank You For Your Service*, Capote's *In Cold Blood* and Krakauer's *Into the Wild*. As with the regular English sequence, all advanced English courses included ten one-on-one conferences between students and teachers to focus on composition skills.

Mathematics

Similar to English, the mathematics curriculum included few horizontal choices and three vertical levels (see Figure 2, Curriculum map for mathematics and Appendix B, List of mathematics courses). The sequence of courses varied among the three levels, but typically began in either Algebra or Geometry and concluded with Pre-Calculus, Calculus, or another Algebra course. The levels were distinguished from one another by pacing, content, and assessments. As with the other departments, mathematics used coded language to distinguish between levels, using Honors, College Prep, and AP. As with English, we coded courses by level using these terms and also through an examination of the content, skills, and pacing. In the case of mathematics, students often enrolled off grade level, either ahead or behind their peers. In these cases, we coded a student's enrollment as either advanced or remedial depending on whether a student was at grade level, even if the course itself was a regular-level class. In addition, we coded Honors Calculus as a regular Calculus course, given that there were two other levels of Calculus that were of greater difficulty. In the following paragraphs we summarize the sequences and distinguishing features of each of the three vertical levels.

The remedial sequence included several standalone remedial-level courses and served two groups: first, students enrolled in remedial-level courses, and second, students who enrolled in regular-level classes one year behind their peers. For the first group, their placement and sequence varied; some of the remedial-level courses could be skipped by students. The full remedial-level sequence included Pre-Algebra, Foundations of Algebra, Foundations of Geometry, Foundations of Algebra II, Foundations of Algebra III, and Consumer Math or College Algebra. The second group of students were enrolled one

year behind their peers in the regular-level classes. This generally meant that students began 9th grade in regular Algebra, followed by regular Geometry in 10th, Algebra II in 11th, and concluding with College Algebra, Trigonometry, or Pre-Calculus in 12th grade, depending on the student's performance in Algebra II. We observed that beginning with their 9th grade placement, no students in the remedial sequence could enroll in either Calculus or advanced Statistics by the end of high school.

The regular sequence included two groups of students, beginning together in 8th grade, then separating in 11th grade. Both began with students placed in regular Algebra in 8th grade, followed by regular Geometry in 9th grade and regular Algebra II in 10th grade. Students in the first group moved from this Algebra II course into regular Pre-Calculus in 11th, then regular Calculus in 12th grade. Students in this group also could concurrently enroll in advanced Statistics during their 11th or 12th grades. Students in the second group enrolled in a regular Trigonometry course in 11th grade, followed typically by regular Pre-Calculus in 12th grade. Students in this second group could concurrently enroll in advanced Statistics during their senior year only. At any point in the sequence, a student enrolled in regular-level classes might be moved to the remedial classes based on their performance.

The advanced sequence was only available to students who were initially placed in advanced Algebra in 8th grade, followed by advanced Geometry in 9th grade, advanced Algebra II and Trigonometry in 10th, advanced Pre-Calculus in 11th, and one of the two AP Calculus courses in 12th grade. These students also could concurrently enroll in the advanced Statistics course or an advanced Number Theory course during

their 11th or 12th grades. As with students in regular-level courses, students in advanced classes might be moved to the regular-level sequence based on their performance.

Science

The science curriculum included three vertical levels in most grades, few horizontal choices in 9th and 10th grades, and several horizontal choices in 11th and 12th grades (see Figure 3, Curriculum map for science and Appendix C, List of science courses). The general sequence for science was known as Physics First, meaning that students in 9th grade enrolled in Physics, followed by Chemistry in 10th and Biology in 11th grades. The courses were distinguished generally by the amount of content, assessments, and whether they required algebra. As with the other departments, science used coded language to denote course levels, including Honors, Foundations, and AP, but they did not adopt College Prep for regular courses. In general, we coded the classes according to their naming and content. In 11th grade, the department offered two different advanced Biology courses, one taught as an AP class and the other not; we coded both as advanced. In the following paragraphs we summarize the sequences and distinguishing features of each of the three vertical levels.

The remedial sequence, which began in 9th grade and concluded in 11th grade, included three standalone courses: Foundations of Physics, Foundations of Chemistry, and Foundations of Biology. All three courses emphasized science reasoning skills and the ability to understand the world around a student; they also all featured some laboratory exercises and experiments. In general, none of the remedial courses required algebra skills. Because of prerequisites, students in the remedial sequence could not enroll in any AP coursework in science at the school. According to the curriculum guide

prerequisites, beginning in 11th grade, these students technically could only enroll in one science elective, Forensic Science, which was a study of the application of science to criminal investigations. However, we observed that students were able to enroll in other courses despite the guidebook prerequisites. Additionally, in some years, the Foundations of Biology course was taught within the regular Biology course, similar to the embedded nature of remedial courses in English; however, this was not consistently part of the curriculum and scheduling.

The regular sequence likewise included a three-year sequence of standalone courses: regular Physics, regular Chemistry, and regular Biology. Students conducted laboratory exercises and experiments, often with an aim of students deriving scientific understanding themselves rather than be told about the natural world. Algebraic reasoning skills were required in both regular Physics and regular Chemistry. In 11th and 12th grade, students who were enrolled in or who had completed regular Biology could enroll in elective science courses such as Cosmology, Evolution, and Plant Science; students who completed regular Chemistry could enroll in Astronomy. As with students in the remedial sequence, students in the regular sequence could enroll in Forensic Science. However, as with the remedial sequence, no students in regular courses could enroll in AP courses according to department prerequisites. Again, we observed that the prerequisites were waived for some students.

The advanced science sequence included two paths which diverged beginning in 11th grade. For 9th grade, students enrolled in advanced Physics, which incorporated some elements of the AP Physics I curriculum; for 10th grade, students enrolled in advanced Chemistry. Both courses required use of algebra, scientific calculators, daily

homework, and extensive laboratory exercises. In 11th grade, students were required to enroll in either a non-AP advanced Biology or an AP Biology course, and they had additional course options open to them either concurrently in 11th grade or the following year in 12th grade. These courses included AP Chemistry, AP Environmental Science, AP Physics I, and AP Physics II, which required concurrent enrollment in AP Physics I. In addition, some students enrolled in non-AP advanced Biology in 11th grade followed by AP Biology in 12th grade; this was similar to students who enrolled in the advanced 10th grade Chemistry then enrolling in AP Chemistry in either 11th or 12th grades. The students in the advanced sequence also could enroll in any other regular science course.

Social Studies

The social studies curriculum included no horizontal choices and two vertical levels in 9th and 10th grades, remedial and regular, then wide horizontal choices and two vertical levels in 11th and 12th grades, regular and advanced (see Figure 4, Curriculum map for social studies and Appendix D, List of social studies courses). The sequence included two required history courses in 9th and 10th grades, followed by open enrollment in any social studies course. Students also were required to complete a course in Government prior to graduation. Generally, the vertical levels were distinguished by pacing, content coverage, and assessment styles. Social studies used coded language to distinguish the remedial and advanced classes, including Topics and AP as prefixes. We generally coded courses according to their names and course content. In the following paragraphs, we summarize the 9th and 10th grade courses, both remedial and regular, then Government, followed by a discussion of regular and advanced courses.

In the 9th grade, all students enrolled in a combined World and U.S. History course encompassing the years 1450 to 1875, followed by a 10th grade combined World and U.S. History course studying 1875 to the present day. Similar to the English curriculum, the social studies curriculum included a remedial course embedded within the regular class. Students enrolled in remedial history received modified instructional materials, but they were present in the same classrooms as students receiving regular instruction. The department also used a co-teaching model for 9th grade history, wherein two history teachers co-taught three sections of the course. Students in the remedial classes were assigned to these sections, but no distinction was made between the co-taught and the regular classes in terms of skills, content, or pacing.

State graduation requirements included completion of a course in U.S. Government; the curriculum included three levels of this course: remedial, regular, and an AP Government course. The regular-level Government course was taught in a single semester. On rare occasions, students were enrolled in a remedial-designated Government class embedded within the regular class. These students' coursework typically was modified to meet IEP requirements. The curriculum also included an AP Government course, which was a full-year class and included the study of both U.S. and comparative government.

In addition to Government, the social studies curriculum included wide horizontal differentiation for students in 11th and 12th grades. As with science electives, students could concurrently enroll in multiple social studies courses. Regular-level courses included Film and American Society, Music and American Society, African-American Studies, Gender Studies, History of World Wars I and II, Current Issues, Sociology, Civil

War History, Philosophy, Ancient Civilizations History, and History of St. Louis. All regular-level courses were a single semester in length and open enrollment for any student in 11th or 12th grades. All advanced social studies courses were AP courses; in addition to AP Government, the curriculum included AP Economics, AP US History, AP World History, AP European History, AP Psychology, and AP Human Geography. Only Human Geography was a single semester, and the rest were full-year courses. As with the regular-level courses, all advanced social studies courses were open enrollment for any student in 11th or 12th grades, including students who had completed the remedial coursework in 9th and 10th grades.

Placement and Mobility

Following our examination of differentiation at the school, the placement procedures and vertical mobility in each subject area were analyzed. For placement procedures, for each subject area we described the selection instruments and degree of student choice in placement for each subject area. In general, selection instruments included a student's placement in other subject areas, previous grades in courses, previous placement levels in the subject area, school and standardized test scores, and staff recommendations. We found that the school relied heavily on students' grades, previous placement decisions, staff recommendations, and test scores for placement purposes (see Table 2: Selection instruments used in core subject areas). In most cases, students' preferences were not considered until after a placement decision had been made by the staff; specific information related to student input is provided in the findings for each subject area.

If a student or family disagreed with the placement decision, they were permitted to override the placement according to a procedure that governed all subject areas at the school, except social studies, which did not require overrides to enroll in any classes. To initiate the process, the student was required to meet with their counselor and discuss the benefits and drawbacks of changing levels and how the desired course would affect the student's overall workload. If the override was for a 9th grade course, the parents also were required to contact the respective department chair to discuss the same issues. Next, the counselor provided the student with a placement change request form, and the student was required to meet with their current teacher to discuss the reasons for the current recommendation and to identify areas of improvement. The student next would meet with their parents, and the parent was required to contact the current teacher to discuss the same issues. The current teacher then notified the high school counselor, department chair, and assistant principal of the meeting. Next, the parent was required to contact the high school department chair, for the second time in the case of a 9th grade override; the department chair was required to verify that the parent knew about the areas for improvement and differences between the courses. The chair then signed the placement change request form acknowledging the meeting and notified the counselor and assistant principal. Last, the parent was required to contact the high school assistant principal to discuss the same issues for the third time. The assistant principal verified that the parent knew that the student would be required to remain in the course for at least one semester. At this point, the assistant principal signed the request form granting permission and forwarded it to the counseling department, which made the change. We did not seek to

obtain information related to the frequency of successful or unsuccessful overrides as part of this study.

In the following sections, we describe the placement procedures and analyze student mobility in each subject area.

English

In English, the placement decision for 9th grade was made either by the curriculum coordinator or by a group of staff, both of whom relied on several different selection instruments. In subsequent years, students were recommended for their next year's course level based on their current level; that is, if a student were enrolled in advanced 9th grade, they normally would be enrolled in advanced 10th grade by default. The department allowed students in the regular course to request a change to advanced coursework, and it maintained a policy to move students from the advanced to the regular course under certain circumstances.

The initial placement decisions for advanced and regular 9th grade coursework were made by the curriculum coordinator, who relied on test scores, student grades in middle school courses, and the 8th grade English teacher's recommendation. In general, students needed to meet the advanced requirements in two of those three categories to be recommended for advanced English coursework; failing to meet these resulted in a regular-level placement. On the other hand, recommendations for remedial 9th grade coursework typically were made by a staff group that included special education teachers, 8th grade teachers, high school English teachers, and counselors. This team relied on similar data but did not adopt clear standards for placement.

Specifically in terms of tests and grades from previous courses, the coordinator relied on results from the state standardized English test scores from 6th and 7th grades, the Scholastic Reading Inventory (SRI), and a district writing test scored by one 8th and one 9th grade teacher. Scoring in the advanced performance level or above grade level in reading typically met the threshold for an advanced coursework recommendation. The district writing test was scored on a five-point scale, and a student needed a combined score of 8/10 from the two teachers to meet the threshold. In terms of previous course grades, advanced recommendations were made if a student earned a trend of As in both history and English courses in middle school.

In subsequent years, as previously noted, the department used procedures to determine whether a student should be moved from regular to advanced or from advanced to regular coursework. However, movement from remedial to regular placement was not governed by a formal procedure, and it instead relied on teacher recommendation alone. No movement occurred from regular to remedial coursework.

To move from regular to advanced courses, students either initiated the process by asking their instructor or their instructor could encourage them to do so. Next, the student was required to submit an English placement change request form no later than mid-January to their regular-level teacher. The form included a statement describing the expectations of the advanced courses and that students were committed to enrolling for an entire year in the advanced course. We observed that this statement was not actually enforced in practice, and it conflicted with the override procedure described previously. In addition, students were required to submit a brief statement or essay explaining their

interest in advanced coursework, and they were required to self-assess their "academic characteristics" on a checklist on the form. These traits included:

1. Demonstrates a passion for learning.
2. Embraces academic mistakes. More interested in learning than in grades.
3. Leverages an awareness of the world to inform his/her/their work.
4. Listens to peers, asks thought-provoking questions, and makes insightful connections in discussions.
5. Develops and explores original ideas/arguments in writing and/or discussion.
6. Is open to challenging reading in a variety of genres.
7. Enjoys reading and discussing books outside of class.
8. Asks and is willing to wrestle with questions for which there may be no answers. Deals well with ambiguity.
9. Comprehends meanings beyond the literal text by making connections with self, other texts, and world.
10. Succeeds in developing in-depth thoughts based on evidence.
11. Identifies and analyzes literary techniques employed in a text (appropriate to grade level).
12. Succeeds at responding confidently to open-ended assignments, including independent research, independent reading, etc.
13. Takes ownership of the writing process, including appreciation of constructive criticism.
14. Shows mastery of the five traits of writing (appropriate to grade level).

After both the form and essay were submitted to the teacher, the teacher rated the student in three ways: first, the teacher rated the students' performance on standardized tests as superior, varied but some superior, average, and low. No information was provided as to which test scores were used or how teachers should interpret the scores. Second, the teacher provided the student's first quarter, second quarter, and first semester grade in English; the form noted that a "strong candidate will have earned an A- or higher 1st semester." Last, the teacher rated the student's academic characteristics on the same checklist as the student had done their self-assessment. In addition to the test score ratings and grades, the student needed at least ten affirmative responses by the teacher on the checklist. Following this checklist, the teacher was asked to provide an overall recommendation for whether the student should be permitted to move from regular to

advanced coursework. Their choices were to deny the change, to deny the change but reconsider at the end of the third quarter, or to allow the change in placement.

Students moved from advanced to regular coursework in one of two ways: first, a student could simply request the regular course during the registration period in the last week of January; no special forms or procedures were required, and teachers routinely approved these changes. Second, the teacher could recommend that the student move from advanced to regular coursework. The department maintained a policy that if a student earned lower than a B during the first semester of advanced coursework, the teacher would meet with the student to discuss a change in placement for either the second semester and/or the following year. If the teacher recommended the change to regular coursework for the spring semester, the department would not move the student from the advanced course section; instead the student would remain in the class section but be excused from certain assignments and projects. Regardless of whether the student moved at the end of first semester, the teacher could recommend regular-level placement for the following year without any special forms or procedure.

In terms of mobility in English, we first described the flow of students from each placement level into subsequent years (see Table 3, Mobility among levels in grades in English and Figure 5, Mobility flow in English). Second, we examined a related concept, the proportion of the cohort that moved or remained in the same level at each of three mobility points, from 9th to 10th, 10th to 11th, and 11th to 12th grades.

In general, students remained in their original placement, although some students flowed from the regular to the advanced level of English coursework during the four years of school. There were very few students assigned to the remedial coursework or

who did not enroll in courses in English at the school site during their four years. In Table 3, we describe the origin level and subsequent placements for the same students during their four years at the school. Specifically, we found the percentages of students in each level who were placed in levels for the following years. Thus, of the 148 students assigned to regular 9th grade English, 91% (n=135) enrolled in regular 10th grade English, 86% (n=127) enrolled in regular 11th grade English, and 76% (n=113) enrolled in regular 12th grade English. Likewise, of the 59 students in advanced 10th grade English, 12% (n=7) enrolled in regular 11th grade English and 88% (n=52) enrolled in advanced 11th grade English.

We also constructed Figure 5, Mobility flow in English, to show the flow of students from one level to the next in English, and we included the percentage of the cohort enrolled in the vertical level for each grade level. From this, we observed that a small portion of the students in regular courses moved to advanced courses each year. We also observed that a relatively equal number of students moved from regular to advanced 11th grade English as from advanced to regular 11th grade English; otherwise, few students moved from advanced to regular English.

Next, we examined the proportion of the cohort that moved or that remained in the same level at each of the three mobility points of 9th to 10th, 10th to 11th, and 11th to 12th grades (see Table 4, Proportion of mobility by type in English). We observed that nearly all upward mobility from one year to the next is from regular to advanced coursework, and that approximately 10% of students in regular classes moved upward in any given year. Conversely, we found that the vast majority of students remained in the same level from one year to the next; no less than 90% of students remained in their level

in English in any given grade. Third, we found that downward mobility was rare, with the only exception being 12% (n=7) of students moving from advanced 10th to regular 11th grade English. Last, we observed that non-enrollment was rare, with 1% or less of the cohort students not enrolling in an on-site English course at the school in any given year.

Mathematics

In mathematics, the initial placement occurs prior to the 9th grade, making the analysis of placement decisions more difficult. As noted in the differentiation section, the curriculum included three courses in 8th grade and that the placement decision for them occurred in 7th grade. As with English, the curriculum coordinator ultimately decided 9th grade placement for the regular or advanced level, and they relied on several factors, including 8th grade mathematics placement, test scores, grades in 8th grade mathematics, and the student's 8th grade mathematics teacher's recommendation. Specifically in terms of tests and grades, placement used results from a skills test conducted by the NWEA and from an 8th grade ACT ASPIRE test. The coordinator initially made their recommendation blind, then compared their recommendation to the 8th grade teacher recommendation; in the event of a difference, the coordinator and teacher discussed the next year's placement and attempted to reach a consensus. For placement in the 9th grade remedial level, as with English, a team of staff that included the coordinator, teachers from the middle school, and special education teachers was responsible for making recommendations; typically they relied on similar data.

In subsequent years, the department used a highly detailed procedure governing the movement of students from one course to the next, with the exception of the remedial track. Deviation from the procedure was permitted with approval of the mathematics

department chair. In no cases did the procedures automatically move a student from the remedial to the regular or from the regular to the advanced track; however, in several places, students were automatically moved from advanced to regular or from regular to remedial courses. The procedures also indicated that if a student were to move from one track to a lower difficulty track, the parents should be informed about the override process. Likewise, if a student wanted to enroll in a course with lower difficulty than the recommendation, they would need to fill out a form and be informed that the change was permanent. In the following paragraphs, we describe the placement procedures for each of the three tracks.

For students in the remedial track, the procedures indicated that students should proceed to the next course in the sequence; there was no process for movement out of the remedial track or details about course progression. The department classified students who were remedially placed in the regular Algebra course in 9th grade as regular track for the purposes of placement.

In contrast to the remedial track, for the regular track there were detailed instructions governing the next year's placement. For students in regular Algebra, if they earned above a 75% for the first semester and if their classroom test score average was above 75%, they were placed in the regular Geometry course in the following year. If they fell below 75%, they were placed in the remedial Geometry course. From the regular Geometry course, if the student earned above a C on one specific unit test and if their semester grade was a C or better, they were placed in the regular Algebra 2 course. If they fell below these standards, they were moved to the remedial Algebra 2 course. From regular Algebra 2, students had three possible placements: remedial Algebra 3, regular

Trigonometry, or regular Pre-Calculus. If the student earned below a 78% on one specific unit test, below a 70% on the first semester final exam, and below a 78% on the first semester grade, they were placed in the remedial Algebra 3. However, after the registration period, a second specific unit test and the second semester grade were also considered as checkpoints, and if a student scored below a 78% on either of these, they were subject to a revised remedial placement. If a student scored above these benchmarks but below a 92% on the first unit test and a 95% on the final exam and in the first semester, they were placed into regular Trigonometry. If the student earned above a 92% on the unit test and above a 95% on the final exam and in the first semester, they were moved to regular Pre-Calculus for the following year. In addition, these students had four additional checkpoints, consisting of earning above a 92% on four unit tests, teachers were to revisit recommendations in May based on these checkpoints. From regular Trigonometry, students had two possible placements: regular Pre-Calculus and regular College Algebra. If a student earned low scores on two specific unit tests and less than an 80% in the first semester grade, they would be moved to the regular College Algebra course. If a student earned high scores on the two unit tests and above an 80% for the first semester, they would be placed in the regular Pre-Calculus course. For students in regular Pre-Calculus, no procedures were provided for placement, although most students who enrolled in regular Pre-Calculus in 11th grade enrolled in regular Calculus in 12th grade.

For students in the advanced track in mathematics, teachers relied on a similarly detailed placement procedure as the regular track. Beginning with advanced Geometry in 9th grade, students might be placed in advanced Algebra 2-Trigonometry in 10th grade or regular Algebra 2. If a student earned a first semester grade above 80%, they were placed

in the advanced course, while if they earned below an 80%, they were moved to the regular Algebra 2 course. In May, the teacher revisited the placement decision, and they were instructed to examine the student's 8th grade Algebra grades and the student's score on a specific unit test from the spring. No clear cutoff scores were used in this evaluation. From advanced Algebra 2-Trigonometry, students moved to either advanced Pre-Calculus or regular Pre-Calculus. Again, if the student earned a first semester grade above 80%, they were placed in the advanced course, while below 80% meant placement in the regular course. From the advanced Pre-Calculus course, students had three potential placements: regular Calculus, advanced Calculus 1, and advanced Calculus 2. In this case, if a student earned below an 80% in the first semester, they were moved to regular Calculus; between an 80% and 93% yielded placement in advanced Calculus 1, and above 93% meant placement in advanced Calculus 2. For the advanced Statistics class students had to have completed Trigonometry and have their current mathematics teacher's recommendation, while for the advanced Number Theory course, advanced Pre-Calculus was a prerequisite.

In terms of the actual placement process, in most cases, students briefly met with their teacher one-on-one with registration forms, and during these meetings, the teacher provided the student with their recommendation and signed an approval document. Students were free to express their preferences, and if they expressed interest in mobility outside the recommendation, they were directed to the override process.

For examining mobility in mathematics, we first described the flow of students from each placement level into subsequent years (see Table 5, Mobility among levels in grades in mathematics and Figure 6, Mobility flow in mathematics). Second, we

examined a related concept, the proportion of the cohort that moved or remained in the same level at each of three mobility points, from 9th to 10th, 10th to 11th, and 11th to 12th grades.

As with English, in general, students remained in their original placement in mathematics. In terms of the remedial track, most students placed in remedial 9th grade remained in remedial coursework until 12th grade, when 79% (n=33) enrolled in a remedial class and 17% (n=7) did not enroll in mathematics courses at the school. Of the 42 students who began in the remedial sequence, only two moved to regular coursework, both in 12th grade. In both the regular and advanced tracks, likewise most students remained in the sequence.

We constructed Figure 6, Mobility flow in mathematics, to show movement of students from one level to the next in mathematics, and we included the percentage of the cohort enrolled in the vertical level for each grade level. From this, we observed that most movement was downward from 9th through 11th grades; only one student moved up a vertical level from 9th to 10th, and no students did so from 10th to 11th. We also noted there was upward movement from 11th 12th grades. However, a similar proportion of students moved from remedial to regular as did from remedial to not enrolled in mathematics coursework during their 12th grade.

Next, we examined the proportion of the cohort that moved or that remained in the same level at each of three mobility points of 9th to 10th, 10th to 11th, and 11th to 12th grades (see Table 6, Proportion of mobility by type in mathematics). We observed that nearly all mobility from one year to the next was from advanced to regular or from regular to remedial coursework, and that approximately 10% of students moved

downward in any given year. We also noted that virtually no students moved up until the 11th to 12th grades, when 13% (n=17) of students in remedial or regular 11th grade classes moved up levels in the 12th grade. We found the majority of students remained in the same level; with the exception of students in remedial 11th grade courses, no less than 80% of students remained in their level. Overall, 94% (n=186) remained in the same level from 9th to 10th, 89% (n=177) remained unchanged from 10th to 11th, and 83% (n=166) were unchanged from 11th to 12th. Last, we observed that non-enrollment overall was rare but more common in the 12th grade, with a majority of students not enrolled for 12th grade who had been enrolled in remedial classes in 11th grade.

Science

In science, the placement procedures relied more heavily on objective measures in the 9th grade course placement than the other grades. The placement decision for all three levels of 9th grade science relied on a combination of test scores on the ASPIRE and NWEA, a school reasoning test, the placement decision by the mathematics department, the student's first-semester grade in 8th grade science, a three-question rating scale filled out by the 8th grade science teacher, and the 8th grade science teacher's recommendation. Given these factors, the science department chair made initial placement decisions. In terms of the tests, rating scales, and grades, the department chair did not use strict cutoff scores, instead viewing the data more holistically. If the chair's decision differed from the 8th grade teacher's recommendation, both discussed the recommendation and reached consensus. Occasionally, parents also were consulted, often if a student's test scores or ratings were significantly different from course grades, science interest, etc.

For subsequent years in science, the placement decision was based on the student's current science teacher's recommendation. Although the science faculty informally discussed placement norms in a department meeting prior to registration, teachers were free to recommend students for the next year's courses as they saw fit, typically using course grades, homework completion, or other factors as inputs to the decision. This placement procedure was used for all levels of science, including remedial, regular, and advanced coursework. Prerequisite requirements also were in place that would prevent mobility, but the teacher's placement decision could override these requirements if the department chair approved.

In terms of the actual placement process, in most cases, students briefly met with their teacher one-on-one with registration forms, and students typically brought the form to the teacher with a course preference already written on the form. During the meeting, the teacher provided the student with their recommendation and signed their approval. If the teacher did not approve of the student's choice, the teacher's decision was written on the form, but as with other departments, students could override the placement decision using the override process.

For mobility in science, we first described the flow of students from each placement level into subsequent years (see Table 7, Mobility among levels in grades in science and Figure 7, Mobility flow in science). Second, we examined a related concept, the proportion of the cohort that moved or remained in the same level at each of three mobility points from 9th to 10th, 10th to 11th, and 11th to 12th grades.

Overall, science exhibited more mobility than either English or mathematics. Although small in number, the students assigned to the remedial class in 9th grade moved

up to regular coursework relatively often: 2 of the 11 moved to regular coursework in 10th grade, 5 had moved to regular coursework by 11th grade, and 8 were enrolled in regular courses in 12th grade. Likewise, students in the regular classes also moved up to the advanced classes frequently: 21% (n=27) of students in regular 9th grade classes moved to advanced 10th grade classes, 49% (n=63) moved to advanced 11th grade classes, and 45% (n=58) enrolled in advanced classes in 12th grade. In terms of downward mobility, no students moved from regular to remedial classes, and only from 11th to 12th grade was there significant movement from advanced to regular classes: 23% (n=28) of students in advanced 11th grade science did not enroll in advanced 12th grade science.

When we constructed the flow diagram for science, we observed large increases in advanced class enrollment from 9th through 11th grade. By 11th grade, the proportion of students in advanced classes had doubled from the enrollment in 9th grade (61.3%, n=133 compared with 29.6%, n=59). We also noted the declining enrollment in remedial classes, and the relatively low percentage of students who did not enroll in science classes on-site. While we observed that large numbers of students in advanced 11th grade classes did not enroll in advanced 12th grade classes, we noted that it was somewhat balanced by an inflow from regular 11th grade classes to advanced 12th grade classes.

Next, we examined the proportion of the cohort that moved or that remained in the same level at each of three mobility points of 9th to 10th, 10th to 11th, and 11th to 12th grades (see Table 8, Proportion of mobility by type in science). From this, we observed that in any given year, more than one of five students move up from either remedial to regular or from regular to advanced classes in science, more than double the

rate of upward mobility in English or mathematics. In particular, nearly 40% of students in remedial or regular classes moved up a level going from 10th to 11th grade science. We also noted that students remained within the advanced level at high rates, especially from 9th to 10th (97%, n=57) and from 10th to 11th (98%, n=82). No students moved into the remedial classes from the regular track at any point; however, 21% of students (n=25) moved from advanced 11th grade to regular 12th grade science.

Social Studies

In social studies, placement decisions involved whether students' coursework in the three core classes of 9th and 10th history and U.S. Government should receive remedial designation. In all three cases, the remedial course was embedded within the regular course, so the purpose of the remedial designation was to note that the student received modified grading and materials on the student's transcript. Similar to science and English, the 9th grade placement relied on a wide range of inputs compared to later placements which were primarily a teacher decision.

For 9th grade placement in remedial coursework, the department chair met with the 8th grade social studies teachers and 8th grade guidance counselor, the high school's student support director, and the 9th grade guidance counselor; at these meetings, the 8th grade staff provided a draft list of students who they recommended for remedial designation. After consulting with the high school staff, the department chair made recommendations for remedial placement. Typically parents were consulted at this step to confirm the placement. In terms of later placement with remedial designation, the department chair consulted informally with the student's current social studies teacher to

determine whether continued remedial designation was necessary. Ultimately, the chair decided placement after attempting to reach consensus.

For advanced coursework, unlike the other three departments, social studies did not have any formal recommendation or approval process. After the completion of the required 10th grade history course, students were free to enroll in any advanced or regular course offered in the department without any prerequisites or approval required.

In terms of the actual registration process in social studies, the students briefly met with their teacher one-on-one with their registration forms. Prior to the meeting, the students were provided with information about their social studies coursework options, and they were instructed to fill out their choices for the upcoming year. During the meeting, the student typically would bring the form filled out with their preference, and they would discuss with the teacher about their opinion of their course choices. The teacher then signed the registration form indicating that they had met with the student. Because there was no approval required from the social studies teachers of student's choices, there was no override process in social studies.

For mobility in social studies, as with the other subjects, we first described the flow of students from each placement level into subsequent years (see Table 9, Mobility among levels in grades in social studies and Figure 8, Mobility flow in social studies). Second, we examined a related concept, the proportion of the cohort that moved or remained in the same level at each of three mobility points from 9th to 10th, 10th to 11th, and 11th to 12th grades.

Overall, mobility in social studies was more limited in the first two grades by the structure of the curriculum. Given that nearly all students enrolled in a heterogeneous

regular-level class in 9th and 10th grades, very little mobility was exhibited. Nevertheless, when students were able to enroll in advanced classes, approximately 70% of students did so in 11th grade. Additionally, of the students who enrolled in regular classes in 11th grade, nearly one-in-five enrolled in advanced classes in 12th grade (18%, n=10), while a relatively equal proportion did not enroll in social studies in 12th grade (21%, n=12). Of the students who enrolled in 11th grade advanced classes, 69% (n=95) continued in advanced classes in 12th grade, with most of the other students enrolled in regular classes in 12th grade (26%, n=36). Very few students were placed in the remedial classes in either 9th or 10th grades, but they all enrolled in regular social studies classes in 12th grade.

From the flow diagram for social studies, Figure 8, Mobility flow in social studies, we noted the substantial movement of students from regular 10th grade social studies to 11th grade advanced coursework. However, a large proportion of these students shift back to regular coursework for the 12th grade. Additionally, we observed the relatively equal number of students moving from 11th grade regular classes to advanced 12th grade and to not enrolled status.

Next, we examined the proportion of the cohort that moved or that remained in the same level at each of three mobility points of 9th to 10th, 10th to 11th, and 11th to 12th grades (see Table 10, Proportion of mobility by type in social studies). From this, we noted that social studies has a large number of students moving up from one year to the next, particularly from 10th to 11th (70%, n=138 moved up a level) but also from 11th to 12th to a (19%, n=11). However, social studies also exhibited substantial downward mobility at the only transition point where it could occur; from 11th to 12th grade, 26%

(n=36) of students moved from advanced to regular classes. Additionally, at the same point, 9% (n=18) of students moved from enrolling in a social studies class in 11th grade to not enrolling for 12th grade.

Inclusiveness

In this section, the inclusiveness of the vertical levels is described and analyzed in four ways. First, we examined and analyzed the extent to which students are included in the advanced level sequence; this reflects the traditional understanding of inclusivity (Sorensen, 1970). Second, for each subject area, we generated demographic profiles for each vertical level and analyzed them for trends. Third, for each demographic group, we generated enrollment profiles showing their coursework and analyzed these for trends. Last, we compared the enrollment of students in each demographic group in each of the vertical levels with an expected enrollment of those students, using the proportion of students in each group in the overall grade level. We used chi-square tests to determine whether there was significant disproportionality between the expected enrollment and the actual enrollment. We generated residual values to aid in determining the root of disproportionate representation for race and residency status; gender, lunch, and disability status were binary in our analysis, so we did not generate residuals for them.

The first element of analyzing inclusivity was our examination of how inclusive the advanced sequence were of the entire student body (see Table 11, Inclusiveness of vertical levels in all subject areas). For this analysis, we determined the percentage of students enrolled in each vertical level of the total in the grade level. Because some students enrolled in more than one course, the percentages do not sum to 100. For example, in 12th grade social studies, 63% of 12th grade students enrolled in a regular

course, and 50% of seniors enrolled in an advanced course. In addition, students who were not enrolled in a regularly scheduled course in the department were counted as not enrolled, even if they were enrolled in courses in the subject area in off-site alternative programs, online programs, or in special education self-contained courses.

English

In the English department, the demographic profile of each vertical level revealed disproportionate representation of race, gender, lunch status, disability status, and residency (see Table 12, Demographic profile of vertical levels in English). In particular, the disproportionality in gender appeared larger than any other demographic.

In terms of race, Black students typically made up one-fifth of each regular class, while only around one in twenty students in an advanced classroom were Black. The Black student population at the school ranges from 12 to 19% of students in any given grade level. Asian students had the reverse proposition, with less than one in ten Asian students in the regular sequence. White students had a relatively balanced proportion between regular and advanced sequences until 11th and 12th grades, but the difference was somewhat small.

In addition to race, gender disproportionality appeared highly significant in English classes. Females were no less than 60% of advanced students and as many as 71% in 10th grade. In all four grades, male students appeared more in the regular and remedial sequence than their proportion in the overall grade level. Likewise, lunch status appeared to be disproportionate: in both 9th and 11th grades, none of the 146 students in advanced classes received free or reduced-price lunch. Disability status also was disproportionate; in all four grades, no less than one-fourth of the students in regular

classes had special education plans, while only between 5 and 8% of students in the advanced classes had them. Last, in terms of residency, students who transferred into the district enrolled in regular classes far more often than they did in advanced classes. For example, there were more than twice as many 9th grade transfer students in regular classes (n=20) as all of the transfer students in advanced classes combined (n=9).

Our second method of inclusivity analysis was to consider the distribution of each demographic group across different levels (see Table 13, Distribution of demographic groups in English). For example, we examined the proportion of the total Black students in each grade level who were present in the vertical levels. This was in contrast with our previous description of the demographic makeup of each vertical level. Because some students enroll in more than one vertical level at the same time while other students do not enroll in a subject area at all, the percentages of the levels combined do not sum to 100. As Karolyn Tyson summarized her ethnographic research on this phenomenon,

> At racially diverse and predominantly White high schools, [high-achieving Black adolescents] were frequently the only Black students in their advanced classes. This pattern, which was especially evident in AP courses, did not escape their attention. … Robin, for example, who attended Shoreline High School (72% White, 15% Black), recalled that she did not have another Black student in her advanced classes until her junior year. (Tyson, 2011, p. 7)

Thus, we consider the same demographic data but from the perspective of the students. The disproportionate assignment to remedial and regular classes of Black students, male students, students receiving free or reduced-price lunch, students with disabilities, and transfer students was readily apparent in English.

In terms of race in English classrooms, disproportionality appeared for both Asian and Black students. No less than 40% of Asian students were enrolled in advanced English classes in any given year, with a peak of 78% of 10th grade Asian students

enrolled in advanced classes. At the same time, no more than 15% of Black students were enrolled in advanced English in any given year. The proportion of White students enrolled in advanced English remained relatively consistent at approximately one in three in advanced classes.

The data also revealed gender, lunch status, disability status, and residency status disproportionality. Only one in four males typically enrolled in advanced classes, while no fewer than two of five females did so. In 10th grade, nearly 60% of females were enrolled in advanced classes, while only 28% of males were. Although in 9th and 11th grades, no students receiving free or reduced-price lunch were enrolled in advanced classes, in 10th grade more than one in four students receiving free or reduced price lunch were in advanced classes. In terms of disability status, typically only one in ten students with disabilities were enrolled in advanced classes, again with the exception of 10th grade, in which 18% of these students enrolled in advanced coursework. With regard to residency, no less than 85% of transfer students enrolled in regular coursework, and in the 9th grade, only one of the 64 students in advanced English classes was a transfer student.

Our final element of analyzing inclusiveness involved testing whether the disproportionality of representation we observed was statistically significant. We compared the observed number of students in each demographic subgroup with an expected number, generated by finding the percentage of students of each subgroup in the grade level who were enrolled in the subject area, then multiplying this by the total number of students in the vertical level for that grade level. Using this technique in English, we found statistically significant differences in terms of race, gender, and

disability status (see Table 14, Chi-square test results for demographic disparities in English). Lunch and residency status did not exhibit significant disparities.

In terms of race, we found significant results in four of eight vertical levels, specifically in both regular and advanced coursework in both 10th and 11th grades. We also found significant gender disparities in six of eight levels, with particular disparities in 10th grade English. For the two of eight levels in which statistically significant disparities were not present, the p value = .06. Last, in terms of disability status, we found disparities in five levels, including all four grades of advanced English.

Post-hoc tests were conducted to determine the contributing factors to the significant results described above (see Table 15, Post-hoc test results for English). In both 10th and 11th grades, Black students were underrepresented in advanced English (10th, -1.41, p=.16; 11th, -1.44, p=.15) and slightly overrepresented in regular English (10th, 0.92, p=.36; 11th, 0.80, p=.42). At the same time, Asian students were disproportionately enrolled in advanced English (10th, 1.11, p=.27; 11th, 1.44, p=.15) and disproportionately not in regular English (10th, -1.39, p=.16; 11th, -1.62, p=.10). Neither White nor multiracial students appeared to contribute to the significant results from the chi-square tests.

Mathematics

In the mathematics department, the demographic profile of each vertical level showed disproportionate assignment of Black, low-income, and transfer students to remedial sequence coursework (see Table 16, Demographic profile of vertical levels in mathematics). At the same time, mathematics at the school did not appear to reveal gender disproportionality.

In terms of race, the mathematics curriculum exhibits disproportionality throughout all four years and in all three levels. In the remedial level, Asian students and White students were underrepresented; Asian students were between 10 and 12% of the student body in any given grade, but they never exceeded 3% of the population in remedial courses. Likewise, White students were between 60% and 68% of the student population but were fewer than 50% of the students enrolled in the remedial track. Black students, on the other hand, were between 12% and 19% of the students at the school in any given year, yet they were approximately one-third of the students assigned to remedial courses.

Lunch status, disability status, and residency status also exhibited disproportionate representation. The population of students receiving free or reduced-price lunches varied between 5 and 10% of the school population; these students were between two and three times overrepresented in remedial classes, and they were far less likely to appear in advanced mathematics classes. Disability status mirrored this pattern with regular courses approaching proportional representation, while remedial and advanced classes had over- and underrepresentation, respectively. Last, residential status also appeared disproportionately represented. In particular, students who enrolled at the school via desegregation and local transfer agreements were overrepresented in remedial courses.

When we examined the enrollment patterns from the perspective of students, similar trends emerged (see Table 17, Distribution of demographic groups in mathematics). However, by viewing the data in this way, we viewed the situation with the eyes of students who actually attended the school. As with the previous results,

significant disproportionality emerged in terms of race, lunch status, disability status, and residency, while gender did not exhibit significant disproportionate representation.

From the perspective of each racial group, in every grade, more than half of all Black students at the school were enrolled in remedial mathematics courses. Among the 35 Black 9th graders, 69% (n=24) were enrolled in remedial mathematics. Likewise, Asian students appeared overrepresented in advanced mathematics, with 77% of Asian seniors enrolled in advanced-sequence mathematics. Last, typically fewer than one-fourth of White students were enrolled in remedial mathematics in any given year, with a low of only 13% of White students enrolled in the 12th grade.

Lunch status also presented disproportionality, with 75% of 9th grade students who received free or reduced-price lunch enrolled in remedial mathematics. Likewise, typically less than one-fourth of students paying full price for lunch were enrolled in remedial classes in any given year. Students with disabilities also appeared overrepresented in remedial classes, especially in 9th and 10th grades. Last, between half and three-fourths of transfer students were assigned to remedial classes, while typically only one-fourth of resident children and employee children were assigned to these courses.

Our final element of analyzing inclusiveness involved testing whether the disproportionality of representation found in our initial examination was statistically significant (see Table 18, Chi-square test results for demographic disparities in mathematics). We compared the observed number of students in each demographic subgroup with an expected number, generated by finding the percentage of students of each subgroup in the grade level who were enrolled in the subject area, then multiplying

this by the total number of students in the vertical level for that grade level. Using this technique in mathematics, we found statistically significant results not only in terms of race, but also in lunch status, disability status, and residency status.

In terms of race, we found statistically significant results in remedial and advanced sequences for every grade level, all of which had p values < .01. Both remedial and advanced 10th grade mathematics also exhibited statistically significant disparities in terms of lunch status, with overrepresentation of students receiving free or reduced-price lunches in remedial courses and underrepresentation in advanced. Disability status also exhibited significant disproportionality in remedial and advanced sequences for every grade. Last, residency status had significant disparity in remedial and advanced sequences for 9th grade, remedial 10th grade, and advanced 12th grade courses. Post-hoc tests were conducted to determine contributing factors to significant results (see Table 19, Post-hoc test results for demographic disparities in mathematics). Maldistribution of Black students drove the disproportionality in race in all four grade levels. In terms of residency status, transfer students were overrepresented in remedial classes in 9th and 12th grades, while in 10th grade remedial courses, employee children appeared overrepresented.

Science

In the science department, the vertical levels exhibited disproportional enrollment in terms of race, lunch status, disability status, and residency status (see Table 20: Demographic profile of vertical levels in science). Although the curriculum maintained a separate remedial course for 9th, 10th, and 11th grade students, we combined this course with the regular courses for inclusivity analysis. Each remedial course existed as a

separately taught section (similar to mathematics), but each only had one section assigned and each section had low enrollment: remedial physics had 14 students; remedial chemistry had seven students; and remedial biology had three students in a single section, separated from their peers in the regular course.

In terms of race, we noted that science exhibited similar patterns as other subject areas, with Black underrepresentation in advanced courses and Asian students overrepresented in these courses. Very few Black students enroll in advanced science: there were more Black 12th grade students in regular and remedial courses (n=32) than Black students in advanced science courses at the entire school (n=30).

No clear trend was detected in terms of enrollment by gender. However, in terms of lunch status, disproportionality appeared: the number of 9th grade students in regular or remedial science receiving free or reduced-price lunch (n=14) nearly matched the number of the students receiving free or reduced price lunch in all advanced classes (n=15). Disability status also was a marker of remedial or regular coursework. Likewise, residency appeared linked to advanced coursework as well; transfer students made up between 13 and 19% of students in remedial or regular classes, while at most 6% of advanced classes, again with a peak in 11th grade advanced science coursework.

When considering the data from the perspective of students, similar trends emerged (see Table 21, Distribution of demographic groups in science). In terms of race, the lowest rates of advanced enrollment occurred in 9th grade, while in 10th and 11th grades, Asian, Black, and White students all saw increased enrollment in advanced courses. The proportion of Black student enrollment in advanced science, however, was lower than the proportion of Asian or White student enrollment in every year. In terms of

gender, only 12th grade showed an apparent distinction between male and female enrollment; while less one-third of male students were enrolled in regular classes and 55% were enrolled in advanced coursework, 50% of females were enrolled in regular classes and only 45% were enrolled in advanced classes. Lunch status also appeared disparate, with students receiving free or reduced-price lunch less likely to be enrolled in advanced classes, although clear trends were difficult to discern. Likewise, transfer students were disproportionately assigned to remedial or regular courses.

The fourth and final element of analyzing science inclusiveness involved testing whether the disproportionalities of representation found in our initial examination were statistically significant (see Table 22, Chi-square test results for demographic disparities in science). We compared the observed number of students in each demographic subgroup with an expected number, generated by finding the percentage of students of each subgroup in the grade level who were enrolled in the subject area, then multiplying this by the total number of students in the vertical level for that grade level. Using this technique in science, we found statistically significant results in terms of race, gender, disability status, and residency status. We did not find significant disparities in lunch status in science.

In terms of race, statistically significant disproportionality was exhibited in every grade and level except for regular-remedial 9th grade courses. The disproportionality appeared to increase as the grade levels continued, with 9th grade advanced courses having $p = .03$, while both regular and advanced 12th grade courses had $p < .001$. Gender disproportionately was limited to the 12th grade regular courses, with an overrepresentation of female students and underrepresentation of male students. As with

race, disability status was significantly disproportionate in all grades and levels except 9th grade regular-remedial courses, with p values < .01 in six of seven cases. Residency status also exhibited disproportionality, with p = .05 in advanced 9th grade coursework and p < .05 in both regular and advanced 12th grade courses.

Post-hoc tests were conducted on race and residency status to determine the contributing factors to the significant results in science (see Table 23, Post-hoc test results for demographic disparities in science). In terms of race, Black and Asian student disproportionality appeared to drive the significant results. In all grades, the p values for Black and Asian student representation were at most .42, which was lower than the p values for White or multiracial student representation. Black students appeared underrepresented and Asian students appeared overrepresented in the advanced coursework, with the reverse being true in regular-remedial science coursework. In terms of residency status, there were fewer clear trends. In 9th grade advanced science courses, both transfer students and employee children were underrepresented, while residents were slightly overrepresented. In 11th grade regular science, all three groups were slightly disproportionately represented. In 12th grade science, transfer students and employee children again appeared to be the source of the disparity, with overrepresentation of transfer students in the regular-remedial courses and an underrepresentation of employee children in advanced courses.

Social Studies

In the social studies department, the vertical levels appeared to exhibit fewer disparities in terms of most subgroups (see Table 24, Demographic profile of vertical levels in social studies). In terms of race, it appeared that Black students were

underrepresented while Asian students appeared overrepresented in advanced coursework, more so in 12th than 11th grade. Gender, lunch status, and residency status did not appear to exhibit disparities, with the possible exception of transfer students being underrepresented in advanced 11th grade coursework. Disability status clearly exhibited disproportionate representation, with more than a 10% difference between regular and advanced representation.

From the students' perspective, disparities in race appeared less distinct (see Table 25: Distribution of demographic groups in social studies). More than 50% of Black juniors were enrolled in advanced coursework in social studies; however, slightly less than one in four Black seniors were. At the same time, every Asian junior was enrolled in advanced coursework, while one in four of them also enrolled in regular social studies courses. A similar pattern emerged in the 12th grade. In terms of gender, two-thirds of both males and females enrolled in 11th grade advanced coursework, while about one-half did so in 12th grade. Approximately 40% of students receiving free or reduced-price lunch enrolled in advanced courses in both 11th and 12th grades, while one-third or more of the transfer students did so in both grades. However, in terms of disability status, less than one-fifth of students with disabilities were enrolled in advanced courses in 12th grade. Students with disabilities had the lowest participation rate in advanced courses of any subgroup.

When examining the distribution for statistically significant difference between expected enrollment and actual enrollment, both race and disability status emerged with significant results (see Table 26, Chi-square test results for demographic disparities in social studies). In 12th grade advanced social studies, there was significant disparity in

both race and disability status, while in 11th grade advanced social studies, there was significant disparity in disability status. 11th grade advanced social studies also had p = .0506 in terms of racial disparity.

Post-hoc tests were conducted on race in advanced 12th grade courses to determine the contributing variables (see Table 27, Post-hoc test results for demographic disparities in social studies). Black and Asian students both had relatively low p values of .14 and .26, respectively. The standard residuals indicated a limited overrepresentation of Asian students and a clear underrepresentation of Black students in advanced 12th grade social studies.

Scope and Student Communities

Sorensen (1970) originally defined the dimension of scope as "to what extent a given group of students will be members of the same classroom over time," and that high scope is indicative that students spend most of their time with the same group of students (Sorensen, 1970, 362). For our analysis of this dimension, we investigated three related questions: first, what communities of students exist at the school, and what are their characteristics? Second, to what extent do these communities interact with one another? Last, to what extent do students' memberships in communities evolve over time?

Community Detection and Traits

For the first question, we imported coded enrollment data into Gephi, an open-source network analysis program, then established links between students based on their shared core subject area courses. In answering the first question, within Gephi we used the Leiden algorithm to discover communities of students based on their network

connections. We adopted the Force Atlas 2 layout for all graph diagrams, which spatializes network relationships into a map-like form (Jacomy et al., 2014).

Whole School.

When initially applied to the entire school, the Leiden algorithm yielded a modularity value of 0.658 and 18 communities (see Figure 9, Communities and network structure of the school). Of the 18 communities, four communities comprised 98% (n=885) of the students, while 14 communities comprised the remaining 18 students. These 18 students generally were either enrolled in an alternative, off-site school program or in self-contained special education courses. The four largest communities generally aligned with the grade levels of the students.

9th grade.

When applied to all enrolled 9th grade students (n=214), four communities were detected with a modularity value of 0.186 (see Figure 10, Communities and network structure of 9th grade students). Of these, three communities comprised 213 students, and a fourth community was an individual student enrolled in off-site alternative coursework or self-contained special education courses. As we examined the network structure, we observed that the three main communities emerged out of the number of remedial or advanced courses taken by the students. Within each of the three communities, which we have coded as 9A, 9B, and 9C, we visually identified subclusters of students; to aid in discussion, we have numbered clusters within each grade level and denoted these on the Figure 10.

Community 9A, coded blue in Figure 10, comprised four clusters, and all students within 9A were enrolled in two or more advanced classes. Cluster 1 was the largest of the

four and was composed of students in all three available advanced classes and regular social studies. Surrounding it were the three other clusters in 9A. The smallest cluster in 9A was cluster 2, which included students enrolled in advanced English and science with regular social studies and mathematics. Slightly larger than cluster 2 was cluster 3, which included students in regular English and social studies and in advanced mathematics and advanced science. Nearly equal in size was cluster 4, which included students in advanced English and mathematics with regular science and social studies.

Nearest to cluster 4 were the two clusters of community 9B, colored orange in Figure 10. The smaller of the two, cluster 5, included students in advanced English and otherwise enrolled in regular classes. Also in 9B was cluster 6, which included students enrolled in all four regular classes. Cluster 6 was the largest cluster of the grade level.

Community 9C included three clusters, the smallest of which, cluster 8, appeared between cluster 3 in 9A and cluster 6 in 9B. Cluster 8 included students in advanced mathematics and three other regular classes. Also in 9C were two other groups, both of which were characterized by remedial classes. The largest cluster in 9C was cluster 7, which included students in remedial mathematics and three regular courses; the remedial course in this case was 9th grade Algebra. The last cluster in 9C was cluster 9, which included students enrolled in two or more remedial classes or not enrolled in some subject area coursework. Interestingly, the network map indicates in some sense their physical and metaphysical distance from the rest of their grade level peers.

Following our initial examination of communities within the 9th grade, we analyzed the demographic profile of each of the three communities (see Table 28, Demographic profile of 9th grade communities). We also generated network maps to

show the locations of each student demographic group in the 9th grade (see Figure 11, Race in network structure of 9th grade; Figure 12, Gender in network structure in 9th grade; Figure 13, Lunch status in network structure of 9th grade; Figure 14, Disability status in network structure of 9th grade; Figure 15, Residency status in network structure in 9th grade).

Community 9A, which primarily comprised students in advanced courses, was distinct from the grade level in several ways, including race, lunch status, special education status, and residency status. In terms of gender, 9A was nearly identical to the overall population. However, 9A included twice the proportion of Asian students as the overall population and slightly more White students; it was also only 3% Black (n=2), compared to the overall proportion of 16% (n=34). It also disproportionately included full-pay lunch status and under-included students receiving free or reduced-price lunches. Likewise, only 4% (n=3) of students had an IEP or a 504 Plan, compared to 21% (n=45) of the grade level. The community also primarily included resident students, who were 93% (n=63) of the 9A group, compared to 82% (n=175) of the grade; conversely, only one transfer student was part of community 9A, out of 21 in the grade.

Community 9B, which included two clusters was primarily composed of students in regular classes, was more similar to the overall grade level population, but it still diverged in terms of lunch status and race. In terms of race, although 9B included a relatively proportional population of Asian students and multiracial students, its population was only 10% Black (n=8), compared to an overall Black population of 16% (n=34). Likewise, 9B included more White students than the overall population (70%, n=56 compared to 61%, n=129). Lunch status also was divergent from the overall

distribution: only 3% (n=2) of 9B students received free or reduced-price lunches, compared to 7% (n=15) overall. However, gender, disability status, and residency status were comparable to the overall population distribution.

The last 9th grade community, 9C, included three clusters: the smallest with students enrolled in advanced mathematics and other regular coursework, and two larger clusters with students in remedial coursework. 9C exhibited divergence from the overall population in terms of race, lunch status, disability status, and residency. In terms of race, 37% (n=24) of students in 9C were Black, the highest proportion of any 9th grade community. The White population was 45% (n=29) of the total, and the Asian population was 2% (n=2), both of which were the smallest proportion of any of the three communities. The lunch status of students in 9C also diverged: 19% (n=12) of students in 9C received free or reduced-price lunches, the highest proportion of any community in the grade. Similarly, 43% (n=28) of students had an IEP or 504 plan, the highest proportion of any community in 9th grade. Transfer students were more than one-fourth of the students in 9C (26%, n=17), the highest proportion of any community, and the resident population was 69% (n=45), the lowest proportion.

10th grade.

When we applied the Leiden algorithm to the 10th grade population (n=223), four communities were detected with a modularity value of 0.335. Of these, two communities comprised 220 students, and the other two communities included three students enrolled in self-contained special education courses. As with 9th grade communities, we observed that the two main communities emerged out of the remedial or advanced courses taken by the students. Within the communities of 10A and 10B, we visually identified nine

clusters of students. As with previously, we color-coded the communities and numbered clusters for aid in analysis (see Figure 16, Communities and network structure of 10th grade students).

Community 10A, coded blue in Figure 16, comprised four clusters and 103 students, and most of the students within 10A were enrolled in two or more advanced classes. As with 9A, cluster 1 in 10A was the largest of the four and was composed of students in all three available advanced classes and regular social studies. Near it were two smaller clusters, both of which had two advanced classes. Cluster 4 was the smallest within 10A, and it included students in advanced science and other regular coursework. Between cluster 3 and cluster 4 was one student who was enrolled in advanced mathematics and advanced English, but regular social studies and science.

Community 10B comprised 117 students. Cluster 5 was the smallest within 10B, and it included students enrolled in advanced mathematics and other regular coursework; slightly larger was cluster 6, which included students in advanced English and other regular coursework. Farther afield were the three remaining clusters in community 10B. Similar in size to cluster 1 in 10A, cluster 7 and cluster 8 were close together in 10B. Cluster 7 primarily comprised students enrolled in all four regular classes, while cluster 8 included students in mostly regular-level courses and remedial mathematics classes; typically these were regular-level courses but one year behind their peers. Last was cluster 9, which included about a dozen students in one or more remedial classes in all subject areas. As with communities in 9th grade, the map showed their distance from other students.

After the detection and examination of communities in 10th grade, we analyzed the demographic distribution within community 10A and 10B (see Table 29, Demographic profile of 10th grade communities). We also generated network maps to show the locations of each student group in the 10th grade (see Figure 17, Race in network structure of 10th grade; Figure 18, Gender in network structure in 10th grade; Figure 19, Lunch status in network structure of 10th grade; Figure 20, Disability status in network structure of 10th grade; Figure 21, Residency status in network structure in 10th grade).

In community 10A, we observed disparities in terms of every demographic measure. In terms of race, 10A was highly segregated: only 2% (n=2) of the population was Black, while 22% (n=23) was Asian. The 10A community also skewed in terms of gender, with 60% (n=62) of the community being female compared with an overall female population of 53% (n=116). Additionally, when we examined Figure 18, Gender in network structure in 10th grade, we observed that female students were disproportionately part of clusters 1 and 3, while males were predominantly in clusters 1, 2 and 4. The proportion of students receiving free or reduced-price lunches was half that of the overall grade level (5%, n=5 versus 10%, n=22). Disability status also exhibited disproportionate distribution, with only 6% (n=6) of 10A having an IEP or 504 plan, one-third of the overall proportion. Last, transfer students were underrepresented in 10A (2%, n=2) compared to the overall population (9%, n=19).

Community 10B had equally disparate representation in all demographic measures. In terms of race, only 3% (n=4) of students in 10B were Asian, while 21% (n=25) of students were Black. For both 10th grade communities, the White population

was roughly proportional to the overall grade level. In terms of gender, 54% of students in 10B were male (n=63), compared to the overall population with 47% (n=104). Students receiving free or reduced-price lunch also were overrepresented in 10B, with 15% (n=17) of the population in this group. Students with 504 plans or IEPs were overrepresented, with 28% (n=33) of students in 10B having an IEP or 504 plan. Last, in terms of residency, transfer students were overrepresented in 10B, with 15% (n=17) of the community; conversely, resident students were slightly underrepresented, with 80% (n=94) of the community.

11th grade.

The 11th grade students (n=240) formed eight communities with a modularity value of 0.322. Of these, three comprised 235 of the 240 students, and the remaining students formed isolated communities due to alternative school enrollment or self-contained special education classes. The three main communities were less defined by the presence of advanced or remedial classes compared to 10th and 9th grade communities. However, we were able to visually identify nine clusters of students that shared similar characteristics (see Figure 22, Communities and network structure of 11th grade students).

In community 11A, colored blue in Figure 22, we identified two clusters. Cluster 1 was clearly defined by its density and distance from other students; it included students enrolled in advanced-level classes in all four subject areas. Beyond this, around a dozen students were part of community 11A; we identified a cluster farther afield that included students enrolled in regular English and otherwise advanced classes. Other students, closer to cluster 3 in community 11B, shared commonalities with cluster 2 and cluster 1

except for enrolling in regular mathematics. Nearly all of the advanced classes in 11A were designated as AP.

Community 11B was composed of three clusters, primarily including students in two or three advanced classes, especially advanced science and social studies. Cluster 3 included students in regular mathematics classes and otherwise advanced courses; the advanced science courses in cluster 3 were non-AP advanced classes, e.g. Honors Biology. Cluster 4 was nearly identical to cluster 2 in 11A, except that as with cluster 3, students in cluster 4 were enrolled in the non-AP advanced science classes.

Community 11C included four clusters with a wide range of course-taking in English and social studies, but most shared regular or remedial science and mathematics. Cluster 6 was proximate to community 11A, and it included students in advanced English and advanced or regular social studies; however, these students were also enrolled in remedial mathematics. This was similar to cluster 8 in 10th grade, which included students in the regular mathematics classes who were enrolled one year behind their peers. Cluster 7 included a large group of students enrolled in all regular-level classes, while cluster 8 was a similar group who were enrolled in regular-level classes except for mathematics, in which they were remedially one year behind their peers. Last, cluster 9 was a small group of students who mostly were enrolled in remedial classes or not enrolled in coursework in a subject area. Most of these students were enrolled in at most one or two regular-level classes, nearly always English, science, or social studies.

After we detected and visually analyzed communities in 11th grade, we analyzed the demographic distribution within the three communities (see Table 30, Demographic profile of 11th grade communities). We also generated network maps to show the

locations of each student group in the 11th grade (see Figure 23, Race in network structure of 11th grade; Figure 24, Gender in network structure in 11th grade; Figure 25, Lunch status in network structure of 11th grade; Figure 26, Disability status in network structure of 11th grade; Figure 27, Residency status in network structure in 11th grade).

In community 11A, we observed significant differences between the distribution of students and the overall population in terms of every demographic indicator. Considering race, the White and multiracial population was generally aligned with the overall distribution, while Asian students were 31% of 11A (n=21) compared to the overall population with 13% (n=30). We also noted Black students were only 3% of 11A (n=2), compared to the overall population of 15% (n=35). Gender exhibited a wide disparity: 60% (n=41) of 11A were female, compared to 50% of the population. Lunch status was exceptionally stark, given that no students receiving free or reduced-price lunch were in community 11A. Disability status likewise was highly disparate, with only one of 68 students in 11A having either an IEP or 504 plan. 97% of 11A (n=66) were resident students, while there was only one transfer student and one employee child in the community.

Community 11B was more similar to the overall distribution of demographic groups. We observed that 11B had proportionally more White students (72%, n=54) and fewer Asian students (8%, n=6) compared to the overall population. Gender was roughly distributed according to the overall population, as was lunch status. Disability status was skewed, with 15% (n=11) of 11B having an IEP or 504 plan, compared to 20% (n=48) of the population. Residency status in 11B nearly matched the overall population.

In community 11C, we saw the reverse of many of the disparities in 11A. In terms of race, only 3% (n=3) of 11C were Asian students, while 25% (n=23) were Black students. The community also included proportionally more males, who were 55% (n=51) of students in 11C. Lunch status was slightly higher in 11C than in the overall population. Disability status was significantly different from the overall grade; 39% (n=36) of students in 11C had either an IEP or 504 plan, twice the proportion in the overall population. Last, resident students were underrepresented in 11C, with 75% (n=69) of the community, while both transfer students and employee children were overrepresented.

12th grade.

Among the 12th grade students (n=226) we detected 11 communities with a modularity value of 0.262. Of these, two comprised 96% (n=217) of the population, and the other nine communities were single communities. The two main communities were distinguished primarily by whether students were enrolled in at least two or three advanced courses; if they were, they appeared as members of 12A, while students with fewer than two advanced courses predominated in community 12B (see Figure 28, Communities and network structure of 12th grade students). As with 11th grade, distinctions between the communities were less clear, and visually identifying clusters within the community was difficult.

Community 12A included 40% (n=90) of the students in the entire grade level, and we distinguished four clusters within the community. Cluster 1 included students enrolled in all advanced courses, and all of these were AP designated. Near cluster 1 was cluster 2, which included students in advanced classes except for regular-level science;

also nearby was cluster 3, which included students in advanced classes except for regular-level mathematics. These students in cluster 3 were often enrolled in the Honors Calculus class, which we coded as a regular-level course. Further afield was cluster 4, which included students in advanced classes except for regular-level English.

Community 12B included 56% (n=127) of the students in the grade level, and we found four clusters within it. Two of these, clusters 5 and 6, were characterized by non-AP advanced science classes or AP Environmental Science and advanced social studies classes, along with regular English and regular mathematics. Students who enrolled in mostly regular classes were part of cluster 7, while students with a mixture of remedial or regular classes or non-enrollment in courses comprised cluster 8.

After we detected and visually analyzed communities in 12th grade, we analyzed the demographic distribution within the three communities (see Table 31, Demographic profile of 12th grade communities). We also generated network maps to show the locations of each student group in the 12th grade (see Figure 29, Race in network structure of 12th grade; Figure 30, Gender in network structure in 12th grade; Figure 31, Lunch status in network structure of 12th grade; Figure 32, Disability status in network structure of 12th grade; Figure 33, Residency status in network structure in 12th grade).

In community 12A, which was primarily composed of students in advanced classes, we observed disparate representation in nearly all demographics. In terms of race, only 7% (n=6) of students were Black, compared to an overall 18% (n=40); Asian and White students were both overrepresented compared to their overall distribution in the grade. In terms of gender, females were overrepresented with 56% (n=50) of community 12A, compared to an overall 48% (n=104). Lunch status was starkly

disparate, as only 2% (n=2) of 12A students received free or reduced-price lunch, compared with 7% (n=15) overall. Students with disabilities were underrepresented, with only 6% (n=5) in 12A compared to 18% (n=38) overall. Last, while resident students were overrepresented (89%, n=80 to an overall 80%, n=173), transfer students were underrepresented in 12A (3%, n=3 to an overall 11%, n=23).

Community 12B, which included students in mostly regular courses, exhibited similar disparities in representation as 12A. Black students were significantly overrepresented, with 27% (n=34) of 12B students, while both White and Asian students were slightly underrepresented. Males were also overrepresented, with 57% (73) of students in 12B compared to overall 52% (n=113). Likewise, students receiving free or reduced-price lunch, students with disabilities, and transfer students were all overrepresented in 12B.

Community Interaction

Our second point of analysis related to scope was an examination of how the communities we identified previously interacted with one another. We used statistical network analysis measures to analyze the extent to which student communities were connected. First, we examined a network analysis concept known as degree, which in our context refers to the number of connections a given student had with other students. Although typically only average degrees are calculated in network analysis, we also calculated median, minimum, and maximum degrees. We also calculated the eccentricity for each student, the network radius, and the network diameter. Eccentricity is the maximum distance from a particular student to any other student; radius is the minimum eccentricity of all students in the network, while diameter is the maximum eccentricity.

We also calculated the average path length, which is the average of the lengths of the shortest paths between all pairs of students. We begin our results of the relationships of communities with an analysis of the four communities of the whole school (SA, SB, SC, and SD), then proceed to community interaction within each of the four grade levels.

Whole School.

As noted previously, the four main communities at the school included 98% (n=885) of the students and generally were distinguished by grade-level. Of the students in the four main communities, the network diameter was 5; thus, the farthest course-distance from one student to another involved a path of four additional students. The network radius was 3, meaning that the shortest maximum distance from one student to any other student at the school involved two other students. The average path length for the students in the four communities was 2.2. For the four communities combined, the average degree was 168.7, meaning the typical student shared courses with slightly less than 19% of the students in the four communities. When we examined the communities in detail, however, distinctions emerged among them (see Table 32, Degree measures of the entire school).

In community SA, which mostly included students in 9th grade, the average degree was 178.7, the highest of the four communities. The median number of students connected to students in SA was 193, while the minimum was only one and the maximum was 229. 93% (165.6) of the average degrees were internal, while only 7% (13.1) were degrees connected to outside of community SA. Within these external links, 98% (12.9) were connections to SB, primarily 10th grade students. Students in SA had

very few links to SC or SD, the communities primarily composed of 11th and 12th grade students.

For students in community SB, which primarily included 10th grade students, the average degree was 170.2, slightly lower than for SA students. The median number of connected students to members of SB was 169, with a minimum of one and maximum of 284 other students connected. As with SA, the majority of connections were internal (86%, 145.6). Within the 14% of connections that were external to the community, most were to either community SA (50% of external average degrees, 12.4) or community SC (42%, 10.4). The average number of degrees connecting to community SD was 1.7, approximately 1% of the total average degrees.

Members of community SC, which comprised mostly 11th grade students, had a total average degree of 172.9, similar to community SB and the school average. The median number of degrees was 155, with a range of one to 276. The proportion of average degrees that linked internally was 83% (143.7). Nearly all of the average external degrees were connections with SB (34% of average external degrees, 10.0) and SD (65%, 19.0).

The fourth community, SD, included mostly 12th grade students. Their overall average degree was 152.9, the lowest of the four communities; the minimum number of degrees was 43, while the maximum was 305, ultimately the largest number of connections at the school. Similar to the other communities, 86% (131.0) of the total average degrees were internal to the community. Nearly all of the average external degrees were with SC (92% of average external degrees, 20.0).

9th grade.

For 9th grade, we began by examining the students in the three main communities detected previously, 9A, 9B, and 9C (n=213). The network diameter for 9th grade was 2, meaning that each student was connected to every other student through at most one other student. Of the 213 students, one had an eccentricity of 1, meaning the student was directly linked to all other students in the three communities, while the remaining 212 had eccentricity of 2. The average path length was 1.2, indicating relatively high connectivity among 9th grade students. When we examined the degrees for students in all three 9th grade communities, we found that the average degree for the students was 165.6, meaning the typical student shared courses with slightly less than 80% of the students in the three communities (see Table 33, Degree measures of 9th grade communities).

For members of community 9A, primarily composed of students in advanced courses, their average degree was 144.6, the lowest of the three communities and indicating links with slightly less than 70% of students. 45% (65.1) of the average degrees of 9A students were internal to 9A, while 55% (79.6) were external to 9A. In terms of these external degrees, 60% (47.8) of the average external links were to 9B students, while 40% (31.8) were to 9C students. Thus, only 22% of the average total links of 9A students were to 9C students, and 33% were to 9B students. The median number of links of 9A students to 9C students was 9, the lowest of any of the pairwise groupings.

In community 9B, which mostly included students enrolled in regular classes, their average degree was 180.2, the highest of the three communities and indicating links to approximately 85% of the students in the grade. Of the average degrees for 9B, 44%

(79.0) were internal links to other 9B students, while 56% (101.2) were outside of 9B. In terms of 9B students' connections to other communities, 60% (60.6) of the average external links were to 9C students, while only 40% (40.6) were to 9A students. Thus, only 23% of the average total degrees for 9B students were to 9A students, while 34% were to 9C students. The median number of degrees of 9B and 9C students were 64, the highest of the pairwise groupings.

Last, for community 9C, which included students in remedial and regular classes, their average degree was 169.5, similar to the overall grade-level average, and indicating links to approximately 80% of the students. Of the total average degrees, 36% (61.6) were to other students in 9C, while 64% (107.9) were external links to either 9A or 9B. Of the average external degrees, 69% (74.6) were to students in 9B, while only 31% (33.3) were to students in 9A. Thus, only 20% of total average degrees for students in 9C were to 9A students, while 44% of their total average degrees were to students in 9B.

10th grade.

Among 10th grade students, we examined the relationships of students in the two main communities (n=220). For students in 10A and 10B, the network diameter was 3, meaning that the longest path between two students involved two other students. The radius was 2, indicating the shortest path between any two students involved one other student, while the average path length was 1.3, similar to 9th grade. When we examined both of the communities combined, we found 145.1 total average degrees, indicating an average connection to 66% of the students (see Table 34, Degree measures of 10th grade communities).

For 10A, which was mostly students in advanced classes, we observed a nearly identical total average degrees of 145.4, or 66% of the two communities. Most of the average degrees were internal to 10A, with 70% (101.2) of degrees being to other 10A students. Only 30% of average degrees were to 10B students.

In 10B, which mostly included students in regular and remedial classes, we again found the average degrees nearly identical to the overall average (144.8 in 10B). As with 10A, the majority of the average degrees were internal, with 73% (105.9) of degrees being to other 10B students. From the perspective of 10B students, only 26% of their average degrees were to students in 10A.

11th grade.

For interactions among 11th grade students, we focused on the three communities of 11A, 11B, and 11C, who were 96% (n=230) of juniors. The network diameter within these three was 3, indicating the longest path between two students involved two other students. As with 10th grade, the radius was 2, indicating the shortest distance between any two students always involved one other student. The average path length was 1.4, a slight increase from 10th grade, which itself was a slight increase from 9th grade. When we examined the three communities together, their average degrees were 143.3, indicating average connections to 62% of the students (see Table 35, Degree measures of 11th grade communities).

Students in 11A primarily were enrolled in advanced classes; their average degree was 110.0, lower than the overall average and indicating connections with 48% of the 11th grade students. Of these, 59% (65.0) were internal to other 11A students and 41% (45.0) were to students in 11B or 11C. Of these external links, 63% (28.2) were to

students in 11B, while 37% (16.8) were to students in 11C. Thus, of all the average degrees of students in 11A, only 15% (16.8) were to students in 11C and 26% (28.2) were to students in 11B.

Community 11B mostly included students in regular classes or non-AP advanced classes. Their average degree was 162.6, the highest of the three 11th grade communities, indicating an average connection to 71% of the students. Of these, 42% (69.1) were internal links to other 11B students, while 58% (93.6) were external links to either 11A or 11C students. Of the external degrees, 27% (25.6) were to students in 11A, while 73% (68.0) were to students in 11C. Of the total average degrees of students in 11B, only 16% (25.6) were to students in 11A, and 42% (68.0) were to students in 11C.

Last, community 11C was composed of students mostly enrolled in either regular or remedial classes. Their average degree was 152.2, or about 66% of students in the three communities. Of these, most were internal to 11C (55%, 84.3 degrees), while slightly less than half were to either 11A or 11B (45%, 67.8 degrees). Of the external degrees, 18% (12.4) were to students in 11A, while 82% (55.4) of degrees were to students in 11B. Overall, only 8% (12.4) of the total average degrees of 11C were links to students in 11A, while 36% (55.4) were to 11B.

12th grade.

When we examined the 12th grade student communities' relationships, we focused on the two main communities, 12A and 12B, comprising 217 students or 96% of 12th grade students (see Table 36, Degree measures of 12th grade communities). For these two groups of students, their total average degrees were 129.6, the smallest of any of the four grades, representing connections to 60% of the 12A and 12B students. As with

10th and 11th grades, the network diameter was 3 and the radius was 2. The average path length was similar to 11th grade at 1.4.

In the 12A community, composed of students mostly in advanced classes, the average degree was 101.6, lower than the grade level average degree, and linking to 47% of the population. 66% (66.8) of the average degrees were internal to 12A, while 34% were degree connections to 12B students. For students in the 12B community, however, the average degree was 149.4, linking them to 69% of students in the grade. Of these, 83% (124.7) were internal degrees; only 17% (24.7) were links to students in 12A.

Community Evolution

After we analyzed the communities in the school and their relationships to one another, we examined the second question related to scope: how do student communities evolve? To this end, we used the transcript data of the students who were continuously enrolled from 9th to 12th grades (n=199). To answer the question, we looked at the data in two ways: first, we detected student communities in each grade level and compared memberships in communities over time; second, we constructed graphs to illustrate the positions of students based on their initial community in 9th grade.

In terms of community identification, we detected different numbers of communities in each grade level. In 9th grade, four communities emerged from the 199 students, which we labeled similarly to in our previous discussion of community detection, 9A, 9B, 9C, 9D. Students in 9A (30%, n=59) and 9B (15%, n=30) generally were enrolled in two or more advanced courses, students in 9C (34%, n=68) were enrolled in mostly regular courses, and students in 9D (21%, n=42) were enrolled in remedial and regular courses. In 10th grade, the number of communities detected fell to

only two; 10A (n=85), which primarily comprised students in advanced and regular classes, and 10B (n=114), which included students in mostly regular or remedial classes. For 11th grade, three communities emerged: 11A (n=45), which was mostly students in AP-designated advanced courses, 11B (n=77), which included students in both AP and non-AP advanced courses, 11C (n=76), including mostly students in regular and remedial courses. One student in 11th grade who enrolled in off-site alternative courses was not included in the communities. Last, for 12th grade, four communities were detected: 12A (n=41) included mostly students in AP-designated advanced courses, 12B (n=62) with students in both AP and non-AP advanced courses, 12C (n=54) with students in regular courses, and 12D (n=39) with students in regular or remedial classes or who did not enroll in some subject areas. Three students were not part of communities in 12th grade, again due to off-site alternative enrollments. After community detection and coding, we compared the memberships of the communities over time, similar to our analysis of mobility among levels (see Table 37, Community population mobility).

We found that most students remained with their peers during their four years at school, particularly in the two advanced 9th grade communities and the remedial-regular 9D community. For students who began in 9A, 97% (n=57) went on to 10A, all students in 9A went on to either 11A or 11B, and 93% (n=55) went on to 12A or 12B. For students who began in 9B, there was slightly more mobility to other communities: 70% (n=21) went to 10A, while 30% (n=9) moved to 10B. By 11th grade, however, these students returned to the advanced-level communities: 93% (n=28) of students in 9B continued to either 11A or 11B, and in 12th grade, 87% (n=26) of 9B students were in 12A or 12B. For students beginning in 9C, which mostly included students in regular-

level classes, we saw somewhat greater movement in 11th and 12th grades. 90% of 9C students (n=61) went on to 10B; however, when entering 11th grade, 44% of 9C students entered the advanced-level 11B community (n=30) and 54% (n=37) entered the regular-level community of 11C. The students in 9C also saw the most diverse outcomes in 12th grade, with 26% (n=18) in the 12A or 12B communities, 44% in the 12C community (n=30), and 28% (n=19) in 12D. Unlike 9C, students beginning in 9D saw little movement to other levels of communities. All 42 students went into 10B, while 90% (n=38) moved into 11C or were not in a community in 11th grade. By 12th grade, 53% (n=22) of 9D students were in 12D or not in a community, 38% (n=16) were in the 12C community, and only 10% (n=4) were in either of the two advanced-level 12th grade communities.

In 10th grade, students were identified in one of two communities and entered one of three communities in 11th grade. Of students in the 10A community, 98% (n=83) went on to either of the two advanced-level communities in 11th grade (11A or 11B). 90% (n=76) of 10A students continued on to one of the two advanced-level communities in 12A or 12B. For students in the 10B community, 65% (n=74) went to the regular-remedial 11th grade community (11C), and 34% (n=39) went on to 11B, the non-AP advanced 11th grade community. By their senior year, only 24% (n=27) of 10B students were still in advanced communities, 39% (n=45) were in the regular 12C, and 34% (n=39) were in the regular-remedial 12D.

By the 11th grade to 12th grade transition, little mobility occurred for most students. Of students in 11A, 96% (n=43) moved to one of the two advanced-level 12th grade communities. The students in the non-AP advanced 11th community, 11B, had

more varied outcomes: 67% (n=51) entered either 12A or 12B, the two advanced communities in 12th grade, while 34% (n=26) moved to either 12C or 12D. Few students in 11C moved to one of the advanced 12th grade communities (12%, n=9), while 88% (n=67) moved to the two regular or remedial communities or were not part of communities in 12th grade.

When we constructed graphs to visually examine the changing connections and positions of students, we found similar results to our mobility analysis (see Figure 34, Student networks over time by 9th grade community). A clear similarity emerged between 9th and 10th grade, with similar subclusters of students emerging between the two. By 11th grade, it was difficult to visually distinguish subclusters of students, but the relative positions of students based on their 9th grade community remained intact. In 12th grade, we saw few distinguishing subclusters and movements of some students from 9C into the advanced-level communities, but overall little change from the 9th grade graph in terms of relative positions.

Teacher Traits

For the final aspect of the whole-school analysis, we analyzed the characteristics of the teachers at the school in two ways: first, by examining teachers' traits compared to the levels they taught, and second, by examining the distribution of levels of courses among teachers. In particular, we examined four traits: the years of experience at the school, the overall years of experience in public schools, the educational attainment, and salary for each teacher in the four departments. We coded the educational attainment using the divisions of the salary schedule at the school, with 1=Bachelor's degree, 2=Bachelor's plus 15 graduate credit hours, 3=Master's degree, 4=Master's plus 15,

5=Master's plus 30, and 6=Doctorate. We also coded each instructor as to whether they taught remedial, regular, or advanced classes; for teachers who taught more than one level, they were coded for all that applied. We calculated the median, average, and standard deviation for the four traits for each subject area and for the entire school. Only teachers who taught at least one regularly scheduled core class in the subject area were included. First, we described the overall school, then we examined each subject area in detail.

Overall, we noted that teachers of advanced classes at the school had more experience, higher educational attainment, and higher salaries compared to teachers of other levels and to the overall traits of teachers at the school (see Table 38: Teacher traits for the whole school). Specifically, we observed that advanced-level teachers had an average of 18.38 years of experience in public schools, while remedial-level teachers averaged 16.44 years, the lowest of the three groups. However, we also noted that teachers of remedial classes had more average years of experience in the district than the teachers of regular classes; nonetheless, both groups still had fewer average years of experience in the district than teachers of advanced classes. Likewise, we observed educational attainment increased with each vertical level, as did salary. The largest gap in average salary was approximately $4,000, and it appeared between teachers of remedial classes ($78,043) and teachers of advanced classes ($82,071).

For our second point of analyzing teacher traits, we examined the distribution of vertical levels among teachers (see Table 39: Distribution of levels among teachers). No teachers at the school taught entirely remedial classes in any department; additionally, few teachers exclusively taught advanced classes (14%, n=7). Slightly more than one-

third of teachers taught at least one remedial class (36%, n=18), while more than two-thirds taught at least one advanced class (72%, n=37). The mathematics department appeared most diverse in its course loads, with only one of 11 teachers exclusively teaching one level; in contrast, in science, half of the teachers taught exclusively one level of classes.

English

In English, we noted that teacher traits mirrored the patterns we saw in the whole school (see Table 40: Teacher traits by course level in English). In particular, the teachers of advanced classes had higher average years of experience both in the district and in public schools overall than the other two groups in the English faculty. The average advanced-level English teacher had slightly less than two years more experience in the district than the average remedial-level teacher, and nearly three years more experience than the average regular-level teacher. Although average educational attainment did not indicate significant differences among the levels, we observed that the median educational attainment increased as levels increased. We also observed that the average salary of advanced-level teachers was nearly $7,000 more than the average salary of the remedial-level teachers ($77,242 and $70,673, respectively).

Mathematics

The traits of mathematics teachers showed very little distinction among course levels (Table 41, Teacher traits by course level in mathematics). The only apparent difference was in teachers of regular-level classes, who had fewer average years of experience in public schools and slightly lower average educational attainment than the average level for teachers of remedial and advanced mathematics classes. We noted that

the average years of experience in the district was markedly lower for teachers of regular-level classes (9.88 years) compared to remedial or advanced-level teachers (12.57 and 12.44 years, respectively). Average salaries exhibited very little difference among all three levels, with the largest gap of approximately $1,500 between the average salary of regular-level teachers ($78,348) and the average salary of advanced-level teachers ($79,892).

Science

In the science department, teacher traits by course level exhibited higher average experience, salary, and educational attainment for teachers of advanced versus regular classes, but equally or greater average values for teachers of remedial classes (see Table 42, Teacher traits by course level in science). Although there were few teachers of remedial classes (n=3), they had the highest average years of experience in the district, highest average salary, and highest average educational attainment compared to the average values for teachers of regular and remedial science classes. We did not observe significant differences between average years of experience in the district for teachers of regular and advanced classes, but there was an average of one more year experience overall for teachers of advanced classes compared to teachers of regular classes. Educational attainment likewise did not exhibit a major difference, although the average for teachers of advanced classes was slightly higher than for regular classes. In terms of salaries, the largest gap was approximately $6,300, between the average salary for teachers of remedial classes ($92,766) and the average salary for teachers of regular classes ($86,441).

Social Studies

Among the social studies teachers, years of experience, educational attainment, and salary increased moving from remedial to regular to advanced (see Table 43: Teacher traits by course level in social studies). Although as with science there were few remedial teachers (n=3), the average years in the district and average years in public schools overall were significantly lower for teachers of remedial classes compared with both regular and advanced classes. Average educational attainment was also lower for teachers of remedial classes compared with teachers of regular and advanced classes. Salaries reflected this difference as well, with the largest average salary gap of nearly $10,000 between the average remedial class teacher ($73,055) and the average advanced class teacher ($82,649). When comparing the average values for teachers of advanced and regular classes, most of the gaps closed or were quite small; the only significant difference appeared to be in average years of experience in the district; the average experience in the district for regular class teachers was 12.89 years, while the average for advanced classes was 15 years. The median years of experience also indicated some disparity, with fewer years for teachers of remedial and regular classes compared to advanced class teachers.

Chapter 5

Autoethnography

Introduction to Inquiry through Narrative Reflection

The following represents my work as a qualitative researcher. It is an autoethnographic insight into my experiences as a privileged White male. This is the mantle I wear and the ethnographic discourse of my professional life as a vocal music educator. It embodies my own unique experiences, however, as mentioned by Tracy (2010), autoethnography allows the reader to see themselves in the narrative of the researcher focusing squarely on humanization and relatability. Autoethnography allows the researcher to build a bridge between scholarly discourse and the power of individual reflection that crafts relevance and personal meaning that are often void in other forms of scholarship (Lockford, 2014).

Baron and Eisner (2012) state that autoethnography can utilize a myriad of structures, forms, and expressions to facilitate understanding of the research topic. In this instance, the qualitative research tool represents an exploration of my own personal experiences in music education and how White privilege, both my own and societal, impacts the ability groupings of students within choral classes. Baron and Eisner (2012) go on to say that from this research "qualities of life are revealed and the reader learns to notice aspects of the world" (p 3). One may notice a distinctly casual voice evident in my introspective narratives; this is an intentional attempt to create an aesthetic fitting to my personality as a classroom teacher in daily interactions with my students and to create a form that is compelling and redolent for my envisioned audience: other White male choir teachers. Recognizing the privileges within music and the field music education afforded

by Whiteness, we can identify the boundaries drawn by the bourgeois of the classical music tradition. This creates the aesthetic norms, perpetuates the music of the elite, and effectively devalues and blocks those outside of the privileged majority (Bull, 2019). This White privilege also prevents me, as a White researcher, from "fully understanding how racial identities impact the lived experiences of people of color" (VanDeusen, 2021). However, VanDeusen (2021) also states that this complication with my own Whiteness affords me the opportunity to examine and unpack my own racial identities and focus on how my own complicity affects my students of color. As a storyteller, language is the tool of craft that I employed to create the bridge between art-based qualitative research and scholarship (Lockford, 2014).

Narrative #1: An involuntary absence...

Mr. Cowell, I am sorry to bother you but you told us to send a message if we're having trouble getting into our scheduled Master Class. The instant messenger app notified me shortly after the scheduled start time for the ILMEA District Choral Festival. I had fully prepared myself to help my students troubleshoot technical issues associated with the day's events. More instant messages landed across my screen. Something wasn't right. A quick phone call to tech support revealed a simple mistake from the Zoom call hosts. I was able to copy and paste a quick reply for everyone to try again because the issue should be resolved. *Mr. Cowell, I am sorry to bother you again but I still can't get in.*

This one student's ability to access their respective Master Class was obviously a different issue. So, I began to ask the student to tell me the specific message they were receiving. The other students' error message read: THE MAXIMUM NUMBER OF

PARTICIPANTS FOR THIS ROOM HAS BEEN REACHED. This student's error message was completely different: YOU HAVE BEEN REMOVED BY THE MEETING'S HOST. This was frustrating because I intentionally met with students in a separate Zoom meeting prior to their first master classes to ensure that we followed protocols and expectations as laid out by the organization. Students were informed of these expectations. They had to have their cameras on when logging into their master class and their screen name had to be their name as registered with the organization during their auditions which were held months earlier. I personally made sure that every student had followed each guideline before sending them, so I began to get frustrated with myself. Had I missed something in the instructions? Why was this student having issues and no one else was? I frantically pulled up instructions and read to see what I had missed.

In double-checking the instructions, it clearly stated that it was important for students to use their real names to ensure that room hosts could filter out the names of any potential scammers or Zoom hackers. I immediately logged into the Zoom room where my student was denied access. At this point, it was fifteen minutes after the start of the event, and my student was beginning to panic. The organization has a firm rule about attendance: no matter how good a student scores on their qualifying audition, if they do not attend or are late for the District festival, they are ineligible to qualify for State. My private message to the room's host was polite but direct. *Excuse me. Why was my student denied access to the meet?*

The room moderator realized he had mistakenly removed my student. There was a flood of apologies from the host which I quickly stated we would address later; however,

I needed to get this student into the master class. He told me to have them try again. No success. Once the organization had removed someone from the meeting, their e-mail would no longer allow them to access the workshop's Zoom addresses. So, my student had to use their own personal e-mail address and reset up their Zoom access. At about 30 minutes into the keynote speaker of the 1st session, my student was finally allowed into the event. I then went about the business of ensuring that this student did not encounter similar barriers the rest of the event. I tracked down their future room host, explained the situation, and made sure they knew to grant this student access. I then returned to the original room to address the issue with the remorseful host.

Again, I asked the host the same pointed question. *I would like to address why my student was denied access to this meet?* He stated that after looking at my student's name, he assumed they were fake. I then realized that my student had been filtered simply for their name: Pride Ngwenya. He asked me how he could have possibly known that was a real person. In asking that question, he clearly identified that my African-surnamed student did not belong in this ensemble. My stomach dropped, and I instantly got that sickening feeling in my stomach. Realizing that the privilege of someone else, in this case the ability for them to serve as gatekeeper, had directly impacted my student's participation shook me to my core. I am known for thinking fast and always knowing was to say. In this situation, I was heartbroken and speechless.

I am glad that Pride had the resilience and courage to not just give up. I am glad that they didn't become so frustrated with this barrier to access that they simply logged off and assumed it meant they were not welcome. That student's scores qualified them for All-State, an honor that could have easily been ripped away by the racist actions,

whether intentional or implicit, of the volunteer gatekeeper of this education opportunity. A few weeks later, prolonged because of the Thanksgiving holiday break and an announcement that students would be moving to full remote learning due to COVID-19 in our district, I had an opportunity to discuss the incident with this student when they thanked me again for helping them sort out "getting into the room" for the District festival. They were under the assumption that it was just a technical glitch. I felt it was important to discuss what had happened with the student since they were not privy to all of the conversations that occurred that day amongst myself and facilitators. When I stated that it was actually an intentional removal from the room moderator because of their African name, I believe that there was a moment of disbelief from the student. I assured them that I would addressing this with the organizational leadership which I am a part of, and I stated that such actions were unacceptable. I asked if there was anything they wanted me to do to address the issue; I didn't want to remove the student's voice as the target of this wrongdoing. The only response I got was a simple *thank you*, a shoulder shrug, and an *I'm used to it.* I felt that sickness in my stomach again.

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This student's deliberate omission from participation shows, as written by Bradley (2007), that "Colonialism is alive and well" (p. 134) in music education creating a space and recognition for White stakeholders while denying access to their Black counterparts. Bradley (2007) also asserts that this is directly reflected in the participation of our music programs as a whole, in who is and is not present and in who is and isn't welcome within our spaces of music making in our schools. There is an importance in acknowledging that the majority of students who meet the standards and cultural norms

within music education are validated within our programs, while marginalized students, especially students of color, “are frequently pushed out of music” (Hess, 2017).

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Narrative #2: A voluntary absence...

I think I want to sit this year out, Mr. Cowell. These are words you never want to hear from a student. *I’m just not comfortable with this.* The circumstances around this student’s decision were heartbreaking for me as a music educator but stemmed from two unrelated prior events that combined to create this discomfiting situation for my student. The first event was the decision by the Illinois Music Education Association that all auditions during the 2015-2016 school year for their highly competitive All-State selection process would be blind. The second event was the onset of a global pandemic that greatly impacted daily life, including education, in the spring of 2020.

In 2015, the Senior Chorus division, which is responsible for the execution and oversight of high school auditions of the ILMEA’s All-State auditions decided to make the process completely blind. Prior to the decision, students would walk into an audition room, and they would be face-to-face with a judge. They would confirm their audition identification number and then the judge would lead them through the audition process. Students did not use their names or state their schools, and judges were using the audition identification number to tabulate scores. At the conclusion of the audition day, judges would upload scores to the computer which would then link those scores to the prospective student by identification number. While many people may have found this method to be fair because it kept judges, all of whom were familiar with local choral programs and their success, from allowing their biases about the choirs that student

auditionees sang in to affect their rankings and decisions. However, it meant that other biases could go unchecked and infiltrate the audition process. Students could easily be judged not only on how they sounded but also on how they looked, including the clothes they were wearing and their perceived racial, gender, and religious identities. This left many music educators questioning the equity of such a process: *Is my male student singing soprano going to be judged fairly? Is my Black student going to be judged fairly? Is my non-binary student going to be judged fairly? Is my pregnant student going to be judged fairly? Are all of my students going to be judged solely on the merits of the singing ability and musicianship or will a judge allow their biases, whether implicit or explicit, to impact their adjudication?*

Starting in 2015, the audition process drastically changed. Auditions became 100% blind. Students are escorted into their audition rooms by a room monitor. The room monitor then introduces the auditionee by their identification to the judge. The judge is situated in the room with their back to the door and to the performing student. After introducing the candidate, the room monitor states that the auditionee is ready to begin. The judge pushes play on an electronic device that begins playing back the audition tracks. These tracks ensure that all students receive the exact same instructions, the same starting pitches, and the same time to complete the audition. The judge never sees the auditionee. They never know the student's gender, sex, race, or any other identifiable elements of the student's cultural identities. For me personally, this was a huge relief. It afforded my students a much fairer opportunity for success when auditioning for this program. While biases are inexorable, creating an environment that encourages adjudicators in nullifying the skew of their own bias on their adjudication

results assures my students that they will be judged just for the merit of their performance. Since this change, many students have stated repeatedly how much they appreciate the anonymity of this process. In preparation for these annual auditions, upper-class choristers regularly model for underclass choristers through the audition process and then lead a Q&A session. Veteran auditionees regularly soothe unsure first-timers by stating how fair the auditions are because of the blind audition process. It can be weird walking into a room and singing to the back of someone's head, but at least you know they'll never know who you are.

Shortly after this audition process was implemented, I began to serve in the leadership role for the organization that implements and oversees auditions at the local level for the state-wide organization. While blind auditions may have been a welcome addition for students participating in this adjudication, it was not as easy of a transitional process for our adjudicators. Many judges simply refused to follow the practice by turning and facing students, or they would ask students to introduce themselves. During adjudicator training meetings, they would argue with the validity of the process usually by stating that it was insulting to them that they could not be trusted to be fair and unbiased. They would ignore repeated reminders from myself and other facilitators during auditions when they refused to follow expectations. They would not be asked back to adjudicate in following years.

The second event that intersected leading to this student's choice to not participate was COVID-19: the novel coronavirus disease 2019. In early March of 2020, my students' lives changed in unprecedented ways because of COVID-19. A few weeks earlier, we had been traveling as part of the Walt Disney World Youth Performing Arts

program. We had trekked to Orlando, Florida and performed on one of the resort's mainstages. This was an unforgettable once-in-a-lifetime moment for these students to experience together as a musical community and performing ensemble. Little did we know then that just three short weeks later, our nation would be in a state of emergency and that we would be sent home to begin learning remotely to ensure the health of families and communities. The pandemic has greatly affected education; the way that it impacts each content area is unique. Given that music classrooms focus on the building of communities performing together, music ensembles were impacted greatly. Many state music education associations decided to completely cut their All-State audition processes for the 2020-2021 school year. Illinois made the decision to continue with the process; however, they decided to adapt the process to be completely online. Instead of students auditioning in-person, they would submit videos of themselves singing using the same prompts. To submit the videos, they would upload an unlisted YouTube video and share that video with their director. To ensure that the voice on the recording was that of the actual student and to ensure that no playback devices such as headphones or earbuds were being used, students had to include themselves in the video; they couldn't be off-frame or blurred out. The director would then upload the link to ILMEA's website, then judges would be forwarded the appropriate videos for them to evaluate and score.

Yah. I'm just not comfortable with this. I know they can't see me, but I can always see them, and I've never seen a Black judge. In that moment, I realized to this young Black student just how much blind auditions had meant to them. They had realized how different they were from those that would be adjudicating, and I realized how COVID-19 had disrupted the fragile steps we had taken toward equitable blind auditions.

The statement wasn't just an understanding of their differences but an awareness of how this specific dissimilarity might impact him directly. The anonymity of blind auditions gave this student a sense of opportunity; this speaks directly to the inequities this student has felt within the culture and climate of choral music performance spaces as a young Black singer. I remember telling that student that I hoped something would change their mind but knowing full-well that nothing would do so for this specific student. This made me feel helpless as a music educator: *how many more students would step away from this program knowing that someone could possibly judge them for the color of their skin?*

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When ability grouping and leveling is determined by assessment, in this case performance adjudication, the impact of test bias cannot be denied. Kruse (2016) states that a student musician's self-awareness of how cultural and racial biases impacts their own assessment results "will further complicate these students' testing experiences" (p. 27). Bradley (2012) writes that "these practices often scar students' psyches" (p. 7) requiring that, realizing bias, music students of color must submit and adapt or risk being labeled musically inferior. Rather than feel unworthy or being forced into exclusion, music students of color may choose to not participate rather than risk the indignity of forced exclusion because of the implication of bias (Bradley, 2012).

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Narrative 3: Noticing the void…

Mr. Cowell, can I ask you something? Where were all the Black people? Never has a student's question taken so much wind from my sails. This was a pivotal moment in my development toward becoming an anti-racist music educator, this was the moment my

eyes were opened, and this was the moment from which I could never unthink racism's impact on my life.

Let's rewind to where I and my students were just 30 minutes prior to this moment. Students stood with their hands joined and, for many of them, with tears streaming down their faces. I had just dropped my hands from conducting. Having just released a glorious last chord that the choir had been singing, the room's air was still filled with the reverberations of my students' voices and the tensions of anticipation as we waited for the audience's reaction. Every choral director knows this feeling. Every singer or performer has felt this moment of vulnerability and disequilibrium. That split second can feel like an eternity, but in this case it didn't last long. People quickly got to their feet as applause and shouts of *Bravo!* filled the room. I hadn't even turned to acknowledge our audience yet; I took a quick moment to scan the smiling faces of my students and acknowledge their accomplishment. We had just sung the greatest concert of our lives at the Illinois Music Educators Associations annual conference in a room filled with other choral directors and music educators from around the state. As a conductor, having one of your choirs designated to sing for conferences within our different professional associations is a career pinnacle, and, in this instance, I had the incredible honor of not only having one choir chosen but two. Nearly 150 of my students shared the stage that day when singing that concert. My music department colleagues and school administration were there to share in the success of the program and our performances. Choirs from around the state submit recordings to be selected for these performances, and we realized that having two choirs from our school selected was a true honor and a testament to my students' exceptionality. The standing ovation for this performance was

well earned; the students were thoroughly prepared, they performed their concert flawlessly, and the students' passion and energy were undeniable to the audience.

The moment was euphoric. I cannot tell you how proud I was of my students' and my own accomplishments in that moment. My own family had driven to the conference to see the performances that day, and there was a brief chance for me to meet with guests and other music educators that had come to the performance. I quickly thanked everyone for coming and graciously accepted their congratulations and job-well-dones before quickly loading the busses to get students back to the hotel so they could change out of their concert clothes. I was sitting in the front seat of the bus and had just loosened my bowtie when a student sat down in the seat next to me. I gave her a friendly smile with congratulations. She smiled back but just took a deep breath and asked the question that was weighing heaviest on her mind. *Mr. Cowell, can I ask you something?* This was a student known for the intensity of her questions. She is someone I considered a lifelong learner; this is a student who I knew was considering being a music teacher herself. I turned to her and nodded. *Where were all the Black people?* She was right. They were not in the audience as vocal music educators and choral directors. They were not in the choristers of the other choir that sang on the concert with us either. For a brief moment, I fumbled for the right thing to say. Realizing there was no adequately appropriate answer for the disparity that this student observed, I could only circle back and remind her of the amazing music she had just made.

The Black people were on that stage giving a performance of a lifetime. I think my words caught her off guard in that moment just as much as her question had shaken my reality. She nodded and turned moving further into the crowd of students on the bus

as we arrived at the hotel. I quickly jumped from the bus so I could stand at the lobby doors and say thanks to each performer as they entered the hotel. As they walked past, I looked up at the faces of my students who were excitedly celebrating their success with their peers and ensemble mates. Their skin was Black, White, beige, brown, pink, fawn, umber, gold, ochre, sepia, and taupe; however, the composition of this student ensemble could not be denied: a majority of my top ensemble were White. Yes, this is that moment where I realized that I existed both musically and professionally within normative Whiteness.

This student's question suddenly made me incredibly aware of representation within my choral ensembles, it made me incredibly aware of representation within my professional organization, and it made me incredibly aware of representation within the content area of choral music. My district's student population was 48% White, yet the composition of my choral ensembles did not correlate with my district's own population statistics. While my non-auditioned ensembles seemed to be appropriately distributed, there seemed to be a decrease in enrollment of students of color as selectivity in the program increased. With a top ensemble of almost 60 students, only 5 students identified as a race other than White; that's less than 10% of the ensemble's population, a far cry from the 52% of the district's population. This absence of student representation from key populations made me wonder what the barriers were keeping students of color from my top ensembles. I wondered if students themselves were choosing not to audition or participate at higher levels or if counselors may be discouraging participation. Since a proportionate population of students of color existed at the remedial choral offering, I wondered what mobility barriers prevented Black students from advancing through the

program. Given that each of these students auditioned and I was the adjudicator, I wondered what about this selection instrument created an unfair bias for some students. Beyond the process of auditioning, I wondered what about my own experience as a privileged White male was affecting the educational outcomes and experiences of my Black choristers. Conversely, I wondered what the lived experience of school and music education, more specifically as a singer in choir, felt like for the Black students within my school community.

I began reflecting on my own experiences as a music student in high school. Here are my truths: 1.) My family could afford to send me weekly private lessons beginning at the age of 6 and continuing until the age of 18. 2.) My parents had the means to foster my interest in music including regular transportation to and from performance, lessons and rehearsals, participation in musical opportunities such as summer camps, regular attendance at concerts, and access to technologies to research music and the fine arts. 3.) The other students in the ensembles I performed in looked like me. 4.) My music teachers all looked like me. 5.) I had a private space in my home in which to practice uninterrupted and access to a piano to help develop my musicianship skills. 6.) When I informed my family of my choice to study music in college, there was no hesitation. I received nothing but support. From identifying these truths, I came to realize the privilege that I have experienced as a student of music. I also came to comprehend that this, as my own lived experience, strongly informed and drove my expectations of my own students.

I then began reflecting on my own experiences as a music educator specifically within my professional organizations. Here are my truths: 1.) My ethnic background and

race are widely represented within the field of choral music both in the topics of the literature and in representation of composers and arrangers. 2.) When I look around gatherings of professional choral directors, I can easily find other professionals that look like me. 3.) I have never had my ability or expertise questioned because of the color of my skin. 4.) I have never been seen as an expert on certain styles or genres of music because of the color of my skin. From identifying these truths, I came to realize the privilege that I have experienced as a teacher of music and how these normalized professional behaviors dictated choices I made in my own professional development as well as in the development of the choral programs I facilitated.

Finally, I stepped back even further and began reflecting on my own experiences as a singer, conductor and musician in general. Here are my truths: 1.) In classical music, I see myself in the performers, directors, composers, and arrangers that regularly performed and are considered canon within the field of study. 2.) The historical perspective used in the study of both music appreciation and music theory coursework are incredibly Eurocentric and therefore White. 3.) I had done very little to explore and familiarize myself with vocal music and performance styles outside of my own race, ethnicity, or culture. 4.) When teaching, preparing, singing, or directing things outside of my own culture, preparations were shallow and superficial at best. 5.) I have strong opinions of what qualifies as *good* music, and the scale I have used to evaluate music's worth is based solely on my own musical experiences which I have already identified as privileged. From identifying these truths, I came to realize the insidious impact of the systems that encoded themselves on me as musician, director and educator. Whether

subtle or blatant, I had become blind to the impact my own race had on my own musical experiences and therefore functioned as an extension of my educational practices.

That one moment in time forever transformed how I would look at the ways my previous privileged experience consistently informs who I am as a teacher. It challenges me to looks at ways to create spaces where Black directors and student singers not only feel welcomed but where they feel affirmed. I now see that while my student's question: *Where are all the Black people?* needs to be addressed by choral professionals and concert musicians as a whole, that student's first interrogation: *Mr. Cowell, can I ask you a question?* was just as powerful an inquiry and in fact a more direct personal conviction for me to do better work for my students. It was a call to action; my Black students should have no doubts that their explorations, learning, and music-making are welcome in my classroom.

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The model of White dominance infused in the culture of music education and the insistence that students of color assimilate to this oppression, create such insurmountable barriers to access that families of talented minority music students would never consider music education a viable choice as a profession (DeLorenzo & Silverman, 2016). Koza's (2009) commentary on racialized listening identifies how Black auditionees in post-secondary music programs are expected to conform to aesthetic expectations based on White Eurocentric culture thus further restricting the participation of pre-service collegiate music educators. A reconstruction and reimagination of a more inclusive music education in both secondary and post-secondary settings will allow music students of color to take ownership of and reshape the music education programs that often denied

them access (Davis et al., 2020). This reimagination perpetuates more inclusive leveling and ability grouping practices (DeLorenzo & Silverman, 2016).

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Narrative #4: Filling the void...

Why are we doing it this way? I had fully anticipated this question and was surprised it had taken until 6th hour for someone to finally ask. I had made the decision to implement a few drastic changes to the choral program as a whole specifically in how students are selected and placed within each of the leveled choirs in the program. There were three major changes being implemented that school year. One of the most obvious changes was that the process was no longer called auditions, and it was no longer optional. They were now called Vocal Placements and were required by all students in hopes of increasing electivity. Next, the vocal placements would be completely blind to reduce bias in selectivity. Finally, courses would be offered differently allowing for easier mobility of students from one ability grouping to the next. To create continuity from one director to the next, up to this point I had sustained the audition process of my predecessor: allowing students interested in the top ensemble the opportunity to sign-up for an audition time and prepare material specifically for an adjudication. I explained that these changes were being done to ensure just and equitable opportunities for all students within the program by specifically reducing the impact of adjudicator and teacher bias. I had expected to have to explain myself more; however, it seems that the students not only understood the reasoning but accepted its need within the program. Students and their families were aware of my goals to make the choral program more inclusive and diverse.

Previously, students prepared for auditions on their own time. Often their success depended greatly on accessibility to extra resources such as a private voice instructor, piano teacher, or transportation to and from school to utilize extra help from choir teachers before or after school hours. By having all students participate in a Vocal Placement, it allowed us to move the preparation for adjudication into the curricular instruction during the day thus giving students more equitable access to preparatory materials and their instructors. Also, by having all students prepare and participate, as instructors, we were able to hear every student individually. It allowed us to hear and identify problematic developmental issues in singers' voices, and it allowed us to identify students with serious potential that we might have heard otherwise. Since all students participated, they would automatically be registered for the choir classes that were most appropriate for their voice and ability level. All ability-groupings would be listed. For instance, if a student was eligible for the top ensemble, they were also eligible for the middle and lower-level ensembles as well. The goal was to give students that might not have considered themselves talented enough to audition for a higher ability-grouping a better chance at being heard and recognized. It also guaranteed that students would not be forced into a higher ability-grouping which may demand more of a time commitment from choristers. Calling the process Vocal Placements, aligned our department's ability grouping process with that of other departments creating a sense of familiarity and comfort for our students. Since Vocal Placements were prepared during class time, all students received a completion grade instead of a grade based off their ability adjudication. This practice helped include the Seniors which I tasked with facilitating younger students in mastering the content.

The Vocal Placement procedure would be completely blind. Audio prompts were created to ensure that every student received exactly the same instructions. The choir teacher would be located in a secluded space with their back to the performer. The auditionee would use a provided Chromebook to push play on the audio tracks in order. Each audio track would prompt students what to sing and provide them with their starting pitch. Students would sing through each of the steps and then return to the classroom. The next student would then begin the process again. To ensure anonymity in auditions and to ease with tallying scores for students, auditionees would complete a small Google form on a different Chromebook before beginning the audition. The student's information would then appear in a spreadsheet accessible by the teachers which could then easily put in the auditionee's adjudication scores; student names, identification numbers, and grade levels would be hidden and locked. This information would not be revealed until after students were ranked and placed within ensembles ensuring a decreased impact of teacher bias.

The department's master course schedule would also be modified to allow for more fluidity between ensembles. Reducing the amount of single-class period offerings ensures that students could move easily between entry, mid-, and advanced ability groupings. Since half hour choirs offered opposite of a student's lunch are so popular because of a student's ability to gain Physical Education credit by taking an hour and a half of music classes, we aligned the courses to match the ability groups of student enrollment as well. All of these changes allowed for more movement in student scheduling including flexibility for Health and Driver's Education requirements. It was also at this time that my district decided to offer Health class as a completely

asynchronous online course during the summer solely for students in the music department. All of these changes combined to create more mobility and opportunity for students to be moved into the most appropriate course offerings by ability groupings. If a student has a schedule change or decides to graduate early, their empty seat is more likely to be immediately filled by an advancing student if schedule changes do not dramatically affect their academic courses.

Years after the implementation of these policies and practices, I have seen a noticeable increase in the number of students of color in advancing ability groupings within my choral programs. While less than 10% of the most advanced ensemble's membership were students of color just a few years before, now nearly 40% of students in this group do not identify as White. The change is substantive and more accurately represents the racial and ethnic composition of our student population as a district. With a continued focus on ability grouping practices that establish just and equitable means of access for all students, all stakeholders prosper in a diverse and affirming music ensemble.

Why are we doing it this way? When I was asked about these new procedures, I was delighted to realize that my students had noticed such a deliberate shift in practice within my program. It allowed me to answer that I was trying to understand my own White privilege and to ensure that it was not negatively impacting my music classroom. It allowed me to open a dialog about elitism in fine arts education and how we can all actively participate in disrupting the common practices that frequently bar others' participation. When I was asked why, I knew the choices were making lasting change.

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By combining blind auditions with program access, all stakeholders benefit from allowing both ability and effort to be assessed. It identifies not only high-ability individuals but ascertains high-effort individuals who are capable of growth (Droege, 2019). Blind auditions attempt to reduce visual bias which extend beyond race to other populations: sex, gender, religious expression, physical ability, or socioeconomic status (Fang & O'Flaherty, 2020). Identifying our own bias, prejudice and subsequent discriminative practices can be a challenge for gatekeepers; however, introducing the blind audition process can mitigate their impact (Marshall, 1997).

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Narrative #5: Preservice undergraduate self-definition...

If you're having issues with behaviors from your African-American boys, I strongly suggest that you consider having them drum. I wasn't really paying attention to my elementary music methods instructor, so I looked up from my notebook to see if anyone else had heard the words that I had heard. Yep. All of my peers were staring at our professor. A friend had raised her hand and asked for clarification. *When working with African-American children, it's important to pick music that is energetic and has a great beat and strong rhythms.* I saw my friend taking notes. She asked again for further insight from our instructor. The class was small; there were only five students in the class. We were a small cohort that had worked together closely as we approached our upcoming undergraduate graduations, and we knew our inquisitive classmate was engaging in this exchange for a reason. As part of the lecture, the professor played for us a Martin Luther King Jr. Day performance she had organized and directed with her elementary students before her retirement from public education. If anyone was confused

by the thinly veiled racial implications, the video reinforced her words. While students of every race participated, the students positioned behind the drums were all Black. I remember feeling uneasy with the professor's methodologies; however, the feeling I felt most strongly was hopelessness. That stemmed from feeling helpless. I felt that I couldn't call this professor out. They were in a position of power, and I was merely an undergraduate. Even if I somehow felt brave or bold enough to question this instructor, I knew that they would grading me. Speaking up was a luxury I couldn't afford. We were released by our professor at the end of class, and as we walked down the hallway my classmate reminded us that what we just experienced was not okay. It took some convincing, but together we walked into the Dean's office at the School of Music to lodge a complaint.

By the time I had completed my undergraduate degree and earned my teaching certifications, I had attended four different colleges and universities and finally completed the degree as a non-traditional student having taken a few years off. Whereas many music teachers only experienced one department of music, I had the advantage of having experienced four. I believe this was an advantage because it helped me discover commonalities amongst collegiate pre-service music education programs. In all programs of music education study I experienced, racism and equity were rarely a topic of conversation outside of courses focusing on education. For so many music educators, however, our identities as conductors are molded by the leadership techniques, ensemble experiences, and private lesson instruction we experienced collegiately. For me these experiences were predominantly White. My private instructors were all White. My fellow ensemble members were primarily White. Every private vocal instructor I had was White.

I was trained in the vocal style that is considered the standard for all singers: the bel canto style. It is based off of the lyrical singing style which became dominant in European opera from the 17th to 19th centuries. Its name literally translates from Italian to English as *beautiful singing.* This style of singing, in its naming alone, came with social and artistic collateral. I even had the opportunity along with my choir to travel to and perform in the birthplace of this style. Traveling throughout Italy and performing concerts, the audiences were all White.

There were two specific experiences within my tenure as a pre-service music educator that helped me realize how musical elitism was perpetuated and how this system must be interrupted because it represents a barrier of access for students of color. The first of these experiences was my varied assignments in student teaching. As a candidate for a K-12 teaching certificate, my student teaching experience was divided into two distinct age groups: elementary and secondary. Both of these assignments were so dissimilar, they offered insights into student access to music making. In elementary student teaching, I was assigned to an elementary school located in north St. Louis with a student population that was 100% Black. This experience was beyond valuable for me as a privileged White male because it was the first time I had ever worked with Black students and their families.

I quickly realized a few take-aways from this student teaching experience: 1.) I did not have the energy nor the desire to teach elementary music and 2.) the musical experiences we teach students in the music classroom perpetuate the ideals of primacy toward European White culture. The first take-away was more about my own realization as a music educator; I gravitated toward older learners and the ensemble-based

classroom. The second take-away was a realization that elementary students are exposed to music that is not only White but subversive to affirming the Black race and its culture. The primary sources of music students were exposed to were folk songs from America's racist past. Many of these songs were included in the minstrel show catalogues of post-Civil War Reconstruction United States, and any authentic musical sources such as spirituals were linked to slavery as a firm reminder of taught inferiority. While the beauty of these songs of slavery cannot be ignored and must be taught so that we as a country can never forget this atrocity, I wondered why songs from jazz, Gospel, and popular music genres, which can squarely be linked to the greatness of Black musicianship, were not given equal or prevalent exposure to that of their White airtime Eurocentric counterparts. This is teaching to music students of color, from a very young age, that the White musical experience is what is seen as beautiful within society and that to be welcome in a space of scholarly music making, students of color must conform to the practices of their dominant White counterparts.

My second student teaching experience was very different. I worked with a high school choral program that featured numerous choral ensembles at varying levels and abilities and with a diverse student population. This placement offered a few take-aways: 1.) I was right. I was meant to teach high school choir and be a choral director and 2.) my White privilege meant that I had never been privy to a collaborative musical environment in which I, as a musician, shared the music making experience with musicians outside of my own race. My facilitating teacher in this placement was relentless in developing my skills as a choral director by primarily focusing on how I interacted with the students within the room and through communications with their families. She was insistent that I

make time to understand each student's lived experience and how that affected the shared experience in the choir room as an ensemble. Each student walked a unique path that had led them to the choir room. This student's parents were deaf. This student's family struggled with transportation. This student, while an incredibly talented singer, was even more talented as a science scholar and was already accepted into a prestigious pre-med program. I was encouraged to find music for the ensembles to sing that would speak to everyone in some way; I was tasked with finding points of access for every individual student with each warm-up, exercise, activity, or piece of music I planned for the ensembles. Beyond this crash course in individualized instruction, as a White male I was able to look around the room and see students within my race interacting with students outside of my race. This may seem like such a trivial realization but, when living a homogeneous existence, the ability to see an intentional space where Black and White folks were making music together was revolutionary in my own development as an educator. It made me wonder how many White music educators, throughout their experience from student musicians through pre-service teaching and into the classroom, have suffered from a completely racially homogenous existence.

The final experience that impacted my collegiate pre-service music educator experience happened quite by accident but would afford me an exceptional experience to witness the genius of Black music-making and music education. The semester before I began student teaching, my advisor discovered that I was short one class in advanced choral conducting. Looking at the course schedule, if I waited to take the course at its next offering, I would be extending my time at the school by almost two years. As a nontraditional transfer student, I was given the opportunity to take an independent study

in conjunction with my student teaching if I could find one of the choral conductors at the university to allow me to observe and assist them with their ensemble. I was blessed with the opportunity to work with the only Black choral conductor at the university. He was a brilliant mind in choral music. He had composed a large work that effectively bridged the classical styles of choral singing with traditions within the Black church. He was also the conductor of multiple racially diverse choral ensembles throughout St. Louis that primarily focused on the performance of Black composers and arrangers. This was an obvious inversion of the normal literature catalogue for ensembles of this quality. I was exposed to literature that my previous narrow experience would have never afforded me. I worked with an incredibly talented composer, musician, and conductor. I came to realize that while I need to expose my students, no matter their race, to music of the Black diaspora, I could no way claim to be an expert in an experience I have not lived. I could, however, be sure to expose White students to music outside of their own cultural and societal norms. I learned that scholarship could lead to authentically genuine performances of music beyond our own cultures that, while not authentic to the lived experience, can create points of intersectionality for singers so that ensemble music making becomes a tool for developing empathic citizenship.

I distinctly remember that moment in Elementary Music Methods when a professor's comment snapped me out of my haze of ignorance; this was a state of being oblivious to races beyond my own. I realized as a pre-service educator that I needed to break the cycle of demanding that students conform to Whitewashed musical experience. I needed to look beyond my own culture's narrative in music education to ensure that my

future students would feel welcome and affirmed in my ensembles and to ensure that students excelled within my classroom to ensure their advancement in musical studies.

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Paetz et all (2020) write that “it stands to reason that music teacher educators should focus on preparing music educators who are willing and able to teach all students" (p 194). Expanding further, it is the responsibility of music educators to identify opportunities to individualize music education for each student while levying equality in opportunity (Paetz et all, 2020). Creating student teaching internship, field experience, and observation opportunities is imperative in not only adequately preparing music educators but allows pre-service music educators the opportunity to reflect on the impact of their own race on the learning of others (Emmanuel, 2005). It is in these pre-service experiences that we have the opportunity to develop music educators that are acutely aware of their privilege and how it impacts the access of their students.

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Narrative #6: Professional self-definition...

I’m Black. I’ll never be anything other than the preacher or the bad guy.

Painfully, the student was not wrong. My first full-time teaching assignment landed me a position in West County St. Louis at a private all-boys high school that had a well-developed musical theater program. I had watched this student, probably the most talented singer in the school, be passed over time and time again for lead roles in every production. He was cast again and again in the supporting roles such as the preacher, the mayor, the judge, or the villain; however, he was never the male lead or the love interest. He was a Black artist functioning in a White artistic space. As only a second-year

teacher at this point, I was in no position to advocate for shows and roles that better suited this student's abilities; it was above my position. However, just looking around this mostly White and exceptionally affluent school, I realized that shows billing a Black male lead would never be chosen because those were not the shows that our patrons and wealthy donors would want to see. I talked with this student numerous times about this very issue trying to convince them to not quit the theater or music program; it ultimately did not matter. They did not feel welcome and did not sign up for any classes in the fine and performing arts the following year. I remember feeling very much trapped in what I could or could not do for this student. It made me feel, once again, like I had in my undergraduate Elementary Music Methods. I thought it would be different as a teacher, but I realized that somehow this amazing thing, creating art through musical theater with my students, was perpetuating the very racialized bias that made me uncomfortable as a pre-service educator. Much like that student, I decided I could not stay in such a program so I left after two years of service.

As a novice music educator, I found myself moving from job to job after only a few years' time. Either program budgets would be cut and my position would not be returning, or I would simply find a position a little bit better than the next. I knew my ultimate goal was to work in a large, well-established vocal music program where I could be singing with students all day every day. I found myself in five different schools before finally settling into my current tenured position in a district that I feel challenges me to develop professionally as a music educator while allowing me the gift of making music daily with talented students in an appreciative and diverse community. In almost every school, I had a moment, like the one above, centered on welcoming and celebrating all

students. These are the moments that have made me want to strive to become an anti-racist music educator for my students.

I guess we can't call it the White House anymore, huh? My second teaching job found me in a rural farming community just outside of St. Louis amongst the notorious sundown towns of predominantly White southern Illinois. The student population matched that of the town in which the school was located, 100% White. It was Tuesday, January 20, 2009 and the inauguration of Barack Obama, the first Black president of the United States of America. I had developed a lesson plan for that day for my students involving replaying and watching different vocal music performances from both this and other recent Presidential Inaugurations. I was working with my middle school choir when, after listening to and watching numerous other performances, we watched Aretha Franklin's performance of America at Obama's celebration. From the back of the room, I heard the racist joke and slur fling into the room. I don't know if I was more surprised by the joke or caught off guard by the laughter and reaction from the rest of the class. I immediately asked who had said it. A young White male proudly stood up from the back of the room, and I promptly sent him to see his assistant principal stating that racist jokes would not be tolerated in my room. The young man returned to my room in less than 15 minutes with a note from the office saying it had been handled. At the end of the day, I followed up with my superiors to find out about the student's consequences. At the conclusion of the conversation, as I was leaving the administrative offices, I was directed that in the future I should refrain from so easily calling a person or an incident racist. Anger boiled in me that day; had I really just been reprimanded for someone else's racist actions? As a privileged White male, I still lacked the status needed to make change.

Oh, sorry. She's not eligible to attend school here. She is Black and lives outside of the city limits. The student had just finished completing a masterful entrance audition for the school, and now the principal was delivering some devastating news. The auditionee had just sung two different prepared musical theater numbers and even prepared a brief tap dance as part of her *Other Talents* portion of her audition. I had spoken with her and her mother at length. The student was very interested in attending a school that focused so heavily on the fine and performing arts. I had just started working at a brand new public middle school focusing on the fine and performing arts as the music teacher. One of my first responsibilities was interviewing and auditioning potential students. I believe these auditions specifically served two purposes. First, as a first-year school we had no experience with these students, and these auditions allowed us the opportunity to assess the ability level of the entering students. This was crucial for us as we developed curriculum within the performing arts for these students. Second, the audition created an intentional barrier. It created an elitism to the process or a hurdle that insured only students interested enough to endure the audition process would apply. Legally, since we received funding as a public institution, we could not deny a student eligibility solely by their audition performance; however, we could talk with the family about this new school not being a good fit for them.

For this auditioning student and her mother, the new turn of events was unexpected. Mom asked our principal why her student was not eligible. Our principal explained that desegregation laws governing the city schools of St. Louis, including our new charter school, required that schools which were predominantly White outside of the city of St. Louis accepted Black students. It also specifically stated that students from

outside of the city limits that were Black could not apply to attend schools, such as our charter school, that were located in predominantly Black communities. The daughter was visibly upset, but her mother assured her that there was no way around these laws. It became clear to me, as we were auditioning and enrolling students for the school, that our student population would consist of talented Black students from the city and talented White students from the surrounding counties. It was the first time as an educator in the St. Louis area that I would become intimately familiar with our area's past history with redlining, community segregation, and the impact of desegregation laws that would create huge racial divides and disparities in the city of St. Louis.

My experiences teaching in these different communities affirmed my need to have a deeper understanding of how race impacts the dynamic of the music classroom. It fostered a realization that, until recently being introduced to Critical Race Theory, I struggled to identify race's impact on all facets of life and culture. It kindled a fire in me to investigate how race impacts all stakeholders in the music classroom and might be the key to understanding why Black musicians and singers either choose to leave music classes or are ignored for placement in advanced ensembles.

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Within the framework of Critical Race Theory, a distinct element of any White music educator's experience is the understanding of how their Whiteness and privilege function within their own educational settings (Bradley, 2012). My own early teaching experience, lacking the ability and confidence to challenge unjust school practices that negatively impacted my students, is addressed by Whip (2013) who notes that little support is given to 1st and 2nd year teachers in developing a socially conscious pedagogy

or in establishing their voices as advocates (p. 454). Hess (2017) sustains that a music teachers' understanding of their positionality should inform their practice and ultimately the ability to effect lasting change in their communities.

Narrative #7: Black music and popular culture…

Cowell, Cowell… did you know there's a Black Music Month? This student's question excited me since I had just completed graduate coursework called America's Music focusing on the development of popular music and the contributions of Black artists throughout our country's history.

Hey, hey… did you know Black music is green? I could tell that posing this question back to my young music scholar had made him think even more. His question allowed me to discuss how Black music the originator of all Popular modern music genres and how Black Music Month co-founders Kenny Gamble and Leon Huff is used the "Black music is green!" slogan to show how White executives made millions on the hard work of Black performers and producers (Cochrane, 2019). I then have the pleasure of directing my student to the pages of Quincy Jones' *Vibe Magazine* to learn more about the fight for equity with the marketplace of popular music.

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YouTube offers the opportunity for pop culture scholars to take deep dives into archival footage that might not be available in the catalogues of typical research scholarship. Such is the case with YouTube, trying to research the impact of popular culture on the Black voice in music, you cannot ignore MTV's impact on society as a whole. A quick search found an archived news clip showing an investigative report from 1983 teaching American society as a whole what this new medium was, but I quickly

found the intersection of MTV and racist listening. “We’re sitting in the back of the bus; cable style,” said James during an aired interview (Hezakya Newz & Films, 2019). MTV defended themselves in their obvious lack of Black videos at the beginning of their broadcast tenure by simply stating that if Black performers conformed to the White rock style, they would more likely be played (Hezakya Newz & Films, 2019). Performers like Michael Jackson and Prince would pave the way for future artists of color.

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“Shots fired!” I thought to myself. I was watching a recording of Beyoncé’s history making performance as the headliner for the Spring 2018 Coachella Valley Music & Arts Festival, one of the largest annual popular music festivals in the world. About halfway through an unapologetically Black concert loaded with race and cultural references ranging from Egyptian greatness to the Greek life and marching bands of Historically Black Colleges, Ms. Knowles stopped to look at the camera to thank Coachella for inviting her to the mainstage. Her tone, however, changed quickly. “Thank you Coachella for allowing me to be the first Black woman to headline. Ain’t that ‘bout a bitch?” (The FADER, 2018). She flipped her hair and walked away from the camera to start her next song having made a strong commentary on how the world’s largest music festival had, until that moment, ignored the contributions of Black female artists.

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They apologized.

So? They did it multiple times.

They’re K-Pop. Do you think they knew what they were actually doing?

You can be ignorant one time. After that, you’re just being stupid.

But…

No buts. Blackface is never okay. Never.

I overheard this student conversation one afternoon between choir classes, and I stopped to talk with them about what I overheard. K-Pop was a genre of music that I knew very little about, and I wanted to know more. I had recently been studying the racialized pageantry of minstrel shows and blackface in my graduate work, and I believed this moment of intersectionality was a great opportunity to share scholarship with my students. It led to an insightful conversation about cultures outside of the United States not fully understanding America's relationship with racism especially around popular music and culture. These conversations with students usually end with me logging on and searching for various musical artists, songs, or social media accounts during my office or lunch hours. I learned of an incident in which Mamamoo, a popular female K-Pop ensemble performed Bruno Mars' *Uptown Funk* while dressed in blackface. That's when I discovered the official statement posted on the Rainbow World, Inc. Facebook page; they are the entertainment company that represents Mamamoo. "We understand now why our actions were wrong and we never meant to do harm with our video. We were extremely ignorant of blackface and did not understand the implications of our actions" (Rainbow World, Inc., 2017).

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He's White. He's White. Jennifer Hudson mouthed these words under her breath to fellow judge Adam Levine during the Season 13 opener of NBC's hit show The Voice. NBC actually wanted everyone to know clearly what she was implying since they captioned these words clearly on the screen to make sure audiences at home could

understand. The contestant, Lucas Holiday, was invited by Hudson to join her in a duet singing the Gospel standard “He is Able”. During Holiday’s prior blind audition, the judges: Adam Levine, Black Shelton, Miley Cyrus, and Jennifer Hudson all sat with their backs turned to Holiday as he sang Maxwell’s “This Woman’s Work”. During the audition, Hudson was the only judge to turn her chair which then revealed to her who the person was that was singing this soulful jam. Her mouth had instantly fallen open. As Holiday’s performance wrapped up and the other judge’s chairs turned, their disbelief of Holiday’s performance was explained by Levine’s statements to the contestants: “No offense because you’re brilliant. But you’re like the Whitest dude. I’m questioning the whole world right now” (Entertainment Weekly, 2017).

This episode confirms that we listen with our ears and our eyes, and that we racialize the singing voice. Hudson fully expected, after hearing the voice of Holiday during the audition, to turn and see a Black male singing this R&B ballad. Lucas Holiday’s talent was undeniable; however, the commentary of the judges focused solely on the fact the Holiday’s voice did not match his physical racial expression. Simply put he was White and sound Black. He was White and skillfully sang Black music. It’s important to note that while they discuss Holiday’s race, they do not link it to his sound or the music that he’s singing in their commentary. Instead they repeatedly use the word *soul* as a key descriptor of his performance.

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Our time as victims is over

We will no longer ask for justice

Instead we will take our retribution

Then I will turn my hands

To fists of fury

(Koo & Woo, 1972)

Kasami Washington's 2018 album *Heaven and Earth* kicks off with an arrangement of the title song by the same name of the kung fu classic film "Fists of Fury (1972)". Released just a few short months after the killing of Stephon Clark and the deaths of Philando Castile, Alton Sterling, Walter Scott, Tamir Rice, Michael Brown, and Eric Garner. Washington's use of this song originally used as a storytelling device in a film focused on Japanese imperialism and colonialism from the Chinese perspective is no accident. In an interview airing on NPR in June of 2018 Washington stated that: "at a certain point, when there's a barrier between you and what's right, eventually you have to decide you're not going to allow yourself to be subjugated" (Greene & Richmond, 2018). Washington's album, even in title, represents a jazz musician using their medium to reimagine the Black experience through artistic commentary, protest, and Afrofuturism. Washington's album focuses on building empathy in a musical space that places a welcome mat for all listeners. It creates a space where music-lovers together can create an experience in which all stakeholders are welcome. Washington reinforces this stating, "I love what you are even though it's not what I am. I'm also going to protect you, and you're going to protect me. We're going to work to make the world what we want it to be" (Greene & Richmond, 2018).

Chapter Six

Conclusions

The purpose of this study was to examine the grouping practices that reproduce systemic racist, classist, gendered, and intersectional inequities. To that end, we conducted a research case study and offered an autoethnography. The case study specifically sought to answer the question: What are the characteristics of the ability grouping system at a comprehensive high school in the post-tracking era? As part of this question, we asked the following sub-questions:

1. What is the extent of vertical levels and course choices at the school?
2. How are students grouped, and how much mobility occurs after placement?
3. How inclusive are the groupings in terms of race, gender, disability status, economic status, and residency?
4. What student communities exist as a result of the groupings, how much do they interact, and how do they evolve over time?
5. To what extent do teacher traits correspond to the levels of courses taught by teachers?

Although the autoethnography did not address specific research questions, it presented narratives about grouping practices in vocal music, in order to provide a human context for the numbers and statistics of the case study. In this chapter, we summarize our findings as they relate to our research question, then provide our specific findings regarding each of the five sub-questions, then conclude with a summary of the findings from our vocal music autoethnography. Next, we provide recommendations to the school

at the case study site and to vocal music practitioners. We conclude with a discussion on limitations of our study and future directions for research.

Summary

From our case study, we found that the ability grouping system of the comprehensive high school in the post-tracking era shares much in common with the tracking era schools of decades ago. We observed high degrees of vertical separation of students, particularly so in science and mathematics. Additionally, overall we found a high degree of horizontal choice within advanced courses, and less so within remedial or regular coursework. The placement system at the school contributes to this phenomenon: in three of the four core subjects, elaborate and at times vague placement systems worked to sort students into tracks, and mobility was limited by another, related system of prerequisites and enrollment procedures. This system operated in different ways in different subjects, adding another layer of complexity facing students and families trying to ensure they were enrolled in the best course of study. In terms of inclusiveness, the levels of courses were heavily segregated by race, economic status, and to some extent, gender. We found statistically significant disparities in all subject areas in terms of students' enrollment in advanced versus other levels of coursework. When we analyzed student communities and scope, we likewise found that the decline of formal tracking has not changed the situation faced by students. The placement procedures at the school created remarkably stable student communities, and relatively few students moved from their original community over the course of four years of school. As with the vertical levels, these communities were heavily segregated by race, economic status, and gender, leading to a two schools phenomenon in which students may be attending the same

physical building every day but have little interaction in the classroom. Last, we found only limited evidence that the course level taught by teachers had a relationship with the teachers' educational attainment, salaries, or years of experience; further study is required in this respect.

From our autoethnography, we found that through reflective narrative we can observe moments within the content area of vocal music where students have encountered barriers of access to both ability groupings and advancement through leveling. These barriers exist within the culture of the profession of music education, are taught in undergraduate pre-service institutions, and are then replicated in the vocal music classrooms of this country. Focusing on the framework of critical race theory, our autoethnography reveals that vocal music students of color are faced with another level of complexity in a White dominated field flooded with predominantly White content in both the historical and popular contexts. We found that ability-leveled ensembles, like their core subject counterparts, can become heavily segregated by race. We also observed that mobility and advancement within the ability levels of ensembles are greatly affected without purposefully implementing procedures and practices that allowed for fluid movement in an environment with reduced bias from the evaluator. Our autoethnography affirms that reflective research practices afford valuable insight for teachers and enable them to identify barriers that keep many Black students from not only participating in vocal music education.

Findings

Differentiation

Our findings related to differentiation at the case study site were that the school used two or three vertical levels in most subject areas, with relatively limited horizontal choices in early grades and greater choices in later grades. In this section, we summarize and interpret our findings related to differentiation in each subject area.

The English department generally used two vertical levels, regular and advanced, while using a remedial designation for coursework by students in regular classes who required curricular modifications. This practice of denoting classes with an alternate or modified curriculum is widely considered acceptable in terms of students' rights and equity (Office for Civil Rights, 2008). We observed a clear distinction between the advanced and regular courses, particularly in the amount of content taught in each level. By the end of high school, students enrolled in the advanced sequence read at least a half dozen more texts as part of their English class than students in the regular sequence. However, both course levels shared the same number of one-on-one conferences and core texts, and both included research projects in 11th or 12th grades. The absence of horizontal choice was clear in the English department as well, with only one choice available (in advanced 12th grade).

In mathematics, there were three clear vertical levels and sequences of coursework; this was an unsurprising arrangement that has been practiced for a century in schools with tracked mathematics education (Weimar, 1928, Kertes, 1932). We observed the practice of assigning students to levels in middle school had a large effect on the vertical differentiation in the high school. We noted that there were distinctions between

the levels, including different textbooks for the different levels of the same courses and more content depth in advanced courses. The horizontal choices available to students appeared concentrated in the later years of the advanced sequence, with only AP Statistics and the advanced Number Theory course as optional courses.

The science department likewise used three clear vertical levels, and it retained two types of advanced classes in later grades. It also had greater horizontal choices than either the mathematics or English departments. We observed clear distinctions between the advanced, regular, and remedial Physics courses in 9th grade, especially in terms of mathematical skill required, homework expectations, and content covered. The Physics First sequence has been critiqued on the issue of mathematical skills: “Students that lack algebra skills tend to perform poorly in ninth-grade physics … and these failures are correlated with significantly lower graduation rates” (Popkin, 2009). While there were distinctions between the levels in Chemistry and Biology in 10th and 11th grades, the gap appeared less wide between the courses. All course levels included laboratory exercises to some extent. The array of horizontal choices was wide for both regular and advanced courses, although the use of prerequisites narrowed these choices for some students.

In social studies, the unified World-U.S. History courses in 9th and 10th grades precluded any horizontal choice or vertical levels, which was unique in the school. As with English, the embedded remedial courses appeared mostly designed to denote that students had received alternate curricula, rather than to separate these students from their peers. In the 11th and 12th grades, students had the widest range of horizontal choices of any department in the school, with more than a dozen options available. The absence of prerequisites was also unique at the school, with the department allowing any student to

enroll in any course. One factor limiting the distinction between levels was that the department did not have multiple levels of the same course except for Government. However, even then, the advanced Government class was two semesters and included more material about U.S. politics and international governments than the single-semester regular Government class.

Placement and Mobility

In terms of the placement system at the case study site, departments at the school used a wide array of tools to place students in 9th grade, then relied on teacher recommendations to determine if a change in placement was warranted. The exceptions to this were mathematics, which also relied on grades and test scores throughout the students' time in high school for placement, and social studies, which used a placement process only to determine whether a student should receive modified, remedial coursework in earlier grades. Student choice or preference was often factored into the placement process only after the decision was made by school staff. Given our frame that schools reproduce socioeconomic status, we expected a tournament-style elimination of students from advanced courses as they proceeded through grades, per the Rosenbaum (1976) thesis. We observed this pattern in mathematics to some extent, although not as clearly in English, science, and social studies. Mobility was low overall, but particularly so in terms of movement from remedial to regular or from regular to advanced classes, and this was especially true in English and mathematics.

In English, the initial 9th grade placement process relied on standardized test scores, grades, school-designed test scores, and teacher recommendations for initial placement; a similar system was used in mathematics and science. In subsequent years,

teacher recommendations governed the process for moving up vertical levels, while an automatic procedure was begun to move students from advanced to regular if they earned below a C. We observed typically around 10% of students moved from regular to advanced in any given year. Interestingly, very few students moved from advanced to regular with the exception of from 10th to 11th grades; we hypothesize that an intensive research project in 11th grade advanced English dissuaded students from enrollment.

For mathematics, placement into vertical levels relied on a battery of tests, grades, and teacher recommendations, and many of these took place prior to high school. In subsequent years, the department relied on specific cutoff scores for a variety of tests and grades to sort students for placement into levels. We observed virtually no students moving from regular to advanced except for some students enrolling in advanced Statistics during their senior year, while about 10% of students moved from advanced to regular classes in each year. The vast majority of students remained in their original level placement.

Science relied on similar procedures for placement as English, with a robust array of inputs to the 9th grade decision and essentially teacher recommendations for subsequent years. However, the movement from regular to advanced was not governed by a formal process as it was in English. We observed large increases in advanced enrollment at every grade; no less than one-fifth of students in each year's regular classes enrolled in an advanced class the next year. Downward mobility also was present, but only from 11th to 12th grades, which we hypothesized was due to multiple factors, including that students necessarily had fewer advanced options in 12th than 11th grade if they already completed some of the advanced classes, a state graduation requirement that

only requires 3.0 units of science, and that students preferred lesser workloads in their senior year.

Last, social studies used similar procedures as English for its identification of students in need of remedial coursework designations, but otherwise uniquely allowed open enrollment in courses. As previously noted, social studies differed from English in that social studies did not use the placement process to sort students into advanced or regular coursework in 9th and 10th grade. Kelly (2007) observed many schools misleadingly claim to have open enrollment policies: many schools claim students can choose their courses, but in reality, they are limited by prerequisites, grades in prior courses, etc. However, we did not observe the department using any of these techniques during course registration and enrollment. We noted that the department had at one time offered a general suggestion that students earn an A in 9th or 10th grade history prior to enrolling in advanced 11th or 12th grade classes, but that the department had dropped this suggestion some years ago.

Inclusiveness

In terms of inclusiveness, we argue that Sorensen's (1970) definition of inclusiveness as a measure to determine the proportion of students included within the advanced level must be adapted; we believe that a better understanding of inclusiveness is considering the proportion of each demographic group of students within each vertical level. As an illustration, consider a school with 70% Black and 30% White students, in which 30% of students are enrolled in advanced classes. If all of the students in advanced classes were White, it would not be an inclusive system whatsoever. Our case study findings indicate that the high school of the post-tracking era shares much in common

with its formally tracked and segregated predecessor. Our findings about the school using informal tracking aligned with the decades of research indicating that its practices segregate students by race, class, and gender (Alexander & McDill, 1976; Vanfossen et al., 1987; Oakes, 1990; Braddock, 1990; Hallinan, 1992; Catsambis, 1994; Oakes & Guiton, 1995).

In English, we initially observed disproportionate representation in different vertical levels in terms of race, gender, lunch status, disability status, and residency. This was particularly pronounced in terms of race and gender, especially for Black students and male students who are disproportionately missing from advanced classes. This result was expected, given that male students often suffer from an underachiever stereotype and that academically talented male students are often assigned to remedial or regular tracks instead of advanced tracks (Jones, 2010; Van de Gaer et al, 2006). Overall, about one-third of students enrolled in advanced English classes, two-thirds of students enrolled in regular English, and very few enrolled in remedial English, indicating a moderate to high level of inclusion under the original definition by Sorensen (1970).

In mathematics, we found disproportionate inclusion in vertical levels particularly in terms of race; it exhibited disproportionality in all three vertical levels in all four grades. Our results were highly statistically significant for remedial and advanced courses. Likewise there was significant disparity in inclusion based on economic status and transfer status, with students at or near the poverty line and those transferring into the district much more represented within remedial classes. One aspect of inclusion in mathematics that separated it from English was in terms of gender: we found no evidence of inclusion disproportionality in terms of gender in mathematics. This aligned with

Catsambis (2005), which noted a national trend toward more equal gender representation in mathematics coursework and achievement. Overall, in each grade level, about one-third of students enrolled in each of the three vertical levels in mathematics, again indicating a moderate level of inclusion under the Sorensen (1970) definition.

Science shared similar issues, with disproportionate inclusion of Black and Asian students in vertical levels. In particular, Black students were rarely enrolled in advanced science courses, while far overrepresented in remedial classes; conversely, Asian students were significantly overrepresented in advanced classes. There was an increase in the disproportionality over time, with 12th grade regular and advanced science classes having highly statistically significant disproportionality. Similar to mathematics, we observed little evidence of disproportionality in terms of gender or residency. In terms of overall inclusion, roughly half of students in 10th through 12th grades enrolled in advanced science, indicating a high level of inclusion under the Sorensen (1970) definition.

Social studies had little disproportionality in 9th and 10th grades because of its curriculum structure. Interestingly, there also was no statistical disproportionality in terms of race, economic status, or gender in the 11th grade classes, leading us to hypothesize that the absence of tracks in early grades contributes to proportional representation in later grades. In 12th grade, there was statistically significant disproportionality in terms of race in advanced social studies; however, we noted that nonetheless, 23% of Black seniors enrolled in advanced social studies, while only 14% enrolled in advanced English, 7% in advanced mathematics, and 5% in advanced science. In terms of overall inclusion, two-thirds of students enrolled in advanced 11th grade social studies, and half enrolled in advanced 12th grade social studies, indicating high

inclusiveness. We also observed that the overall inclusion levels appear to align with the disproportionality of inclusion of different groups of students; specifically, more students included in advanced classes aligns with less disproportionality of Black students.

Scope and Student Communities

With regard to our subquestion about student communities, we found multiple communities within each grade level, generally segregated by race, class, and gender. In terms of how they interact, we found that when moving from 9th to 12th grades, internal connections within communities became much more common than external connections among or between communities. In other words, the communities became more isolated over time. Unsurprisingly, communities primarily composed of students in advanced classes had stronger links to communities of students in regular classes than communities of remedial classes. For our third part of the scope subquestion about community evolution over time, we noted some mobility among communities, particularly the community composed of students in regular classes. However, the communities composed of students in remedial and advanced classes exhibited lower levels of mobility over time.

In 9th grade, the three communities appeared heavily segregated by race and economic status, although not by gender. The 9A community, composed of 68 students in mostly advanced classes, had only two Black students and only one student receiving free or reduced-price lunch. The average number of connections from a 9A student to other students was 145; of these, slightly less than half were within the 9A group, and only 22% were connections to students in the 9C group. The 9C community, composed of 65 students in mostly remedial classes, was nearly 40% Black and 19% of students received

free or reduced-price lunch. Of the average of 170 connections of these students, about 40% were internal to other students in 9C, slightly more than 40% were to students in 9B, and less than 20% were to students in 9A. The median number of connections between 9C students to 9A was nine.

In 10th grade, the two communities were likewise heavily segregated by race, economic status, and to a lesser extent, by gender. The 10A community, composed of 103 students mostly in advanced classes, had only two Black students and only five students receiving free or reduced-price lunch. It also was 60% female, while the 10th grade as a whole was 53% female. The 10B community on the other hand, composed of 117 students, had 25 Black students, 17 students receiving free or reduced-price lunch, and was 54% male. More than 70% of the connections among students were internal to their own community, a dramatic increase in community isolation compared to 9th grade. The median number of connections between 10A and 10B students was 23; this was an increase from 9th grade, but likely attributable to the larger community sizes in 10th grade.

The three 11th grade communities emerged similarly in terms of racial, economic, and gender segregation. The 11A community, composed of 68 students in mostly advanced classes, had only two Black students, was 40% male, and had no students receiving free or reduced-price lunch. On the other hand, the 11C community, composed of 92 students mostly in remedial or regular classes, had 23 Black students, was 55% male, and 7 of the 12 students in the grade who received free or reduced-price lunch. Only 15% of the average connections of 11A students were to students in 11C, and less than 10% of the average connections of 11C students were to students in 11A. This lack

of connectedness demonstrates the two-schools phenomenon, in which students are segregated by the tracking system. The median number of connections between 11A and 11C students was eight; for comparison, the median total connections of 11A was 96, while the median total connections of 11C was 156.

With the 12th grade, the two communities again were heavily segregated by race, economic status, and gender. The 12A community, composed of 90 students in mostly advanced classes, was only 7% Black, 56% female, and 2% received free or reduced-price lunch. The 12B community, composed of 127 students, was 27% Black, 57% male, and 10% received free or reduced-price lunches. Interestingly, the two communities had somewhat greater connectedness, although more from the perspective of 12A than 12B students. While 34% of 12A connections were to 12B students, 17% of 12B connections were to 12A students. This ratio was similar to that observed in 10th grade, indicating that the number of communities plays a role in the connectedness of them.

Teacher Traits

In terms of teacher traits aligning with course levels taught, our case study findings presented mixed results within each department; however, for the overall school, there appeared to be a trend that weakly aligned with the expected result of more advanced classes being taught by teachers with more years of experience, greater educational attainment, and higher salaries. The average teacher of advanced classes had two more years of experience than the average teacher of remedial classes, although there was a relatively large standard deviation. This result has been documented previously in several studies, some of which have argued it plays a role in perpetuating inequitable access to opportunity (Finley, 1984; Conforti, 1992; Reglin & Chisom, 1992; Gamoran,

1992; Darling-Hammond, 1994; Heck et al., 2004). Within each department, we observed it was relatively more common for English and science teachers to only teach one level of courses; however, this likely is attributable to the fewer number of courses per teacher for these subjects. Because of the relatively mixed results within each department and the lack of a clear statistically significant link between course levels and teacher traits, we decline to make generalizations about the case study site results. The absence of clear data does not indicate that there is no link, but that further study is needed in this regard.

Vocal Music

As my research concludes, after months of writing, reflecting, and processing I realize that this journey has allowed me to process the experiences that have molded me as a music educator. This has precipitated a deeper understanding of my Whiteness and how it has impacted my professional experience to date and inevitably in the future. As a White male studying the Critical Race Theory framework and its tenets, I came to realize the importance of naming my own reality. Finding the moments in my life where leveling, access, and ability groupings impacted students, I began to find consistent themes around racial inequity emerge. I realized that in my own practices I was perpetuating structures and systems of elitism that limited student participation specifically Black students.

During this conclusion, I offer one last narrative. During the completion of this research, I encountered the student who asked where all the Black people were during our conference performance. I was excited to see her. It was my first interaction with her since she had graduated and moved on to her collegiate endeavors. I asked how school was going and she commented that things were going great. I quickly did the math in my

head realizing she was in her junior year. I asked if she was excited for student teaching next year. At first I was dumbfounded to find out that she was no longer an education major and had left the music program completely to join the school of business. The surprise must have been obvious on my face. She stated that she realized studying music just wasn't for her anymore. She didn't enjoy it anymore. I let that sink in. I cannot speak to this young woman's experience. I do not know the circumstances surrounding her decision. I do, however, know my previous conversation with this student, and I can wonder what about this young woman's musical experience made music education no longer an option for her future happiness.

The study's autoethnographic research highlights the need for music educators, specifically White male choral directors, to reflect on how they contribute to the social reproduction of injustices in choral music. Just as Whiteness has capital, White music has capital which perpetuates elitism amongst those who know and participate at acceptable levels. This means we must implement pedagogies of interruption with the specific intent of disrupting the cycles of limitation and access for marginalized communities in music education (Wright, 2015). Practices such as teachers and adjudicators identifying their biases, understanding how the singing voice has been racialized, and developing assessment practices for leveling and ability groupings that extend beyond traditional White European music practices establishes a choral music education program that is welcoming to all student musicians. We see that, because of the communal nature of ensemble music making specifically in choral singing, a music educator's willingness to disrupt systems of elitism and oppression have the ability to provide extraordinary outcomes for all students involved (De Quadros, 2015).

Recommendations

We offer recommendations both to the specific context of the case study site and to vocal music and performing arts educators. At the case study site, because each of the subject areas at the school has different policies, we offer specific guidance both for each area and for the school as a whole. We offer recommendations for each subject area, then the school, concluding with recommendations for performing arts communities.

First, in English, we recommend combining the advanced and regular levels in 9th and 10th grades into mixed-ability classes similar to social studies. This change would necessitate curriculum adaptation, given that both advanced English classes require summer work, include an additional text, and the 10th grade course uses Aristotle's *Poetics* as a teaching frame. We suggest the possibility that the additional summer work and the texts be retained in the regular course as an advanced option, which would be reflected on transcripts for students who choose to complete it. Second, we recommend continuing the integration of remedial English within the regular English classes; however, additional resources should continue to be dedicated to these courses. We endorse a co-taught model in which each mixed-ability remedial-regular class has two English teachers or an English teacher and English reading specialist. We note that this practice is already in place to some extent, and it is an encouraging practice that should be consistently adopted. Third, we recommend an open enrollment placement practice for the advanced English classes in 11th and 12th grades. Changing to open enrollment would eliminate the potential for implicit bias affecting teacher recommendations and the problems associated with purportedly objective placement tests and the subjective nature of staff approvals. Last, we recommend the English department be provided with

professional development to ensure teachers have adequate strategies to differentiate material for diverse learners, particularly male students and Black students.

In mathematics, we offer three recommendations. First, we recommend reducing the use of placement tools that encourage downward mobility from advanced to regular classes, along with greater support for diverse learners in advanced mathematics classes. Second, we suggest expanding or adapting the program that supports Black 11th grade students in advanced social studies classes to serve Black students in advanced mathematics classes in all grade levels. As part of this support, we recommend staff facilitate outreach to Black students in 7th and 8th grades to encourage them to enroll in advanced mathematics. Third, we recommend the department explore a more open enrollment policy in the regular sequence that would allow students in regular 10th grade Algebra II to enroll in either regular Pre-Calculus or regular Trigonometry; an alternative consideration might be combining regular Pre-Calculus and regular Trigonometry in 11th grade or combining regular Algebra II and regular Trigonometry in 10th grade, to provide all students in the regular sequence the opportunity to enroll in Calculus in their senior year. If regular Algebra II and Trigonometry were combined in 10th grade, it would additionally permit more students to enroll in AP Statistics. These curriculum changes would require careful study and would prove difficult, but we believe the teachers can redesign this system to reduce leveling that separates students by race.

For science, first we recommend combining all remedial and regular classes into mixed courses, similar to English and social studies. We acknowledge the Physics First sequence contributes to the difficulty of bringing students who do not have algebra skills into the regular 9th grade Physics class; however, we recommend a co-taught model, in

which two Physics teachers are assigned to one classroom. This model is already in place in social studies and English, and we note that it was temporarily adopted in Biology. In situations where Physics and Chemistry require mathematical skills that some students lack, we suggest adapting the curriculum and maintaining the mixed-ability classrooms. Aside from the benefit of attending classes with more of their grade-level peers, eliminating the separate remedial track would open regular elective classes to the students in the remedial classes. We previously noted that Forensic Science, a study of crime scenes, is technically the only elective science course that does not officially require regular Biology or Chemistry; however, many students in remedial science appear to enroll in other elective science classes despite the prerequisites. Second, we recommend eliminating the Honors Biology course and encouraging students to enroll in AP Biology. This would require curriculum adaptation of AP Biology to ensure students were supported in the class; we acknowledge that some students would opt for regular Biology instead, but this too would reduce separation of students by race. Third, we recommend that the department adopt an open enrollment placement policy for all of its courses. Given that the advanced 9th grade Physics requires algebraic mathematical skills and a robust workload, we recommend providing a recommendation to families, but we advocate for eliminating the override process and allow families to choose their 9th grade level. Within that process, we also recommend eliminating the use of student ratings that reproduce teacher recommendations and eliminating the use of advanced Geometry placement. Last, we recommend the science department revisit its use of course prerequisites in the Program of Studies; many appeared to be required in name only, with teacher approvals allowing greater movement than would otherwise be permitted.

For social studies, we recommend continuing to combine remedial and regular classes in 9th and 10th grades. We note that the department had the least segregation and disproportional representation in its advanced classes in 11th and 12th grades, and we connect this to the mixed-ability groupings in the first two years of high school. Second, we recommend expanding the support and outreach program for Black students in advanced 11th grade classes to include historically marginalized students in advanced classes in both 11th and 12th grades. Third, we advocate for continuing the co-taught model in 9th grade history classes to support students in remedial history; we recommend the school investigate expanding this program to 10th grade history classes as well.

For the entire school, first we recommend changing the names of advanced, regular, and remedial classes to align them across subject areas and eliminate hierarchical labeling. Specifically, we suggest renaming advanced classes with the suffix (Advanced) or (AP) instead of the prefix Honors and eliminating the use of the prefix College Prep for regular English and mathematics. Where the only course in a subject is an AP course, we suggest considering eliminating the suffix (AP) entirely; this would necessitate creating a separate AP transcript listing the AP classes students had completed at the school. We note that already the students' transcripts do not reflect the full range of AP classes taken; for example, students' transcripts list AP Comparative Government, which also includes the AP United States Government course. We also suggest renaming all remedial classes, both standalone and those embedded within regular classes, with a suffix such as (Adapted) or (Topics) to indicate the curriculum modifications in the class. By shifting vertical levels to parenthetical suffixes over hierarchical prefixes such as

Honors or College Prep, the school would prioritize the course itself and deemphasize the level designation.

Second, for all courses with vertical level differences, we recommend beginning the registration process by asking for the family and student choice or preference. In cases where staff recommendation is needed, it should come after the school has information about the student and family preference.

Third, we advocate for a more streamlined override process with fewer requirements for families to opt for other course levels when placement decisions are made by the staff. While the school has taken steps toward this goal in recent years, we note that each department still maintains its own policies related to overrides, and the process might be cumbersome for some families.

Last, we recommend the school develop and implement a student advisory program to build inter-community student relationships. The membership for each group should be carefully selected to ensure all student communities are represented, and the activities of the advisory should build cultural awareness and relationships among students. This would reduce the deleterious effects of separating students into levels, which creates isolated student communities at the school.

From observations made within the autoethnography coupled with the findings of the case study, for vocal music education we encourage teachers and adjudicators to formalize the process in which students are placed in ability groupings and levels. To this end, an equitable system should be developed where students have equal access and opportunity to display not just their current musical prowess but also their capacity for growth. We recommend that the music selected for ensemble performance within the

choral setting allows for variety in style, genre, timbre, and vocal techniques thus not limiting enrollment within ensembles to a specific type of voice. As previously recommended in core subject areas, we advocate that members from varying ability groupings and levels be given opportunities to interact both musically and scholastically.

Given the use of performance-based assessment and the subjectivity of adjudication within all fine and performing arts subjects, we assert the need for teachers to become aware of their own biases and preferences surrounding music. We are proponents of reflective teaching practices; we recommend that these teachers participate in activities where they develop awareness of their own race and culture as well as identify and explore their own biases. Teachers intentionally exposing themselves to art and performance mediums beyond their own expertise can create a more welcoming classroom environment for marginalized students and encourage retention.

Limitations

Limitations of the study's findings derive both from the study design and issues that arose during implementation. First, we describe the limitations associated with the case study, followed by those in the autoethnography.

In the case study, we acknowledge that the design did not include extracurricular activities or other subject areas beyond English, mathematics, science, and social studies. We are aware that this necessarily affects the formation of student communities and limits the validity of our community analysis. We also note that the design did not include multiple case study sites, limiting the generalizability of our findings. Thus we confined our recommendations from the study to the case study site in particular. We also reiterate the study design limitation that the primary researcher is an employee at the

school site. While this undoubtedly allowed greater access to school data and information, it allowed for bias in terms of the research questions and the recommendations provided at the conclusion of the study.

In terms of study implementation, we note that the statistical analysis also was limited by the size of some of the groups of students involved. As a result, in our design we intentionally did not disaggregate students by more than one demographic group; however, even with this choice, some student group populations were small, such as those who received free or reduced-price lunch. In response, we did not attempt to draw significant conclusions about these groups in our findings. We also note that the study implementation relied on the school's data regarding student race or ethnicity; setting aside the possibility of data errors, students who identified as multiracial may or may not have identified as part of historically marginalized groups. The complexity of this issue increasingly affects the validity of social science results, and it has emerged in our popular discourse in the debates about the Blackness of President Obama or Vice President Harris (Pena-Vasquez & Kwakwa, 2020). A final study implementation limitation was the difficulty in classifying coursework as remedial, regular, or advanced. Our choices in this regard are not without legitimate criticism; in particular, we assigned the mathematics class "Honors Calculus" to the regular level, and we assigned students one-year behind their peers to remedial-level mathematics. These two choices had the effect of reducing the population of advanced and regular-level enrollment in mathematics. However, we observe that our decision led to an increase in the population of remedial enrollment, and it likely had the effect of reducing the statistical segregation that we found in every level of mathematics.

In the autoethnography, we also acknowledge that limitations exist both in design and implementation. First, it is crucial to recognize the personal investment of both the researcher, serving as not only researcher but subject, and the audience reading this research. In both situations, using lived historic moments from the past can cause a visceral emotional response from both the researcher and the reader (Méndez, 2013). Also, it should be noted that the safety of the researchers was crucial in ensuring honest research results. As often the case in autoethnography, researchers have the potential of facing rejection and even consequences, both personal and professional, if their work is interpreted as unworthy. The research can open avenues for the researchers to face scrutiny from family, friends, and colleagues for their experiences (Chathum-Carpenter, 2010) around such topics as race and privilege as discussed in this study.

Finally, in implementation of the autoethnography it is important to address concerns around what may be viewed as a lack of scholarship or academic voice in the presentation of the research. As stated by Dauphinee (2010), we affirm that a limitation of the academic voice is that it encourages a silencing of true self-identity of the researcher. Juxtaposed to this limitation, is the acknowledged limitation that concern arises as the authenticity and accuracy of the author's accounts of the narrative. However, it should be worth noting that however adapted, crafted, or expounded the narrative account, it still represents the truth of the researcher presenting it and, for that reason alone, offers more scholarly insight (Méndez, 2013).

We assert that this dual methodology research study, by coupling both elements of an evaluative case study with autoethnography, effectively reduced the effects of limitations by using the creative voice of the autoethnographic researcher to bolster the

scholarly voice of the case study researcher. Likewise, the scholarly voice and finding of the case study's presentation only strengthen the qualitative research of the narrator in the autoethnography. Limitations of the autoethnography were counterbalanced not only by dual methodology but also by dual authorship giving the autoethnograph's researcher parallel perspective and validity to his narratives (Holt, 2003).

Future research

Our research leads to several future research directions. In terms of the case study and analysis of the Sorensen (1970) model, we consider the possibility of conducting similar analyses at other sites, especially larger or small schools, at schools part of larger school districts, and schools with different socioeconomic backgrounds. All of these variables might affect student community formation, tracking and placement decisions, and distribution of students within the tracking system. In addition, we are interested in the effect on student communities of including enrollment in non-core subject areas and participation in extracurriculars. We also would be interested to know whether the segregation we observed in core subjects continues in other areas of the school similar to vocal music with fewer formal tracking and placement rules, but perhaps greater informal rules or norms about participation and enrollment. Last, our research into mapping student relationships introduces network analysis to the field of education research, which we hope may prove fruitful for future research in many ways we have yet to conceive.

In terms of the autoethnography, we consider the ramifications of how the practices of ability groupings and leveling are impacted by systems of oppression and the bias of teachers in subjects outside of the core coursework as studied within the case study. In the fine and performing arts and vocational fields of study, when task evaluation

and the aesthetic worth of student outcomes greatly determine both placement and advancement in courses, we are interested to see more inquiries that specifically calculate teacher and adjudicator impact. Though our autoethnography specifically used the framework of Critical Race Theory as its lens, perhaps analogous social justice frameworks can be applied to demonstrate bias toward other marginalized communities.

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Tables

Table 1

Demographic profile of each grade and the school

Grade level (N)		9th (214)	10th (223)	11th (240)	12th (226)	Total (903)
Race	Asian	11% (24)	12% (27)	12% (29)	10% (22)	11% (102)
	Black	16% (35)	12% (27)	15% (36)	19% (43)	16% (141)
	Multi./Other	12% (26)	8% (18)	10% (25)	9% (20)	10% (89)
	White	60% (129)	68% (151)	63% (150)	62% (141)	63% (571)
Gender	Female	51% (110)	52% (117)	49% (118)	48% (109)	50% (454)
	Male	49% (104)	48% (106)	51% (122)	52% (117)	50% (449)
Lunch status	FRP	7% (16)	10% (23)	5% (13)	7% (16)	8% (68)
	Full pay	93% (198)	90% (200)	95% (227)	93% (210)	92% (835)
Disab. status	Yes	21% (46)	18% (41)	22% (52)	19% (44)	20% (183)
	No	79% (168)	82% (182)	78% (188)	81% (182)	80% (720)
Resid. status	Resid.	82% (175)	87% (193)	85% (204)	80% (180)	83% (752)
	Transf.	10% (22)	9% (19)	10% (24)	11% (25)	10% (90)
	Employ.	8% (17)	5% (11)	5% (12)	9% (21)	7% (61)

Note: Multi./Other includes multiracial students, Hispanic students of any race, and Native American students. White includes only non-Hispanic White students. Resid. includes students who reside in the district, students who pay tuition to attend, and students who have family who own property in the district. Transf. includes students who participate in one of two inter-district student transfer programs. Employ. includes students whose parents are district employees.

Table 2

Selection instruments used in core subject areas

	Grade level	Other subject area level	Previous level	Previous grades	Staff recom.	Test scores
English	9th			Y	Y	Y
	10th				Y	
	11th				Y	
	12th				Y	
Mathematics	9th		Y	Y	Y	Y
	10th		Y	Y	Y	Y
	11th		Y	Y	Y	Y
	12th		Y	Y	Y	Y
Science	9th	Y (Math)	Y	Y	Y	Y
	10th		Y		Y	
	11th		Y		Y	
	12th				Y	
Social Studies	9th	Y (English)		Y	Y	Y
	10th				Y	
	11th					
	12th					

Table 3

Mobility among levels in grades in English

		Destination level											
		10th				11th				12th			
Origin level		Not	Rem.	Reg.	Adv.	Not	Rem.	Reg.	Adv.	Not	Rem.	Reg.	Adv.
9th	Not (0)	0	0	0	0	0	0	0	0	0	0	0	0
	Rem. (4)	0	75% (3)	25% (1)	0	0	75% (3)	25% (1)	0	0	75% (3)	25% (1)	0
	Reg. (148)	0	0	91% (135)	9% (13)	<1% (1)	0	86% (127)	14% (20)	2% (3)	0	76% (113)	22% (32)
	Adv. (47)	0	0	2% (1)	98% (46)	0	0	9% (4)	91% (43)	0	0	4% (2)	96% (45)
10th	Not (0)	—	—	—	—	0	0	0	0	0	0	0	0
	Rem. (3)	—	—	—	—	0	100% (3)	0	0	0	100% (3)	0	0
	Reg. (137)	—	—	—	—	<1% (1)	0	91% (125)	8% (11)	2% (3)	0	82% (112)	16% (22)
	Adv. (59)	—	—	—	—	0	0	12% (7)	88% (52)	0	0	7% (4)	93% (55)
11th	Not (1)	—	—	—	—	—	—	—	—	100% (1)	0	0	0
	Rem. (3)	—	—	—	—	—	—	—	—	0	100% (3)	0	0
	Reg. (132)	—	—	—	—	—	—	—	—	2% (2)	0	86% (114)	12% (16)
	Adv. (63)	—	—	—	—	—	—	—	—	0	0	3% (2)	97% (61)

Note: Students who enrolled in two or more courses simultaneously were counted once only in the highest level of coursework for which they enrolled.

Table 4

Proportion of mobility by type in English

Mobility type	Level origin	9th to 10th	10th to 11th	11th to 12th
Up	Remedial to Regular	25% (1 of 4)	0% (0 of 3)	0% (0 of 3)
	Regular to Advanced	9% (13 of 148)	8% (11 of 137)	12% (16 of 132)
	Total	9% (14 of 148)	8% (11 of 140)	12% (16 of 135)
Same	Not enrolled	0 (0 of 0)	0 (0 of 0)	100% (1 of 1)
	Remedial	75% (3 of 4)	100% (3 of 3)	100% (3 of 3)
	Regular	91% (135 of 148)	91% (125 of 137)	86% (114 of 132)
	Advanced	98% (46 of 47)	88% (52 of 59)	97% (61 of 63)
	Total	92% (184 of 199)	90% (180 of 199)	90% (179 of 199)
Down	Advanced to Regular	2% (1 of 47)	12% (7 of 59)	3% (2 of 63)
	Regular to Remedial	0% (0 of 148)	0% (0 of 137)	0% (0 of 132)
	Total	<1% (1 of 195)	4% (7 of 196)	1% (2 of 195)
Out	Advanced to Not enrolled	0% (0 of 47)	0% (0 of 59)	0% (0 of 63)
	Regular to Not enrolled	0% (0 of 148)	<1% (1 of 137)	2% (2 of 132)
	Remedial to Not enrolled	0% (0 of 0)	0% (0 of 0)	0% (0 of 0)
	Total	0% (0 of 199)	<1% (1 of 199)	1% (2 of 198)

Table 5

Mobility among levels in grades in mathematics

		Destination level											
		10th				11th				12th			
Origin level		Not	Rem.	Reg.	Adv.	Not	Rem.	Reg.	Adv.	Not	Rem.	Reg.	Adv.
9th	Not (0)	0	0	0	0	0	0	0	0	0	0	0	0
	Rem. (42)	0	100% (42)	0	0	2% (1)	98% (41)	0	0	17% (7)	79% (33)	5% (2)	0
	Reg. (74)	0	4% (3)	95% (70)	1% (1)	1% (1)	14% (10)	84% (62)	1% (1)	3% (2)	3% (2)	91% (67)	4% (3)
	Adv. (83)	0	0	11% (9)	89% (74)	1% (1)	0	25% (21)	74% (61)	4% (3)	0	20% (17)	76% (63)
10th	Not (0)	—	—	—	—	0	0	0	0	0	0	0	0
	Rem. (45)	—	—	—	—	2% (1)	98% (44)	0	0	17% (7)	73% (33)	11% (5)	0
	Reg. (79)	—	—	—	—	1% (1)	9% (7)	90% (71)	0	3% (2)	3% (2)	90% (71)	5% (4)
	Adv. (75)	—	—	—	—	1% (1)	0	16% (12)	83% (62)	4% (3)	0	13% (10)	83% (62)
11th	Not (3)	—	—	—	—	—	—	—	—	33% (1)	33% (1)	0	33% (1)
	Rem. (51)	—	—	—	—	—	—	—	—	14% (7)	67% (34)	20% (10)	0
	Reg. (83)	—	—	—	—	—	—	—	—	4% (3)	0	88% (73)	8% (7)
	Adv. (62)	—	—	—	—	—	—	—	—	2% (1)	0	5% (3)	94% (58)

Note: Students who enrolled in two or more courses simultaneously were counted once only in the highest level of coursework for which they enrolled. Only students who were continuously enrolled from 9th to 12th grade were included in this analysis. Totals may not sum to 100% due to rounding.

Table 6

Proportion of mobility by type in mathematics

Mobility type	Level change	9th to 10th	10th to 11th	11th to 12th
Up	Remedial to Regular	0% (0 of 42)	0% (0 of 45)	20% (10 of 51)
	Regular to Advanced	1% (1 of 74)	0% (0 of 79)	8% (7 of 83)
	Total	<1% (1 of 116)	0% (0 of 124)	13% (17 of 134)
Same	Not enrolled	0% (0 of 0)	0% (0 of 0)	33% (1 of 3)
	Remedial	100% (42 of 42)	98% (44 of 45)	67% (34 of 51)
	Regular	95% (70 of 74)	90% (71 of 79)	88% (73 of 83)
	Advanced	89% (74 of 83)	83% (62 of 75)	94% (58 of 62)
	Total	94% (186 of 199)	89% (177 of 199)	83% (166 of 199)
Down	Advanced to Regular	11% (9 of 83)	16% (12 of 75)	5% (3 of 62)
	Regular to Remedial	4% (3 of 74)	9% (7 of 79)	0% (0 of 83)
	Total	8% (12 of 157)	12% (19 of 154)	2% (3 of 145)
Out	Advanced to Not enrolled	0% (0 of 83)	1% (1 of 75)	2% (1 of 62)
	Regular to Not enrolled	0% (0 of 74)	1% (1 of 79)	4% (3 of 83)
	Remedial to Not enrolled	0% (0 of 42)	2% (1 of 45)	14% (7 of 51)
	Total	0% (0 of 199)	2% (3 of 199)	6% (11 of 196)

Table 7

Mobility among levels in grades in science

		Destination level										
		10th				11th				12th		
Origin level		Not	Rem.	Reg.	Adv.	Not	Rem.	Reg.	Adv.	Not	Reg.	Adv.
9th	Not (1)	0	100% (1)	0	0	0	100% (1)	0	0	100% (1)	0	0
	Rem. (11)	9% (1)	73% (8)	18% (2)	0	9% (1)	45% (5)	45% (5)	0	27% (3)	73% (8)	0
	Reg. (128)	0	0	79% (101)	21% (27)	0	0	51% (65)	49% (63)	6% (7)	49% (63)	45% (58)
	Adv. (59)	0	0	3% (2)	97% (57)	0	0	0	100% (59)	3% (2)	14% (8)	83% (49)
10th	Not (1)	—	—	—	—	100% (1)	0	0	0	100% (1)	0	0
	Rem. (9)	—	—	—	—	0	67% (6)	33% (3)	0	22% (2)	78% (7)	0
	Reg. (105)	—	—	—	—	0	0	62% (65)	38% (40)	7% (7)	61% (64)	33% (34)
	Adv. (84)	—	—	—	—	0	0	2% (2)	98% (82)	2% (2)	11% (9)	87% (73)
11th	Not (1)	—	—	—	—	—	—	—	—	100% (1)	0	0
	Rem. (6)	—	—	—	—	—	—	—	—	50% (3)	50% (3)	0
	Reg. (70)	—	—	—	—	—	—	—	—	9% (6)	73% (51)	19% (13)
	Adv. (122)	—	—	—	—	—	—	—	—	2% (3)	21% (25)	77% (94)

Note: Students who enrolled in two or more courses simultaneously were counted once only in the highest level of coursework for which they enrolled. Only students who were continuously enrolled from 9th to 12th grade were included in this analysis.

Table 8

Proportion of mobility by type in science

Mobility type	Level change	9th to 10th	10th to 11th	11th to 12th
Up	Remedial to Regular	18% (2 of 11)	33% (3 of 9)	50% (3 of 6)
	Regular to Advanced	21% (27 of 128)	38% (40 of 105)	19% (13 of 70)
	Total	21% (29 of 139)	38% (43 of 114)	21% (16 of 76)
Same	Not enrolled	0% (0 of 1)	100% (1 of 1)	100% (1 of 1)
	Remedial	73% (8 of 11)	67% (6 of 9)	n/a
	Regular	79% (101 of 128)	62% (65 of 105)	73% (51 of 70)
	Advanced	97% (57 of 59)	98% (82 of 84)	77% (94 of 122)
	Total	83% (166 of 199)	77% (154 of 199)	73% (146 of 199)
Down	Advanced to Regular	3% (2 of 59)	2% (2 of 84)	21% (25 of 122)
	Regular to Remedial	0% (0 of 128)	0% (0 of 105)	n/a
	Total	1% (2 of 187)	1% (2 of 189)	21% (25 of 122)
Out	Advanced to Not enrolled	0% (0 of 59)	0% (0 of 84)	3% (3 of 122)
	Regular to Not enrolled	0% (0 of 128)	0% (0 of 105)	9% (6 of 70)
	Remedial to Not enrolled	9% (1 of 11)	0% (0 of 9)	50% (3 of 6)
	Total	<1% (1 of 198)	0% (0 of 198)	6% (12 of 198)

Table 9

Mobility among levels in grades in social studies

		Destination level									
		10th			11th				12th		
Origin level		Not	Rem.	Reg.	Not	Rem.	Reg.	Adv.	Not	Reg.	Adv.
9th	Not (1)	0	0	100% (1)	0	0	100% (1)	0	0	100% (1)	0
	Rem. (1)	0	100% (1)	0	0	100% (1)	0	0	0	100% (1)	0
	Reg. (197)	<1% (1)	<1% (1)	99% (195)	3% (5)	0	28% (56)	69% (136)	9% (18)	37% (73)	54% (106)
10th	Not (1)	—	—	—	0	0	100% (1)	0	0	100% (1)	0
	Rem. (2)	—	—	—	0	50% (1)	50% (1)	0	0	100% (2)	0
	Reg. (196)	—	—	—	3% (5)	0	28% (54)	70% (137)	9% (18)	37% (72)	54% (106)
11th	Not (5)	—	—	—	—	—	—	—	0	80% (4)	20% (1)
	Rem. (1)	—	—	—	—	—	—	—	0	100% (1)	0
	Reg. (56)	—	—	—	—	—	—	—	21% (12)	61% (34)	18% (10)
	Adv. (137)	—	—	—	—	—	—	—	4% (6)	26% (36)	69% (95)

Note: Students who enrolled in two or more courses simultaneously were counted once only in the highest level of coursework for which they enrolled. Only students who were continuously enrolled from 9th to 12th grade were included in this analysis.

Table 10

Proportion of mobility by type in social studies

Mobility type	Level change	9th to 10th	10th to 11th	11th to 12th
Up	Remedial to Regular	0% (0 of 1)	50% (1 of 2)	100% (1 of 1)
	Regular to Advanced	n/a	70% (137 of 196)	18% (10 of 56)
	Total	0% (0 of 1)	70% (138 of 198)	19% (11 of 57)
Same	Not enrolled	0% (0 of 1)	0% (0 of 1)	0% (0 of 1)
	Remedial	100% (1 of 1)	50% (1 of 2)	n/a
	Regular	99% (195 of 197)	28% (54 of 196)	61% (34 of 56)
	Advanced	n/a	n/a	69% (95 of 137)
	Total	99% (196 of 199)	28% (55 of 199)	65% (129 of 199)
Down	Advanced to Regular	n/a	n/a	26% (36 of 137)
	Regular to Remedial	0% (0 of 197)	0% (0 of 196)	n/a
	Total	0% (0 of 197)	0% (0 of 196)	26% (36 of 137)
Out	Advanced to Not enrolled	n/a	n/a	4% (6 of 137)
	Regular to Not enrolled	0% (0 of 197)	3% (5 of 196)	21% (12 of 56)
	Remedial to Not enrolled	100% (1 of 1)	0% (0 of 2)	0% (0 of 1)
	Total	<1% (1 of 198)	3% (5 of 198)	9% (18 of 194)

Table 11

Inclusiveness of vertical levels in all subject areas

Grade level	Vertical level	English Percent (n)	Mathematics Percent (n)	Science Percent (n)	Social Studies Percent (n)
9th (N=214)	Not enrolled	<1% (1)	<1% (1)	2% (5)	1% (3)
	Remedial	1% (2)	27% (58)	7% (14)	4% (8)
	Regular	69% (147)	40% (86)	66% (141)	95% (204)
	Advanced	30% (64)	32% (69)	25% (54)	0% (0)
10th (N=223)	Not enrolled	1% (3)	1% (3)	2% (5)	2% (4)
	Remedial	1% (2)	28% (63)	4% (8)	0% (0)
	Regular	55% (122)	32% (72)	49% (109)	94% (209)
	Advanced	44% (99)	38% (85)	45% (101)	0% (0)
11th (N=240)	Not enrolled	5% (11)	5% (12)	5% (11)	3% (8)
	Remedial	<1% (1)	27% (64)	1% (2)	1% (2)
	Regular	61% (146)	40% (96)	38% (91)	55% (132)
	Advanced	34% (82)	30% (71)	58% (139)	67% (161)
12th (N=226)	Not enrolled	4% (8)	8% (18)	9% (20)	11% (24)
	Remedial	1% (3)	20% (46)	0% (0)	0% (0)
	Regular	59% (133)	32% (72)	43% (98)	63% (142)
	Advanced	36% (82)	40% (90)	50% (113)	50% (114)

Table 12

Demographic profile of vertical levels in English

Grade level		9th		10th		11th		12th	
Vertical level		Reg.	Adv.	Reg.	Adv.	Reg.	Adv.	Reg.	Adv.
Race	Asian	9% (14)	16% (10)	5% (6)	21% (21)	5% (7)	27% (22)	9% (12)	12% (10)
	Black	20% (30)	6% (4)	19% (23)	4% (4)	20% (30)	5% (4)	26% (35)	7% (6)
	Multi./ Other	13% (19)	11% (7)	10% (12)	7% (7)	10% (15)	11% (9)	7% (10)	10% (8)
	White	58% (86)	67% (43)	67% (83)	68% (67)	65% (95)	57% (47)	58% (79)	71% (58)
Gender	Female	44% (65)	70% (45)	39% (48)	71% (70)	41% (61)	65% (53)	39% (53)	61% (50)
	Male	56% (84)	30% (19)	61% (76)	29% (29)	59% (86)	35% (29)	61% (83)	39% (32)
Lunch status	FRP	10% (15)	0% (0)	13% (16)	6% (6)	8% (12)	0% (0)	10% (13)	2% (2)
	Full pay	90% (134)	100% (64)	87% (108)	94% (93)	92% (135)	100% (82)	90% (123)	98% (80)
Disab. status	Yes	27% (40)	8% (5)	26% (32)	7% (7)	27% (40)	5% (4)	26% (35)	5% (4)
	No	73% (109)	92% (59)	74% (92)	93% (92)	73% (107)	95% (78)	74% (101)	95% (78)
Resid. status	Resid.	78% (116)	92% (59)	82% (102)	92% (91)	81% (119)	94% (77)	74% (101)	88% (72)
	Transf.	13% (20)	2% (1)	14% (17)	2% (2)	13% (19)	4% (3)	15% (21)	4% (3)
	Employ.	9% (13)	6% (4)	4% (5)	6% (6)	6% (9)	2% (2)	10% (14)	9% (7)

Note: Regular level includes students enrolled in remedial English; Multi./Other includes multiracial students, non-White Hispanic students, and Native American students; Resid. includes students who reside in the district, who pay tuition to attend, and who have family who own property in the district; Transf. includes students who participate in desegregation transfer programs; Employ. includes students whose parents are employed by the district.

Table 13

Distribution of demographic groups in English

Grade level		9th		10th		11th		12th	
Vertical level		Reg.	Adv.	Reg.	Adv.	Reg.	Adv.	Reg.	Adv.
Race	Asian	58% (14)	42% (10)	22% (6)	78% (21)	24% (7)	76% (22)	55% (12)	45% (10)
	Black	86% (30)	11% (4)	85% (23)	15% (4)	83% (30)	11% (4)	81% (35)	14% (6)
	Multi./ Other	73% (19)	27% (7)	67% (12)	39% (7)	60% (15)	36% (9)	50% (10)	40% (8)
	White	67% (86)	33% (43)	55% (83)	44% (67)	63% (95)	31% (47)	56% (79)	41% (58)
Gender	Female	59% (65)	41% (45)	41% (48)	60% (70)	52% (61)	45% (53)	49% (53)	46% (50)
	Male	81% (84)	18% (19)	72% (76)	27% (29)	70% (86)	24% (29)	71% (83)	27% (32)
Lunch status	FRP	94% (15)	0% (0)	70% (16)	26% (6)	92% (12)	0% (0)	81% (13)	13% (2)
	Full pay	68% (134)	32% (64)	54% (108)	47% (93)	59% (135)	36% (82)	59% (123)	38% (80)
Disab. status	Yes	87% (40)	11% (5)	78% (32)	17% (7)	77% (40)	8% (4)	80% (35)	9% (4)
	No	65% (109)	35% (59)	51% (92)	51% (92)	57% (107)	41% (78)	55% (101)	43% (78)
Resid. status	Resid.	66% (116)	34% (59)	53% (102)	47% (91)	58% (119)	38% (77)	56% (101)	40% (72)
	Transf.	91% (20)	5% (1)	89% (17)	11% (2)	79% (19)	13% (3)	84% (21)	12% (3)
	Employ.	76% (13)	24% (4)	45% (5)	55% (6)	75% (9)	17% (2)	67% (14)	33% (7)

Note: Percentage refers to the number of students from the group enrolled in that level divided by the number of students from the group in the grade; regular includes students in remedial and regular English.

Table 14

Chi-square test results for demographic disparities in English

Grade level		9th		10th		11th		12th	
Vertical level		Reg.	Adv.	Reg.	Adv.	Reg.	Adv.	Reg.	Adv.
n		149	64	124	99	147	82	136	82
Race DF 3	X2	0.93	3.64	10.07	12.22	9.50	20.73	4.08	7.41
	P	.58	.13	.02 *	<.01 **	.02 *	<.01 ***	.25	.06
Gender DF 1	X2	1.81	4.80	9.41	13.21	3.46	7.85	4.67	5.33
	P	.06	<.01 **	<.01 **	<.01 ***	.06	<.01 **	.03 *	.02 *
Lunch status DF 1	X2	0.62	F	0.90	1.94	2.16	F	1.27	2.68
	P	.23	.12	.34	.16	.14	.12	.26	.10
Disab. status DF 1	X2	1.17	4.79	4.55	8.45	2.66	13.62	3.41	11.13
	P	.11	<.01 **	.03 *	<.01 **	.10	<.01 ***	.06	<.01 ***
Resid. status DF 2	X2	0.82	4.64	4.39	F	1.91	F	3.00	4.80
	P	.40	.05	.11	.17	.38	.20	.22	.09

Note: Regular level includes students enrolled in remedial English; F is used to denote that a Fisher test was used in place of the chi-square test due to low expected values or zero observed students in the group.
* indicates .05 to .01 probability
** indicates .01 to .001
*** indicates less than .001

Table 15

Post-hoc test results for demographic disparities in English

Grade level			10th		11th	
Vertical level			Regular	Advanced	Regular	Advanced
n			124	99	147	82
Race	Asian	Std. Res.	-1.39	1.11	-1.62	1.44
		P	.16	.27	.10	.15
	Black	Std. Res.	0.92	-1.41	0.80	-1.44
		P	.36	.16	.42	.15
	Multi./ Other	Std. Res.	0.21	-0.26	-0.05	0.07
		P	.83	.80	.96	.95
	White	Std. Res.	-0.02	0.02	0.20	-0.28
		P	.98	.98	.84	.78

Note: Regular level includes students enrolled in remedial English; Multi./Other includes multiracial students, non-White Hispanic students, and Native American students.

Table 16

Demographic profile of vertical levels in mathematics

Grade level		9th			10th			11th			12th		
Vertical level		Rem.	Reg.	Adv.	Rem.	Reg.	Adv.	Rem.	Reg.	Adv.	Rem.	Reg.	Adv.
Race	Asian	3% (2)	10% (9)	19% (13)	3% (2)	11% (8)	20% (17)	2% (1)	7% (7)	32% (23)	2% (1)	3% (2)	19% (17)
	Black	41% (24)	9% (8)	3% (2)	30% (19)	10% (7)	1% (1)	30% (19)	13% (12)	4% (3)	50% (23)	18% (13)	3% (3)
	Multi./ Other	16% (9)	10% (9)	12% (8)	10% (6)	6% (4)	9% (8)	19% (12)	6% (6)	6% (4)	9% (4)	8% (6)	8% (7)
	White	40% (23)	70% (60)	67% (46)	57% (36)	74% (53)	69% (59)	50% (32)	74% (71)	58% (41)	39% (18)	71% (51)	70% (63)
Gender	Female	55% (32)	48% (41)	54% (37)	48% (30)	58% (42)	52% (44)	45% (29)	49% (47)	56% (40)	54% (25)	56% (40)	42% (38)
	Male	45% (26)	52% (45)	46% (32)	52% (33)	42% (30)	48% (41)	55% (35)	51% (49)	44% (31)	46% (21)	44% (32)	58% (52)
Lunch status	FRP	21% (12)	2% (2)	1% (1)	24% (15)	7% (5)	2% (2)	9% (6)	6% (6)	0% (0)	15% (7)	6% (4)	4% (4)
	Full pay	79% (46)	98% (84)	99% (68)	76% (48)	93% (67)	98% (83)	91% (58)	94% (90)	100% (71)	85% (39)	94% (68)	96% (86)
Disab. status	Yes	48% (28)	17% (15)	3% (2)	37% (23)	14% (10)	7% (6)	36% (23)	20% (19)	4% (3)	30% (14)	18% (13)	8% (7)
	No	52% (30)	83% (71)	97% (67)	63% (40)	86% (62)	93% (79)	64% (41)	80% (77)	96% (68)	70% (32)	82% (59)	92% (83)
Resid. status	Resid.	66% (38)	85% (73)	93% (64)	75% (47)	89% (64)	93% (79)	78% (50)	83% (80)	94% (67)	63% (29)	76% (55)	91% (82)
	Transf.	29% (17)	3% (3)	1% (1)	21% (13)	7% (5)	1% (1)	17% (11)	10% (10)	3% (2)	28% (13)	10% (7)	2% (2)
	Employ.	5% (3)	12% (10)	6% (4)	5% (3)	4% (3)	6% (5)	5% (3)	6% (6)	3% (2)	9% (4)	14% (10)	7% (6)

Table 17

Distribution of demographic groups in mathematics

Grade level		9th			10th			11th			12th		
Vertical level		Rem.	Reg.	Adv.	Rem.	Reg.	Adv.	Rem.	Reg.	Adv.	Rem.	Reg.	Adv.
Race	Asian	8% (2)	38% (9)	54% (13)	7% (2)	30% (8)	63% (17)	3% (1)	24% (7)	79% (23)	5% (1)	9% (2)	77% (17)
	Black	69% (24)	23% (8)	6% (2)	70% (19)	26% (7)	4% (1)	53% (19)	33% (12)	8% (3)	53% (23)	30% (13)	7% (3)
	Multi.	35% (9)	35% (9)	31% (8)	33% (6)	22% (4)	44% (8)	48% (12)	24% (6)	16% (4)	20% (4)	30% (6)	35% (7)
	White	18% (23)	47% (60)	36% (46)	24% (36)	35% (53)	39% (59)	21% (32)	47% (71)	27% (41)	13% (18)	36% (51)	45% (63)
Gender	Female	29% (32)	37% (41)	34% (37)	26% (30)	36% (42)	38% (44)	25% (29)	40% (47)	34% (40)	23% (25)	37% (40)	35% (38)
	Male	25% (26)	43% (45)	31% (32)	31% (33)	28% (30)	39% (41)	29% (35)	40% (49)	25% (31)	18% (21)	27% (32)	44% (52)
Lunch status	FRP	75% (12)	13% (2)	6% (1)	65% (15)	22% (5)	9% (2)	46% (6)	46% (6)	0% (0)	44% (7)	25% (4)	25% (4)
	Full pay	23% (46)	42% (84)	34% (68)	24% (48)	34% (67)	42% (83)	26% (58)	40% (90)	31% (71)	19% (39)	32% (68)	41% (86)
Disab. status	Yes	61% (28)	33% (15)	4% (2)	56% (23)	24% (10)	15% (6)	44% (23)	37% (19)	6% (3)	32% (14)	30% (13)	16% (7)
	No	18% (30)	42% (71)	40% (67)	22% (40)	34% (62)	43% (79)	22% (41)	41% (77)	36% (68)	18% (32)	32% (59)	46% (83)
Resid. status	Resid.	22% (38)	42% (73)	37% (64)	24% (47)	33% (64)	41% (79)	25% (50)	39% (80)	33% (67)	16% (29)	31% (55)	46% (82)
	Transf.	77% (17)	14% (3)	5% (1)	68% (13)	26% (5)	5% (1)	46% (11)	42% (10)	8% (2)	52% (13)	28% (7)	8% (2)
	Employ.	18% (3)	59% (10)	24% (4)	27% (3)	27% (3)	45% (5)	25% (3)	50% (6)	17% (2)	19% (4)	48% (10)	29% (6)

Note: Percentage refers to the number of students from the group who are enrolled in that level divided by the number of students from the group in the grade.

Table 18

Chi-square test results for demographic disparities in mathematics

Grade level		9th			10th			11th			12th		
Vert. level		Rem.	Reg.	Adv.	Rem.	Reg.	Adv.	Rem.	Reg.	Adv.	Rem.	Reg.	Adv.
n		58	86	69	63	72	85	64	96	71	46	72	90
Race DF 3	X2	39.96	4.14	11.70	22.31	1.33	12.99	20.93	5.84	31.55	29.89	4.46	20.35
	P	<.01 ***	.25	<.01 **	<.01 ***	.72	<.01 **	<.01 ***	.12	<.01 ***	<.01 ***	.22	<.01 ***
Gender DF 1	X2	0.33	0.48	0.14	0.59	0.99	0.02	0.38	0.00	1.46	0.69	1.55	1.30
	P	.57	.49	.71	.44	.32	.90	.54	.97	.23	.41	.21	.25
Lunch status DF 1	X2	F	3.30	3.62	12.40	0.88	5.82	F	0.13	F	F	0.25	0.95
	P	.06	.07	.06	<.01 ***	.35	.02 *	.49	.72	.24	.32	.61	.33
Disab. status DF 1	X2	24.65	0.84	14.14	13.79	0.97	7.27	7.68	0.20	12.73	0.53	0.09	7.85
	P	<.01 ***	.36	<.01 ***	<.01 ***	.32	<.01 **	<.01 **	.66	<.01 ***	.06	.76	<.01 **
Resid. status DF 2	X2	F	5.43	6.65	F	F	F	F	F	F	F	1.85	8.51
	P	.03 *	.07	.04 *	.02 *	.74	.31	.06	.27	.14	.13	.40	.01 *

Note: F is used to denote that a Fisher test was used in place of the chi-square test due to low expected values or zero observed students in the group.
* indicates .05 to .01 probability
** indicates .01 to .001
*** indicates less than .001

Table 19

Post-hoc test results for demographic disparities in mathematics

Grade level			9th		10th		11th		12th	
Vertical level			Rem.	Adv.	Rem.	Adv.	Rem.	Adv.	Rem.	Adv.
n			58	69	63	85	64	71	46	90
Race	Asian	Std. Res.	-1.09	0.82	-1.28	0.91	-1.61	1.81	-1.05	1.15
		P	.27	.41	.20	.36	.11	.07	.29	.25
	Black	Std. Res.	1.77	-1.80	1.56	-1.96	1.24	-1.46	1.79	-2.23
		P	.08	.07	.12	.05	.21	.14	.07	.03
	Multi./ Other	Std. Res.	0.34	-0.07	0.19	0.21	0.87	-0.71	-0.02	-0.18
		P	.73	.95	.85	.83	.38	.48	.99	.86
	White	Std. Res.	-1.11	0.33	-0.53	0.09	-0.67	-0.26	-1.11	0.44
		P	.27	.74	.60	.92	.50	.80	.27	.66
Resid. status	Resid.	Std. Res.	-0.72	0.49	-0.53	-	-	-	-	0.59
		P	.47	.63	.60	-	-	-	-	.56
	Transf.	Std. Res.	1.63	-1.51	-0.58	-	-	-	-	-1.63
		P	.10	.13	.56	-	-	-	-	.10
	Employ.	Std. Res.	-0.41	-0.34	1.74	-	-	-	-	-0.44
		P	.68	.73	.08	-	-	-	-	.66

Table 20

Demographic profile of vertical levels in science

Grade level		9th		10th		11th		12th	
Vertical level		Reg.	Adv.	Reg.	Adv.	Reg.	Adv.	Reg.	Adv.
Race	Asian	8% (13)	20% (11)	3% (4)	23% (23)	2% (2)	19% (26)	2% (2)	17% (19)
	Black	21% (32)	4% (2)	21% (24)	2% (2)	23% (21)	9% (12)	33% (32)	5% (6)
	Multi./ Other	12% (19)	13% (7)	7% (8)	10% (10)	16% (15)	8% (11)	11% (11)	6% (7)
	White	59% (91)	63% (34)	69% (81)	65% (66)	59% (55)	65% (90)	54% (53)	72% (81)
Gender	Female	54% (84)	46% (25)	47% (55)	59% (60)	48% (45)	53% (73)	63% (55)	43% (49)
	Male	46% (71)	54% (29)	53% (62)	41% (41)	52% (48)	47% (66)	37% (33)	57% (64)
Lunch status	FRP	9% (14)	2% (1)	14% (16)	5% (5)	8% (7)	4% (5)	9% (9)	4% (4)
	Full pay	91% (141)	98% (53)	86% (101)	95% (96)	92% (86)	96% (134)	91% (89)	96% (109)
Disab. status	Yes	25% (39)	4% (2)	28% (33)	5% (5)	37% (34)	8% (11)	29% (28)	6% (7)
	No	75% (116)	96% (52)	72% (84)	95% (96)	63% (59)	92% (128)	71% (70)	94% (106)
Resid. status	Resid.	77% (119)	96% (52)	81% (95)	93% (94)	76% (71)	91% (127)	69% (68)	88% (100)
	Transf.	13% (20)	2% (1)	14% (16)	2% (2)	15% (14)	6% (8)	19% (19)	4% (4)
	Employ.	10% (16)	2% (1)	5% (6)	5% (5)	9% (8)	3% (4)	11% (11)	8% (9)

Note: Regular level includes students enrolled in remedial science due to small group size.

Table 21

Distribution of demographic groups in science

Grade level		9th		10th		11th		12th	
Vertical level		Reg.	Adv.	Reg.	Adv.	Reg.	Adv.	Reg.	Adv.
Race	Asian	54% (13)	46% (11)	15% (4)	85% (23)	7% (2)	90% (26)	9% (2)	86% (19)
	Black	91% (32)	6% (2)	89% (24)	7% (2)	58% (21)	33% (12)	74% (32)	14% (6)
	Multi./ Other	73% (19)	27% (7)	44% (8)	56% (10)	60% (15)	44% (11)	55% (11)	35% (7)
	White	71% (91)	26% (34)	54% (81)	44% (66)	37% (55)	60% (90)	38% (53)	57% (81)
Gender	Female	76% (84)	23% (25)	47% (55)	44% (51)	38% (45)	62% (73)	50% (55)	45% (49)
	Male	68% (71)	28% (29)	58% (62)	55% (58)	39% (48)	54% (66)	28% (33)	55% (64)
Lunch status	FRP	88% (14)	6% (1)	70% (16)	22% (5)	54% (7)	38% (5)	56% (9)	25% (4)
	Full pay	71% (141)	27% (53)	51% (101)	48% (96)	38% (86)	59% (134)	42% (89)	52% (109)
Disab. status	Yes	85% (39)	4% (2)	80% (33)	12% (5)	65% (34)	21% (11)	64% (28)	16% (7)
	No	69% (116)	31% (52)	46% (84)	53% (96)	31% (59)	68% (128)	38% (70)	58% (106)
Resid. status	Resid.	68% (119)	30% (52)	49% (95)	49% (94)	35% (71)	62% (127)	38% (68)	56% (100)
	Transf.	91% (20)	5% (1)	84% (16)	11% (2)	58% (14)	33% (8)	76% (19)	16% (4)
	Employ.	94% (16)	6% (1)	55% (6)	45% (5)	67% (8)	33% (4)	52% (11)	43% (9)

Note: Percentage refers to the number of students from the group who are enrolled in that level divided by the number of students from the group in the grade; Regular level includes students enrolled in remedial science due to small group size.

Table 22

Chi-square test results for demographic disparities in science

Grade level		9th		10th		11th		12th	
Vertical level		Reg.	Adv.	Reg.	Adv.	Reg.	Adv.	Reg.	Adv.
n		155	54	117	101	93	139	98	113
Race DF 3	X2	1.44	5.79	8.36	10.88	9.10	4.89	9.30	12.13
	P	.41	.02 *	<.01 **	<.01 ***	<.01 **	.02 *	<.01 ***	<.01 ***
Gender DF 1	X2	.24	0.28	0.70	0.99	0.01	0.31	3.81	0.54
	P	.49	.45	.24	.16	.88	.43	<.01 **	.30
Lunch status DF 1	X2	.25	F	0.63	2.06	0.34	0.53	0.29	1.41
	P	.46	.36	.23	.08	.37	.34	.42	.14
Disab. status DF 1	X2	.58	7.76	3.16	8.84	5.00	10.43	2.22	8.90
	P	.27	<.01 **	<.01 **	<.01 ***	<.01 ***	<.01 ***	.02 *	<.01 ***
Resid. status DF 2	X2	1.18	F	1.60	4.35	2.27	2.70	3.10	5.02
	P	.27	.05 *	.13	.06	.06	.11	.02 *	.03 *

Note: Regular level includes students enrolled in remedial science due to small group size; F is used to denote that a Fisher test was used in place of the chi-square test due to low expected values or zero observed students in the group.
* indicates .05 to .01 probability
** indicates .01 to .001
*** indicates less than .001

Table 23

Post-hoc test results for demographic disparities in science

Grade level			9th	10th		11th		12th	
Vertical level			Adv.	Reg.	Adv.	Reg.	Adv.	Reg.	Adv.
n			69	63	85	64	71	46	90
Race	Asian	Std. Res.	-0.56	-1.69	1.28	-1.80	0.99	-1.57	1.03
		P	.57	.09	.20	.07	.32	.12	.30
	Black	Std. Res.	0.62	1.13	-1.92	0.84	-1.09	1.33	-2.09
		P	.53	.26	.06	.40	.27	.18	.04
	Multi./ Other	Std. Res.	0.02	-0.24	0.31	0.76	-0.49	0.37	-0.51
		P	.98	.81	.76	.45	.63	.71	.61
	White	Std. Res.	-0.13	0.10	-0.15	-0.21	0.17	-0.54	0.60
		P	.90	.92	.88	.84	.87	.59	.55
Resid. status	Resid.	Std. Res.	-0.35	-	-	-	-	-0.59	0.51
		P	.73	-	-	-	-	.56	.61
	Transf.	Std. Res.	0.49	-	-	-	-	1.06	-1.48
		P	.62	-	-	-	-	.29	.14
	Employ.	Std. Res.	0.48	-	-	-	-	0.30	-0.24
		P	.63	-	-	-	-	.77	.81

Note: Regular level includes students enrolled in remedial science due to small group size.

Table 24

Demographic profile of vertical levels in social studies

Grade level		11th		12th	
Vertical level		Regular	Advanced	Regular	Advanced
Race	Asian	5% (7)	18% (29)	8% (11)	18% (20)
	Black	19% (25)	12% (19)	23% (33)	9% (10)
	Multi./ Other	11% (15)	7% (11)	8% (11)	8% (9)
	White	65% (86)	63% (102)	61% (87)	66% (75)
Gender	Female	53% (70)	50% (81)	54% (76)	47% (54)
	Male	47% (63)	50% (80)	46% (66)	53% (60)
Lunch status	FRP	8% (10)	4% (6)	6% (9)	5% (6)
	Full pay	92% (122)	96% (155)	94% (133)	95% (108)
Disab. status	Yes	27% (36)	11% (18)	20% (29)	7% (8)
	No	73% (97)	89% (143)	80% (113)	93% (106)
Resid. status	Resid.	80% (107)	89% (144)	76% (108)	83% (95)
	Transf.	14% (18)	6% (10)	13% (18)	7% (8)
	Employ.	6% (8)	4% (7)	11% (16)	10% (11)

Table 25

Distribution of demographic groups in social studies

Grade level		11th		12th	
Vertical level		Regular	Advanced	Regular	Advanced
Race	Asian	24% (7)	100% (29)	50% (11)	91% (20)
	Black	69% (25)	53% (19)	77% (33)	23% (10)
	Multi./ Other	60% (15)	44% (11)	55% (11)	45% (9)
	White	57% (86)	68% (102)	62% (87)	53% (75)
Gender	Female	59% (70)	69% (81)	70% (76)	50% (54)
	Male	52% (63)	66% (80)	56% (66)	51% (60)
Lunch status	FRP	77% (10)	46% (6)	56% (9)	38% (6)
	Full pay	54% (122)	68% (155)	63% (133)	51% (108)
Disab. status	Yes	69% (36)	35% (18)	66% (29)	18% (8)
	No	52% (97)	76% (143)	62% (113)	58% (106)
Resid. status	Resid.	52% (107)	71% (144)	60% (108)	53% (95)
	Transf.	75% (18)	42% (10)	72% (18)	32% (8)
	Employ.	67% (8)	58% (7)	76% (16)	52% (11)

Note: Percentage refers to the number of students from the group who are enrolled in that level divided by the number of students from the group in the grade.

Table 26

Chi-square test results for demographic disparities in social studies

Grade level		11th		12th	
Vertical level		Regular	Advanced	Regular	Advanced
n		133	161	142	114
Race DF 3	X2	4.23	3.70	1.04	7.03
	P	.09	.05	.55	<.01 **
Gender DF 1	X2	0.32	0.04	0.80	0.02
	P	.42	.77	.21	.85
Lunch status DF 1	X2	0.51	0.53	0.06	0.32
	P	.27	.34	.73	.45
Disab. status DF 1	X2	1.05	6.45	0.04	7.70
	P	.13	<.01 **	.77	<.01 ***
Resid. status DF 2	X2	1.00	1.68	0.54	1.13
	P	.32	.24	.56	.39

Note: Regular level includes students enrolled in remedial social studies; F is used to denote that a Fisher test was used in place of the chi-square test due to low expected values or zero observed students in the group.
* indicates .05 to .01 probability
** indicates .01 to .001
*** indicates less than .001

Table 27

Post-hoc test results for demographic disparities in social studies

Grade level			12th
Vertical level			Advance
n			114
Race	Asian	Std. Res.	1.13
		P	.26
	Black	Std. Res.	-1.47
		P	.14
	Multi./ Other	Std. Res.	-0.18
		P	.86
	White	Std. Res.	0.23
		P	.82

Table 28

Demographic profile of 9th grade communities

		All (N=213)	9A (N=68)	9B (N=80)	9C (N=65)
Race	Asian	11% (24)	21% (14)	10% (8)	3% (2)
	Black	16% (34)	3% (2)	10% (8)	37% (24)
	Multi./Other	12% (26)	12% (8)	10% (8)	15% (10)
	White	61% (129)	65% (44)	70% (56)	45% (29)
Gender	Female	52% (110)	53% (36)	48% (38)	55% (36)
	Male	48% (103)	47% (32)	53% (42)	45% (29)
Lunch status	FRP	7% (15)	1% (1)	3% (2)	19% (12)
	Full pay	93% (198)	99% 67	98% (78)	82% (53)
Disability status	Yes	21% (45)	4% (3)	18% (14)	43% (28)
	No	79% (168)	96% (65)	83% (66)	57% (37)
Residency status	Resident	82% (175)	93% (63)	84% (67)	69% (45)
	Transfer	10% (21)	2% (1)	4% (3)	26% (17)
	Employee	8% (17)	6% (4)	13% (10)	5% (3)

Table 29

Demographic profile of 10th grade communities

		All (N=220)	10A (N=103)	10B (N=117)
Race	Asian	12% (27)	22% (23)	3% (4)
	Black	12% (27)	2% (2)	21% (25)
	Multi./Other	8% (18)	10% (10)	7% (8)
	White	67% (148)	66% (68)	68% (80)
Gender	Female	53% (116)	60% (62)	46% (54)
	Male	47% (104)	40% (41)	54% (63)
Lunch status	FRP	10% (22)	5% (5)	15% (17)
	Full pay	90% (198)	95% (98)	85% (100)
Disability status	Yes	18% (39)	6% (6)	28% (33)
	No	82% (181)	94% (97)	72% (84)
Residency status	Resident	86% (190)	93% (96)	80% (94)
	Transfer	9% (19)	2% (2)	15% (17)
	Employee	5% (11)	5% (5)	5% (6)

Note: Multi./Other includes multiracial students, non-White Hispanic students, and Native American students; Resid. includes students who reside in the district, students who pay tuition to attend, and students who have family who own property in the district; Transf. includes students who participate in one of two desegregation transfer programs; Employ. includes students whose parents are employed by the district in any capacity.

Table 30

Demographic profile of 11th grade communities

		All (N=235)	11A (N=68)	11B (N=75)	11C (N=92)
Race	Asian	13% (30)	31% (21)	8% (6)	3% (3)
	Black	15% (35)	3% (2)	13% (10)	25% (23)
	Multi./Other	10% (23)	9% (6)	7% (5)	13% (12)
	White	63% (147)	57% (39)	72% (54)	59% (54)
Gender	Female	50% (117)	60% (41)	47% (35)	45% (41)
	Male	50% (118)	40% (27)	53% (40)	55% (51)
Lunch status	FRP	5% (12)	(0)	7% (5)	8% (7)
	Full pay	95% (223)	100% (68)	93% (70)	92% (85)
Disability status	Yes	20% (48)	1% (1)	15% (11)	39% (36)
	No	80% (187)	99% (67)	85% (64)	61% (56)
Residency status	Resident	85% (200)	97% (66)	87% (65)	75% (69)
	Transfer	10% (23)	1% (1)	9% (7)	16% (15)
	Employee	5% (12)	1% (1)	4% (3)	9% (8)

Note: Multi./Other includes multiracial students, non-White Hispanic students, and Native American students; Resid. includes students who reside in the district, students who pay tuition to attend, and students who have family who own property in the district; Transf. includes students who participate in one of two desegregation transfer programs; Employ. includes students whose parents are employed by the district in any capacity.

Table 31

Demographic profile of 12th grade communities

		All (N=217)	12A (N=90)	12B (N=127)
Race	Asian	10% (22)	16% (14)	6% (8)
	Black	18% (40)	7% (6)	27% (34)
	Multi./Other	8% (18)	9% (8)	8% (10)
	White	63% (137)	69% (62)	59% (75)
Gender	Female	48% (104)	56% (50)	43% (54)
	Male	52% (113)	44% (40)	57% (73)
Lunch status	FRP	7% (15)	2% (2)	10% (13)
	Full pay	93% (202)	98% (88)	90% (114)
Disability status	Yes	18% (38)	6% (5)	26% (33)
	No	82% (179)	94% (85)	74% (94)
Residency status	Resident	80% (173)	89% (80)	73% (93)
	Transfer	11% (23)	3% (3)	16% (20)
	Employee	10% (21)	8% (7)	11% (14)

Note: Multi./Other includes multiracial students, non-White Hispanic students, and Native American students; Resid. includes students who reside in the district, students who pay tuition to attend, and students who have family who own property in the district; Transf. includes students who participate in one of two desegregation transfer programs; Employ. includes students whose parents are employed by the district in any capacity.

Table 32

Degree measures of the entire school

			M	SD	Median	Minimum	Maximum
Overall (SA, SB, SC, SD)			168.7	44.2	177	1	305
SA (9th)	Overall		178.7	40.5	193	1	229
	Internal		165.6	35.8	178	1	212
	External		13.1	14.9	1	0	82
		to SB	12.9	14.8	1	0	82
		to SC	0.2	1.0	0	0	8
		to SD	0.1	0.3	0	0	1
SB (10th)	Overall		170.2	43.2	169	1	284
	Internal		145.6	33.5	136	1	219
	External		24.6	27.8	19	0	156
		to SA	12.4	28.0	2	0	85
		to SC	10.4	14.8	1	0	147
		to SD	1.7	3.6	2	0	48
SC (11th)	Overall		172.9	46.2	180	1	276
	Internal		143.7	35.0	155	1	212
	External		29.2	23.1	25	0	119
		to SA	0.2	1.2	0	0	16
		to SB	10.0	19.9	2	0	107
		to SD	19.0	17.9	14	0	77
SD (12th)	Overall		152.9	42.6	153.5	43	305
	Internal		131.0	33.1	141.5	41	194
	External		21.8	23.7	16	0	168
		to SA	0.1	1.1	0	0	16
		to SB	1.8	9.9	0	0	100
		to SC	20.0	20.3	16	0	126

Note: M refers to the average degree, calculated as the sum of the degrees of the group divided by the number of group members; SD is standard deviation for the mean; median is the middle value of degrees of all group members; minimum is the smallest number of degrees of any student in the group; maximum is the largest number of degrees of any student in the group.

Table 33

Degree measures of 9th grade communities

			M	SD	Median	Minimum	Maximum
Overall (9A, 9B, and 9C)			165.6	35.8	178	1	212
9A	Overall		144.6	51.8	182	1	212
	Internal		65.1	7.8	66	1	67
	External		79.6	49.7	39	0	145
		to 9B	47.8	28.6	39	0	80
		to 9C	31.8	25.2	9	0	65
9B	Overall		180.2	3.6	178	173	182
	Internal		79.0	0	79	79	79
	External		101.2	3.6	80	94	103
		to 9A	40.6	3.2	39	39	47
		to 9C	60.6	6.8	64	47	64
9C	Overall		169.5	25.1	177	21	203
	Internal		61.6	6.0	63	20	64
	External		107.9	21.4	64	1	140
		to 9A	33.3	11.8	9	1	60
		to 9B	74.6	11.7	64	0	80

Note: Average degree for the three communities overall was calculated as the sum of the degrees of each student in the three main communities divided by the number of students in the three communities; average degree for each community was calculated as the sum of the degrees of students in the community divided by the number of students in the community; average degrees for relationships were calculated as the sum of the degrees linking each student in the community to students in the other community divided by the number of students in the community.

Table 34

Degree measures of 10th grade communities

			M	SD	Median	Minimum	Maximum
Overall (10A and 10B)			145.1	33.4	135	1	218
10A	Overall		145.4	31.3	126	96	206
		Internal	101.2	2.7	102	77	102
		External	44.2	31.7	24	6	107
10B	Overall		144.8	35.2	136	1	218
		Internal	105.9	20.1	112	1	115
		External	38.9	24.7	23	0	103

Note: Average degree for the three communities was calculated as the sum of the degrees of each student in the three main communities divided by the number of students in the three communities; average degree for each community was calculated as the sum of the degrees of students in the community divided by the number of students in the community; average degrees for relationships were calculated as the sum of the degrees linking each student in the community to students in the other community divided by number of students in the community.

Table 35

Degree measures of 11th grade communities

			M	SD	Median	Minimum	Maximum
Overall (11A, 11B, and 11C)			143.3	37.4	156	1	214
11A	Overall		110.0	31.6	96	83	205
	Internal		65.0	4.6	66	30	67
	External		45.0	34.0	30	21	142
		to 11B	28.2	15.0	22	13	68
		to 11C	16.8	21.2	8	8	79
11B	Overall		162.6	31.0	167	1	214
	Internal		69.1	10.5	72	1	73
	External		93.6	22.5	95	0	142
		to 11A	25.6	21.9	12	0	62
		to 11C	68.0	24.8	78	0	86
11C	Overall		152.2	29.1	156	8	191
	Internal		84.3	13.6	88	5	90
	External		67.8	18.6	67.5	1	110
		to 11A	12.4	15.3	8	0	62
		to 11B	55.4	16.8	59	0	69

Note: Average degree for the three communities was calculated as the sum of the degrees of each student in the three main communities divided by the number of students in the three communities; average degree for each community was calculated as the sum of the degrees of students in the community divided by the number of students in the community; average degrees for relationships were calculated as the sum of the degrees linking each student in the community to students in the other community divided by number of students in the community.

Table 36

Degree measures of 12th grade communities

			M	SD	Median	Minimum	Maximum
Overall (12A and 12B)			129.6	32.0	139	41	192
12A	Overall		101.6	28.7	97	41	192
		Internal	66.8	14.9	73	28	85
		External	34.8	31.7	26	0	126
12B	Overall		149.4	14.9	147	51	178
		Internal	124.7	7.3	125	43	126
		External	24.7	12.3	21	8	53

Note: Average degree for the three communities was calculated as the sum of the degrees of each student in the three main communities divided by the number of students in the three communities; average degree for each community was calculated as the sum of the degrees of students in the community divided by the number of students in the community; average degrees for relationships were calculated as the sum of the degrees linking each student in the community to students in the other community divided by number of students in the community.

Table 37

Community population mobility

	10A	10B	11A	11B	11C	11 n/a	12A	12B	12C	12D	12 n/a
9A (59)	97% (57)	3% (2)	59% (35)	41% (24)	(0)	(0)	51% (30)	42% (25)	7% (4)	(0)	(0)
9B (30)	70% (21)	30% (9)	30% (9)	63% (19)	7% (2)	(0)	27% (8)	60% (18)	13% (4)	(0)	(0)
9C (68)	10% (7)	90% (61)	1% (1)	44% (30)	54% (37)	(0)	4% (3)	22% (15)	44% (30)	28% (19)	1% (1)
9D (42)	(0)	100% (42)	(0)	10% (4)	88% (37)	2% (1)	(0)	10% (4)	38% (16)	48% (20)	5% (2)
10A (85)			53% (45)	45% (38)	2% (2)	(0)	44% (37)	46% (39)	11% (9)	(0)	(0)
10B (114)			(0)	34% (39)	65% (74)	<1% (1)	4% (4)	20% (23)	39% (45)	34% (39)	<1% (1)
11A (45)							67% (30)	29% (13)	4% (2)	(0)	(0)
11B (77)							13% (10)	54% (41)	29% (22)	5% (4)	(0)
11C (76)							1% (1)	11% (8)	39% (30)	46% (35)	3% (2)
11 n/a (1)							(0)	(0)	(0)	(0)	100% (1)

Note: Percentages are calculated as the number of students from the origin community in the destination community divided by the number of students in the origin community.

Table 38

Teacher traits for the whole school

	Teacher level	M	SD	Median
Years in district	Overall (N=51)	12.06	9.48	12.0
	Remedial (n=18)	12.67	8.40	13.5
	Regular (n=41)	11.32	9.63	10.0
	Advanced (n=37)	13.30	9.61	13.0
Years in public schools	Overall (N=51)	17.39	8.33	17.0
	Remedial (n=18)	16.44	8.27	16.0
	Regular (n=41)	16.98	8.80	17.0
	Advanced (n=37)	18.38	7.60	17.0
Educational attainment	Overall (N=51)	4.24	0.99	5.0
	Remedial (n=18)	4.00	1.08	4.0
	Regular (n=41)	4.17	1.00	4.0
	Advanced (n=37)	4.24	1.01	4.0
Salary	Overall (N=51)	$80,724.96	$17,910.13	$82,455.00
	Remedial (n=18)	$78,042.94	$20,475.97	$79,791.00
	Regular (n=41)	$79,454.17	$18,592.28	$82,455.00
	Advanced (n=37)	$82,070.51	$16,528.15	$82,455.00

Table 39

Distribution of levels among teachers

	Overall (N=51)	English (N=16)	Mathematics (N=11)	Science (N=14)	Social Studies (N=10)
Reg. only	18% (9)	19% (3)	9% (1)	21% (3)	20% (2)
Adv. only	14% (7)	13% (2)	(0)	29% (4)	10% (1)
Rem. and Reg.	10% (5)	13% (2)	9% (1)	14% (2)	(0)
Reg. and Adv.	33% (17)	38% (6)	27% (3)	29% (4)	40% (4)
Rem. and Adv.	6% (3)	(0)	27% (3)	(0)	(0)
Rem., Reg., Adv.	20% (10)	19% (3)	27% (3)	7% (1)	30% (3)

Table 40

Teacher traits by course level in English

	Teacher level	M	SD	Median
Years in district	Overall (N=16)	10.13	8.29	9.5
	Remedial (n=5)	10.60	8.32	13.0
	Regular (n=14)	9.43	7.51	9.5
	Advanced (n=11)	12.27	8.49	10.0
Years in public schools	Overall (N=16)	16.50	7.23	16.5
	Remedial (n=5)	15.00	9.17	16.0
	Regular (n=14)	15.36	6.93	16.0
	Advanced (n=11)	17.45	5.87	16.0
Educational attainment	Overall (N=16)	3.56	0.73	3.0
	Remedial (n=5)	3.60	0.89	3.0
	Regular (n=14)	3.64	0.74	3.5
	Advanced (n=11)	3.64	0.67	4.0
Salary	Overall (N=16)	$75,112.00	$16,773.76	$81,123.00
	Remedial (n=5)	$70,673.00	$22,851.25	$79,791.00
	Regular (n=14)	$72,928.71	$16,809.94	$77,702.50
	Advanced (n=11)	$77,247.91	$12,504.15	$79,791.00

Table 41

Teacher traits by course level in mathematics

	Teacher level	M	SD	Median
Years in district	Overall (N=11)	12.09	9.44	12
	Remedial (n=7)	12.57	8.64	14.00
	Regular (n=8)	9.88	9.64	6.5
	Advanced (n=9)	12.44	9.38	12.0
Years in public schools	Overall (N=11)	17.27	10.17	15.00
	Remedial (n=7)	17.57	9.57	15.00
	Regular (n=8)	16.75	11.47	18.00
	Advanced (n=9)	17.67	8.70	15.00
Educational attainment	Overall (N=11)	4.00	1.18	4.00
	Remedial (n=7)	3.86	1.35	4.00
	Regular (n=8)	3.75	1.28	4.00
	Advanced (n=9)	4.00	1.22	4.00
Salary	Overall (N=11)	$79,886.73	$22,164.85	$74,154.00
	Remedial (n=7)	$79,134.71	$22,667.08	$74,154.00
	Regular (n=8)	$78,347.88	$24,528.84	$79,677.50
	Advanced (n=9)	$79,891.89	$21,191.68	$74,154.00

Table 42

Teacher traits by course level in science

	Teacher level	M	SD	Median
Years in district	Overall (N=14)	14.14	8.20	16.5
	Remedial (n=3)	19.33	3.51	19.00
	Regular (n=10)	13.70	8.49	16.5
	Advanced (n=9)	13.89	8.58	16.0
Years in public schools	Overall (N=14)	18.57	6.01	19.00
	Remedial (n=3)	19.67	4.04	19.00
	Regular (n=10)	18.50	6.45	19.00
	Advanced (n=9)	19.89	4.68	20.00
Educational attainment	Overall (N=14)	4.86	0.66	5.00
	Remedial (n=3)	5.00	0.00	5.00
	Regular (n=10)	4.70	0.67	5.00
	Advanced (n=9)	4.89	0.78	5.00
Salary	Overall (N=14)	$87,577.93	$12,963.90	$86,050.50
	Remedial (n=3)	$92,766.33	$11,321.27	$97,875.00
	Regular (n=10)	$86,441.30	$12,839.94	$86,050.50
	Advanced (n=9)	$89,629.11	$10,822.92	$89,414.00

Table 43

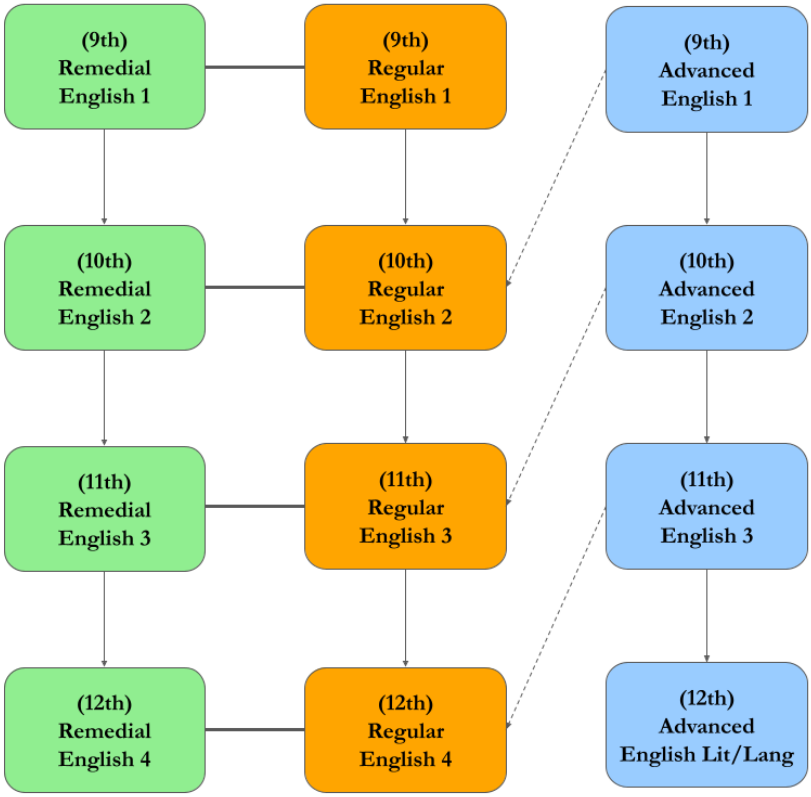
Teacher traits by course level in social studies

	Teacher level	M	SD	Median
Years in district	Overall (N=10)	12.20	13.24	5
	Remedial (n=3)	9.67	11.59	4.00
	Regular (n=9)	12.89	13.85	4
	Advanced (n=8)	15.00	13.44	12.5
Years in public schools	Overall (N=10)	17.30	11.29	15.50
	Remedial (n=3)	13.00	8.89	10.00
	Regular (n=9)	18.00	11.75	20.00
	Advanced (n=8)	18.75	11.46	16.50
Educational attainment	Overall (N=10)	4.70	0.82	5.00
	Remedial (n=3)	4.00	1.00	4.00
	Regular (n=9)	4.78	0.83	5.00
	Advanced (n=8)	4.63	0.92	5.00
Salary	Overall (N=10)	$81,033.60	$19,861.70	$78,258.50
	Remedial (n=3)	$73,055.33	$18,638.45	$63,329.00
	Regular (n=9)	$82,824.78	$20,191.70	$90,700.00
	Advanced (n=8)	$82,649.13	$20,444.11	$80,181.00

Figures

Figure 1

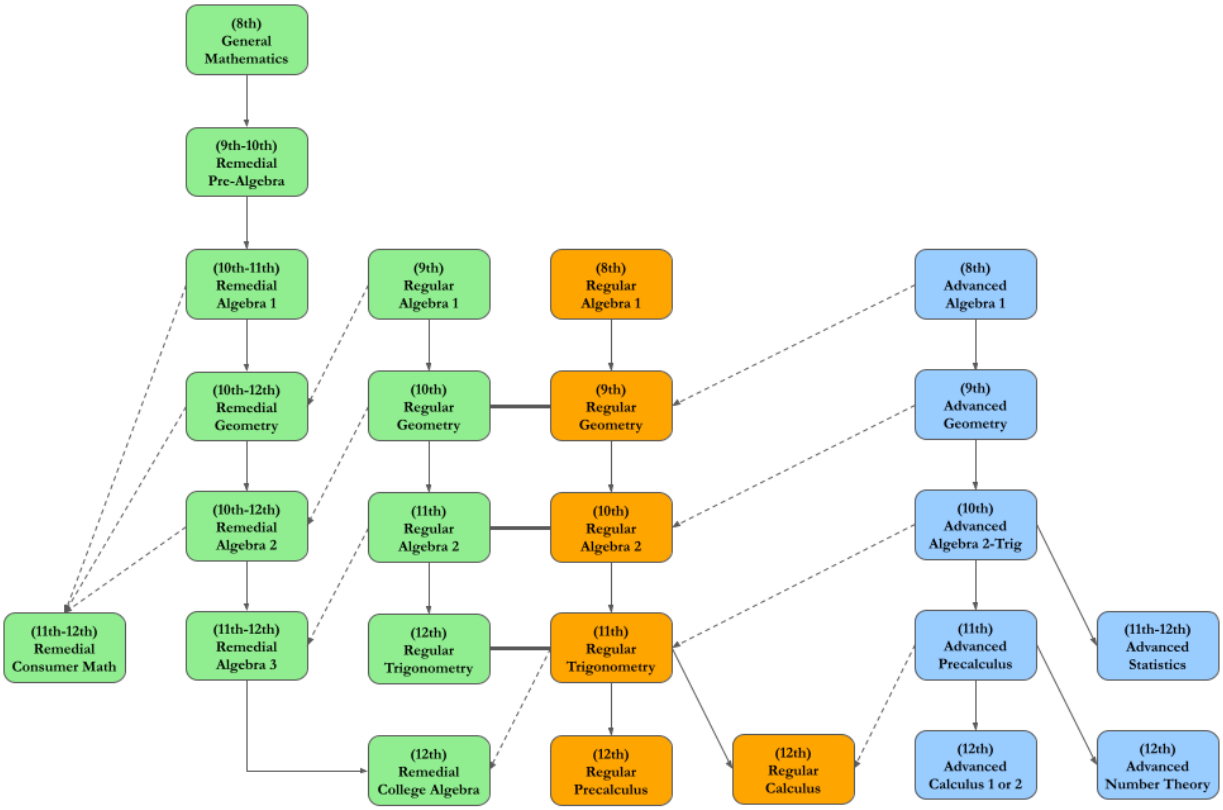
Curriculum map for English



Note: Green courses are remedial level; orange courses are regular level; blue courses are advanced level. Solid arrows indicate the school's standard flow of students through courses. Connector bars without arrows indicate a class taught with another class. Dashed arrows indicate a nonstandard movement of students.

Figure 2

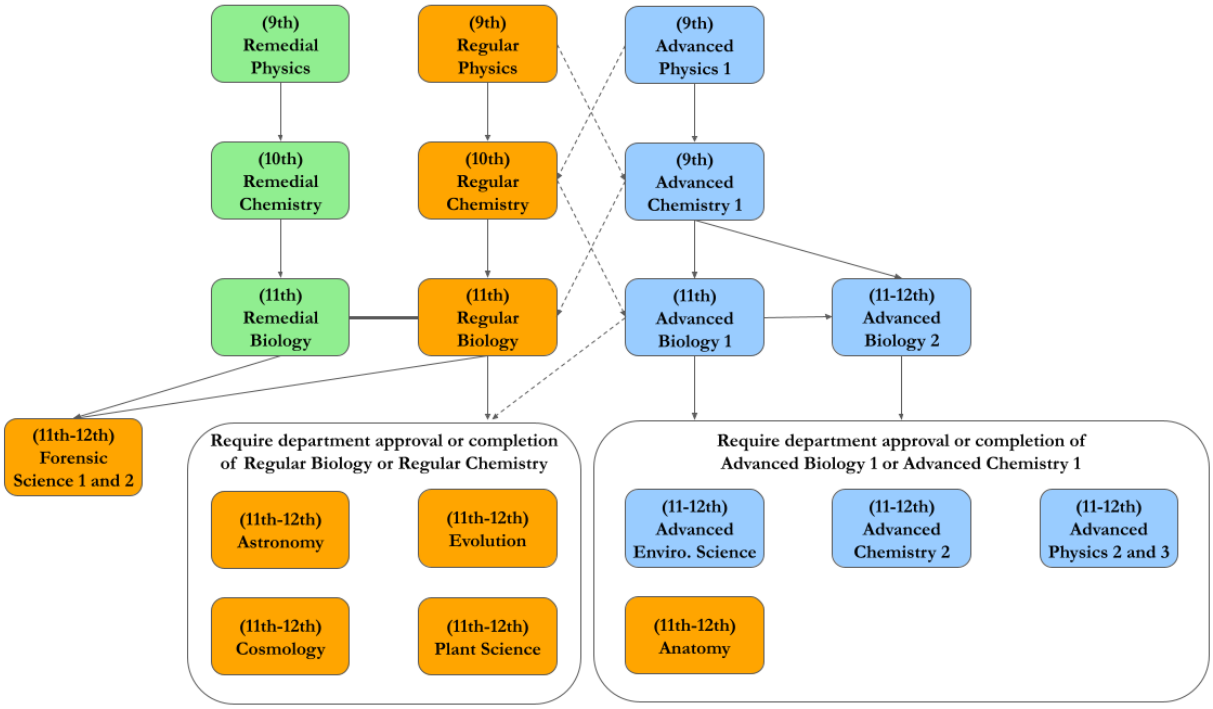
Curriculum map for mathematics courses



Note: Green courses are remedial level; orange courses are regular level; blue courses are advanced level. Solid arrows indicate the school's standard flow of students through courses. Connector bars without arrows indicate a class taught with another class. Dashed arrows indicate a nonstandard movement of students.

Figure 3

Curriculum map for science



Note: Green courses are remedial level; orange courses are regular level; blue courses are advanced level. Solid arrows indicate the school's standard flow of students through courses. Connector bars without arrows indicate a class taught with another class. Dashed arrows indicate a nonstandard movement of students.

Figure 4

Curriculum map for social studies

Note: Green courses are remedial level; orange courses are regular level; blue courses are advanced level. Solid arrows indicate the school's standard flow of students through courses. Connector bars without arrows indicate a class taught with another class. Dashed arrows indicate a nonstandard movement of students.

Figure 5

Mobility flow in English

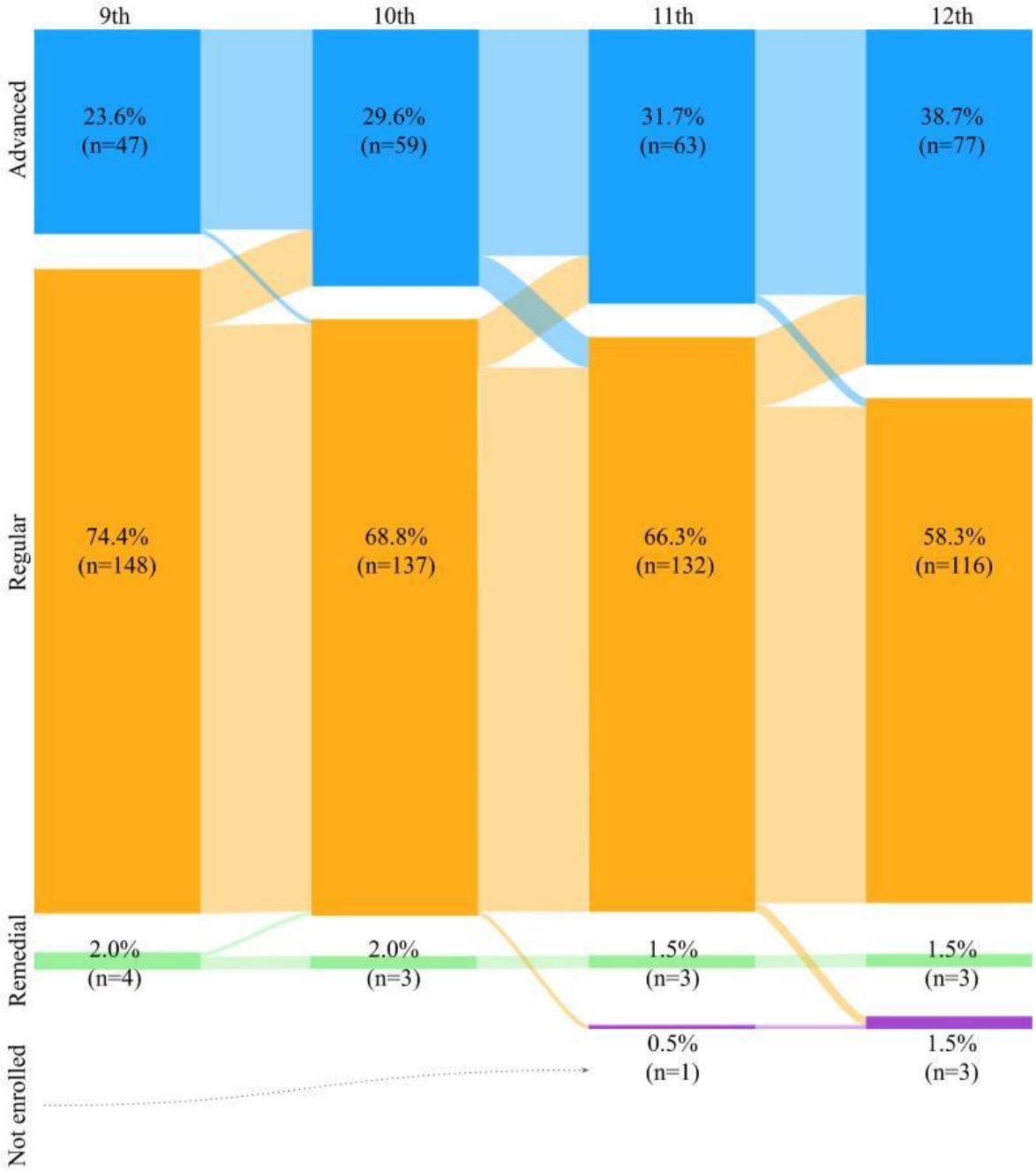


Figure 6

Mobility flow in mathematics

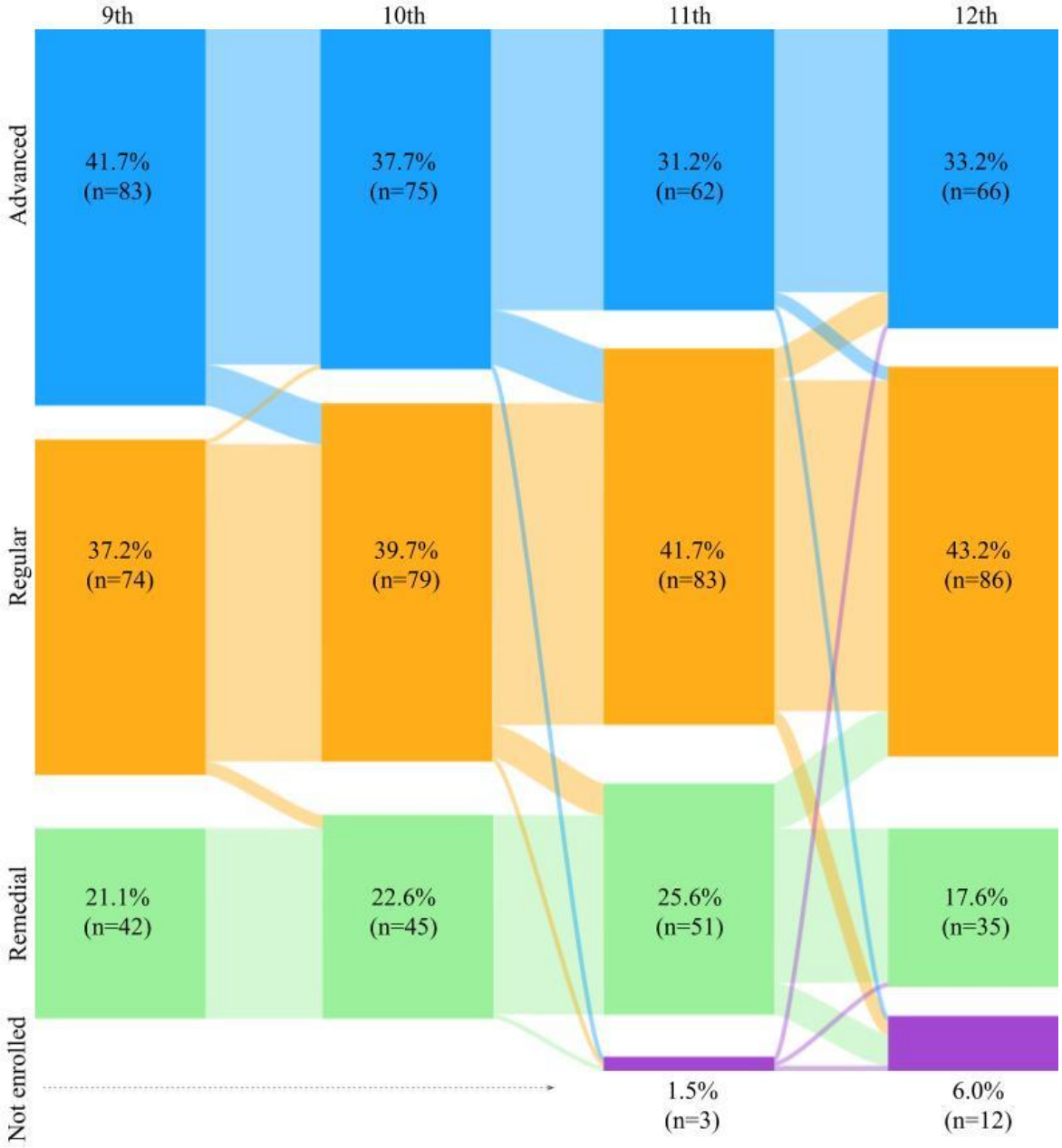


Figure 7

Mobility flow in science

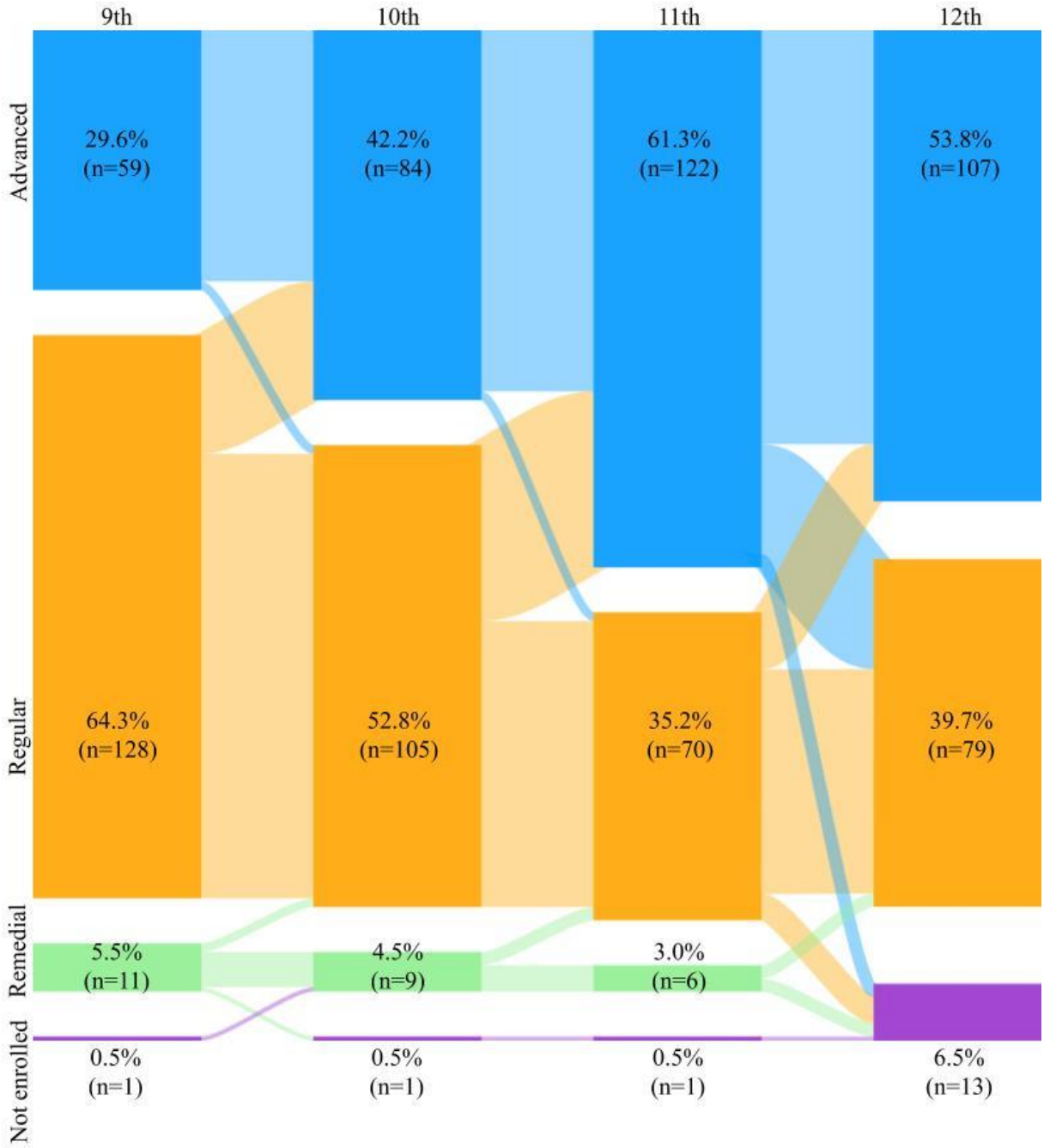


Figure 8

Mobility flow in social studies

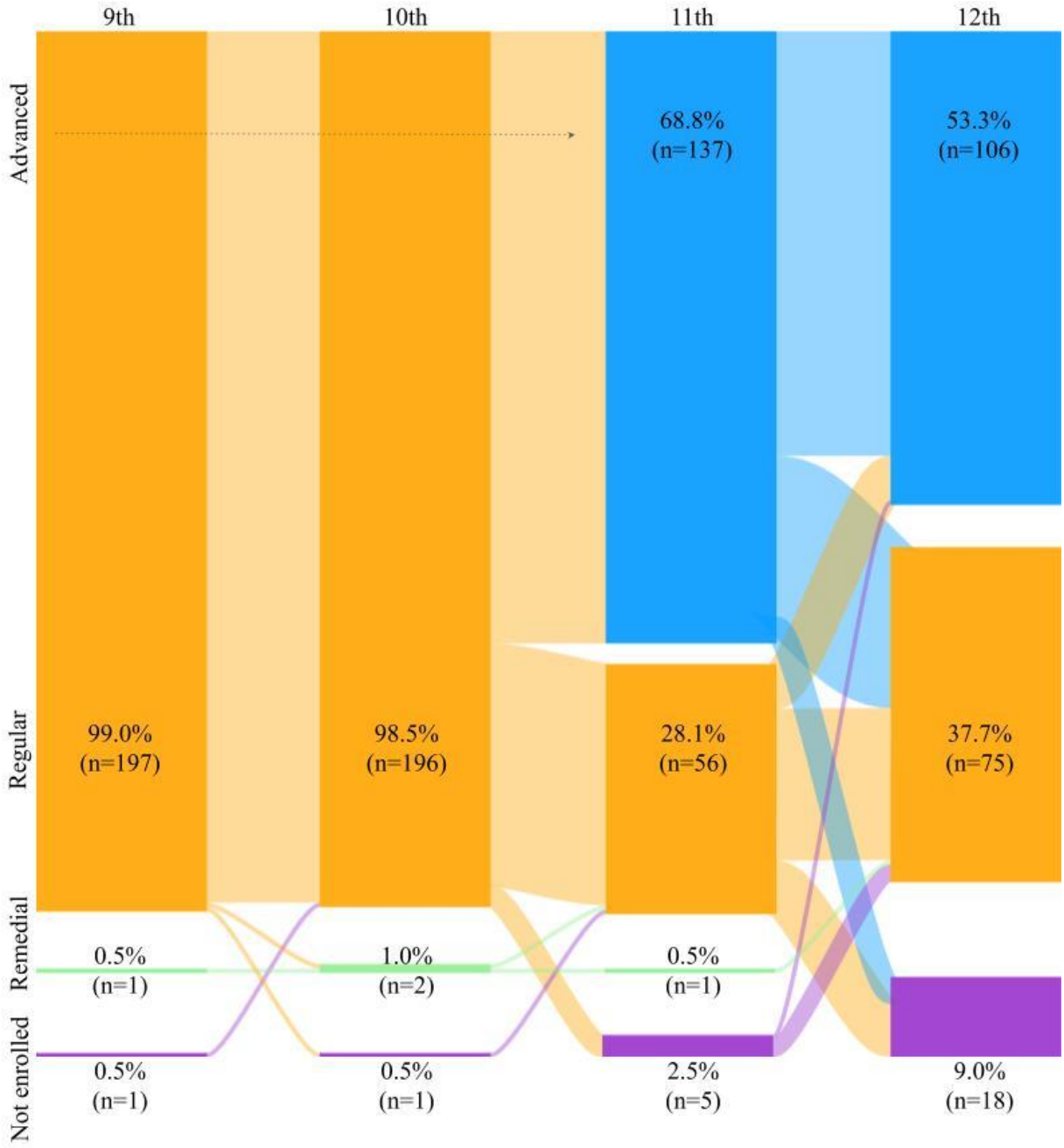
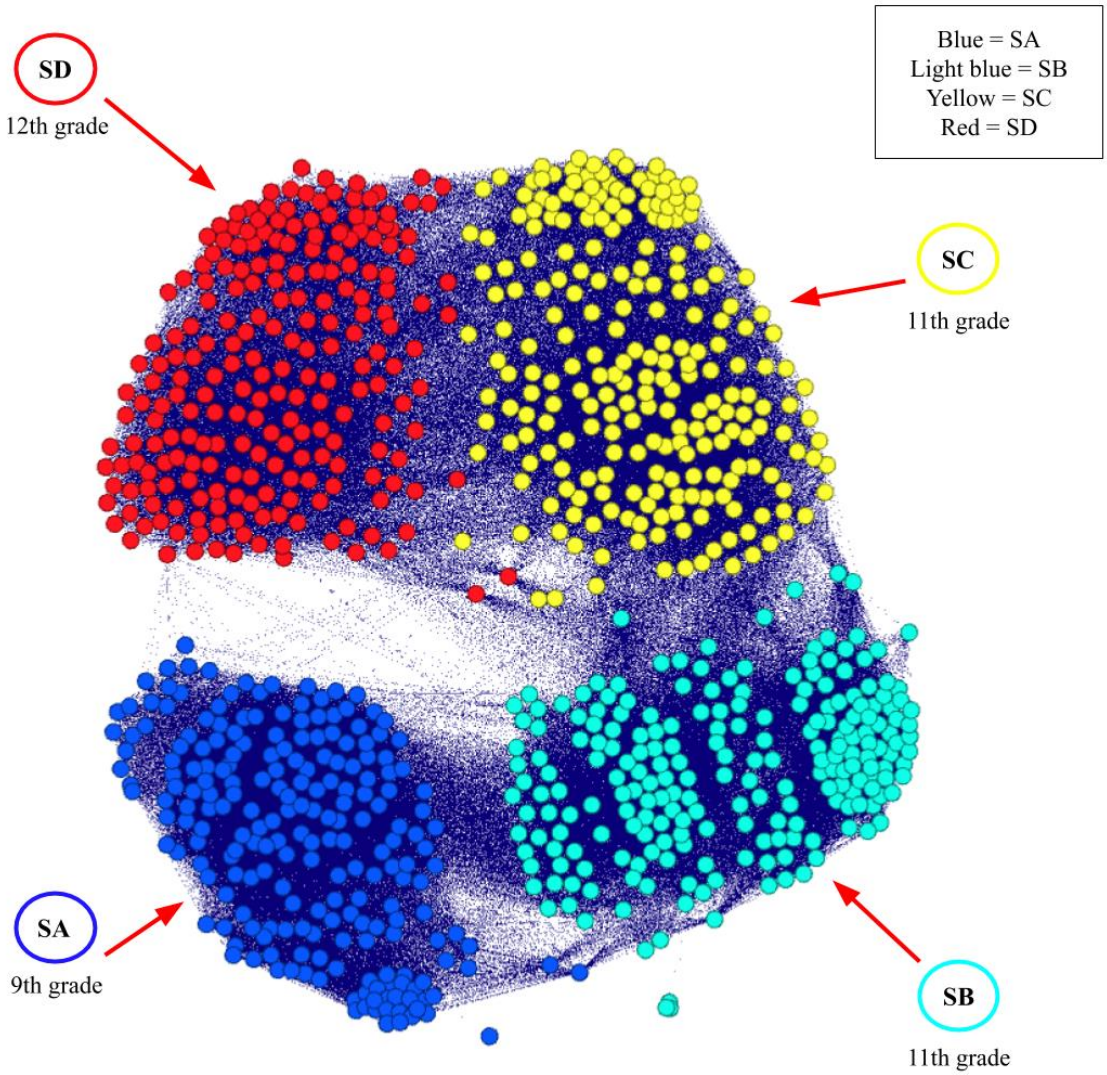


Figure 9

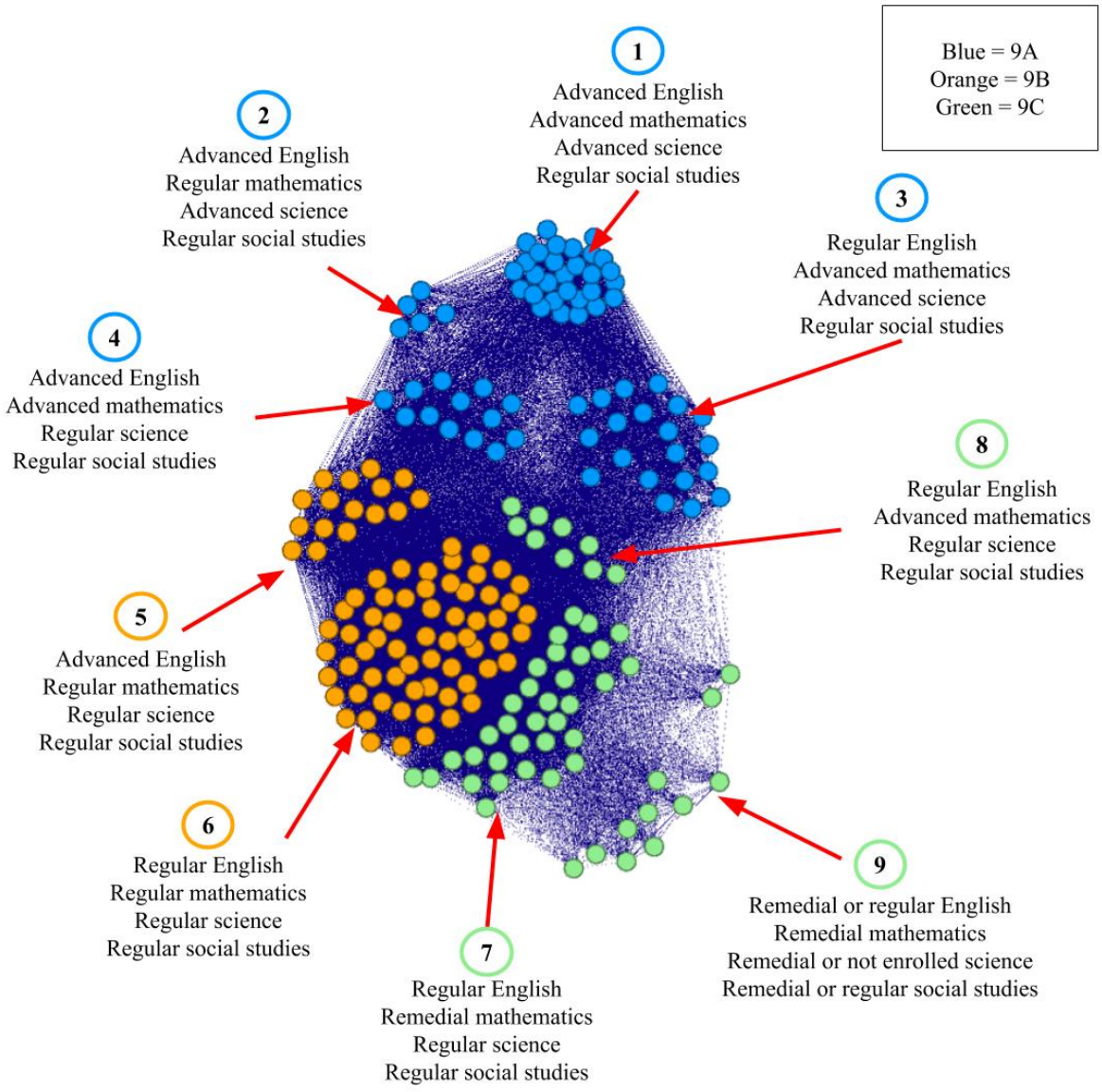
Communities and network structure of the school



Note: This figure illustrates each student as a node or dot in the network; the dark blue lines represent shared courses among students. Only students in the four main communities are shown.

Figure 10

Communities and network structure of 9th grade students



Note: This figure illustrates each student as a node or dot in a network; the dark blue lines represent shared courses among students.

Figure 11

Race in network structure of 9th grade

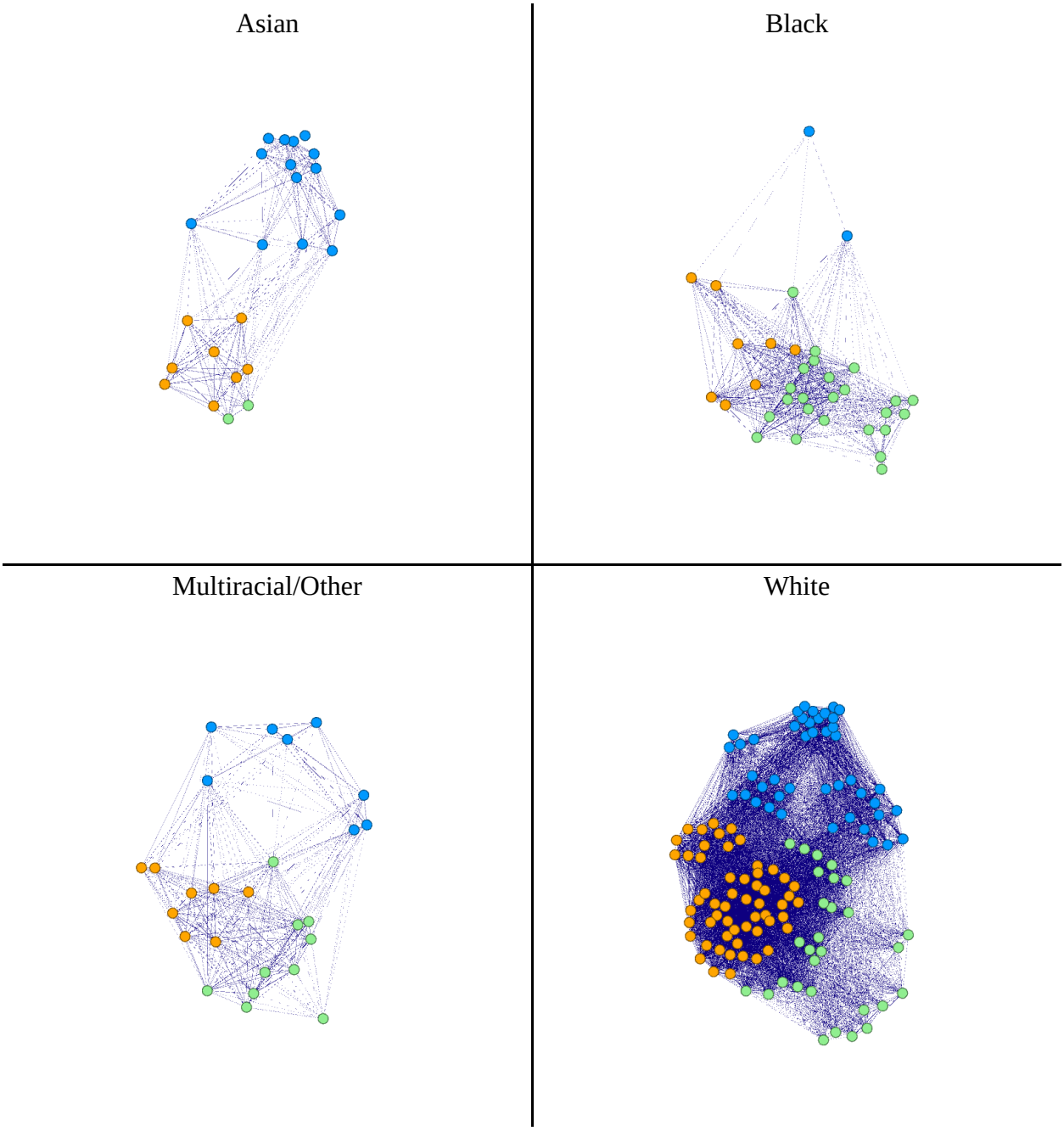


Figure 12

Gender in network structure in 9th grade

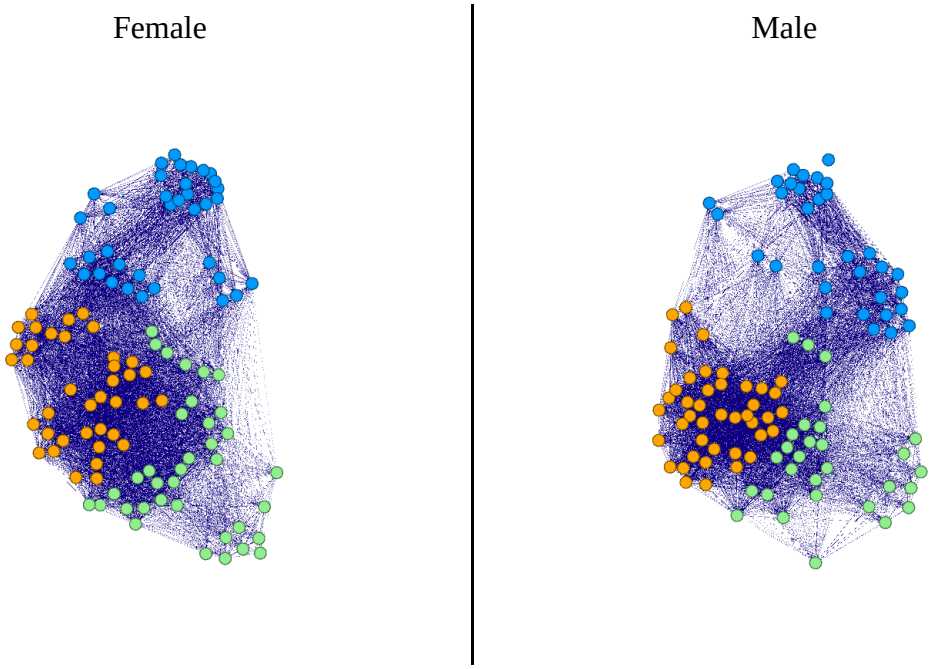


Figure 13

Lunch status in network structure of 9th grade

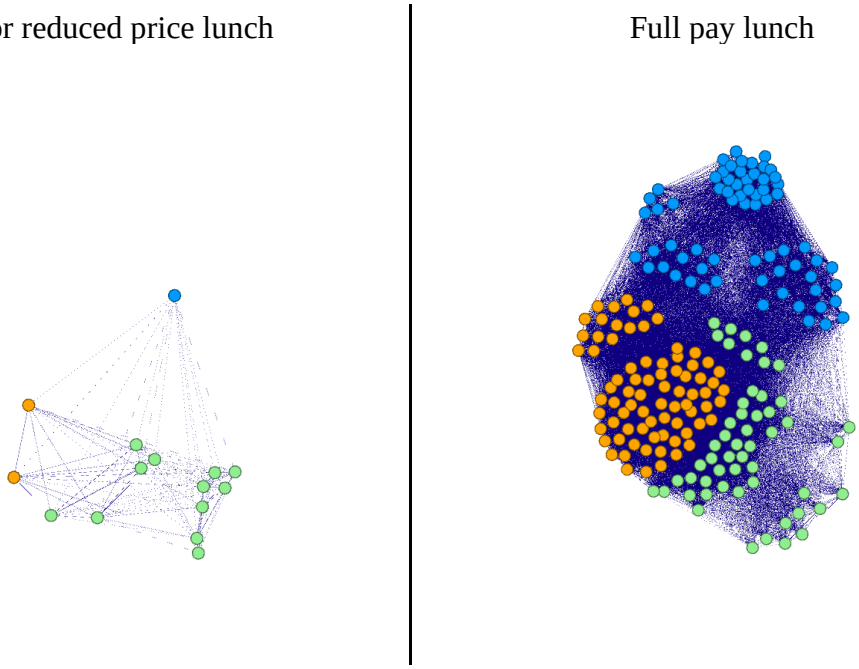
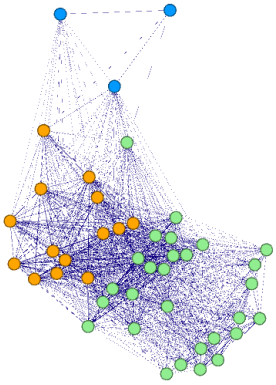


Figure 14

Disability status in network structure of 9th grade

Yes (IEP or 504 Plan)



No (IEP or 504 Plan)

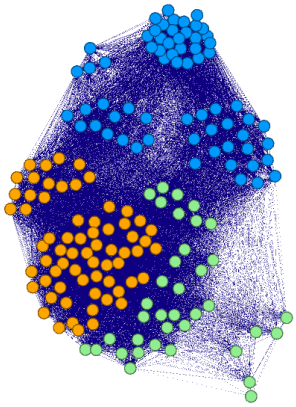


Figure 15

Residency status in network structure in 9th grade

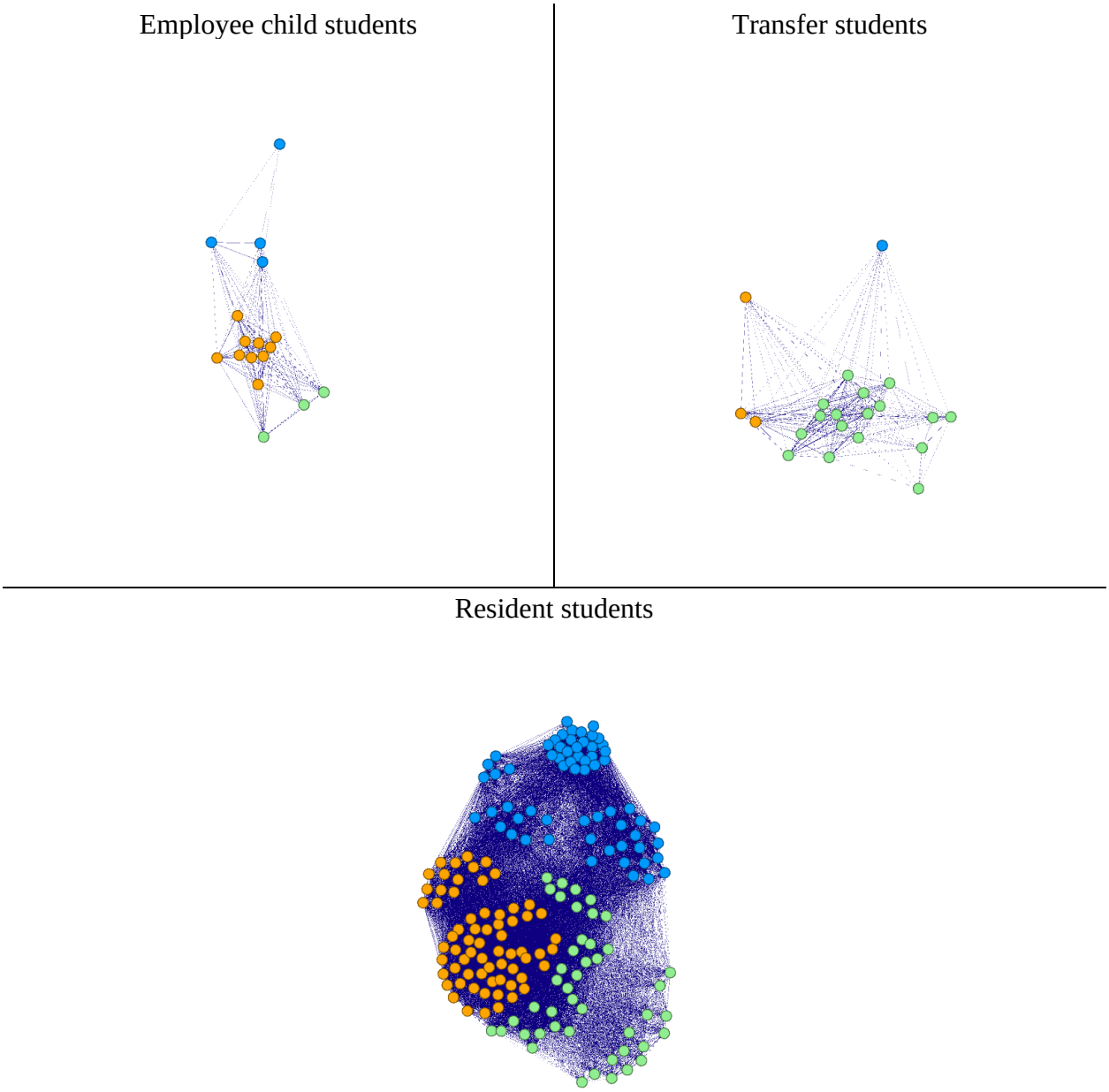


Figure 16

Communities and network structure of 10th grade students

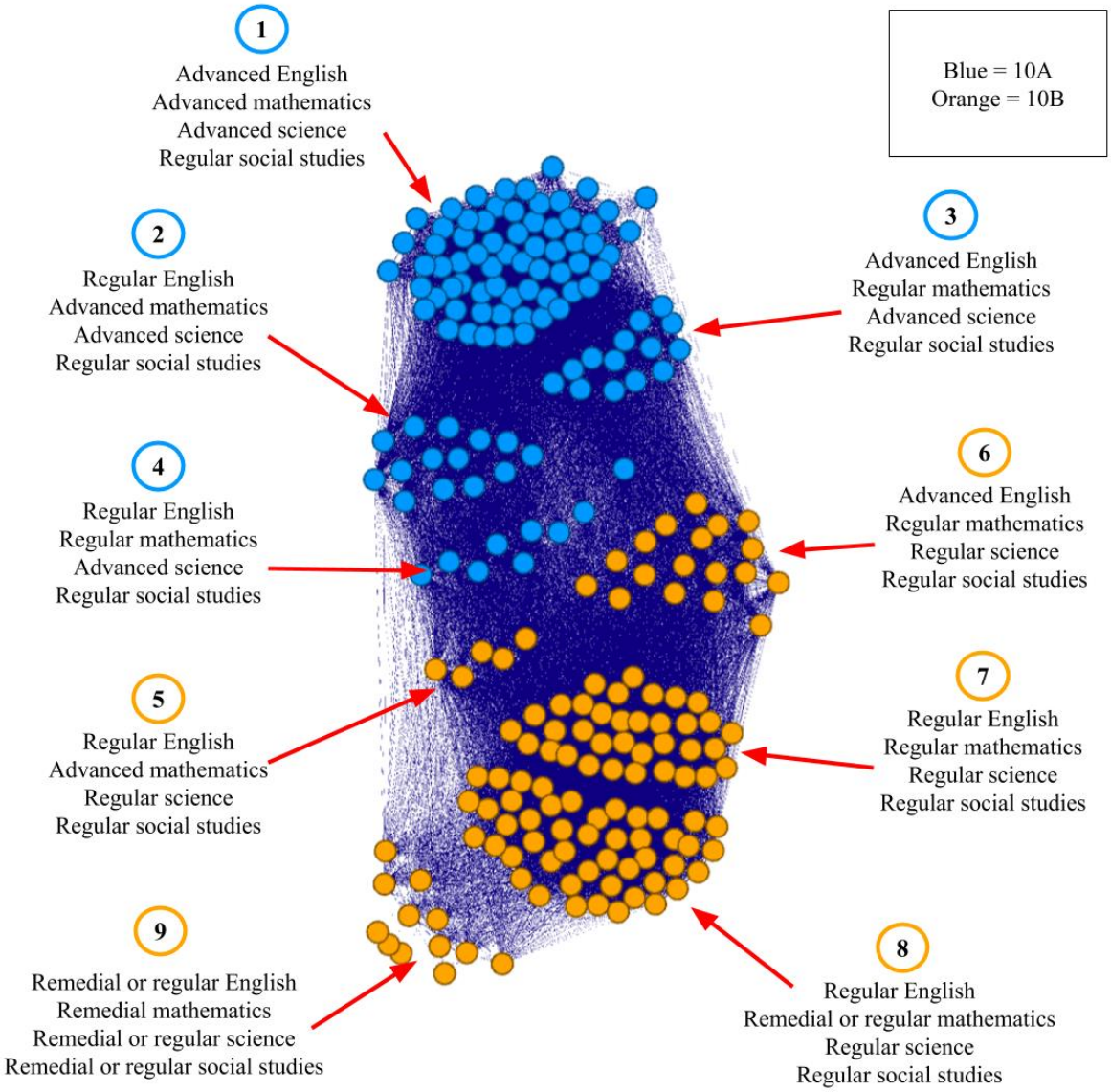


Figure 17

Race in network structure of 10th grade

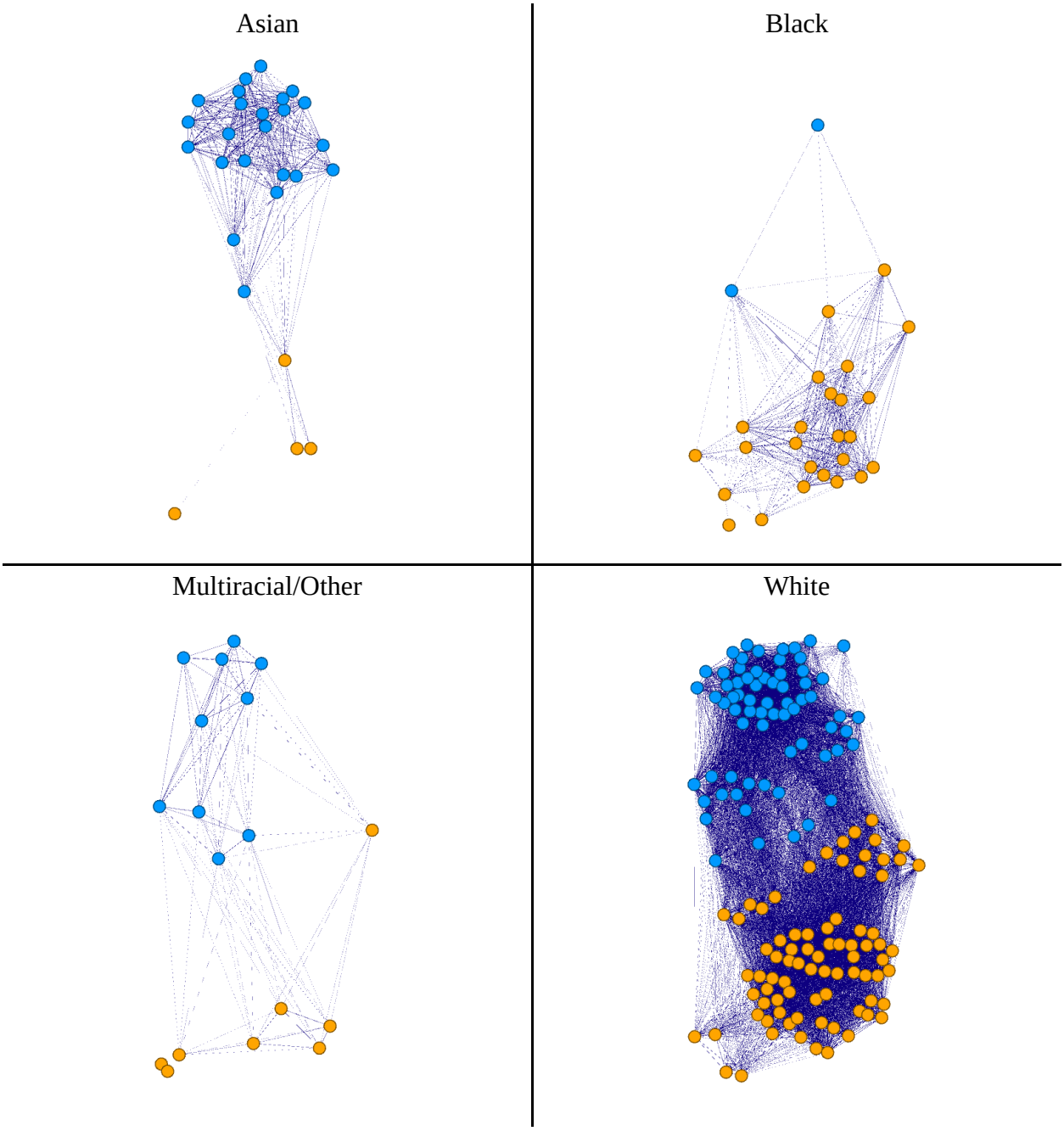


Figure 18

Gender in network structure in 10th grade

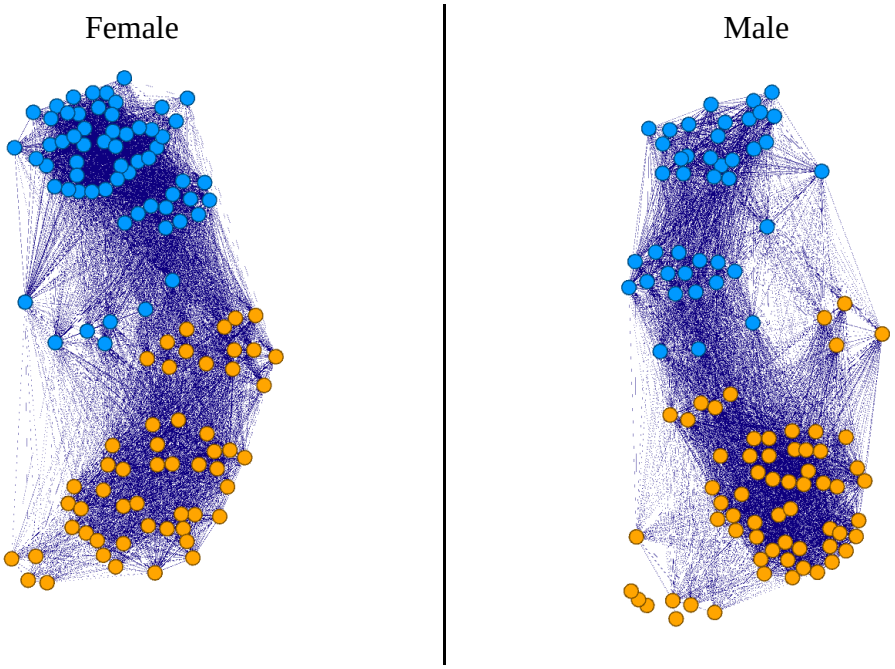


Figure 19

Lunch status in network structure of 10th grade

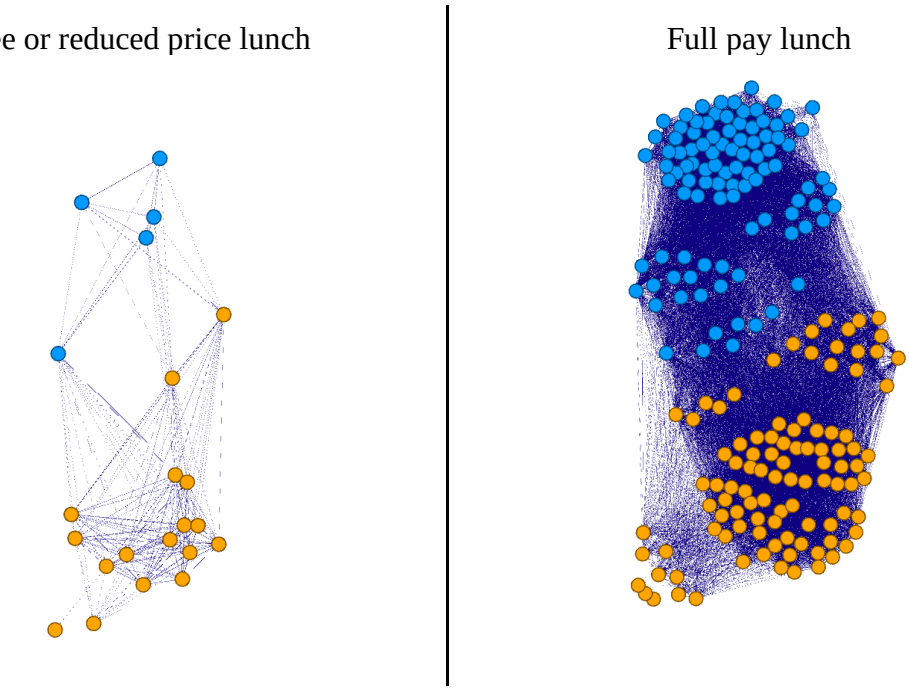


Figure 20

Disability status in network structure of 10th grade

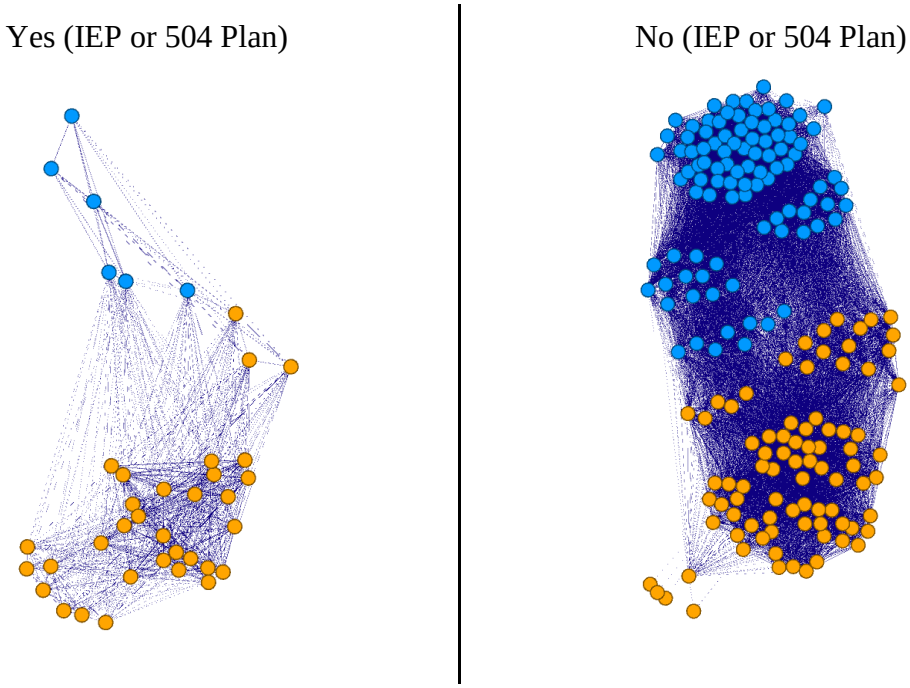


Figure 21

Residency status in network structure in 10th grade

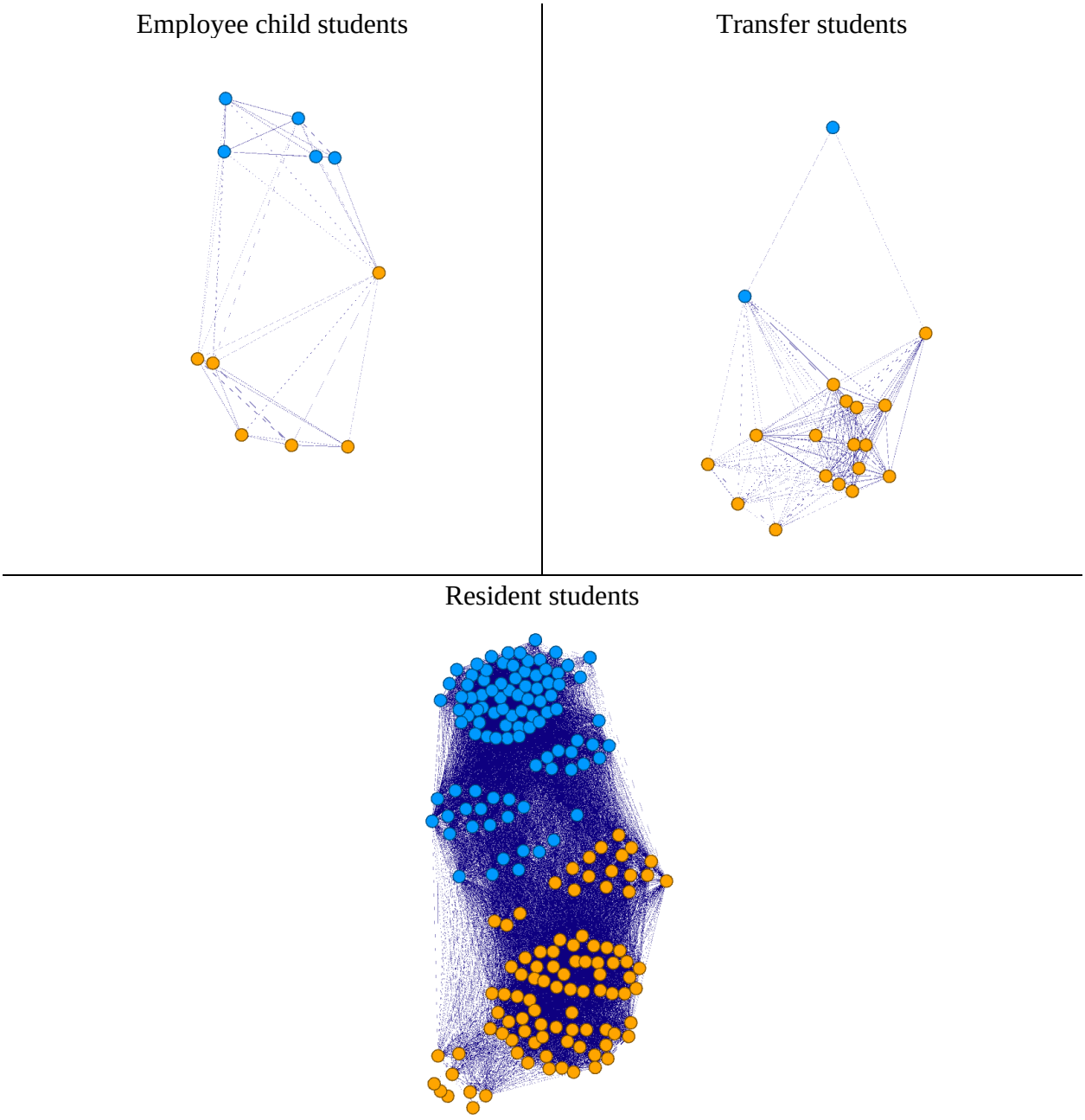


Figure 22

Communities and network structure of 11th grade students

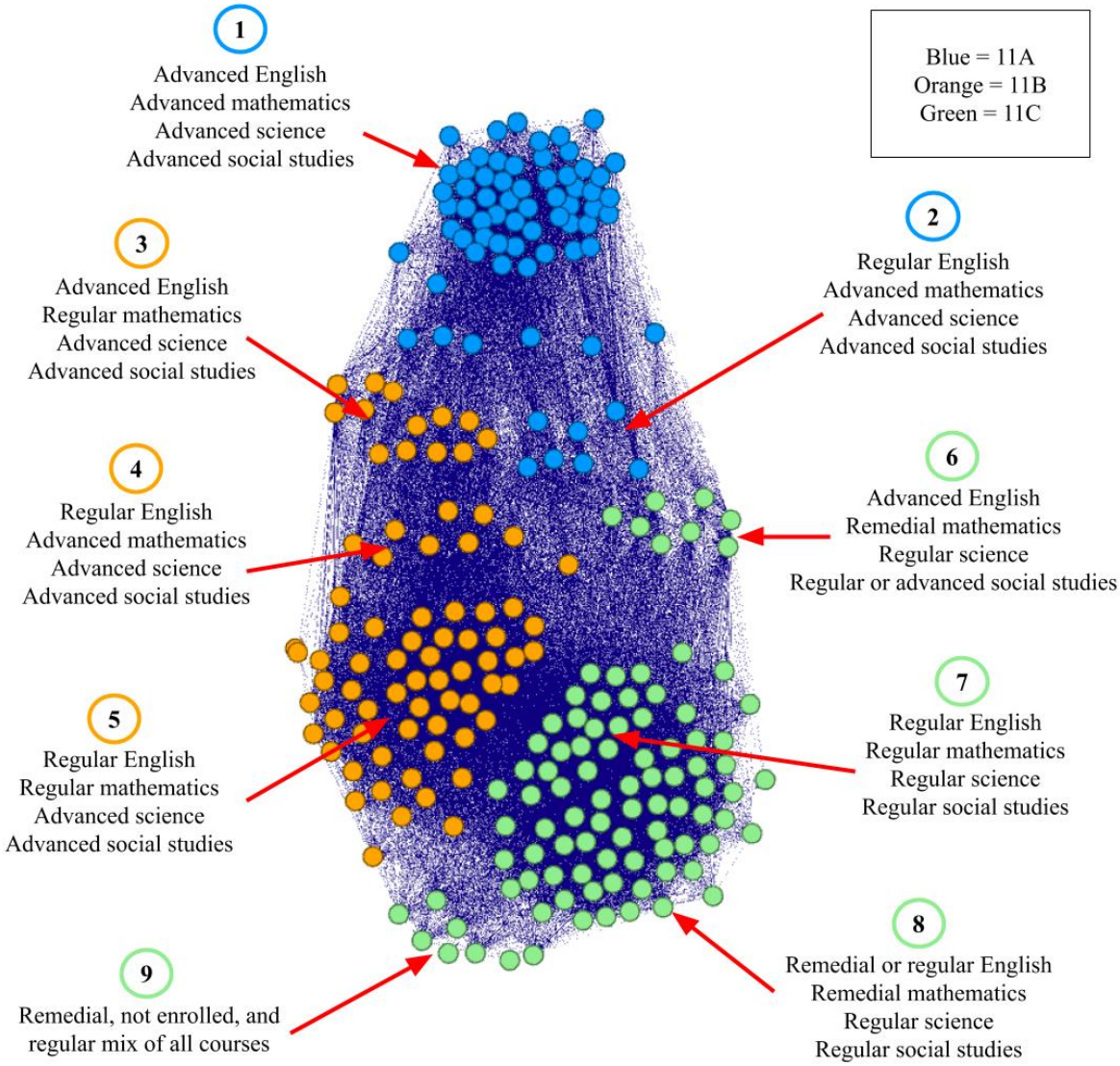


Figure 23

Race in network structure of 11th grade

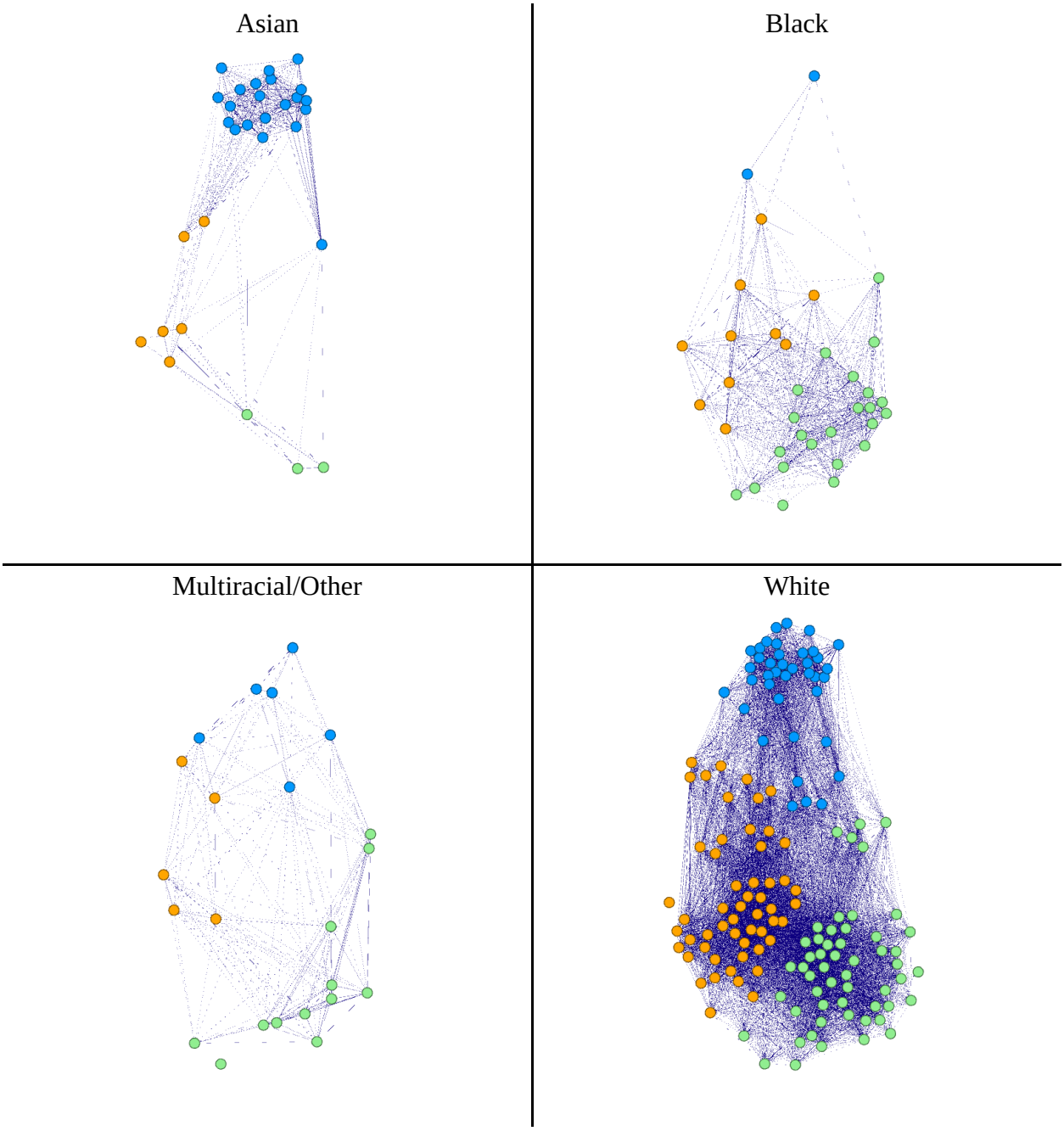


Figure 24

Gender in network structure in 11th grade

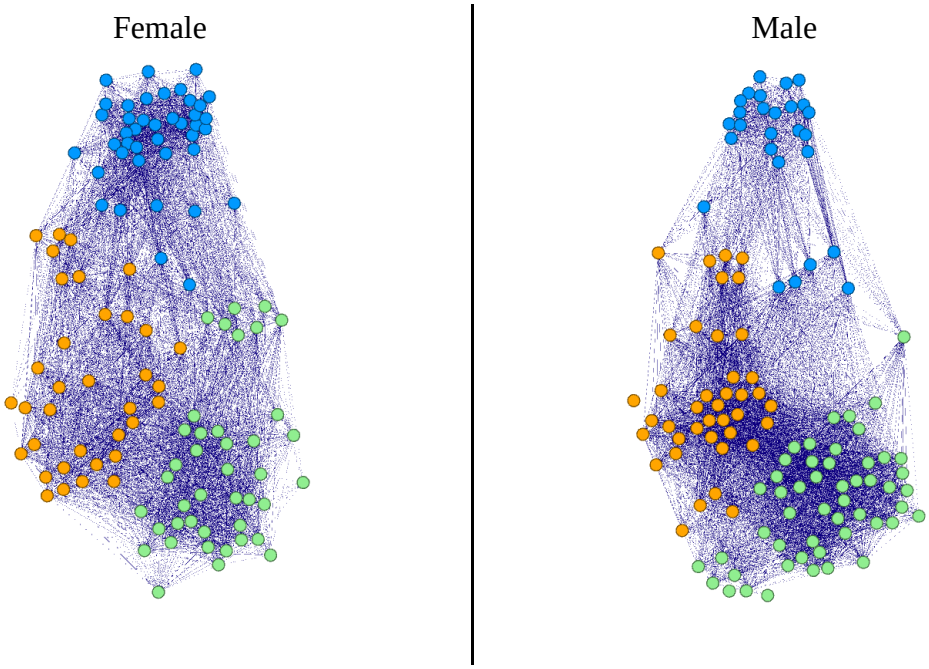


Figure 25

Lunch status in network structure of 11th grade

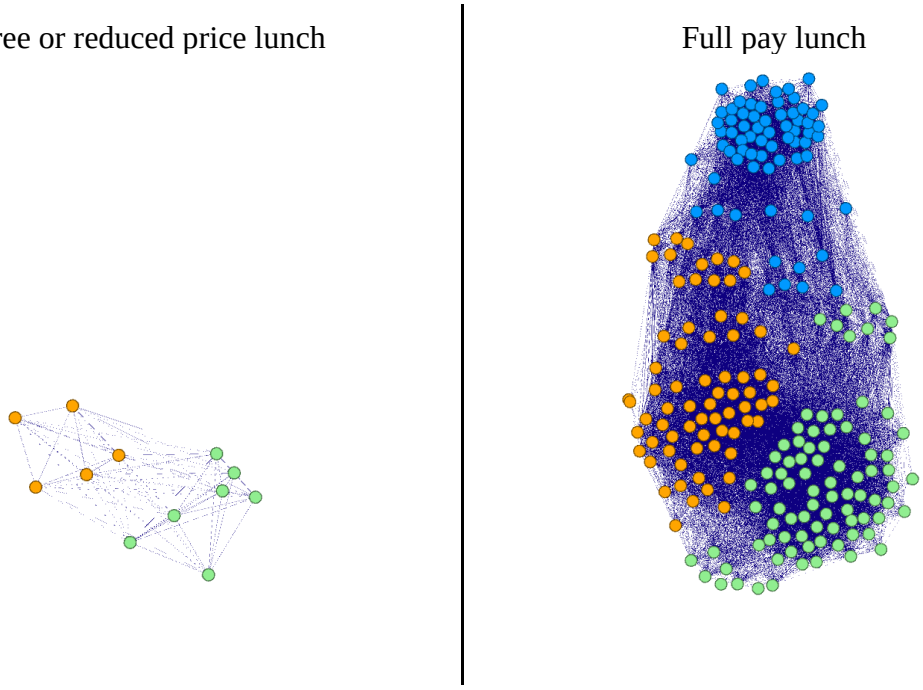


Figure 26

Disability status in network structure of 11th grade

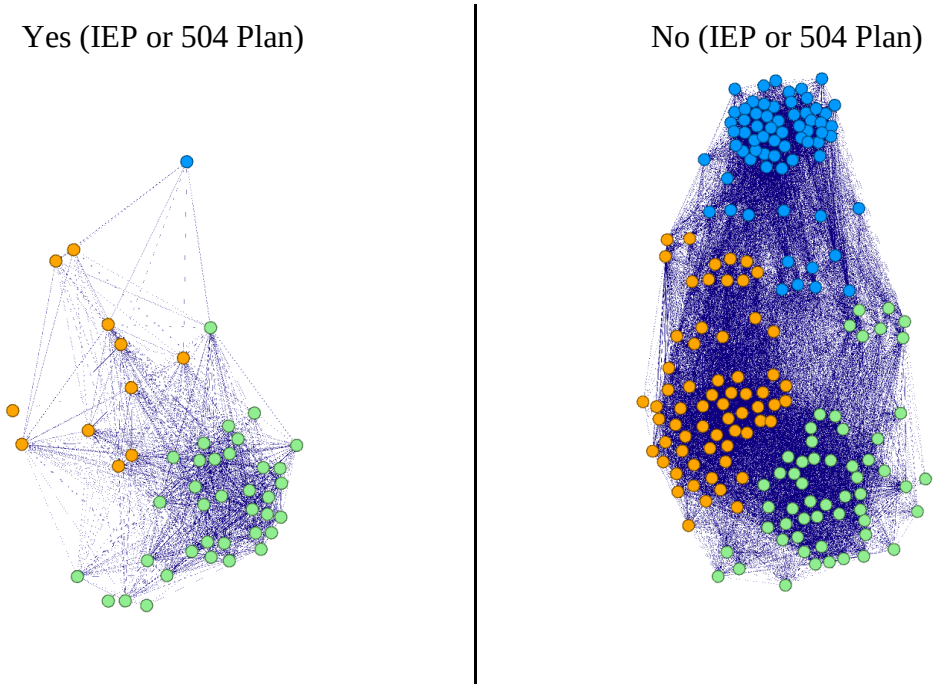


Figure 27

Residency status in network structure in 11th grade

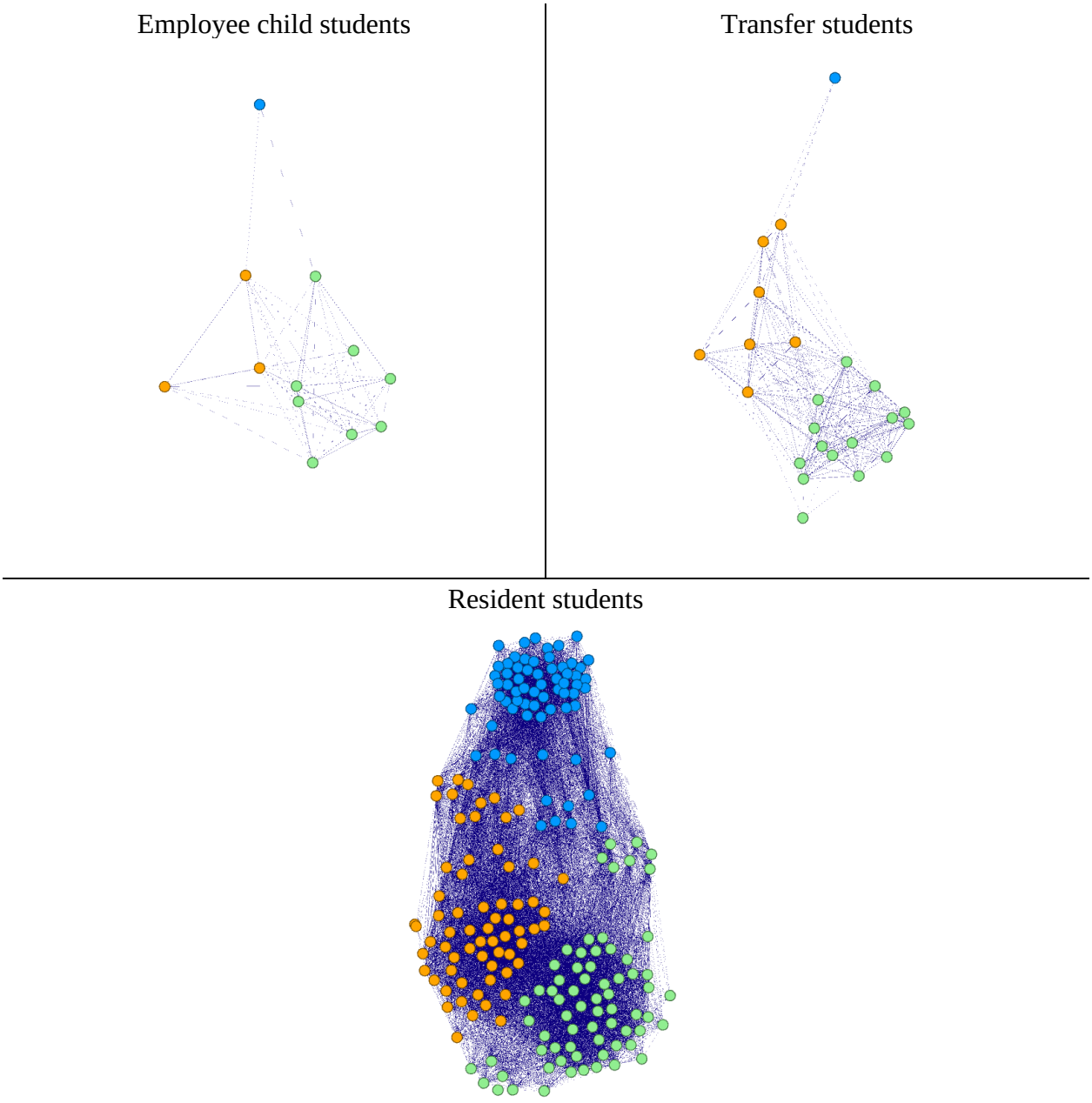


Figure 28

Communities and network structure of 12th grade students

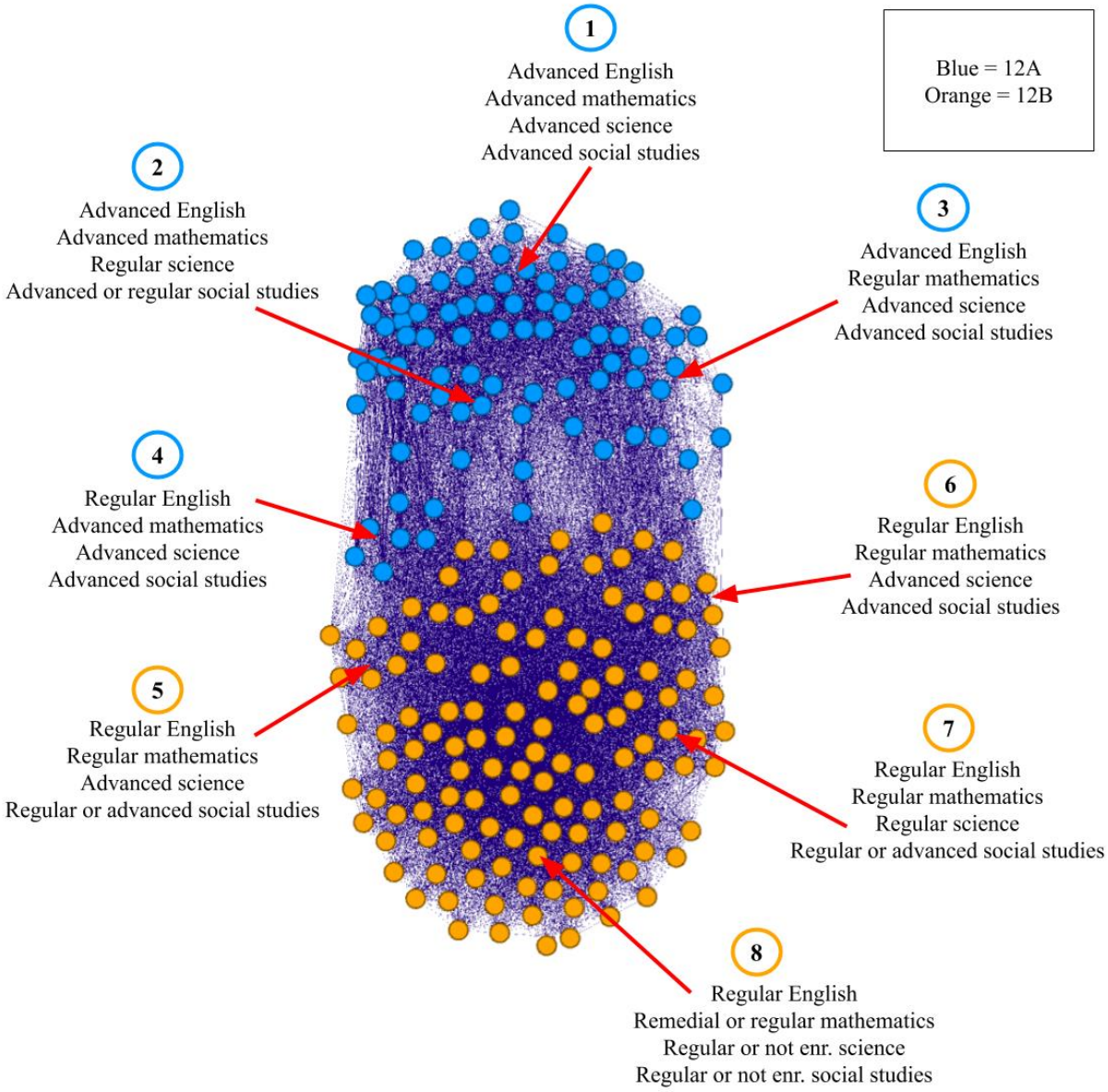


Figure 29

Race in network structure of 12th grade

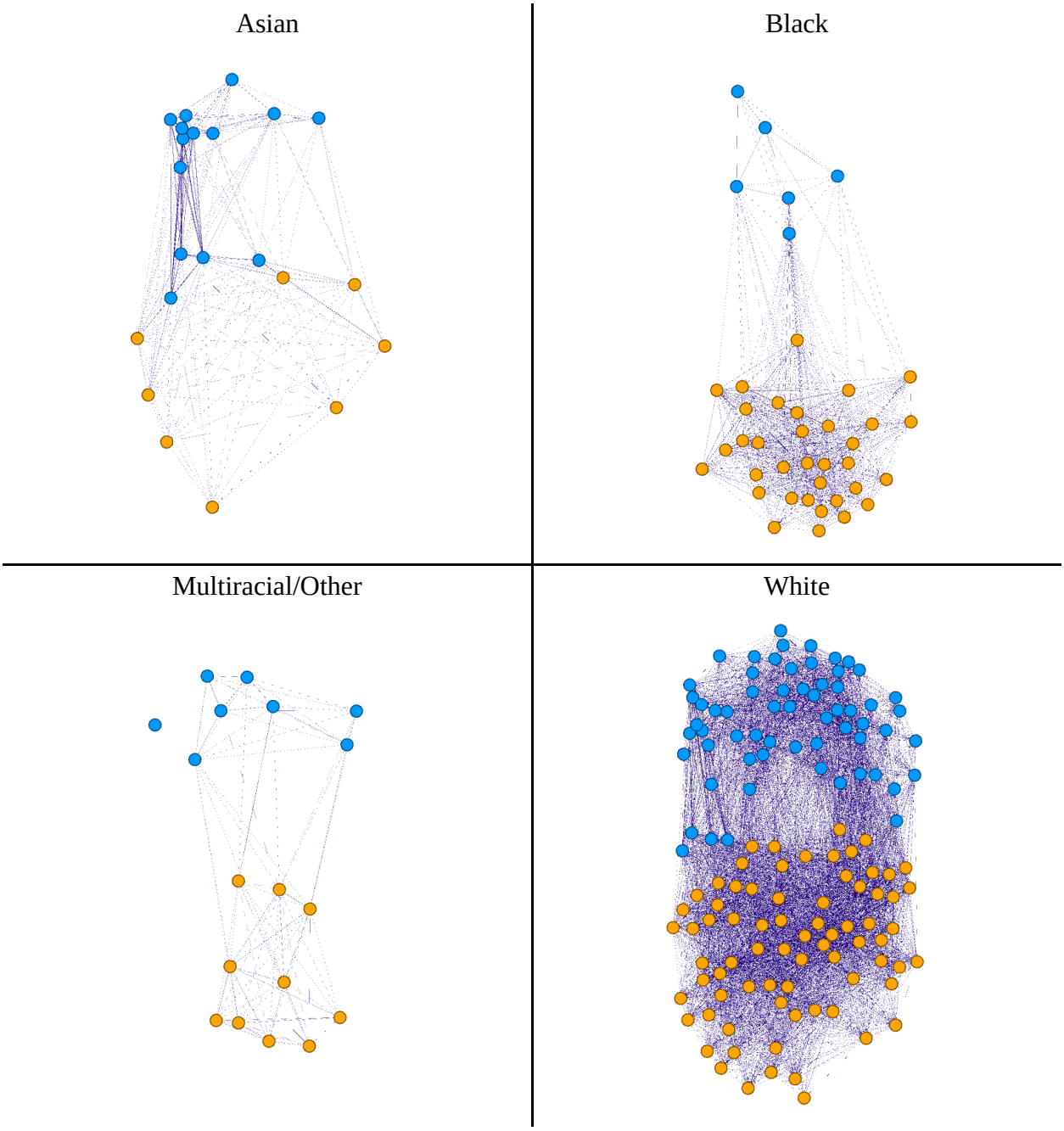


Figure 30

Gender in network structure in 12th grade

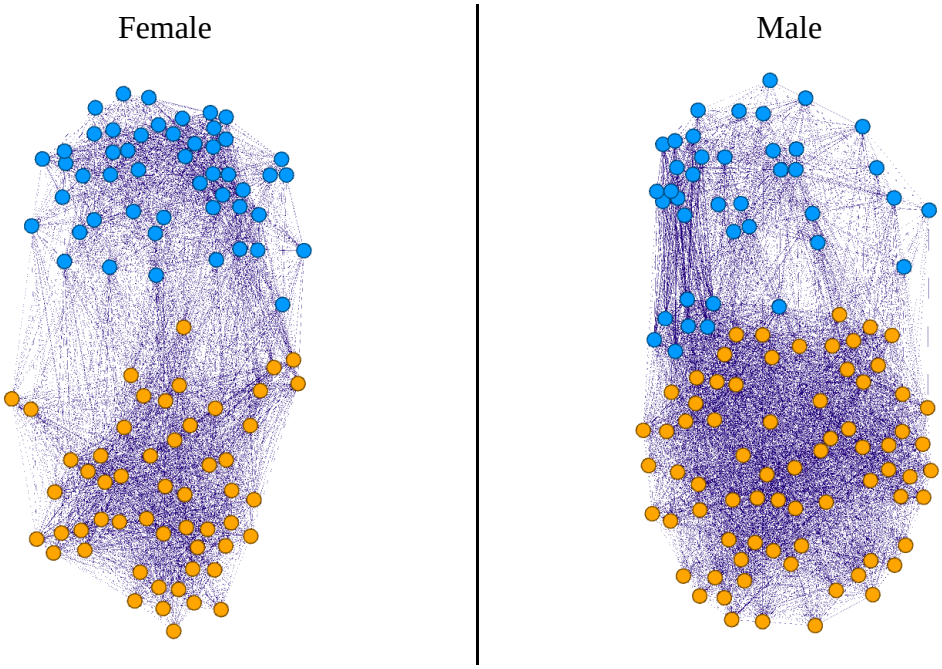


Figure 31

Lunch status in network structure of 12th grade

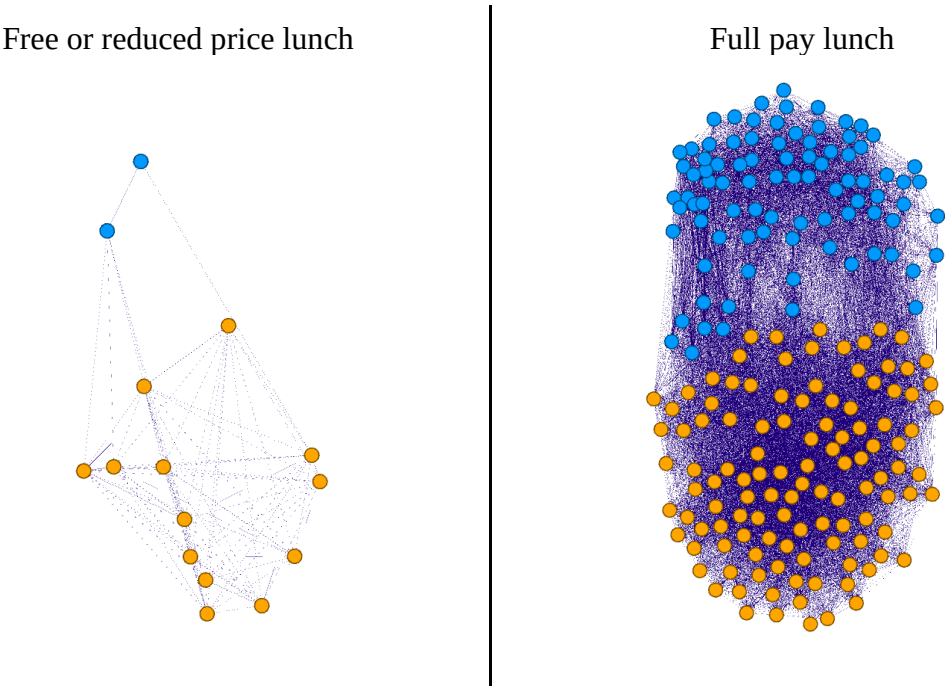


Figure 32

Disability status in network structure of 12th grade

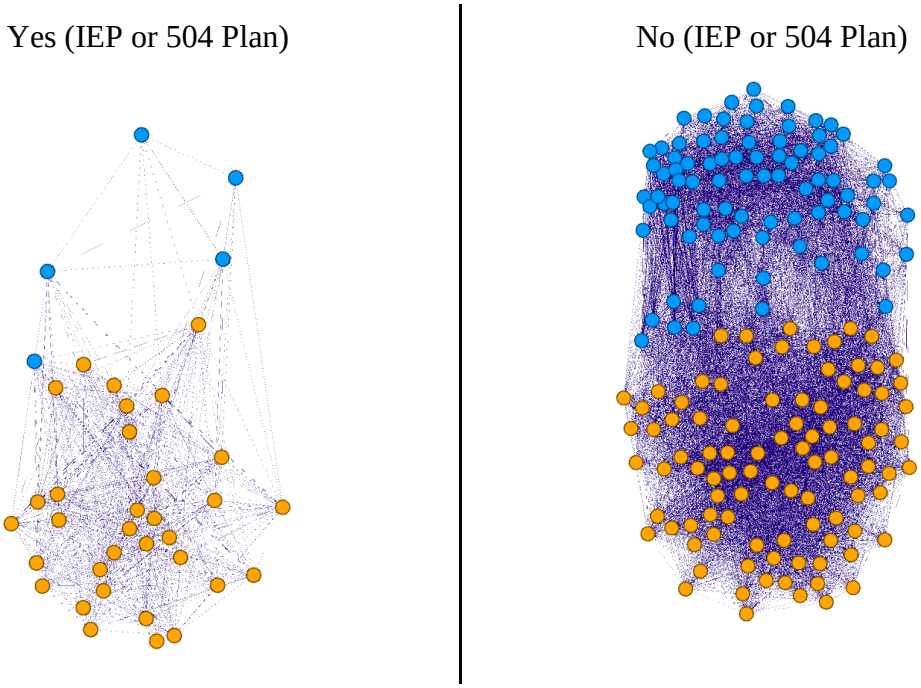


Figure 33

Residency status in network structure in 12th grade

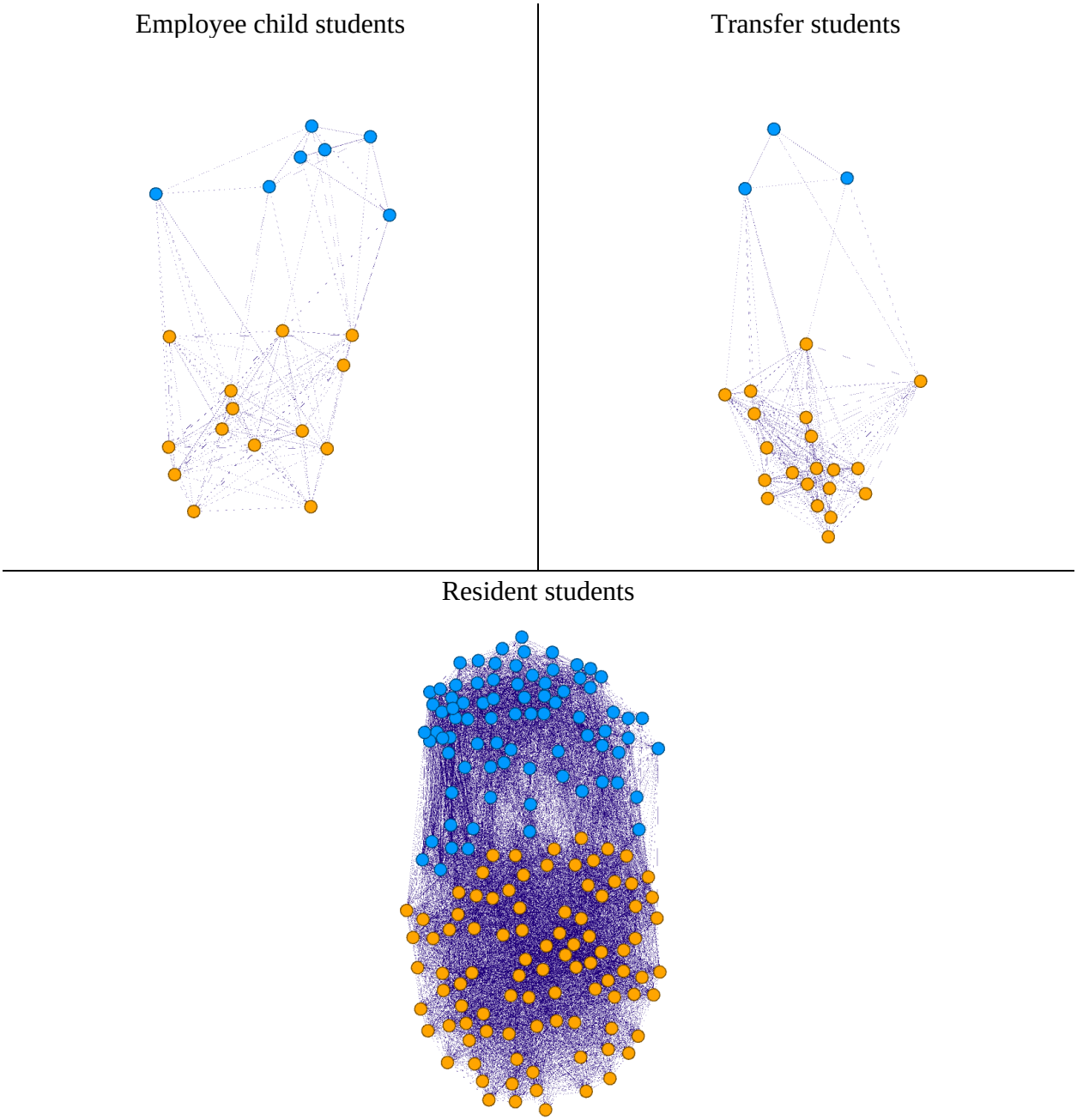
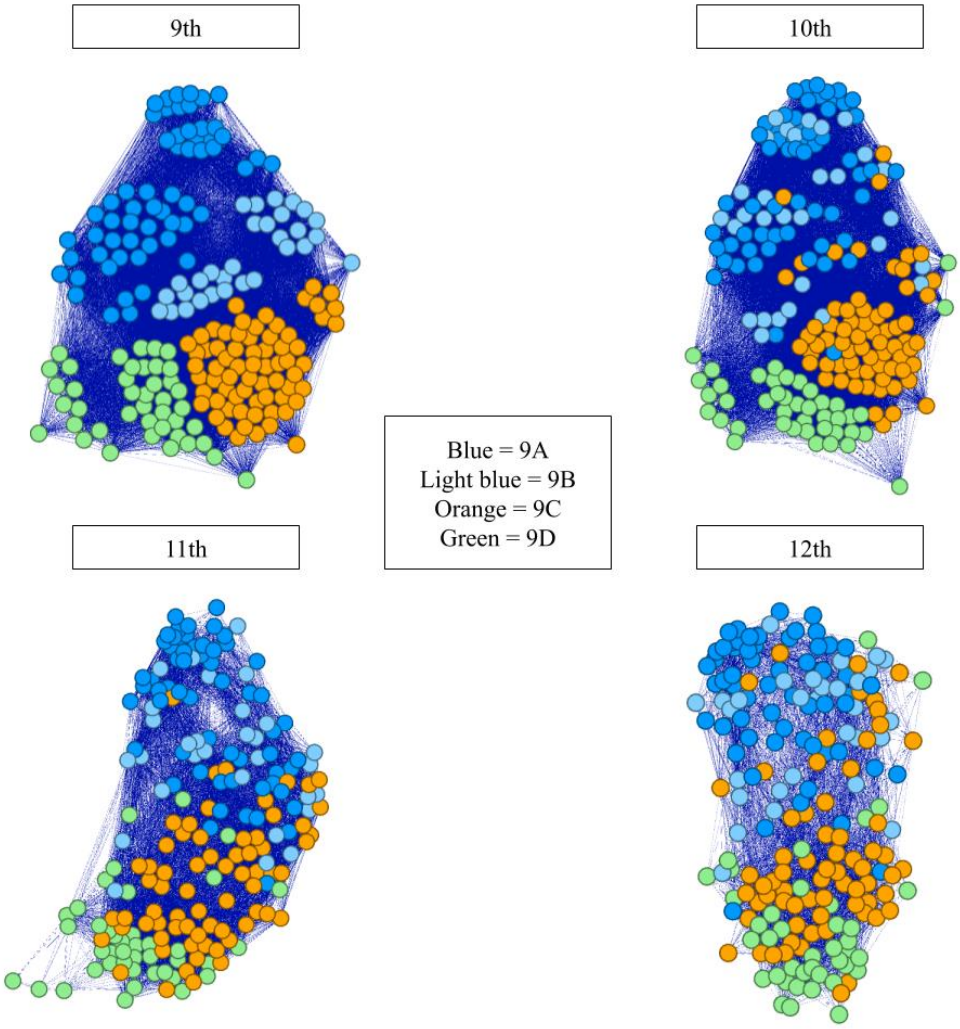


Figure 34

Student networks over time by 9th grade community



Appendix A

List of English courses

Course level	Course title	Grade level
Remedial	English I	9th
	English II	10th
	English III	11th
	English IV	12th
Regular	College Prep English I	9th
	College Prep English II	10th
	College Prep English III: American Literature	11th
	College Prep English IV	12th
Advanced	Honors English I	9th
	Honors English II	10th
	Honors American Literature	11th
	AP English Literature	12th
	AP English Language	12th

Appendix B

List of mathematics courses

Course level	Course title	Grade level
Remedial	Pre-Algebra I and II	any
	Algebra I	any
	Geometry	any
	Algebra II	any
	Algebra III	any
	Consumer Math	any
	College Prep Algebra I	any
Regular	College Prep Geometry	9th
	College Prep Algebra II	10th
	College Prep Functions, Statistics, Trigonometry	11th
	College Prep Pre-Calculus	11th –12th
	Honors Calculus	12th
Advanced	Honors Geometry	9th
	Honors Algebra II-Trigonometry	10th
	Honors Pre-Calculus	11th
	AP Calculus AB	12th
	AP Calculus BC	12th
	Algebra and Number Theory	11th –12th
	AP Statistics	11th –12th

Note: Students enrolled in regular courses not according to grade level were coded as remedial if they enrolled after grade level and as advanced if they enrolled before grade level.

Appendix C

List of science courses

Course level	Course title	Grade level
Remedial	Foundations of Physics	9th
	Foundations of Chemistry	10th
	Foundations of Biology	11th
Regular	Freshman Physics	9th
	Chemistry	10th
	Biology	11th
	Anatomy and Physiology	11th –12th
	Astronomy	11th –12th
	Evolution	11th –12th
	Plant Science	11th –12th
	Forensic Science	11th –12th
	Advanced Forensic Science	11th –12th
Advanced	Honors Freshman Physics	9th
	Honors Chemistry	10th
	Honors Biology	11th
	AP Biology	11th –12th
	AP Chemistry	11th –12th
	AP Environmental Science	11th –12th
	AP Physics I	11th –12th
	AP Physics II	11th –12th

Appendix D

List of social studies courses

Course level	Course title	Grade level
Remedial	Topics in World-U.S. History I	9th
	Topics in World-U.S. History II	10th
	Topics in American Government	11th
Regular	World-U.S. History I	9th
	World-U.S. History II	10th
	American Government	11th –12th
	African-American Studies	11th –12th
	Classical Civilizations	11th –12th
	Current Issues	11th –12th
	Gender Studies	11th –12th
	World at War: History of World Wars I and II	11th –12th
	Film in American Society	11th –12th
	Music in American Society	11th –12th
	History of St. Louis	11th –12th
	Philosophy	11th –12th
	Sports and Western Society	11th –12th
	Sociology	11th –12th
Advanced	AP U.S. History	11th –12th
	AP World History	11th –12th
	AP European History	11th –12th
	AP Government	11th –12th
	AP Economics	11th –12th
	AP Human Geography	11th –12th
	AP Psychology	11th –12th