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The *What* and the *Where*: An Analysis of
Alternate Curriculum Participation and Placements for Secondary Students

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Special Education

by

Karolyn Maurer

2024

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ABSTRACT OF THE DISSERTATION

The *What* and the *Where*: An Analysis of
Alternate Curriculum Participation and Placements for Secondary Students

by

Karolyn Maurer

Doctor of Philosophy in Special Education

University of California, Los Angeles, 2024

Professor Connie L. Kasari, Chair

As per the Individuals with Disabilities Education Improvement Act (2004), students who receive school-based special education services must be educated in the least restrictive environment and participate in the general education curriculum used for instruction of all students. This includes students with extensive support needs who may require more supports and services to access their free and appropriate public education. The present study used longitudinal special education administrative record data from a large school district to review general education access for students with extensive support needs who were educated with alternate curriculum in grades 6-12. The three-part study analyzed timing and dosage of alternate curriculum participation, identified the predictors of school placements and time spent in a general education classroom, and further investigated students who experienced “dual segregation” – those who had a highly restrictive placement while educated with alternate

curriculum. First, results showed that, of the 2,192 students who received IEP services for seven years of middle and high school in the district and who were educated with alternate curriculum for at least one of those years, over 68% (n = 1,497) were educated with alternate curriculum for all seven years. Additionally, of the students who were switched from general curriculum to alternate curriculum in middle/high school (n=690), the highest rate of switching occurred in 7th grade (25%). The results of logistic regression found that disability classifications, grade level, free/reduced-priced lunch state, and race/ethnicity were predictors of a more restrictive school placement for students provided instruction with alternate curriculum compared to a traditional public day school. Lastly, results indicated that students with classifications often associated with more behavioral needs (e.g., emotional disorder) or specialized needs (e.g., orthopedic impairment) were more likely than students with intellectual disability to experience dual segregated. Implications for research and practice are discussed.

The dissertation of Karolyn Maurer is approved.

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2024

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Introduction

Increasing research finds improved academic outcomes for students with disabilities educated in general education environments (e.g., Cole et al., 2021; Cole et al., 2023; Cosier et al., 2013; Kramer et al., 2021). Greater academic achievement has also been noted for students with more extensive support needs educated within inclusive settings (Barrett et al., 2020; Buckley et al., 2006; Gee et al., 2020; Mansouri et al., 2022). These studies suggest a positive association between inclusive placements and academic outcomes for students receiving school-based special education services through an Individualized Education Program (IEP). The decision about a child's educational setting is anchored in the least restrictive environment provision of the Individuals with Disabilities Education Improvement Act (IDEA; 2004), which requires IEP teams to provide the least restrictive setting available in which students' needs can be met and to educate students alongside peers without disabilities to the greatest extent possible. The least restrictive *placement*, however, is only one component of the access to general education specified in IDEA (2004). The federal policy further states that all students with disabilities must participate in and make progress on general education curriculum (referred to as general curriculum throughout this paper). While a student's school and/or classroom setting importantly explains *where* they spend their school day, it does not describe *what* is taught. Therefore, details about curricular materials and academic instruction are vital for a thorough understanding of students' involvement in general education broadly.

IDEA (2004) describes a continuum of placement options for students with IEPs, ranging from inclusive (i.e., a general education classroom in a traditional public school) to restrictive (e.g., special education classroom, special education school). While research has shown expanded access to general curriculum is facilitated when placement is within general education

settings (Soukup et al., 2007), general curriculum may be taught across all educational environments. Accommodations (e.g., visual supports, read aloud, extra time to complete assignments) may be needed for students with disabilities to access curriculum regardless of placement. Students with extensive support needs, however, may require further modifications in order to participate in general curriculum instruction.

The literature describes students with extensive support needs as those commonly receiving IEP services under the disability classifications of Autism, intellectual disability, multiple disabilities, or deaf/blindness, who likely require substantive and consistent school-based supports and services due to a significant cognitive impairment, and who qualify for their state's alternate assessment aligned with alternate achievement standards (AA-AAS; Taub et al., 2017). In the district of the present study, a district-wide alternate curriculum compatible with the state's AA-AAS is available for students with extensive support needs who require significant modifications to the curriculum. Curriculum type and assessment type (general, alternate) are both documented on the student's IEP in this district, and curriculum type was an available variable within the data used for the present study. Therefore, curriculum type – alongside educational placement data – offers a comprehensive review of the involvement in general education experienced by students with disabilities. Exploration of students educated with alternate curriculum, specifically, provides insight into students with extensive support needs. Longitudinal district-level IEP administration data was utilized for the present study to explore alternate curriculum patterns and educational placements of middle and high school students with extensive support needs.

Grade-Level Standards and Assessments

The Every Student Succeeds Act (ESSA; 2015) mandates districts across the U.S. to monitor students' academic proficiency in grades 3-8 and once in high school. The majority of students receiving special education services through an IEP take the same general assessments as their peers without IEPs, while students with extensive support needs may qualify to take their state's AA-AAS. The content assessed on the AA-AAS is derived from the same grade-level standards that are evaluated on the general education assessments, but the AA-AAS presents different *achievement* standards (Quenemoen & Thurlow, 2015). These alternate achievement standards describe the performance level (e.g., basic, proficient, advanced) for an individual student (Kearns et al., 2020), providing information to teachers about the academic proficiency of each unique learner taking the AA-AAS (Quenemoen & Thurlow, 2015).

ESSA (2015) further stipulates that instruction for language arts, math, science, and other content areas be tethered to grade-level general education *content* standards. Content standards guide teaching and learning by describing the knowledge and skills students should master in grades Kindergarten through 12th grade. Content standards, therefore, inform the curricular resources (e.g., lesson plans, activities) used for instruction (Kearns et al., 2020). The state of the present study, along with many other states, utilized the Common Core State Standards (CCSS) to guide grade-level general education instruction during the years included in data collection for this study (Common Core State Standards Initiative, 2021). For example, the CCSS articulate that 6th graders should be able to, "Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text", while 9th graders should be able to, "Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain" (Common Core State Standards Initiative, 2021).

IDEA (2004) states that all students with IEPs, including those with extensive support needs, must make progress on the general curriculum aligned with general education standards (e.g., CCSS). The U.S. Department of Education (2015) further clarifies that IEP goals must be aligned with grade-level content standards. For students with extensive support needs, however, curricular adaptations in depth, breadth, or complexity may be essential for their understanding and participation in classroom instruction (Sabia et al., 2020). Such requirements for curricular modifications may prompt instruction with “alternate curriculum” matched with alternate content standards. The state of the present study uses the Core Content Connectors to guide such instruction (Core Content Connectors, 2014). These alternate content standards aim to narrow the most essential grade-level CCSS for the instruction of students with extensive support needs. In fact, the Core Content Connectors intended to shift instruction for students with extensive support needs from primarily promoting basic adaptive skills to teaching grade-level content and academic skills (Ayres et al., 2011). For example, the Core Content Connector for the 6th grade standard mentioned above is, “Refer to details and examples in a text when explaining what the text says explicitly”, with the essential understanding being, “Recall details from the text” (Core Content Connectors, 2014). Gee et al.’s (2024) study captured experts’ perspectives about general curriculum access for students with extensive support needs. Participants asserted that students with extensive support needs should be provided instruction on grade-level general education content. Respondents stated that the “big ideas” should first be pulled from the general education teacher’s unit and lesson plans, then the important “key concepts” should be selected that will result in the most engagement for students with extensive support needs (Gee et al., 2024, p. 15). The Core Content Connectors do such work for each of the CCSS, as “Essential Understandings” are named for each standard (Core Content Connectors, 2014). In theory,

alternate curriculum developed from the Core Content Connectors is linked with general curriculum aligned to the CCSS, thereby fulfilling IDEA’s (2004) mandate of general curriculum access and participation for all students with disabilities. However, alternate curriculum instruction often falls short of this intention, as alternate curriculum is often not aligned with grade-level content, does not target all content areas, and lacks individualization (Sabia et al, 2020).

District-Specific Details

The terminology of “alternate curriculum” may have different meanings across various districts and schools. In the district of the present study, IEPs include a binary option for both “assessment type” (general education, alternate) and “curriculum type” (general education, alternate), wherein the assessment and curriculum type are likely paired (e.g., a student who participates in the state’s AA-AAS is provided instruction with alternate curriculum). Students may be educated with alternate curriculum during any grade level starting with Transitional Kindergarten/Kindergarten. Assessment and curriculum types can change year over year by the IEP team depending on a student’s present levels of performance. During the academic years included in the data, diploma requirements in the district hinged on the completion of specific general education coursework. Therefore, at the time of data collection, alternate curriculum participation yielded a certificate of completion rather than a high school diploma and allowed students to receive continued special education services in district schools targeting career and transitional skill development. It is also important to note that, during the time of data collection, a packaged alternate curriculum was available for schools to teach core subject areas across grade levels.

Students With Extensive Support Needs

Disability Classifications of Students With Extensive Support Needs

While the present study focuses on students educated with alternate curriculum, prior research has reviewed the characteristics of students participating in their state's AA-AAS specifically. Kearns et al. (2011) found students taking their state's AA-AAS were likely to receive IEP services under the classifications of Autism, intellectual disability, or multiple disabilities – eligibilities which align with the formerly stated definition of students with extensive support needs (Taub et al., 2017). All students receiving special education services through an IEP, however, may qualify for the AA-AAS (Kleinert et al., 2009). For example, in a sample of 117 elementary students participating in their state's AA-AAS, disability eligibilities included health impairment, speech/language impairment, orthopedic impairment, hearing impairment, visual impairment, and traumatic brain injury, as well as Autism, intellectual disability, and multiple disabilities (Jackson et al., 2022). Similarly, Maurer et al. (in press) reviewed student characteristics for nearly 11,400 elementary school students educated with alternate curriculum in one district and found students with all disability types represented, including other health impairment, emotional disturbance, and speech/language impairment. Low academic achievement or the need for more specialized instruction may help interpret why IEP teams choose the AA-AAS for students with more mild disability types – those not commonly associated with extensive support needs (Cho & Kingston, 2015). Special educators reported considering AA-AAS participation for students who demonstrated below grade-level academic aptitude and for whom instructional modifications were required for accessibility, even if a significant cognitive impairment was not specified (Cho & Kingston, 2013). This may partially explain assessment switching (Saven et al., 2016) and curriculum switching (Maurer et al., in press) year over year.

Sociodemographic Characteristics of Students With Extensive Support Needs

The sparse data available for students educated with alternate curriculum or taking their state's AA-AAS limits available sociodemographic information about students with extensive support needs. Furthermore, studies utilizing samples of participants assessed with AA-AAS or educated with alternate curriculum cannot depict the sociodemographics of all public school students with extensive support needs because such studies are constrained to their unique samples (i.e., Jackson et al., 2022; Maurer et al., in press). Review of the broader literature is therefore useful to contextualize the sociodemographic characteristics of students with disabilities, namely students with Autism and intellectual disability who are most likely to be educated with alternate curriculum in this district (Maurer et al., in press), identified as students with extensive support needs (Taub et al., 2017), and assessed with their state's AA-AAS (Kearns et al., 2011). It should be noted, however, that not all students receiving special education services under Autism or intellectual disability have extensive support needs and participate in the AA-AAS or alternate curriculum.

Race/ethnicity gaps in Autism diagnosis have been widely reported, but recent data suggest a decline in such discrepancies (Pham et al., 2022). Based on a national survey response from families with children ages 3-17, White children were found to be more likely than Black and Hispanic children to receive an Autism diagnosis (Xu et al., 2018). Maenner and colleagues (2020), however, found Autism prevalence was significantly lower for Hispanic children compared to Black, White, and Asian American populations, suggesting barriers due to family socioeconomics, language, or lack of healthcare access (Centers for Disease Control, 2019). Shaw et al. (2021) found a lower prevalence of Autism amongst 4-year-old White children compared to Black, Hispanic, and Asian/Pacific Islander children of the same age, which

contradicts Mandell et al.'s (2009) earlier finding that children from racial and ethnic minority groups often experience delays in the evaluation/diagnosis process and receive an Autism diagnosis at an older age. Pham et al. (2022) suggest the gap across race/ethnicity groups is decreasing though, wherein Black children were 11% less likely to be diagnosed with Autism compared to White children in 2017, but were 3% more likely to have an Autism diagnosis in 2021. Moreover, overrepresentation exists of Black students eligible for IEP services under intellectual disability: In the 2019-2020 school year, Black students were 1.48 times more likely to receive services under intellectual disability compared to White (.84) and Hispanic (.99) students (Office of Special Education, 2021). A review of North Carolina educational data revealed a positive correlation between the proportion of Black students in a county with the proportion of students eligible for special education services under intellectual disability (Howard et al., 2020). Black children were also more likely to be diagnosed with a co-occurring intellectual disability compared to their Hispanic, White, and Asian/Pacific Islander peers (Baio et al., 2018; Shaw et al. 2021).

Socioeconomic indicators of students with Autism and intellectual disability classifications have also been explored in prior research, pointing to income disparity across disability groups. The strong association between race/ethnicity and income status must be noted, as it is likely this intersectionality of sociodemographic characteristics influence the previously discussed disparity across disability classifications (Grindal et al., 2019). For instance, one state's data showed that students who qualified for free/reduced-priced lunch were more likely to receive special education services than students who did not qualify (Sullivan & Bal, 2013). Boswell et al. (2014) reported socioeconomic discrepancies for Autism diagnoses in that schools with the highest median incomes had greater rates of Autism. Autism eligibility was found to be

positively correlated with increasing median income, while a negative correlation was found between median household income and intellectual disability eligibility (Howard et al., 2020). Kim et al. (2021) concluded that residency in low-resourced counties was associated with a higher probability of an intellectual disability eligibility compared to an Autism eligibility. Co-occurring intellectual disability and Autism is also associated with lower socioeconomic status (Shaw et al., 2021). Sturm et al.'s (2021) study revealed inequity of special education services for students from lower socioeconomic households and students of ethnic minority groups. Overall, the data illustrated fewer special education services provided to Black, Hispanic, Asian, and low-income students with Autism compared to White and higher-income students with Autism (Sturm et al., 2021).

Educational Settings for Students with Disabilities

A traditional public day school is the least restrictive (or most inclusive) school setting available. Other school options vary across states and districts but typically include special education schools, residential facilities, and home/hospital settings. The state of the present study offers a nonpublic school option for students with disabilities as well. A nonpublic school is a private special education school certified by the state and district to provide a public school student's educational benefit and services indicated on their district IEP. Nonpublic residential schools and nonpublic day schools are available. Meanwhile, students placed in a traditional public school setting may spend time in general education classrooms or in self-contained special education classrooms. IDEA (2004) requires districts to report the percentage of time students spend in a general education classroom within the three categories: $\geq 80\%$, 79-40%, and $< 40\%$. Students are considered to be fully included if they spend $\geq 80\%$ of their day in general education. Students spending 79-40% are partially included in general education but likely spend

the other time in a separate setting, such as a resource room or a self-contained special education classroom. The <40% category indicates a primary placement of a self-contained special education classroom. Students with <40% time in general education placements likely receive the majority of their content instruction in the self-contained classroom and may be integrated with peers without disabilities during electives, lunch, and/or recess (Jackson et al., 2022).

Overall, students with disabilities are spending more time in general education settings presently than in prior decades (National Center for Education Statistics (NCES), 2023; Williamson et al., 2020). In 2020, for example, over 66% of all students with IEPs in public schools spent $\geq 80\%$ of their school day in general education, a marked increase from the 46.5% of all students with disabilities who were fully included in 2000 (NCES, 2023). In a review of students with IEPs within one district who were educated in a traditional public day school setting from 5th-9th grades, 50% of students in the sample had a primary placement of a general education classroom for all five academic years, while just over 9% were educated in a self-contained special education classroom (Maurer et al., 2024). School and classroom placements may also change year over year. For example, in Maurer et al.'s (2024) study, 59% of students had a static classroom placement throughout the included grade levels, while over 40% of students with IEPs in the sample experienced a primary classroom change at least once.

Significant research points to improved academic achievement (e.g., Barrett et al., 2020), increased social engagement with peers (Gee et al., 2020; Jameson et al., 2022; Lyons et al., 2011; Mansouri et al., 2022), and more frequent interactions with teachers (Zagona et al., 2022) when students with extensive support needs are educated in the general education environment. However, students educated with alternate curriculum or assessed with the AA-AAS are often refused entry into general education settings (Gee et al., 2024; Kleinert et al., 2015; Kleinert,

2020; Maurer et al., in press). In fact, the use of alternate curriculum is often used as justification for a segregated school or classroom placement because the materials used to provide instruction are different from the curriculum used in general education settings (Gee et al., 2024). During the time of data collection in the district of study, the district offered curriculum-specific self-contained special education classrooms: self-contained special education classrooms using general curriculum were separate from self-contained special education classrooms using alternate curriculum.

Disability Classification and Placement

Studies have demonstrated placement disparities across disability classifications. In a review of one state's data, Kurth et al. (2014) found that students receiving special education services under the eligibility of multiple disabilities, emotional and behavioral disorders, or deaf/blindness were most likely to be educated in a separate school setting, while students with hearing impairments, vision impairments, or both were most likely to be placed in a residential facility. This is corroborated by more recent NCES (2023) data showing that students with these eligibility classifications have the highest rate of segregated school placements. Meanwhile, students with more mild disability eligibilities have experienced faster rates of inclusion than students with disability classifications indicative of extensive support needs. For example, in a review of 25 years of national placement data (1990-2015), Williamson et al. (2020) found that general education placements increased by 171% for students with a specific learning disability eligibility but only 34% for students with an intellectual disability classification. National data from 2020 report that 40.7% of students with Autism, 19.3% of students with intellectual disability, and 15.1% of students with multiple disabilities were placed in general education for

≥80% of their school day, compared to 74.5% of students with specific learning disability and 88% of students with speech/language impairment (NCES, 2022).

Some studies have reviewed educational placements specifically for students with extensive support needs, indicated by those educated with alternate curriculum or assessed by their state's AA-AAS. Using teacher surveys representative of 40,000 students taking the AA-AAS across multiple states, only 3% of students were primarily educated in a general education classroom setting (Kleinert et al., 2015). Maurer et al. (in press) found similar results of elementary students educated with alternate curriculum in one district. In the sample of over 11,000 students, less than 3% had a general education classroom placement within a traditional public day school. Research has shown students assessed with their state's AA-AAS were the most excluded group of all students with disabilities (Kleinert, 2020), despite alternate assessment (and curriculum) participation not requiring a separate placement (Sabia & Thurlow, 2019; Kleinert et al., 2020).

Other Characteristics and Placements

Analysis of placements demonstrates the variation in educational settings for students with disabilities across different geographic locations including states (Anderson & Brock, 2021) and districts (Brock & Schaefer, 2015). Prior research also reveals inconsistent findings regarding educational placement disparities across race/ethnicity groups and family income status. For example, a review of one state's data yielded no significant association between race/ethnicity and placement (Cosier & Causton-Theoharis, 2011), while a multi-state analysis found Black and Hispanic students were more likely than White students to have a separate classroom placement (Grindal et al., 2019). Maurer et al.'s (2024) review of students in grades 5-9 within one district's public day schools revealed that African American students were less

likely than White students to spend any time in a general education classroom, while Hispanic students were more likely than White students to spend time in a general education classroom. In another study using state-level data of students with Autism, Kurth et al.'s (2016) results showed that African American students, students who qualified for free/reduced-price lunch, and students from higher socioeconomic households were more likely to have a restrictive special education placement. Meanwhile, students who qualified for free/reduced-price lunch in Cosier & Causton-Theoharis's study (2011) experienced decreased rates of general education placements, and Maurer et al. (2024) found that students who qualified for free/reduced-priced lunch spent more of the school day in special education classrooms compared to their peers who did not qualify.

The Present Study

The objective of the present study is to examine the curriculum participation and placements of students with extensive support needs in grades 6-12 in a large urban school district. Extensive support needs were determined by alternate curriculum participation for at least one year during the included grade levels. Grades 6-12 correspond with middle school (grades 6-8) and high school (grades 9-12) in the district of study. The present study was divided into three related parts. Part I aims to explore the timing and dosage of alternate curriculum participation to identify when students started with alternate curriculum instruction and for how long they participated in alternate curriculum instruction. Part II examines the educational placements of students educated with alternate curriculum and the sociodemographic predictors of such placements. Lastly, Part III of the study further investigates students who experienced "dual segregation" – meaning they were educated with alternate curriculum AND had a highly segregated school or classroom placement.

Part I: Timing and Dosage of Alternate Curriculum Instruction

RQ1.1: When did students start with alternate curriculum instruction?

RQ1.2: For how many years were students educated with alternate curriculum in middle school and/or high school?

Part II: Educational Placements of Students Educated with Alternate Curriculum in Middle School and High School

RQ2.1: What are the student factors associated with a segregated school placement compared to a traditional public day school setting when educated with alternate curriculum?

RQ2.2: What are the student characteristics associated with a nonpublic school placement compared to having a special education school placement?

RQ2.3: For students with a traditional public school placement, what are the student factors associated with percentage of time in a general education classroom?

Part III: Dual Segregation

RQ3.1: When did dual segregation begin?

RQ3.2: How many years were students dually segregated in middle and high school?

RQ3.3: Is dual segregation predicted by disability eligibility, free/reduced-price lunch eligibility, grade level, or race/ethnicity?

Theoretical Framework

Zigler's developmental vs. difference theory (1969) serves as the theoretical framework for the present study. Specifically, two components of Zigler's theory are particularly relevant. First, Zigler's theory contested the popular idea that individuals with intellectual disability were a homogenous group. Burack and colleagues (2020) explain that Zigler refuted the commonly used thresholds (e.g., mild, moderate, severe) intended to characterize individuals with

intellectual disabilities, as such descriptors “imply an essential demarcation line between normality and pathology or, in this case, between persons with intellectual disability and the rest of the population” (p. 3). Additionally, Zigler emphasized the importance of the environment when understanding the behaviors of children with intellectual disabilities (Hodapp, 2021). This study first aims to understand the patterns of instruction for students with extensive support needs. The terminology of “alternate” versus “general” exudes an immediate *othering* of students – those who are excluded from the “regular” group participating in universal coursework. Such othering is further underscored by the physical separation of students with extensive support needs into segregated classrooms or restrictive school environments. Zigler asserted one’s environment is a contributing factor in a child’s behavior, which includes academic performance, interactions and reactions, and general conduct. Therefore, the school and classroom environment play a significant role in academic, social/emotional, and behavioral development. Zigler believed that children with intellectual disabilities developed in the same way as children without disabilities, just at a slower rate. This belief is contradictory to the special education approach that separates children with disabilities from their peers. The current study seeks to investigate adolescents with extensive support needs, as it is imperative to understand the curriculum and placement experiences of students in school.

Data and District Information

The present study utilizes de-identified, longitudinal special education administrative record data from a large urban school district in California. Data were available during academic years 2007-08 through 2018-19. The full dataset provided to the study team consists of information from IEPs for each student and each academic year special education services were received in the district. Data were drawn from student IEP records throughout the given school

years. Each year a student received special education services in the district during the study years was recorded as one observation. A student may therefore have between one and 13 observations in the full dataset, depending on how many years of IEP services were received from preschool-12th grade during the study years. District data for 2019, the final academic year of data collection for this study, show that students with IEPs accounted for 13.6% of all students, and 21.8% were considered English learners. Race/ethnicity data from 2019 show 77% of students were Hispanic, 8.5% were African American, 8.1% were White, 3.7% were Asian. Lastly, 84% of students qualified for free/reduced-price lunch.

School and Classroom Placements in the District

During the academic years included in the study, the large urban school district in which the present study took place offered a continuum of placement options for students receiving special education services through an IEP, as per IDEA (2004). Traditional public day schools were the least restrictive school setting available. All public day schools in the district offered general education classroom placements, while some public day schools maintained self-contained special education classrooms solely available to students with IEPs. Such self-contained special education classrooms were further delineated by the type of content standards and curriculum. Self-contained classrooms using general education curriculum differ from self-contained classrooms using alternate curriculum, but students educated with alternate curriculum were not required to be placed in an alternate curriculum-specific special education classroom. Similarly, when students with disabilities were educated with general curriculum aligned with CCSS, a self-contained special education classroom was still an available placement option. In addition to a public day school, the continuum of placement options in the district included separate special education schools. These schools are more restrictive than public day schools in

that they are separate campuses and only serve students with IEPs. Nonpublic schools, home/hospital settings, and other school options were also available to students with IEPs.

Part I: Timing and Dosage

Methods

Participants

Participants were included in this part of the study if they 1) received special education services through an IEP in the district throughout grades 6-12 during school years 2007-08 and 2018-19, and 2) received instruction with alternate curriculum at some point during those grade levels. Each included participant had an observation in the data for all seven years – grades 6-12. The total number of unique students included in this part of the study was 2,192. Table 1 shows the demographic information of participants for grades 6, 8, 10, and 12.

Measures

The following variables were included in the data provided to the study team from district partners and were used for Part I of the study.

Curriculum

In the district of study, two curriculum types were available for students receiving special education services through an IEP: 1) general curriculum and 2) alternate curriculum. The type of curriculum used to instruct a child was determined by the IEP team and may therefore change year over year. Curriculum type was a primary outcome variable for this study, so any participant observations in which curriculum type was not indicated (i.e., *NA*) were removed.

Disability Eligibility

Students who qualified for school-based special education services were eligible for services under one disability category, indicated on the IEP. Twelve disability eligibilities were

represented in the provided data for students in grades 6-12: Autism, deafness, deaf/blindness, emotional disturbance, hard of hearing, intellectual disability, orthopedic impairment, other health impairment, specific learning disability, speech/language impairment, traumatic brain injury, visual impairment. The eligibility of multiple disabilities was not used in the district's documentation of disability eligibilities provided to the study team. As per IDEA (2004), multiple disabilities indicate co-occurring disabilities of an intellectual disability and another eligibility (e.g., orthopedic impairment). Students who received services under the eligibility of multiple disabilities in this district during the years of study were recorded under the other primary disability type (e.g., intellectual disability, orthopedic impairment). Eligibilities may have changed from one year to the next, as per assessment results and IEP team decision.

Race/Ethnicity

Race/ethnicity was extracted from the IEP demographic information and was included in the given data. The dataset includes the following race/ethnicities: African American, Asian, Hispanic, White, Unknown, Mixed, Multi, Native American, Pacific Islander.

English Learner Status

Students in the state of the present study were considered an English learner during the study years if any language other than English was indicated by the family on a standard enrollment form. A child can be redesignated as "English proficient" with a score of a 3 (out of 4) on the English Language Proficiency Assessments for California (ELPAC) domains of reading, writing, speaking, and listening. In the provided data, the variable was coded as either *learner* or *proficient*. English learner students were evaluated with the ELPAC each year, so one's designation may change from *learner* to *proficient*.

Free/Reduced-Price Lunch Status

During the years of data collection, free/reduced-price lunches were available to all public school students from a qualifying household income. In school year 2018-19, the last year of data collection for this study, free lunch was available to students within a family of four whose annual income was \leq \$32,630, and a reduced-price lunch was available to students of a family of four with an annual income of \leq \$46,435 (California Department of Education, 2023b). Free or reduced lunch eligibility was reported in the given dataset as either *eligible* or *not eligible*.

Analysis

R version 2023.12.1+402 was used for all analyses.

RQ1.1: When did students start with alternate curriculum instruction?

The first question aimed to identify the timing of alternate curriculum instruction – when students started on alternate curriculum. If participants had observations in the data prior to grade 6, such observations were maintained to identify the first year of alternate curriculum instruction. A new variable was created to indicate the grade level in which a student was first educated with alternate curriculum. If a participant had a general curriculum observation prior to an alternate curriculum observation, the grade level of that curriculum switch was recorded in the new variable. If the participant’s first observation in the dataset revealed instruction with alternate curriculum, the variable was coded as “started on alternate curriculum”. For students with a first observation of alternate curriculum, the grade level of their first year of IEP services in the district was derived. Data were culled from frequency tables.

RQ1.2: For how many years were students educated with alternate curriculum in middle school and/or high school?

The objective of this question was to identify the dosage of alternate curriculum participation for students who were ever educated with alternate curriculum in middle school and/or high school. A set of new variables were created to count the number of years during grades 6 through 12 that students had alternate curriculum on their IEPs, then frequency tables represented the number of years. The 12th grade observations for each participant were then extracted to review the curriculum type used during the final year of high school, as curriculum type determined diploma eligibility during these years of study in this district.

Results

RQ1.1: When did students start with alternate curriculum instruction?

Of the 2,192 students in the sample, 31.45% (n = 690) of students had a general education curriculum observation prior to an alternate curriculum observation, and 68.52% (n = 1,502) of students were educated with alternate curriculum during their first year of IEP services in this district. Table 2 shows all results. Most notably, of the students who were ever educated with alternate curriculum in grades 6-12 who switched curriculum type from general to alternate (n = 690), 25.22% (n=174) were switched in 7th grade. Meanwhile, 68.52% of participants in the sample (n=1,502) received instruction with alternate curriculum during their first year of IEP services recorded in the given data. Of the students who had a first observation in the data with alternate curriculum instruction, 77.03% (n= 1,157) received IEP services in the district in elementary school (Transitional Kindergarten/Kindergarten-5th grade). See Table 3.

RQ1.2: For how many years were students educated with alternate curriculum in middle school and/or high school?

Of the 2,192 students who received IEP services in the district during grades 6-12 and who were educated with alternate curriculum for at least one of those years, 68.29% (n = 1,497)

were educated with alternate curriculum for all seven years. Meanwhile, 31.71% ($n = 695$) were educated with alternate curriculum for ≤ 6 years. Specifically, 7.39% ($n = 162$) of students were educated with alternate curriculum for one year, 3.69% ($n = 81$) for two years, 4.52% ($n = 99$) for three years, 3.65% ($n = 80$) for four years, 3.56% ($n = 78$) for five years, and 8.8% ($n = 195$) of students were educated with alternate curriculum for six years between grades 6 and 12. Additionally, 89.05% of students ($n=1,952$) were educated with alternate curriculum in 12th grade, while 10.95% ($n=240$) were educated with general curriculum in 12th grade.

Part II: Educational Placements

Methods

Participants

Students were included in Part II of the present study if they 1) were in grades 6-12 in the district between school years 2007-2008 and 2018-2019, 2) received special education services through an IEP during those years, 3) were ever educated with alternate curriculum in grades 6-12, and 4) had a school placement of a) a traditional public school, b) a special education school, c) a home/hospital setting, or d) a nonpublic school. Students with missing curriculum data were excluded. During the years of study, 133,044 unique students received IEP services at some point throughout grades 6-12, had a curriculum type indicated in the given data, and attended one of the school types named above. Of these students, 88.73% ($n = 118,045$) were only ever educated with general curriculum in middle and high school, while 11.27% ($n = 14,999$) were educated with alternate curriculum for at least one year during grades 6-12. The total sample size for part II of the study is 14,999.

Demographic information was pulled from participants' last observation in the data and is shown in Table 4. Results indicated that Autism ($n = 4,631$), intellectual disability ($n = 6,169$),

and orthopedic impairment (n = 2,074) were the three highest represented disability classifications. Notably, 93.13% of all students receiving services under intellectual disability and 68.34% of all students receiving services under orthopedic impairment eligibility were educated with alternate curriculum. Furthermore, 15.72% (n = 2,358) of all students ever educated with alternate curriculum were African American, 65.76% (n = 9,864) were Hispanic, and 47.60% (n = 7,140) were English language learners.

Measures

The following variables were included in the given dataset and were used in Part II of the study.

Curriculum

The curriculum used to instruct a student in a given year was indicated on the IEP and in the dataset as either general education curriculum or alternate curriculum.

Disability Eligibility

Students who received special education services in this district through an IEP qualified for services under one primary disability eligibility: Autism, deafness, deaf/blindness, emotional disturbance, hard of hearing, intellectual disability, orthopedic impairment, other health impairment, specific learning disability, speech or language impairment, traumatic brain injury, visual impairment. The classification of multiple disabilities was not included in the given data.

Race/Ethnicity

The following race/ethnicity groups were present in the data: African American, Asian, Hispanic, White, Unknown, Mixed, Multi, Native American, Pacific Islander.

English Learner Status

A student was considered to be an English learner or English proficient. English learner status may shift to English proficiency status upon a score of a 3 on the ELPAC.

Free/Reduced-Price Lunch Status

Qualification for free/reduced-priced lunch was coded in the data. A student either *qualified* or *did not qualify* for free/reduced-priced lunch based on their household income.

Residential Median Income

The data included the zip code of the child's residential neighborhood. U.S. Census data from the given year was then collapsed into the dataset to indicate the neighborhood's median income.

Grade Level

Students who were ever educated with alternate curriculum in middle school (grades 6, 7, 8) and/or high school (grades 9, 10, 11, 12) were included.

School Type

The current study included students who were educated within the following school types: traditional public day schools, special education schools, nonpublic schools, or home/hospital settings. In the present study, district-operated charter schools and community schools were collapsed into the traditional public day school category. The nonpublic school category was indicative of either a nonpublic residential school or a nonpublic day school.

Proportion of Time in General Education

The proportion of time spent in general education was an available variable in the data for each participant for each academic year in which special education services were received in the district. The proportion of time was automatically calculated within the district's IEP portal based on the time and location of all special education services.

Analysis

R version 2023.12.1+402 was used for all analyses.

RQ2.1: What are the student factors associated with a segregated school placement compared to a traditional public day school setting when educated with alternate curriculum?

A logistic regression was used to determine the predictors of segregated school placements for students educated with alternate curriculum in grades 6-12. A binary dependent variable was created to indicate the restrictiveness of the school placement: 1) public day school, the least restrictive school setting available for students, or 2) segregated school. Participants were considered to have a segregated school placement if they were educated in a nonpublic school, a special education school, or a home/hospital setting. Public day school served as the reference group. Independent variables included in the model were disability type (intellectual disability reference), race/ethnicity (White reference), English learner status (English proficient reference), free/reduced-price lunch status (did not qualify reference), along with median income of residential zip code and grade level as continuous variables. Each participant's first middle school/high school observation of alternate curriculum instruction was used for the analysis. Observations in which the participants' race/ethnicity was indicated as Mixed (n = 5), Multi (n = 6), Unknown (n = 8), Native American (n = 57), or Pacific Islander (n = 49) were removed due to low incidence. Observations in which the disability classification was speech/language impairment (n = 24), deaf/blindness (n = 6), or traumatic brain injury (n = 96) were also removed due to low incidence. The number of unique students included in this analysis was 14,751.

Odds ratios were interpreted as a percent increase or decrease in odds where the percent increase or decrease was calculated as the difference between an odds ratio 1 and the computed odds ratio. For example, an odds ratio of .42 represents a 58% decrease in odds ($1 - .42 = .58$); an odds ratio of 1.42 represents a 42% increase in odds ($1.42 - 1 = .42$). The neighborhood median

income was interpreted as a \$20,000-unit increase rather than a one-unit increase. To determine this, the beta coefficient was multiplied by 20,000, then exponentiated. The one-unit increase of the neighborhood median income is shown in Table 2, along with all other regression results. The *aod* and *car* packages were utilized for the analysis and assumptions in R. All assumptions were met.

RQ2.2: What are the student characteristics associated with a nonpublic school placement compared to having a special education school placement?

This question aimed to further examine the factors associated with a segregated school setting by identifying the predictors of a nonpublic school placement compared to a special education school placement when educated with alternate curriculum in grades 6-12. A logistic regression was used with a binary categorical dependent variable: nonpublic school or special education school (special education school reference). Independent variables included disability type (intellectual disability reference), race/ethnicity (White reference), English learner status (English proficient reference), free/reduced-price lunch status (did not qualify reference), while residential median income and grade level were included as continuous variables. Each participant's first middle school/high school observation of alternate curriculum was used for the analysis. Observations in which the participants' race/ethnicity was indicated as Mixed ($n = 3$), Multi ($n = 3$), Unknown ($n = 6$), Pacific Islander ($n = 20$), or Native American ($n = 27$) were removed due to low incidence. Observations with disability classifications of speech/language impairment ($n = 5$), deaf/blindness ($n = 6$), or traumatic brain injury ($n = 36$) were also removed due to low incidence. The analysis included 5,512 unique students. Of the student observations used in this analysis, 69.01% ($n = 3,804$) were special education school observations, and 30.99% ($n = 1,708$) were nonpublic school observations. Odds ratios and median income were

interpreted in the same way as the prior analysis. R packages *aod* and *car* were used for this analysis and assumptions. All assumptions were met.

RQ2.3: For students with a traditional public school placement, what are the student factors associated with percentage of time in a general education classroom?

This question aimed to identify the student factors associated with time spent in a general education classroom. Participants were included in this model if they were educated with alternate curriculum and their school placement was labeled as a traditional public day school during. Participant's first observation in the data in which alternate curriculum and public day school were present was included in the analysis. A multiple regression was used to determine the student factors associated with the proportion of time spent in a general education classroom. The continuous dependent variable was the proportion of time spent in a general education classroom and was interpreted as a percentage of time. Independent variables included disability type (intellectual disability reference), race/ethnicity (White reference), English learner status (English proficient reference), free/reduced-price lunch status (did not qualify reference), and the continuous variables of neighborhood median income and grade level. The first observation in which participants were educated with alternate curriculum in grades 6-12 was included in the model. Participant observations in which the disability eligibility was emotional disturbance (n= 41), speech/language impairment (n= 19), deaf/blindness (n= 1), hard of hearing (n= 57), traumatic brain injury (n= 60), deafness (n= 38), or visual impairment (n= 90) were removed due to low incidence. Observations in which race/ethnicity was Unknown (n= 4), Mixed (n= 3), Multi (n= 3), Native American (n= 34), or Pacific Islander (n= 30) were removed due to low incidence. The neighborhood median income was interpreted as a \$20,000-unit increase rather than a one-unit increase wherein the beta coefficient was multiplied by 20,000. The one-unit

increase is shown in Table 4, along with all other results. The total number of unique students included in this model was 9,843. All assumptions were met, including normality, multicollinearity, and outliers.

Results

RQ2.1: What are the student factors associated with a segregated school placement compared to a traditional public day school setting when educated with alternate curriculum?

Results revealed significance for most independent variables (disability eligibility, race/ethnicity, free/reduced-price lunch status, median income of residential zip code, and grade level). The disability eligibility of other health impairment ($p = .75$) and English language learner status ($p = .32$) were the only insignificant coefficients.

Compared to students with an intellectual disability eligibility educated with alternate curriculum in grades 6-12, students educated with alternate curriculum receiving services under Autism ($p < .001$, OR= 1.62, CI: [1.48, 1.79]), deafness ($p < .001$, OR=9.92, CI: [6.66, 15.11]), or emotional disturbance ($p < .001$, OR=6.58, CI: [4.52, 9.84]) had a 62%, 892%, and a 558% increase in odds of being placed in a segregated setting, respectively. Similarly, students with an eligibility of hard of hearing had a 598% increase in odds of being in a segregated school compared to a traditional public school ($p < .001$, OR=6.98, CI: [4.89, 10.06]). Furthermore, students with orthopedic impairment ($p < .001$, OR=6.30, CI: [5.61, 7.09]) or visual impairment ($p < .001$, OR=6.60, CI: [4.86, 9.03]) had a 530% and 560% increase in odds of a segregated school placement respectively. Only students educated with alternate curriculum receiving services under specific learning disability had a 71% decreased likelihood of being placed in a segregated school setting ($p < .001$, OR= 0.29, CI: [0.23, 0.36]).

Compared to White students educated with alternate curriculum in grades 6-12, African American students ($p=.02$, OR=0.84, CI: [0.72, 0.97]), Hispanic students ($p<.001$, OR=0.63, CI: [0.55, 0.72]), and Asian students ($p=.002$, OR=0.74, CI: [0.62, 0.89]) had a 16%, 37%, and 26% decrease in odds of being in a segregated school compared to a public day school, respectively, holding all other covariates constant. Compared to students educated with alternate curriculum in grades 6-12 who did not qualify for free/reduced-price lunch, students who did qualify for free/reduced-price lunch had a 65% decrease in odds of being in a segregated school compared to a public day school ($p<.001$, OR=0.35, CI: [0.33, 0.39]). For every \$20,000 increase in median income, there was an 11% decrease in odds of being placed in a segregated setting ($p<.001$, OR=0.99, CI: [0.99, 0.99]). Finally, for every one-unit increase in grade level, there was a 25% increase in odds of having a segregated school placement compared to a public day school placement ($p<.001$, OR=1.25, CI: [1.22, 1.27]). See Table 5.

RQ2.2: What are the student characteristics associated with a nonpublic school placement compared to having a special education school placement?

Results of the logistic regression revealed insignificant coefficients for the disability eligibility of visual impairment ($p=.18$), the race/ethnicity categories of African American ($p=.17$) and Hispanic ($p=.44$), and residential median income ($p=.22$). All other coefficients were significant. Results are shown in Table 6.

Compared to students receiving services under the eligibility of intellectual disability who were educated with alternate curriculum, students with Autism had a 259% increase in odds of being placed in a nonpublic school ($p<.001$; OR= 3.59, CI = [2.90, 4.45]), while students with emotional disturbance were 18,469% more likely to be placed in a nonpublic school compared to a special education school ($p<.001$; OR= 185.69, CI = [67.13, 667.19]). Similarly, students with

an other health impairment eligibility had a 376% increased odds of having a nonpublic school placement ($p < .001$; OR= 4.76, CI = [2.72, 8.21]), and students with specific learning disability had a 377% increased odds of a nonpublic school placement compared to a special education school placement ($p < .001$; OR= 4.77, CI = [2.79, 8.45]), holding all other covariates constant. Meanwhile, students receiving services under deafness were 86% less likely to be in a nonpublic school ($p = .01$; OR= 0.14, CI = [0.02, 0.53]) and students with hard of hearing were 74% less likely to have a nonpublic school placement compared to a special education school placement ($p < .01$; OR= 0.26, CI = [0.09, 0.62]). Similarly, students with an orthopedic impairment eligibility had a 96% decrease in odds ($p < .001$; OR= 0.04, CI = [0.02, 0.06]) of being placed in a nonpublic school compared to a special education school, holding all other covariates constant.

Compared to White students, Asian students ($p = .002$; OR=0.56, CI = [0.38, 0.81]) had a 44% decrease in odds of having a nonpublic school placement compared to a special education school placement, holding all other covariates constant. Compared to students educated with alternate curriculum who did not qualify for free/reduced-price lunch, students who qualified for free/reduced-price lunch had a 98% decrease in odds of being placed in a nonpublic school compared to a special education school ($p < .001$; OR=0.02, CI = [0.02, 0.03]). English learners were 62% less likely to be in nonpublic school compared to a special education school when compared to English proficient peers educated with alternate curriculum ($p < .001$; OR= 0.38, CI = [0.30, 0.49]). Lastly, for students educated with alternate curriculum who had a segregated school placement, there was a 24% decrease in odds of having a nonpublic school placement compared to a special education school placement for every one unit increase in grade level ($p < .001$; OR=0.76, CI = [0.73, 0.79]).

RQ2.3: For students with a traditional public-school placement, what are the student factors associated with percentage of time in a general education classroom?

The multiple regression revealed insignificant results for the independent variables of English language learners and grade level. Significant results are interpreted below. An important contextualization of results is the adjusted R² of the model, which was 0.04. Therefore, only approximately 4% of the variability in the dependent variable – time spent in general education – can be explained by the independent variables included in the model.

Compared to students educated with alternate curriculum who received IEP services under the eligibility of intellectual disability, students with the eligibility of orthopedic impairment ($B = -0.03$, $SE = 0.01$, $p < .001$) spent 3% less time in general education, holding all other variables constant. Meanwhile, students educated with alternate curriculum who received services under Autism ($B = 0.01$, $SE = 0.005$, $p < .05$), other health impairment ($B = 0.07$, $SE = 0.01$, $p < .001$), or specific learning disability ($B = 0.13$, $SE = 0.01$, $p < .001$) spent 1%, 7%, and 13% more time in general education respectively, compared to students with an intellectual disability eligibility. Compared to White students, African American ($B = -0.03$, $SE = 0.01$, $p < .001$), Asian ($B = -0.04$, $SE = 0.01$, $p < .001$), and Hispanic ($B = -0.03$, $SE = 0.01$, $p < .001$) students spent 3%, 4%, and 3% less time in general education, respectively, holding all other variables constant. Similarly, compared to students who did not qualify for free/reduced-price lunch, students who were eligible for free/reduced-price lunch spent 3% less time in general education ($B = -0.03$, $SE = 0.005$, $p < .001$). Meanwhile, for every \$20,000 increase in residential median income, the percentage of time in general education increased by .9% ($B = 0.00000044$, $SE = 0.000000099$, $p < .001$). Table 7 shows all results.

Part III: Dual Segregation

Methods

Participants

Participants who were dually segregated at any point in grades 6-12 were included in this part of the study. Students were considered to experience dual segregation if 1) they received instruction with alternate curriculum and 2) they had a placement of a separate school setting (i.e., special education school, nonpublic school, home/hospital setting) or a public day school setting but spent <40% of the school day in general education. A student with <40% time in general education had a primary classroom placement of a self-contained special education classroom. Of the 14,999 students ever educated with alternate curriculum in grades 6-12 in the district, 12,714 experienced concurrent segregation during middle school and/or high school grade levels. Table 8 includes all information for participants who experienced dual segregation. Demographic information was gathered from participants' last observation in the data.

Measures

The following measures were used in Part III of this study, which focused on dual segregation.

Curriculum

Students in the district were educated with alternate curriculum or general curriculum. Alternate curriculum was required to be considered "dually segregated" in this section.

School Type

A student was considered to be dually segregated if they had a placement of a special education school, a nonpublic school, or a home/hospital setting. Public day school was also included in this part of the study if the percentage of time spent in general education was <40%.

Percentage Category of General Education

Nationally, the percentage of time spent in a general education classroom is categorized by the percentage of time a child spends in a general education classroom, which is available within a public day school setting. A student who spent $\geq 80\%$ of the day in general education was considered to be fully included. A student in the 79%-40 category is partially included in a general education classroom and may spend some time in a special education classroom. Students spending $< 40\%$ of their school day in general education are primarily educated in a special education classroom.

Disability Eligibility

The disability eligibilities within the data are: Autism, deafness, deaf/blindness, emotional disturbance, hard of hearing, intellectual disability, orthopedic impairment, other health impairment, specific learning disability, speech or language impairment, traumatic brain injury, visual impairment.

Race/Ethnicity

The following race/ethnicity groups were present in the data: African American, Asian, Hispanic, White, Unknown, Mixed, Multi, Native American, Pacific Islander.

English Learner Status

Every student observation was coded as either English learner or English proficient.

Free/Reduced-Price Lunch Status

Each student observation was coded as either *qualified* or *did not qualify* for free/reduced-priced lunch.

Residential Median Income

The data included the zip code of the child's residential neighborhood based on U.S. Census data from the given year.

Grade Level

Students who were ever educated with alternate curriculum in middle school (grades 6, 7, 8) and/or high school (grades 9, 10, 11, 12) were included.

Analysis

R version 2023.12.1+402 was used for all analyses.

RQ3.1: When did dual segregation begin?

To determine the year in which dual segregation began, elementary observations were merged into the data for all students who experienced dual segregation in grades 6-12. Then data were extrapolated to identify the first grade level in which students were educated with alternate curriculum and placed in a highly restrictive setting. Frequency tables depicted results.

RQ3.2: How many years were students dually segregation in middle and high school?

This question aimed to identify the number of years from grade 6-12 that students spent dually segregated. Data were culled to include observations in which students were dually segregated in grades 6-12. Then, a new variable was created to count the number of observations for each participant. Frequency tables revealed results.

RQ3.3: Is dual segregation predicted by disability eligibility, income, race/ethnicity, or grade level?

This question examined the factors associated with dual segregation for students in grades 6-12 who were ever educated with alternate curriculum in grades 6-12. A logistic regression was utilized to determine the predictors. A new variable was created for the dependent variable to code whether a student was ever dually segregated or not (never dually segregated

was reference). The independent variables in the model included disability eligibility (intellectual disability reference), free/reduced-price lunch eligibility (not qualify reference), race/ethnicity (White reference), and grade level (6-12) as a continuous variable. Participants' first observation with alternate curriculum instruction in the data were used for the analysis. Observations in which the disability eligibility was deaf/blindness (n= 6), speech/language impairment (n= 24), or traumatic brain injury (n= 96) were removed due to low incidence. Observations in which a participant's race/ethnicity was Mixed (n=5), Multi (n=6), Unknown (n= 8), Native American (n = 57), or Pacific Islander (n= 49) were removed due to low-incidence. The total number of unique students included in the sample was 14,751. Of these students, 15.17% (n=2,238) never experienced dual segregation and 84.83% (n= 12,513) experienced dual segregation at some point in middle or high school. Odds ratios were interpreted as the percentage increase or decrease. See full explanation in the RQ2.1 analysis section. All assumptions were checked and met for the model.

Results

RQ3.1: When did dual segregation begin?

Grade levels in which dual segregation began for the sample of students (n = 12,714) are demonstrated in Table 9. Notably, 8.30% (n= 1055) of students were first dually segregated in 1st grade, 9.21% (n=1,171) began in 7th grade, 8.41% (n=1,069) in 9th grade, and 14.36% of students (n=1,826) were initially dually segregated in 12th grade.

RQ3.2: How many years were they dually segregated in middle and high school?

The number of years middle and high school students spent instructed with alternate curriculum and educated in a highly restrictive environment ranged from one to seven years. Of students in the sample (n= 12,714), 25.43% (n=3,233) of students spent one year, 15.45%

(n=1,965) of students spent two years, 13.99% (n=1,779) spent three years, and 12.27% (n=1,560) of students spent four years dually segregated. Additionally, 10.78% (n=1,371) of students spent five years, 10.78% (n=1,371) spent six years, and 11.29% (n=1,435) of students spent all seven years from grades 6-12 dually segregated.

RQ3.3: Is dual segregation predicted by disability eligibility, free/reduced-price lunch eligibility, race/ethnicity, or grade level?

Significant results were revealed for the following independent variables ($p < .05$) in the model and are interpreted below: all included disability classifications, free/reduced-priced lunch eligible, and grade level. The race/ethnicity of African American ($p = .70$), Asian ($p = .73$), and Hispanic ($p = .14$) were insignificant. All results are shown in Table 10.

Compared to students with intellectual disability, students who received services under specific learning disability ($p < .001$; OR = 0.19, CI = [0.17, 0.22]) or other health impairment ($p < .001$; OR = 0.53, CI = [0.41, 0.68]) had a 81% and 47% decrease in odds of experiencing dually segregated in grades 6-12, respectively, holding all other variables constant. Additionally, compared to students who did not qualify for free/reduced-price lunch, students who were eligible for free/reduced-price lunch were 11% less likely to experience dual segregation ($p = .04$; OR = 0.89, CI = [0.80, 0.99]), and with every one unit increase in grade level between grades 6-12, the likelihood of dual segregation decreased by 17% ($p < .001$; OR = 0.83, CI = [0.82, 0.85]).

Meanwhile, students with Autism had a 21% increased odds of dual segregation ($p = .001$; OR = 1.21, CI = [1.01, 1.36]). Students with deafness had an 869% increase in odds of dual segregation ($p < .001$; OR = 9.69, CI = [3.65, 39.41]). Students with emotional disturbance had a 159% increase in odds of experiencing dual segregation ($p < .001$; OR = 2.59, CI = [1.58, 4.53]).

Students with an orthopedic impairment eligibility had a 250% increased odds of dual segregation ($p < .001$; OR = 3.50, CI = [2.85, 4.33]). Students with hard of hearing ($p < .001$; OR = 5.47, CI = [2.62, 13.99]) or visual impairment ($p < .001$; OR = 5.42, CI = [2.85, 12.05]) had a 447% and 442% increase in odds of experiencing dual segregation in middle or high school, holding all other variables constant.

Discussion

As per IDEA (2004), public school students receiving special education services through an IEP must have access to general education. Such participation in general education is twofold – both *where* students are educated and *what* is used for instruction. Gee et al. (2024) notes the recent attention given to the *what* – the content and instructional materials used to educate students with extensive support needs, as well as what constitutes “access to” and “involvement in” general curriculum as required in IDEA (2004). Such a focus on general curriculum participation is also important given the association between curriculum and placement, in that students provided alternate curriculum instruction are commonly placed in a segregated setting (Maurer et al., in press; Gee et al., 2024). This study aims to add to the body of research focusing on curriculum access for students with extensive support needs by reviewing alternate curriculum participation patterns in conjunction with educational placements, as both indicators are needed to describe a student’s comprehensive involvement in general education.

Longitudinal IEP record data from a metropolitan school district was utilized for this study to investigate curriculum patterns and placement predictors of students with extensive support needs in grades 6-12. Four major findings are discussed in this section pertaining to student characteristics: disability classifications, race/ethnicity, socioeconomic status, and grade level.

Disability Classifications

All participants included in this study were educated with alternate curriculum at some point in middle school and/or high school, insinuating extensive support needs. All IEP disability classifications were represented, but findings showed that the eligibilities of intellectual disability, Autism, and orthopedic impairment were overrepresented. Over 93% of students with intellectual disability, 68% of students with an orthopedic impairment eligibility, and over 35% of students with an Autism classification were educated with alternate curriculum at some point in grades 6-12. This coincides with Maurer et al.'s (in press) prior study of students in this district educated with alternate curriculum during elementary school, which found the same disability categories most represented. While Kearns et al. (2011) found that students with intellectual disability, Autism, or multiple disabilities were most likely to participate in their state's AA-AAS, the data used for this study did not include the eligibility of multiple disabilities.

The high rates of alternate curriculum participation for students receiving services under intellectual disability is disconcerting, particularly given research highlighting lower outcomes for students with intellectual disabilities compared to other disability classifications (Baer et al., 2011). During the reviewed academic years, alternate curriculum participation resulted in a certificate of completion for 12th graders in the district. The high rate of participation for students with an intellectual disability eligibility may therefore be understood as low rates of diploma acquisition for this population. Given the overrepresentation of Black students receiving services under intellectual disability (Howard et al., 2020) and the importance of a diploma for postsecondary employment (Mazzotti et al., 2021), school personnel and IEP teams must be supported in using evidence-based strategies and accommodations to provide access to general curriculum for students receiving special education services under intellectual disability.

Placement Disparities Across Different Disability Classifications

Study results indicated a disparity in general education access across disability types, in that students with eligibilities indicative of more specialized needs (e.g., deafness, hard of hearing, visual impairment) and students with eligibilities often associated with behavioral needs (i.e., Autism, emotional disturbance) were more likely to have a restrictive school placement compared to students with an intellectual disability eligibility. Students with an intellectual disability classification were more likely to be educated in a traditional public day school compared to their peers with the disability types named above. These results corroborate Kurth et al.'s (2014) review of data across states that concluded students with dual-sensory impairments, multiple disabilities, and emotional behavioral disorders were likely to have segregated school placements. While students with deafness or hard of hearing, for example, may require more specialized support, such services do not require a segregated school and, in fact, are able to be provided in general education settings in a way that promotes equity and cultural responsiveness (Silvestri & Hartman, 2022). Meanwhile, maladaptive behaviors are often a reason used to rationalize exclusion of students with disabilities from general education environments (Kurth et al., 2019), despite students with extensive support needs exhibiting fewer off-task behaviors in inclusive settings (Toews et al., 2020). Students with behavioral needs experience higher rates of rejection than their peers without disabilities and with other disability classifications (Cook & Cameron, 2010), and teachers report emotional and behavioral difficulties as a primary barrier to general education (Alkahtani, 2022). Such findings suggest the need for training focused on evidence-based behavioral practices for teachers so that IEP teams do not rely on segregated placements in order to provide targeted behavioral supports. School systems-building must also

be prioritized, as IEP teams may be more likely to recommend inclusive placements if educators feel equipped with knowledge, skills, and strategies to provide all necessary supports.

The study then sought to further examine the two most common types of segregated schools: nonpublic schools and special education schools. Findings demonstrated that students educated with alternate curriculum who received services under disability classifications commonly associated with behavioral needs (e.g., Autism, emotional disturbance) were much more likely to have a nonpublic school placement than a special education school placement. This calls to question the function and perception of nonpublic schools in the district, particularly when research depicts such restrictive schools lead to increased problem behaviors (Powers et al., 2016). Families may elect to send their child to a nonpublic school, or IEP teams may determine a nonpublic school placement. Nonpublic schools may be perceived as the superior school option due to their specialized nature, particularly for parents of students with disabilities who are concerned about minimal teacher training in traditional schools and social rejection of their students within a diverse classroom (Leyser & Kirk, 2004). Extensive research articulates the academic, social/emotional, and behavioral benefits of inclusion for students with disabilities, though, underscoring the gap between research and practice (e.g., Cole et al., 2023; Gee et al., 2020; Toews et al., 2020).

In contrast, students receiving IEP services under disability classifications of specific learning disability and other health impairment were much more likely than students with an intellectual disability eligibility to have an inclusive placement, despite all students' alternate curriculum participation. First, students with a specific learning disability eligibility were much more likely to be in a traditional public day school rather than a segregated school (e.g., nonpublic school, special education school). Furthermore, students receiving services under

specific learning disability or other health impairment who had a public day school placement spent more time in a general education classroom and were much less likely to experience dual segregation. A review of educational placements from 1990-2015 illustrated that students with specific learning disabilities experienced a significant increase in inclusive placements throughout those academic years, much more so than other disability types (Williamson et al., 2020). Prior research explains that educators have more favorable attitudes about including students with higher-incidence disabilities such as learning disabilities (Lee et al., 2015), as these classifications may be perceived as requiring fewer academic, social, and behavioral classroom support. The present study demonstrates that this same disparity exists across disability classifications when all children are educated with alternate curriculum and are therefore considered to have extensive support needs.

Grade Levels

In the district, middle schools serve grades 6-8 while high schools include grades 9-12. Results of the study first revealed that, of the students who received IEP services in the district for all grades 6-12 and were educated with alternate curriculum for at least one of those years (n=2,192), 68% received instruction with alternate curriculum for all seven years of middle school and high school. This finding suggests minimal access to general curriculum during formative adolescent years. Additionally, of the participants with a general-to-alternate curriculum switch indicated in the data (n=690), the highest rate of curriculum switching occurred in 7th grade (25%). Seventh grade signifies early adolescence and the middle year of junior high, a developmental stage marked by decreased intrinsic motivation (Gillet et al., 2012) as well as dramatic physical, cognitive, and social changes (Eccles, 1999). The structure of middle schools is vastly different from elementary schools, requiring students to navigate new

educational environments and social demands with the expectation of consistent self-regulation (Narhi et al., 2017). Students with disabilities may require additional, targeted interventions to support their unique needs during these considerable transitions (Carter et al., 2014). It is noteworthy that students who were switched to alternate curriculum in grade 7 were educated with general curriculum throughout elementary school and in 6th grade. Future research should investigate IEP team reasoning for a curriculum type switch in the context of a student grade level, age, and developmental stage.

In contrast, of the participants with a general-to-alternate curriculum switch indicated in the data (n=690), 5% were switched in 12th grade, signaling these students were instructed with general curriculum from grades 6-11. A probable reason for this curriculum change in 12th grade may be to ensure the student graduates with a certificate of completion if the diploma option was inaccessible due to mandatory graduation requirements. This finding is promising in that students were provided access to the general curriculum for the vast majority of secondary school years, but it also raises questions about the reasoning for the curriculum change and the quality of general curriculum instruction if students were eventually switched to alternate curriculum. Prior research has offered ways to promote access to general curriculum for students with extensive support needs, including peer supports (Carter & Kennedy, 2006), Universal Design for Learning (Capp, 2017), multiple modes of instruction (e.g., team teaching, student groups), and stakeholder collaboration (Olson et al., 2016). Experts in the field of special education are currently focusing on general curriculum access for students with extensive support needs, but Gee et al. (2024) acknowledges that research must shift to general education *settings* in order to promote general curriculum instruction for this population of students, as instruction and placement are interconnected. Future research should focus on maintaining

general curriculum access for secondary students with extensive support needs, accounting for unique graduation requirements.

Study results also revealed significant findings for student grade levels in relation to educational placements. As students educated with alternate curriculum progressed from 6th through 12th grades, there was an increased likelihood of a segregated school placement (e.g., special education school, nonpublic school) compared to an inclusive public day school placement. Such restrictive school settings are placements only for students with IEPs, thereby offering no access to peers without disabilities or general education settings (Jackson et al., 2022). Prior research has found that rates of general education placements increased significantly for secondary students with disabilities from 1990-2007 (McLeskey et al., 2012), but inclusion tends to increase in elementary grades and decrease in middle school and high school (Cooc, 2022). While general education placements have increased for students with disabilities overall (Williamson et al., 2020), this study's results suggest students with more extensive support needs have more segregated school placements as they get older. Many barriers exist that may explain the exclusion of students with extensive support needs, including socioeconomic and geographic disparities, limited resources and professional development (Agran et al., 2020), ableism, a foundational misinterpretation of the least restrictive environment provision of IDEA (2004; Giangreco, 2020), among others. Furthermore, secondary teachers in particular express concerns about students with intellectual disabilities and about peer social approval (Ginerva et al., 2022), which may somewhat explain why students become more excluded as they get older.

This study also revealed that the likelihood of dual segregation decreased by 17% as students advanced through secondary school, suggesting that students educated with alternate curriculum had more inclusive placements as they got older. This is a promising finding for high

schoolers who were found to experience higher rates of inclusion, but the finding simultaneously provokes concern about the increased segregation of middle schoolers. Alternate curriculum participation does not require a separate school or classroom placement, as IEP goals can be targeted in general education settings (Heinrich et al., 2016). In fact, it is well documented in the literature that students with extensive support needs have higher rates of academic engagement (Gee et al., 2020), higher academic achievement (Krämer et al., 2021), and better post-secondary outcomes (Bouck, 2012) when educated in general education settings compared to special education settings. Future research must focus on effective planning practices and instructional techniques that can be used by teachers and staff to provide the appropriate curriculum modification for students educated with alternate curriculum. A particular focus on middle school settings is imperative.

Sociodemographic Characteristics

Findings of the present study demonstrate significant predictors in sociodemographic characteristics, namely socioeconomic status and race/ethnicity. Due to the interconnectedness of race/ethnicity and socioeconomics in education (Grindal et al., 2019) and the trends across the findings of this study, such sociodemographic characteristics are contextualized together. Socioeconomic status was delineated as students who qualified for free/reduced-price lunch (i.e., lower income) and those that did not qualify for free/reduced-price lunch (i.e., non-lower income). A student's residential neighborhood median income contributes additional information about socioeconomic level. Furthermore, the current study portrayed significant race/ethnicity predictors for educational placements, namely Hispanic, Asian, and African American children compared to White students.

Results first established that lower income students educated with alternate curriculum were less likely than non-lower income peers to be educated in a segregated school setting, and were therefore more likely to have a public day school placement. Hispanic, Asian, and African American students educated with alternate curriculum were also less likely than White students to have a segregated school placement. However, of the students with a public day school placement, students from non-lower income families spent more time in a general education classroom compared to students from lower income households, who spent less time in a general education classroom. Additionally, as the student's median neighborhood income increased, so too did the time spent in general education. Likewise, when comparing students across race/ethnicity groups who were all educated in a public day school, Hispanic, Asian, and African American students spent less time in a general education classroom compared to White students. This study focuses only on middle and high school students with extensive support needs, however, contributing to the paradoxical findings of prior studies' analysis of sociodemographic characteristics and educational placements (e.g., Cosier & Causton-Theoharis, 2011; Kurth et al., 2016). Research has revealed the association between student socioeconomic levels and the disability classification of intellectual disability (Howard et al., 2020; Kim et al., 2021), but future research should specifically address the relationship between educational placements and sociodemographic characteristics for students with extensive support needs.

The current study found that, when lower income students were educated in a restrictive school (i.e., nonpublic school, special education school), they were less likely to be in a nonpublic school. Such results substantiates prior research maintaining non-lower income students were more likely to be educated within a nonpublic school setting (Lauderdale-Littin et al., 2013). Finally, this study found that students from lower income families were 11% less

likely than their non-lower income peers to experience dual segregation – instruction with alternate curriculum and placement in a highly restrictive setting. This is a notable finding given prior research determining students who received free/reduced-priced lunch had increased rates of special education identification broadly (Sullivan & Bal, 2013). Such results demonstrate the nuanced layers of general education access and the role that family resources and cultural capital may play in IEP team decisions.

Implications for Research and Practice

Students with extensive support needs require considerable services and support in order to garner their free and appropriate public education. Providing quality instruction in the least restrictive environment and with access to general curriculum calls for purposeful and consistent partnership between researchers and practitioners. The research-to-practice gap must be strategically addressed in research in order to move the needle for practitioners working with students. To this point, implications for research and practice are considered together in this paper.

First, researchers and practitioners need a common language about instruction (i.e., curriculum vs. standards, achievement standards vs. content standards), a shared understanding of the mandates of IDEA (2004) and ESSA (2015), and clarification of what such policies look like in practice. For example, research literature argues that “alternate curriculum” should not be used for instruction, but IEPs in the district of study require the curriculum type to be indicated as either “general” or “alternate” – it is required information on the document. Therefore, the language used within research is mismatched with the language used in the field. A critical first step is to streamline the language and clarify inconsistencies so that researchers and practitioners can have a coherent conversation about the topic. Furthermore, policies that shape educational

requirements require clarification. Practitioners who are in charge of applying the policies in schools deserve a thorough, comprehensive understanding of the policies, as vague guidance is unfair to practitioners, students, and families and may lead to inequities. Some points of clarification include: 1) What does “access to general curriculum” actually mean? How should “access” be interpreted? How do practitioners navigate the “general education curriculum” as mentioned in IDEA (2004) and the “general education standards” referred to in ESSA (2015)? 2) How do teachers use “achievement standards” and “content standards” to guide their instruction? 3) If IEP goals are to be aligned to the CCSS, does alignment with the Core Content Connectors suffice?

The study adds to the body of research showing that students educated with alternate curriculum (and likely assessed with their state’s AA-AAS) are highly segregated in segregated schools or self-contained special education classrooms. As Gee et al. (2024) noted, this is likely because alternate curriculum is seen as a different, separate curriculum from general curriculum, thereby requiring a different setting from students learning with general curriculum materials. Future research should focus on changing this status quo. The confusion around language discussed above is present here though because, in the district of the present study, for example, alternate curriculum *is* different from general curriculum: it is listed as a different curriculum type on the IEP, and schools are able to use a packaged alternate curriculum offered by the district. Additionally, if students with extensive support needs are to have increased time in general education settings while still educated with alternate curriculum, research must focus on general education settings (Gee et al., 2024). While research has identified practices for meeting the needs of students with extensive support needs in a general education setting (e.g., Universal Design for Learning), researchers and teacher trainers must provide more targeted, detailed, and

individualized instruction to teachers about a) the content to prioritize, b) the process and practices for making the content accessible, and c) the delivery of such content within a general education classroom. Such training must be for general education teachers, administrators, and paraeducators in addition to special education teachers. Alternate curriculum materials created and implemented by teachers would likely be more aligned with the general curriculum taught in classrooms, but teachers must be equipped with the skills and resources (i.e., planning time) to create such individualized instructional materials.

Lastly, research about general education access for students with extensive support needs should be conducted at every level – nationally, state, district, school. Despite the same federal oversight, states and districts operationalize special education differently. Review of district data may allow for a more thorough snapshot of student experiences in schools throughout grade levels. Furthermore, the data can be contextualized within the specific policies and practices of the district. Partnerships between researchers and district personnel are therefore critical to ensure the data is properly contextualized and communicated to a broader audience.

Limitations

There are a number of limitations to the data used for this study. Data were pulled from administrative special education records from a district's IEP database. The study was therefore confined to the provided variables. Data did not include information about the type of assessment (general, AA-AAS) used to monitor an individual student each year of IEP services, limiting this study to curriculum type. IEP goals, IEP meeting notes, accommodations, and secondary disability data were unavailable in the data provided to the study team. The disability classification of multiple disabilities was not represented in the data provided to the study team from the district. The disability eligibility of multiple disabilities describes simultaneous

disabilities, including an intellectual disability and another eligibility (e.g., orthopedic impairment; IDEA, 2004). Due to the high number of students receiving services under intellectual disability who were educated with alternate curriculum, it is probable students with a multiple disability eligibility would have been represented in the analysis of students educated with alternate curriculum in this district. Secondary disability eligibilities, academic assessment information, individualized students schedules were also not included in the data. This study contextualized students educated with alternate curriculum as students with extensive support needs. However, it is likely that the group of students educated with alternate curriculum in middle and high school include students who did not have extensive support needs.

This study analyzed data from school years 2006-07 to 2018-19 from one school district in the U.S. Results may not be generalizable or representative of other districts due to the unique characteristics of this particular district. Some district and state policies have changed since the academic years included in this study. IEPs are written by IEP team members, so it is possible for clerical errors to be present on IEP documents. Unique IEP teams also have different IEP meeting practices and protocols for making IEP determinations for students, which convolutes the uniformity of individualized student data. In the district of the present study, curriculum-specific self-contained special education classrooms were available to students during the academic years included in the data. However, the curriculum type was not indicated within the variable representing the type of classroom in which the student was educated.

Conclusion

Students with disabilities are promised involvement in general education in public schools. To fully understand one's access to and participation in general education, though, *what* (curriculum type) is used for instruction and *where* (school and classroom placements) a student

spends their school day need to be analyzed concurrently. It is critical for education researchers, policy makers, district personnel, and school practitioners to know the current status of general education access for students with extensive support needs. District-level data and longitudinal data may offer unique insight into student experiences over time, as curriculum and placements may shift year over year. This study underscores inequities present in general education access in that patterns emerge across student characteristics and sociodemographic indicators.

Table 1*Participant Demographics of Students who Received Special Education Services in Grades 6-12*

	Grade 6 n (%)	Grade 8 n (%)	Grade 10 n (%)	Grade 12 n (%)
Disability eligibility				
Autism	719 (32.80)	728 (33.21)	740 (33.76)	740 (33.76)
Deaf blindness	1 (0.04)	1 (0.04)	1 (0.04)	0 (0.00)
Deafness	25 (1.14)	21 (0.96)	21 (0.96)	19 (0.87)
Emotional disturbance	5 (0.23)	3 (0.14)	6 (0.27)	10 (0.46)
Hard of hearing	19 (0.87)	28 (1.28)	30 (1.37)	28 (1.28)
Intellectual disability	791 (36.08)	817 (37.27)	834 (38.05)	856 (39.05)
Orthopedic Impairment	302 (13.78)	312 (14.23)	315 (14.37)	316 (14.42)
Other health impairment	76 (3.47)	66 (3.01)	61 (2.78)	57 (2.60)
Specific learning disability	214 (9.76)	181 (8.26)	147 (6.71)	129 (5.88)
Speech/language impairment	8 (0.36)	1 (0.04)	0 (0.00)	0 (0.00)
Traumatic brain injury	8 (0.36)	7 (0.32)	10 (0.46)	10 (0.46)
Visual impairment	24 (1.09)	27 (1.23)	27 (1.23)	27 (1.23)
Race/ethnicity				
African American	240 (10.95)	241 (10.99)	239 (10.91)	239 (10.91)
Asian	147 (6.71)	149 (6.80)	149 (6.80)	150 (6.84)
Hispanic	1,606 (73.27)	1,603 (73.13)	1,606 (73.27)	1,605 (73.22)
Native American	9 (0.41)	6 (0.27)	6 (0.27)	6 (0.27)

Pacific Islander	2 (0.09)	3 (0.14)	3 (0.14)	3 (0.14)
White	188 (8.58)	190 (8.67)	187 (8.53)	186 (8.48)
Mixed	0 (0.00)	0 (0.00)	1 (0.04)	1 (0.04)
Unknown	0 (0.00)	0 (0.00)	1 (0.04)	2 (0.09)
<hr/>				
English learner status				
English proficient	901 (41.10)	914 (41.70)	910 (41.51)	922 (42.06)
English learner	1,291 (58.89)	1,278 (58.30)	1,282 (58.48)	1,270 (57.94)
<hr/>				
Curriculum type				
General	534 (24.36)	345 (15.74)	270 (12.32)	240 (10.95)
Alternate	1,658 (75.64)	1,847 (84.26)	1,922 (87.68)	1,952 (89.05)
<hr/>				
Free/reduced-price lunch status				
Eligible	1,758 (80.20)	1,754 (80.02)	1,605 (73.22)	1,420 (64.78)
Not eligible	434 (19.80)	438 (19.98)	587 (26.78)	772 (35.22)

Note. Percentages out 2,192, the total number of students who had received services through an IEP in grades 6-12 and who had at least year of instruction with alternate curriculum

Table 2*Grade Level of Initial Switch From General Curriculum to Alternate Curriculum*

Grade level	Number of students who started with alternate curriculum instruction in given grade level (n = 690)	% of students who had a general curriculum observation prior to alternate curriculum observation (n = 690)	% of all study participants (N = 2,192)
TK/K	0	0.00	0.00
1 st grade	0	0.00	0.00
2 nd grade	18	2.61	0.82
3 rd grade	34	4.93	1.55
4 th grade	35	5.07	1.60
5 th grade	44	6.38	2.01
6 th grade	77	11.16	3.51
7 th grade	174	25.22	7.94
8 th grade	82	11.88	3.74
9 th grade	68	9.85	3.10
10 th grade	84	12.17	3.83
11 th grade	38	5.51	1.73
12 th grade	36	5.22	1.64

Note. Of all included participants (n=2,190), 31.45% (n = 690) had a general curriculum observation prior to their first alternate curriculum observation.

^aTK/K = transitional kindergarten/kindergarten

Table 3

First Year of IEP Services in the District for Students who Started with Alternate Curriculum Instruction

Grade level	Number of students in the given grade level with a first observation of alternate curriculum (n = 1,502)	% of students who had a first observation in the data of alternate curriculum instruction (n = 1,502)	% of all study participants (N = 2,192)
TK/K	3	0.20	0.14
1 st grade	99	6.59	4.52
2 nd grade	182	12.12	8.30
3 rd grade	272	18.11	12.41
4 th grade	268	17.84	12.23
5 th grade	333	22.17	15.19
6 th grade	345	22.97	15.74

Note. Of all included participants (n=2,190), 68.52% (n = 1,502) had a first observation in the dataset on alternate curriculum.

^aTK/K = transitional kindergarten/kindergarten

Table 4*Participant Information: Students Ever Educated with Alternate Curriculum in Grades 6-12*

	Students who ever had IEP services in grades 6-12 (N=133,044)	Of all students, <i>n</i> students educated with alternate curriculum (N=14,999)	% of students educated with alternate curriculum within given category ^a	% of n=14,999 students educated with alternate curriculum sometime in grades 6-12 ^b
Disability eligibility				
Autism	12,973	4,631	35.70	30.87
Deaf blindness	7	5	71.43	0.03
Deafness	554	132	23.83	0.88
Emotional disturbance	6,724	209	3.11	1.39
Hard of hearing	1,805	165	9.14	1.10
Intellectual disability	6,624	6,169	93.13	41.13
Orthopedic impairment	3,035	2,074	68.34	13.83
Other health impairment	15,896	372	2.34	2.48
Specific learning disability	80,833	915	1.13	6.10
Speech/language impairment	3,614	11	.30	0.07
Traumatic brain injury	316	97	30.70	0.65
Visual impairment	663	219	33.03	1.46
Race/ethnicity				
African American	21,937	2,358	10.75	15.72
Asian	3,544	946	26.69	6.31

Hispanic	92,690	9,864	10.64	65.76
Mixed	47	4	8.51	0.03
Multi	79	10	12.66	0.07
Native American	568	47	8.27	0.31
Pacific Islander	267	47	17.60	0.31
Unknown	72	9	12.50	0.06
White	13,840	1,714	12.38	11.43
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English learner status				
English learner	46,886	7,140	15.23	47.60
English proficient	86,158	7,859	9.12	52.40
<hr/>				
Free/reduced-price lunch status				
Eligible	78,556	9,026	11.49	60.18
Not eligible	54,488	5,973	10.96	39.82
<hr/>				
Residential neighborhood median income				
<\$40,000	33,598	3,722	11.08	21.81
\$40,000-79,999	78,126	8,957	11.46	59.72
\$80,000-119,999	13,965	1,520	10.88	10.13
>120,000	3,090	318	10.29	2.12
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Table 5*Results of Logistic Regression: Predictors of Segregated School Placement*

	Coefficient	SE	Wald	p-value	OR	95% CI for OR	
						Lower	Upper
Intercept	-1.68	0.12	-13.81	<.001	0.18	0.15	0.23
Disability							
Autism	0.48	0.05	9.93	<.001	1.62	1.48	1.79
Deafness	2.29	0.21	11.01	<.001	9.92	6.66	15.11
Emotional disturbance	1.88	0.20	9.52	<.001	6.58	4.52	9.84
Hard of hearing	1.94	0.18	10.58	<.001	6.98	4.89	10.06
Orthopedic impairment	1.84	0.06	30.83	<.001	6.30	5.61	7.09
Other health impairment	-0.04	0.13	-0.31	.75	0.96	0.74	1.23
Specific learning disability	-1.25	0.11	-10.98	<.001	0.29	0.23	0.36
Visual impairment	1.89	0.16	11.95	<.001	6.60	4.86	9.03
Race/ethnicity							
African American	-0.17	0.07	-2.32	.02	0.84	0.72	0.97
Asian	-0.29	0.09	-3.14	.002	0.74	0.62	0.89
Hispanic	-0.46	0.07	-6.74	<.001	0.63	0.55	0.72
FRL eligible	-1.03	0.04	-23.36	<.001	0.35	0.33	0.39
English learner	4.94	0.05	0.99	.32	1.05	0.95	1.16
Median income	-0.0000055	0.000001	-5.53	<.001	0.99	0.99	0.99
Grade level	0.22	0.01	24.62	<.001	1.25	1.22	1.27

Note. The results shown for residential median income demonstrate a one-unit increase.

^aFRL = free/reduced-price lunch

Table 6*Results of Logistic Regression: Predictors of Nonpublic School Placement*

	Coefficient	SE	Wald	p-value	OR	95% CI for OR	
						Lower	Upper
Intercept	2.57	0.28	9.04	<.001	13.16	7.55	23.11
Disability							
Autism	1.28	0.11	11.73	<.001	3.59	2.90	4.45
Deafness	-1.93	0.77	-2.50	.01	0.14	0.02	0.53
Emotional disturbance	5.22	0.57	9.10	<.001	185.69	67.13	667.19
Hard of Hearing	-1.35	0.48	-2.82	<.01	0.26	0.09	0.62
Orthopedic impairment	-3.27	0.23	-13.94	<.001	0.04	0.02	0.06
Other health impairment	1.54	0.28	5.47	<.001	4.76	2.72	8.21
Specific learning disability	1.56	0.28	5.53	<.001	4.77	2.79	8.45
Visual impairment	-0.35	0.26	-1.35	.18	0.70	0.42	1.16
Race/ethnicity							
African American	0.19	0.14	1.36	.17	1.21	0.92	1.62
Asian	-0.58	0.19	-3.05	<.01	0.56	0.38	0.81
Hispanic	0.11	0.14	0.77	.44	1.11	0.85	1.46
FRL eligible	-3.77	0.13	-28.74	<.001	0.02	0.02	0.03
English learner	-0.96	0.12	-7.61	<.001	0.38	0.30	0.49
Residential median income	0.0000027	0.0000023	1.22	.22	1.00	0.99	1.00
Grade level	-0.27	0.02	-12.51	<.001	0.76	0.73	0.79

Note. The results shown for residential median income demonstrate a one-unit increase.

^aFRL = free/reduced-price lunch

Table 7*Results of Multiple Regressions: Predictors of Time Spent in a General Education Classroom*

	Coefficient	SE	T-statistic (DF)	p-value	95% CI for Beta	
					Lower	Upper
Intercept	0.37	0.01	26.60	<.001	0.34	0.39
Disability						
Autism	0.01	0.005	2.38 (1)	.02	0.002	0.02
Orthopedic impairment	-0.03	0.01	-4.45 (1)	<.001	-0.05	-0.02
Other health impairment	0.07	0.01	5.64 (1)	<.001	0.05	0.10
Specific learning disability	0.13	0.01	16.67 (1)	<.001	0.12	0.15
Race/ethnicity						
African American	-0.03	0.01	-3.72 (1)	<.001	-0.05	-0.02
Asian	-0.04	0.01	-3.84 (1)	<.001	-0.07	-0.02
Hispanic	-0.03	0.01	-3.30 (1)	<.001	-0.04	-0.01
FRL eligible	-0.03	0.005	-6.28 (1)	<.001	-0.04	-0.02
English learner	-0.002	0.005	-0.47 (1)	.63	-0.01	0.01
Residential median income	0.00000044	0.000000099	4.44 (1)	<.001	0.00000025	0.00000064
Grade level	-0.00023	0.00107	-0.22	.83	-0.002	0.002

Note. The results shown for residential median income demonstrate a one-unit increase.

^aFRL = free/reduced-price lunch

Table 8*Participant Information: Dual Segregation*

	Number of unique students who experienced dual segregation (N = 12,714)	% of all students who were dually segregated (N = 12,714)	<i>n</i> students educated with alternate curriculum - Table 4, column 2 (N=14,999)	% of students educated with alternate curriculum in that subgroup
Disability				
Autism	4,086	32.14	4,631	88.23
Deaf blindness	5	0.04	5	100.00
Deafness	130	1.02	132	98.48
Emotional disturbance	195	1.53	209	93.30
Hard of hearing	156	1.23	165	94.54
Intellectual disability	5,205	40.94	6,169	84.37
Orthopedic impairment	1,970	15.49	2,074	94.98
Other health impairment	268	2.11	372	72.04
Specific learning disability	397	3.12	915	43.39
Speech/language impairment	10	0.08	11	90.91
Traumatic brain injury	81	0.64	97	83.50
Visual impairment	211	1.66	219	96.35
Race/Ethnicity				
African American	2,011	15.82	2,358	85.28
Asian	825	6.49	946	87.21
Hispanic	8,303	65.30	9,864	84.17

Native American	39	0.31	47	82.98
Pacific Islander	41	0.32	47	87.23
White	1,477	11.62	1,714	86.17
Mixed	3	0.02	4	75.00
Multi	7	0.05	10	70.00
Unknown	8	0.06	9	88.89
English learner status				
Proficient	6,631	52.15	7,859	84.37
Learner	6,083	47.84	7,140	85.20
Free/reduced-price lunch status				
Eligible	7,664	60.28	9,026	84.91
Not eligible	5,050	39.72	5,973	84.55

Note. Participants were considered dual segregated if they were educated with alternate curriculum and had one of the following placements the same year: a nonpublic school; a special education school; a home/hospital setting; or spent <40% of the school day in a special education classroom within a traditional public day school.

Table 9*Initial Grade Levels of Dual Segregation*

Grade Level of First Dual Segregation Observation	Number of students	% of dually segregated students (N=12,714)
TK/K	758	5.96
1st	1055	8.30
2nd	784	6.17
3rd	742	5.84
4th	719	5.65
5th	741	5.83
6th	1018	8.01
7th	1171	9.21
8th	983	7.73
9th	1069	8.41
10th	1017	8.00
11th	831	6.54
12 th	1826	14.36

Table 10*Results of Logistic Regression: Predictors of Dual Segregation*

	Coefficient	SE	Wald	p-value	OR	95% CI for OR	
						Lower	Upper
Intercept	3.37	0.13	25.28	<.001	29.27	22.56	38.09
Disability							
Autism	0.19	0.06	3.13	.002	1.21	1.07	1.36
Deafness	2.27	0.58	3.87	<.001	9.69	3.65	39.41
Emotional disturbance	0.95	0.27	3.57	<.001	2.59	1.58	4.53
Hard of Hearing	1.70	0.42	4.05	<.001	5.47	2.62	13.99
Orthopedic impairment	1.25	0.11	11.75	<.001	3.50	2.85	4.33
Other health impairment	-0.64	0.13	-5.03	<.001	0.53	0.41	0.68
Specific learning disability	-1.64	0.07	-21.87	<.001	0.19	0.17	0.22
Visual impairment	1.69	0.36	4.65	<.001	5.42	2.85	12.05
Race/Ethnicity							
African American	0.04	0.10	0.38	.70	1.04	0.86	1.26
Asian	-0.04	0.13	-0.35	.73	0.96	0.75	1.23
Hispanic	-0.12	0.08	-1.47	.14	0.88	0.74	1.04
FRL eligible	-0.11	0.06	-2.03	.04	0.89	0.80	0.99
Grade level	-0.18	0.01	-17.05	<.001	0.83	0.82	0.85

Note. FRL= free/reduced-price lunch

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