



SEPTEMBER 2026

Advancing Algebra I Success by Grade 9

**Barriers and Promising Practices for
Latino and English Learner Students**

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UNIDOSUS





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The Council of the Great City Schools is the only national organization exclusively representing the needs of urban public schools. Composed of 81 large-city school districts, its mission is to promote the cause of urban education and to advocate for inner-city students through legislation, research, and media relations. The organization also provides a network for school districts sharing common problems to exchange information and to collectively address new challenges as they emerge in order to deliver the best possible education for urban youth.

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Acknowledgment of Support

This publication was developed with support from UnidosUS as part of the Math Policy Project.

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September 2026



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Acknowledgements

The Council of the Great City Schools extends sincere appreciation to the many individuals who made this study possible. We are especially grateful to the district leaders, educators, working group members, reviewers, and partners who generously shared their expertise, experiences, and perspectives throughout the research and report-development process. Their insights enriched the analysis and helped ensure that the findings and recommendations were grounded in the realities of practice.

Working Group Members

The Council of the Great City Schools convened a working group of English learner and mathematics practitioners and experts from member districts to inform the study. Members of the working group contributed valuable perspectives, reviewed emerging findings, and provided feedback throughout the research and writing process.

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Project Support and Review

Several individuals supported key components of the project and publication process or served as external reviewers. Their contributions included survey dissemination, content review, and publication design. Their perspectives and recommendations strengthened the analysis and helped refine the final report.

Harold Asturias, Senior Mathematics Equity Learning Specialist (Retired), Lawrence Hall of Science, University of California, Berkeley (Review)

Gina Delgado, Senior Program Manager, UnidosUS (Review)

Lina Lenis, Policy Analyst, K-12 Education Policy Project, UnidosUS (Review)

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Denise Walston, Chief of Curriculum, Council of the Great City Schools (Survey Dissemination)

Executive Summary

Completing Algebra I by the end of grade 9 is a pivotal milestone in students' mathematics trajectories. Students who do not complete Algebra I on time are less likely to reach advanced mathematics courses, meet college-ready expectations, or access pathways into science, technology, engineering, and mathematics (STEM) and other postsecondary opportunities. This study examines the district policies, practices, and system conditions related to English learners' (ELs') and Latino students' access to, placement in, and successful completion of Algebra I by the end of grade 9 in large urban school districts. It was conducted in response to UnidosUS's K-12 Math Policy Project, which seeks to develop an evidence-based research and policy agenda to improve Algebra I success rates by the end of grade 9 and college-level Math 101 during the freshman year, with particular attention to Latino students and English learners.

The study focuses on UnidosUS's priority research areas of access, placement, and readiness, while also addressing instructional supports and systems alignment relevant to the main research areas. The analysis draws on various data sources that include Council of the Great City Schools Academic Key Performance Indicator (KPI) data, prior Council district EL program review (Strategic Support Team) reports, district survey responses, focus groups, working groups, and interviews with district leaders and staff involved in mathematics, English learner services, counseling, placement, advising, and student supports. These sources show that Algebra I completion by the end of grade 9 results from cumulative district and school decisions regarding course pathways, placement criteria, language supports, advising, family communication, instructional resources, and data monitoring.

Key Findings

1. English learners and Latino students face overlapping but distinct barriers. Latino students and English learners are overlapping but distinct groups. Latino students may face racial and ethnic disparities in access to advanced mathematics opportunities, including early sorting, limited course offerings, and lower expectations. English learners face additional barriers tied to language classification, English language proficiency measures, language service schedules, and placement practices that may use English language proficiency as a proxy for mathematical readiness. The overlap between the two groups is substantial in many urban districts, but the barriers are not identical, underscoring the need for both Latino-focused and EL-specific policy responses.

2. The conflation of English language proficiency with mathematical readiness is one of the most consequential barriers. Across the literature, prior Council program reviews, survey responses, and focus group commentary, a recurring concern is that English language proficiency is sometimes used explicitly or implicitly as a proxy for mathematical ability. ELs may be placed into lower-level mathematics courses, delayed from Algebra I, or routed into language-designated mathematics sequences that do not align with college-ready pathways or earn mathematics course credit.

English-medium assessments or course placement rules that incorporate English language proficiency can underestimate students' mathematical knowledge, particularly for ELs with beginning levels of English proficiency, students new to U.S. schools, and students who may have learned algebraic content in another language or country.

3. Placement systems are often inconsistent, subjective, and insufficiently transparent. Districts vary widely in how they define “readiness” for Algebra I. Some use placement tests or benchmark scores; others include prior grades, teacher judgment, prerequisite standards, attendance, or learning behaviors. In some cases, staff from the same district reported different understandings of the criteria being used. More fundamentally, placement systems may assign students to fixed mathematics pathways based on the presumption that only some students can succeed in rigorous coursework. Students should instead have access to multiple options that reflect their aspirations, interests, and mathematical preparation while keeping them on track to complete Algebra I by the end of grade 9. These concerns matter because narrow cut scores, subjective recommendations, unclear appeals processes, early gateway decisions, and rigid pathways can restrict access to Algebra I, including for Latino students. The impacts may be especially acute for ELs, whose mathematical knowledge may not be fully captured by English-medium assessments or by course histories interpreted within the context of schooling in the United States (U.S.).

4. Access without support is insufficient. Districts that expand Algebra I enrollment by grade 9 must also ensure that students receive the language, academic, and advising supports needed to complete the course successfully. Supports should also include flexible pathways that allow students to reconsider earlier decisions and move to a different mathematics pathway based on their aspirations, interests, and evolving preparation while remaining on track to complete Algebra I by the end of grade 9. The study finds that students' success is associated with the availability of co-requisite supports, tutoring, double-dose or support courses, bilingual or home-language supports, co-teaching, bridge programs, and teachers prepared to integrate language development with rigorous mathematics instruction. Without these supports, default or universal placement policies may increase Algebra I enrollment without improving successful course completion, defined as earning credit for or passing the course.

5. Middle school pathways and early gateway criteria strongly influence grade 9 Algebra I access and completion. Algebra I completion by the end of grade 9 is shaped well before students enter high school. Course-taking opportunities in grades 6–8, access to pre-algebra and accelerated pathways, eighth-grade Algebra I availability, transition planning, and bridge programs all affect whether students arrive in grade 9 on pace. Rigid gateway criteria—especially those based on early test scores or fixed grade-level decision points—can exclude ELs, Latino students, students new to the U.S. (i.e., newcomers), students entering in middle school grades or later, and students who arrive throughout the school year and whose prior schooling does not map neatly onto U.S. course labels and sequences.

6. Counseling, family engagement, and data systems are essential but often underdeveloped. Counselors play a critical role in course placement, scheduling, graduation planning, pathway advising, and family communication. Yet districts reported limited counseling capacity, high caseloads, and uneven counselor preparation related to English learner placement and mathematics pathways. Families also often lack accessible information about Algebra I, course

sequences, placement criteria, appeals, and the long-term consequences of Algebra I timing. At the systems level, inadequate data infrastructure and diffuse accountability limit districts' ability to monitor who has access, who completes Algebra I, who repeats the course, who progresses to subsequent mathematics coursework, and where barriers emerge by student group.

Promising District Actions and Conditions

The study identified several district-level actions and conditions associated with stronger or improving Algebra I completion outcomes for English learners and Latino students. Districts with stronger performance or improvement treat completion of Algebra I by the end of grade 9 as a default expectation, sustain access to grade-level coursework, provide embedded language and academic supports, create clearer middle school pathways leading to Algebra I by grade 9 with multiple entry points that are clearly explained to families and students, and monitor student group outcomes more routinely. Examples of promising approaches include automatic or default Algebra I enrollment by the beginning of grade 9; opt-out rather than opt-in access to rigorous mathematics pathways that prepare students to complete Algebra I before or by the end of grade 9; Algebra I sections with embedded academic and language supports, including co-taught or bilingual supports where appropriate; high-quality instructional materials with embedded EL supports; summer bridge or competency-based transition programs; transparent mathematics pathways shared with families; proactive multilingual outreach to families; and dashboards or data routines that allow district and school leaders to monitor Algebra I access and completion by student group.

Recommendations and Policy Implications

The findings point to six recommendations for districts, states, and advocacy partners seeking to improve Algebra I outcomes for English learners and Latino students.

1. Review and revise criteria and placement processes to ensure English learners and Latino students access Algebra I in time to complete it by the end of grade 9. Districts should treat completion of Algebra I, or an equivalent ninth-grade-level mathematics course, by the end of grade 9 as the expected pathway for all students. Placement should not depend solely on school-level discretion, informal advising, or early tracking decisions. Districts should remove EL status and English language proficiency as gatekeeping criteria and ensure that placement systems identify the needed supports rather than using readiness definitions to delay access.

2. Ensure the district's definition of readiness includes multiple modalities for expressing mathematical knowledge. Readiness for Algebra I should be based on mathematics-specific evidence of understanding grade-level concepts, not English language proficiency, single test scores, or subjective judgments alone. Districts should use multiple measures, including prior mathematics coursework, grades, student work, performance tasks, teacher evidence, understanding of prerequisite concepts, and where appropriate, home-country transcripts or other evidence of prior learning. Placement tools should be reviewed for validity with English learners, and districts should ensure that ELs are held to the same expectations and provided the same options and opportunities as their non-EL peers.

3. Enhance Algebra I access with language and academic supports. Expanding access must be paired with the supports necessary for successful completion. Districts should provide co-requisite

support models, tutoring, bridge programs, home-language supports where appropriate, bilingual supports when instruction or assistance is delivered in students' home languages, and instruction that integrates academic language development with rigorous mathematics content. Professional learning should help mathematics and EL teachers design instruction that treats language as a tool for mathematical thinking and develops students' ability to use language for academic purposes, without lowering cognitive demand.

4. Strengthen elementary mathematics instruction and middle school pathways to ensure Algebra I placement by grade 9. Districts should ensure that students develop algebraic thinking throughout the elementary and middle grades (K–8) and have multiple opportunities to enter or re-enter pathways leading to Algebra I in time to complete the course by the end of grade 9. Pathways should include flexible on-ramps, bridge opportunities, transcript review processes, and supports for students new to U.S. schools (i.e., newcomers), students with interrupted formal education, and students entering the district after traditional gateway points, such as specific grade levels or dates in the school year.

5. Cultivate family awareness of pathways and Algebra I content. Families need clear, proactive, multilingual information about mathematics pathways, placement criteria, appeals processes, graduation requirements, and why Algebra I timing matters. Districts should ensure that students, families, and school guidance teams, including teachers, counselors, and other relevant staff, work together to select the pathway and supports that best reflect each student's aspirations, interests, and mathematical preparation while keeping the student on track to complete Algebra I by the end of grade 9.

6. Use disaggregated data and shared accountability to monitor access and completion. Districts should track Algebra I enrollment, placement, completion, grades, failures, and progression to subsequent mathematics courses by variables such as EL status, race/ethnicity, disability status, school, and course pathway. Districts should supplement these data with student interviews or other structured opportunities to understand students' experiences with placement, instruction, and supports. Data routines should bring together mathematics, English learner, counseling, school leadership, assessment, and data staff to identify barriers and act on them. Accountability for Algebra I access and success should be shared across departments rather than assigned to a single office.

Conclusion

Improving Algebra I completion by the end of grade 9 for English learners and Latino students requires more than expanding course enrollment. Districts must redesign their systems to recognize all students as mathematically capable, provide timely access to Algebra I with accompanying supports when needed, help families understand and navigate mathematics pathways, and empower leaders to monitor whether access results in successful completion. UnidosUS's Math Policy Project calls for research that can inform actionable policy agendas, strengthen advocacy, and support policymaker and practitioner engagement. This study contributes to that agenda by showing that stronger Algebra I outcomes are possible when districts combine high expectations, embedded language and supports, coherent pathways for all students leading to Algebra I by grade 9, multilingual family engagement, and shared accountability.

Project Origin and Purpose

This study is part of UnidosUS's Math Policy Project to advance a research-informed policy agenda to improve student success rates in Algebra I by the end of grade 9 and college-level Math 101 during the freshman year, with a special focus on solutions that are effective for Latino students and English learners. The Council's study contributes to the effort by focusing specifically on the district systems, practices, and policy conditions that shape access to and completion of Algebra I by the end of grade 9 in large urban school districts.

Overview of the Research Priority Area

Completing Algebra I by the end of grade 9 functions as a critical gatekeeper to advanced coursework, postsecondary readiness, and long-term opportunity, yet district-level policies and placement systems systematically limit access for Latino students and English learners (ELs), who constitute a substantial share of total enrollment in Council-member districts. Mathematics achievement is among the most consequential and persistent equity gaps in public education. Scholars describe Algebra I as “a gatekeeper that governs students’ opportunities to study advanced mathematics” and “a cornerstone in policies aimed at addressing unequal educational access based on income and school type” (Remillard et al., 2017, p. 2). Because secondary mathematics is sequential, the course a student reaches by the start of high school structures subsequent access to geometry, Algebra II, precalculus, calculus, and other advanced coursework. Students who complete Algebra I by the end of grade 9 are more likely to reach advanced mathematics before graduation, to meet college admission prerequisites, and to persist through higher education (Brown et al., 2018; LaFave, 2019). Those who do not are placed on truncated pathways from which recovery is difficult and uncommon. Latino students and English learners overlap substantially but are distinct, meaning that the barriers they face have both shared and unique dimensions.¹

National evidence shows that the timing of Algebra I is patterned by race/ethnicity. For example, 54 percent of Asian students took Algebra I before grade 9, compared with 33 percent of White students, 23 percent of Hispanic students, and 15 percent of Black students (LaFave, 2019). Researchers find that Black and Latino students are locked out of advanced coursework opportunities beginning in elementary school; they are disproportionately denied access to gifted and talented programs, excluded from eighth-grade Algebra I, and underrepresented in AP courses (Patrick et al., 2020; Stoelinga & Lynn, 2013). Mathematics serves as an early and compounding structural barrier for the trajectory of Latino students who make up roughly one-quarter of all eighth-grade students but represent a smaller share of students enrolled in eighth-grade Algebra I (Patrick et al., 2020).

¹ See *Study Population* section in Part II for extended discussion.

At the high school level, research on English learners' access to core content similarly shows that when language classification functions as a proxy for academic ability, it can produce systematic exclusion from rigorous courses, including core content and advanced courses (Shin et al., 2026; Umansky et al., 2024). A robust body of research links access to advanced mathematics with college preparedness, postsecondary opportunities, and access to science, technology, engineering, and mathematics (STEM) programs. Baker et al. (2023) found that "standard" postsecondary enrollment rates are 17 to 31 percentage points higher for high-achieving students who took advanced courses than for similar students who did not take advanced courses. The same report showed that Latino students who took an advanced mathematics course had a 96 percent graduation rate, compared with an 80 percent graduation rate for Latino students who did not take an advanced mathematics course (Baker et al., 2023).

Why Algebra I completion by the end of grade 9 matters is therefore both practical and structural. Algebra I functions as the gateway through which students advance toward college-preparatory mathematics or are diverted into lower-trajectory pathways. Students who do not take Algebra I by eighth grade cannot reach calculus in high school without doubling up on courses or attending summer school, a logistical barrier that disproportionately affects students from lower-income families (Brown et al., 2018). Missing timely entry can have compounding effects. When qualified students lack access to advanced math, it likely affects their opportunity to attend and graduate from selective colleges, perform well on college entrance exams, and obtain coveted jobs after college (Kotok, 2017).

For English learners specifically, the linguistic demands of mathematics compound structural access barriers. Schleppegrell (2007) documents that mathematics is uniquely language dependent. Specifically, the grammar of the discipline encodes complex meaning relationships through dense nominal structures, multi-semiotic representations integrating symbolic notation and visual displays, technically precise conjunctions, and implicit logical relationships. These features present particular challenges for students simultaneously acquiring academic English and mastering disciplinary content, challenges that standard instructional approaches rarely address. Wilkinson (2019) extends this analysis, documenting that English learners may not yet express mathematical ideas using the formal mathematics register, not because they lack mathematical understanding, but because they are still building the specialized language required to communicate it. The distinction has direct implications for placement. Students who appear less proficient in mathematics because their English is developing may be assessed as mathematically underprepared when they are linguistically developing.

Purpose of Study

The Council's study explores the UnidosUS research priority areas of *access*, *placement*, and *readiness*. Within this priority, the study examines how district and school-based staff involved in course placement, advising, and support for English learners understand the barriers that affect Latino students' and English learners' access to and successful completion of Algebra I by the end of grade 9. The study gives particular attention to placement policies and practices, definitions of readiness, course sequencing, advising and communication, transition planning, the availability and quality of academic supports, effective outreach to families, and data monitoring capacity.

The purpose of this Council study is to generate policy-relevant evidence on the barriers, district responses, and supports associated with access to and completion of Algebra I by the end of grade 9 for Latino students and English learners. The study examines how district systems shape opportunity, including how students are placed into mathematics pathways, how readiness is defined and supported, how families and students receive information, and how English learner services intersect with mathematics access and success. It ultimately identifies recurring barriers, promising district actions, and policy priorities.

Intended Audience and Use of Findings

The study is designed to translate research and district-level experience into actionable insights for policy and practice. The report was designed to be both an analytical resource for understanding barriers to Algebra I access and completion and an implementation resource for designing policies, practices, and supports that increase successful Algebra I completion by the end of grade 9 for English learners and Latino students. It also provides UnidosUS with evidence to inform its Math Research Agenda, subsequent Math Policy Agenda, and engagement with policymakers and education leaders. This report is intended for a broad range of education leaders, practitioners, advocates, and policymakers who influence mathematics access and student success:

- **District leaders (superintendents, chief academic officers, and leaders of mathematics, multilingual/English learner, counseling, and data departments)** can use the report to review districtwide mathematics pathways, placement criteria, readiness definitions, language supports, family engagement systems, and accountability structures. The KPI analysis in Appendix C can help leaders benchmark current outcomes and identify areas for improvement, while the recommendations in Part IV and the implementation crosswalk in Appendix D provide actionable strategies for policy, resource allocation, and cross-departmental planning.
- **School leaders (principals, assistant principals, instructional leaders, counselors, and teacher leaders)** can use the findings to examine how district policies are being implemented at the school level. The barriers and promising practices described in Part III can help schools review course placement processes, master scheduling, counseling and advising practices, support structures, and family communication efforts. The recommendations provide a framework for strengthening school-level systems that support Algebra I access and successful completion by the end of grade 9.
- **State education agencies** can use the report to identify opportunities for state guidance, accountability measures, and supports for professional learning, data collection and reporting, transcript and course-equivalency processes, teacher preparation, and funding. Appendix D may be particularly useful because it outlines specific state-level actions aligned to each of the report's key principles and recommendations.
- **Policymakers, advocates, and education partners** can use the report's literature review, district findings, recommendations, and identified research gaps to inform advocacy, policymaking, technical assistance, professional learning, and future research aimed at improving Algebra I access and completion for English learners and Latino students. The district examples and recommendations provide concrete illustrations of both persistent challenges and promising practices that can support evidence-based action.

This report is designed to serve multiple audiences because the challenges and opportunities associated with Algebra I access and completion by the end of grade 9 are inherently cross-functional. No single department, office, or stakeholder group can address them alone. Districts and states are encouraged to use the report as a shared resource and engage interdisciplinary teams—including mathematics leaders, English learner leaders, counselors, school administrators, data staff, family engagement personnel, policymakers, and other relevant partners—to review findings, identify local priorities, and develop coordinated strategies for improvement. Bringing together diverse perspectives can help ensure that placement policies, instructional supports, family engagement efforts, accountability systems, and resource investments work coherently to expand Algebra I access and success for English learners and Latino students.

Discussion of Student Groups in Report: English Learners, Latino Students, and Other Student Groups

English learners and Latino students are distinct and overlapping groups. In the Council's engagements with districts during data collection, districts did not report approaches designed or implemented specifically for Latino students or for any other racial/ethnic group. It is also worth noting that 45 percent of students enrolled in Council-member districts are Latino. Many Council-member districts enroll high proportions of Latino students, meaning that many districtwide initiatives would necessarily include and reach Latino students, even when they are not designed exclusively for them. Furthermore, in Council-member districts, patterns of enrollment, opportunity, and resource access for Latino students often overlap with those experienced by other minoritized racial/ethnic groups, particularly in schools and communities experiencing concentrated poverty, residential segregation, and historical underinvestment. Socioeconomic status is therefore an important explanatory factor, though it does not eliminate the need to examine race, ethnicity, language status, and other student characteristics in relation to Algebra I access and completion. Considering these dynamics, the following reporting conventions are used:

- ***Latino students.*** Although Latino students are mentioned specifically throughout this report, readers should not assume that other racial/ethnic groups necessarily experience Algebra I access and completion by the end of grade 9 differently when they are exposed to similar systemic conditions. Conversely, when the report refers to students generally, those statements should be understood to include Latino students unless otherwise specified.
- ***English learners.*** Because English learners face unique barriers related to English language development, language classification, English language proficiency measures, language-service structures, and placement or scheduling practices, findings specific to English learners explicitly reference the group.

These distinctions are intended to clarify when a finding applies broadly across student groups, when it is especially relevant to Latino students, and when it reflects barriers or considerations specific to English learners.

PART I

Literature Review

This study focuses on the district policies, practices, and system conditions associated with English learners' and Latino students' access to, placement in, and successful completion of Algebra I by the end of grade 9 in large urban school districts. To inform the study of Algebra I access and completion by the end of grade 9, particularly for English learners and Latino students, this literature review examines the system-level barriers and conditions identified in prior studies. The major topical areas surfaced in the literature related to Algebra I access and completion by the end of grade 9 include persistent systemic barriers limiting access to Algebra I courses, prerequisites for Algebra I, and commonly used Algebra I enrollment practices. The literature review concludes with an overview of gaps in the literature and an explanation of its application to the current study, particularly with respect to the study's methods, interpretation of findings, and crafting of the recommendations and policy implications.

Algebra I Access Barriers

Access to Algebra I depends on the policies and operational conditions at the state, district, and school levels that determine whether a student can be enrolled in an Algebra I class by grade 9. In policy terms, access is related to factors such as course availability, teacher qualifications, prerequisites, placement processes, tracking and sequencing, scheduling logistics, and the availability of co-requisite supports (Barnett et al., 2012; Brooks, 2022; Fowler & Boylan, 2010; Morton & Riegle-Crumb, 2020; Patrick et al., 2020; Smith, 1996; Spielhagen, 2006; Stoelinga & Lynn, 2013; Umansky, 2016b; Umansky et al., 2024). These factors contribute to the disadvantage that English learners (ELs) and Latino students face in accessing and completing Algebra I by the end of grade 9. Systemic barriers that students face before grade 9, including limited access to Algebra I prerequisites, subsequently limit their access to Algebra I by the end of grade 9. For ELs and Latino students, these barriers include both shared systemic barriers and group-specific barriers. Four major types of barriers are especially relevant to Algebra I access.

Limited access to Algebra I seats. Differences in offerings, seat counts, and whether districts compress or delay course timelines affect when students can enroll in Algebra I. Patrick et al. (2020) identify several barriers to equitable access to advanced coursework, including schools lacking advanced courses, too few available seats, and inequitable assignment of students to available courses. Schools serving predominantly Latino students, for instance, often have fewer opportunities or seats in advanced courses, related to the inequitable distribution of these courses across schools (Patrick et al., 2020; Umansky et al., 2024). Further, EL students may be disadvantaged when prior mathematics courses do not provide sufficient language supports or credit-bearing pathway access, limiting both their preparation for Algebra I and their ability to demonstrate mathematical knowledge (Umansky, 2016a).

Sequencing and tracking policies determining when students reach Algebra I. Course availability and sequencing impact who reaches Algebra I by grade 9 early enough to advance into higher-level mathematics courses—and courses for which mathematics serves as a gateway. Importantly, because mathematics pathways are sequential, access to Algebra I by grade 9 is shaped well before students enter high school. English learners may lose access to Algebra I when language services are scheduled in ways that compete with core academic courses or when EL classification is treated as a placement constraint rather than a support need (Umansky, 2016b; Umansky et al., 2024). In these cases, district scheduling practices and sheltered course structures can function as hidden gates that delay Algebra I enrollment even when students demonstrate mathematical readiness.

Institutional practices that shape whether eligible Latino students and ELs are actually enrolled. Decisions about mathematics course pathways in grades 6–8, eighth-grade Algebra I availability, summer bridge programs, and transition advising can either keep students on pace for Algebra I by grade 9 or route them into delayed sequences, making on-time completion less likely (Barnett et al., 2012; Fowler & Boylan, 2010; Smith, 1996; Spielhagen, 2006). District policy choices impact access even when states encourage enrollment. Universal Algebra I by grade 9 policies in districts vary substantially, if they exist. Remillard et al. (2017) found that only 26 percent of districts reported having universal Algebra I by grade 9 enrollment policies. District approaches varied, and many districts appeared to respond to broader state policy contexts rather than adopting distinct districtwide universal Algebra I requirements. Moreover, universal enrollment policies were associated with higher eighth-grade Algebra I enrollment, but the association varied by district poverty level (Remillard et al., 2017).

Disparate resource allocation to support Algebra I instructional fidelity. Resource disparities in schools enrolling high numbers of ELs and Latino students can turn formal access at a district level into uneven opportunity across schools. Even when Algebra I appears accessible on paper, differences in the assignment of certified and experienced teachers can affect content coverage, pacing, language support, and whether Latino students and ELs receive rigorous instruction that leads to successful completion. Morton and Riegle-Crumb (2020) found that content coverage in eighth-grade algebra varied across schools by racial and ethnic composition, raising questions about whether schools serving high concentrations of English learners, Latino students, or both, receive comparable opportunities to learn Algebra I content. Stoelinga and Lynn (2013) similarly cautioned that administrators often assign the least-experienced instructors to Algebra I, especially in sections serving diverse learning needs, even though teaching quality is one of the strongest school-controlled influences on student achievement (Goldhaber & Brewer, 1997).

Ensuring Readiness

Readiness for Algebra I by grade 9 can be conceptualized as having the mathematical understanding needed to engage successfully in the course, with appropriate academic and language supports. Developing the requisite knowledge can be supported by mathematics pathway designs leading to completion of Algebra I by the end of grade 9, as well as academic counseling, family awareness, and the removal of instructional barriers that impede participation. Readiness also requires monitoring data and implementing data-informed practices to ensure students develop the requisite knowledge for Algebra I.

Developing algebraic thinking across the elementary and middle grades. Algebraic thinking should be integrated throughout the K–8 mathematics curriculum so that students develop the conceptual understanding and mathematical practices needed to complete Algebra I by the end of grade 9 (Kaput, 1999; National Council of Teachers of Mathematics, 2014). High-quality grade-level instruction should engage students in identifying patterns, making generalizations, representing relationships, explaining their reasoning, making conjectures, justifying conclusions, and constructing mathematical arguments. For English learners, this instruction should provide meaningful opportunities to use language as a tool for mathematical thinking and communication (Council of the Great City Schools, 2016a; Schleppegrell, 2007; Wilkinson, 2019). Ensuring consistent access to such instruction and appropriate supports can prepare English learners and Latino students for Algebra I without relying on early acceleration, content-skipping, or tracking practices that may restrict later opportunities (Patrick et al., 2020; Umansky, 2016a).

Academic counseling and family awareness. In some cases, ELs and Latino students may not receive clear information about the appropriate Algebra I prerequisites or pathways (Torrez, 2004). Counselors can ensure that students receive accurate information about classes and extracurricular activities so that ELs and Latino students are prepared to access and complete Algebra I by the end of grade 9 (Falco, 2017; Schmidt et al., 2012). This advising should also be relayed to families, many of whom may be unaware of school processes (Good et al., 2010). In particular, families new to the U.S. potentially face myriad hurdles to reaching their children’s educational goals, such as resettlement difficulties, accessing adequate housing and employment, language barriers, cultural misunderstandings, and navigating healthcare, education, and legal systems, often without a support network and, in some cases, immigration status uncertainty (Lai et al., 2025). Consistent school participation may prove challenging for families navigating a new environment while managing outside responsibilities. Routine family engagement helps families learn about opportunities to strengthen students’ readiness for Algebra I. It also keeps families informed about their children’s grades and whether they are on track to complete the prerequisites needed to reach Algebra I by grade 9 (Council of the Great City Schools, n.d.; Good et al., 2010).

Readiness can be supported through extracurricular learning opportunities. One such program, GoSTEM, is a partnership among Atlanta Public Schools, the Georgia Institute of Technology, and a philanthropic foundation. The program’s mission is to “strengthen the pipeline of Latino K–12 students into postsecondary STEM education” (Hernandez et al., 2018, p. 36). Its design supports Latino students and families by promoting college readiness, interest in STEM content, student motivation, and a reduced sense of ethnic identity threat (Hernandez et al., 2018). Counselors can help English learners, Latino students, and their families connect with similar programs that strengthen students’ preparation for Algebra I and subsequent mathematics coursework.

Removing instructional barriers. ELs and Latino students may fail to complete Algebra I by the end of grade 9 when instruction does not make the course content accessible. Access without instructional scaffolding may increase enrollment without improving completion. Additionally, some students may continue to struggle with unfinished pre-algebra learning, particularly when supports repeat the same approaches without addressing underlying misconceptions. As students

fall further behind, they may feel defeated and become disengaged, reinforcing negative perceptions of themselves as capable mathematics learners (Stoelinga & Lynn, 2013). Instructional practices should support unfinished learning while also empowering students as capable mathematics learners.

Data monitoring and accountability. According to the literature, data tracking should be clear yet detailed. Clarity in data collection allows district leaders to easily comprehend and use information for decision-making, while detailed data collection should disaggregate access, placement, performance, completion, and progression by student group (Shannon & Bylsma, 2004). Data use supports accountability (U.S. Department of Education, Office of English Language Acquisition, 2016), ensuring that ELs and Latino students can access and succeed in grade-level content, thus preparing them for Algebra I completion by the end of grade 9.

Mathematics Placement Practices

Placement practices are the formal and informal criteria schools use to determine which students enroll in Algebra I and when. Although placement criteria may appear neutral, the literature shows that placement practices can reproduce inequities when they rely on single cut scores, subjective recommendations, inconsistent school-level discretion, or inaccessible communication with families (Patrick et al., 2020; Snipes & Finkelstein, 2015). The following paragraphs discuss placement practices commonly associated with ELs and Latino students.

Implementation of standardized tests and language proficiency scores. Across studies, standardized testing often serves as the primary gate to Algebra I, but cut scores alone are weak substitutes for transparent, multi-measure placement. Latino and other students' content understanding may not always be fully reflected in standardized assessments when test items depend on background knowledge, language, or contexts that are unevenly distributed across student groups. These factors can limit test performance even when students have relevant content knowledge (Recht & Leslie, 1988). The synthesis across this literature is not that tests, grades, or recommendations should be removed entirely, but that districts should use multiple measures, transparent matrices, standardized appeals, and flexible review processes that include student and family voice. Additionally, the conflation of language proficiency with mathematical readiness is among the most consequential placement errors documented in this review. Schleppegrell (2007) and Wilkinson (2019) show that mathematics requires specialized language and multiple representations; therefore, students may need support with the mathematics register even when they understand the underlying mathematical ideas. Placement systems that rely heavily on English-medium assessments, teacher perceptions of verbal participation, or course names that obscure whether a class is designed for language development can misread linguistic development as mathematical unpreparedness.

Remediation-first and simple repeat models. Remediation-first models and simple repeat policies can hinder progression in the mathematics pathway, compromising credit accumulation with limited evidence of improved mathematics achievement. Generally, these models do not contribute to Algebra I completion by the end of grade 9, even for students enrolled in Algebra I by the beginning of grade 9. Instead, they disproportionately impede timely Algebra I completion for student groups whose schools often implement these models. Specifically, Fong et al. (2014)

found that students in special education, Hispanic students, and English learners had the highest reported Algebra I repetition rates among the demographic and program-status groups examined. Results for Black and American Indian/Alaska Native students were suppressed because of small subgroup sizes. Although the study did not examine the adequacy of supports provided to students, other research indicates that historically underserved students may encounter inequitable placement practices, limited access to rigorous instruction, and insufficient academic supports (Patrick et al., 2020; Stoelinga & Lynn, 2013). Snipes and Finkelstein (2015), for example, found that 68 percent of students who earned below a C when they initially took Algebra I earned below a C when they repeated the course. Thus, remediation and simple repeat models without differentiated, targeted supports can impede students' progress through mathematics pathways toward advanced coursework.

Insufficient advising and family involvement. Advising quality strongly predicts access to advanced mathematics. Baker et al. (2023) found that high-achieving, underserved students who took advanced mathematics courses were more likely to have mathematics teachers who set clear goals and school counselors who spent substantial time on college readiness, and counselor availability has been identified as a policy lever for improving access (Vazquez Cano et al., 2023). Furthermore, Vazquez Cano et al. (2023) noted that ELs in Oregon schools without counselors were far less likely to be enrolled in Algebra I than ELs in Oregon schools with counselors. Advising plays a crucial role in placement into appropriate courses, especially for historically underserved student groups. Additionally, family engagement is often limited by information gaps and language barriers. Multilingual families may lack access to information about algebra pathways, placement criteria, appeal procedures, and the importance of Algebra I for later coursework and graduation requirements (Housel, 2020). Transparency around placement processes is not always common, and many families do not understand the rationale for placement decisions, which is particularly problematic for ELs whose status may affect their course schedules in ways that are not visible to families (Brooks, 2022).

Consideration of subjective criteria. Subjective, non-standardized, and deficit-oriented factors are sometimes used to place students. For example, overreliance on teacher and counselor recommendations can introduce bias. Patrick et al. (2020) identified overreliance on teacher and counselor recommendations as a major barrier for Black and Latino students because judgments may be shaped by implicit or explicit racial bias. Such biases reproduce inequities across a school system when placement is decentralized and thereby inconsistently implemented across schools. Criteria can disadvantage ELs when English language proficiency (ELP) is conflated with mathematical ability, even though the two are separate academic indicators. Federal guidance and contemporary research on ELs in STEM emphasize that language proficiency should be developed through content instruction rather than treated as a prerequisite to it (Lee & Stephens, 2020).

Readiness defined narrowly. Readiness for Algebra I is ideally associated with students' demonstrated mathematical preparation to succeed in the course, based on mathematics-specific evidence such as prior mathematics courses, grades, screeners or benchmark results, and teacher-observed understanding of prerequisite mathematical concepts. However, non-mathematical factors are often considered in practice, conflating language proficiency with mathematical ability. Per federal guidance and contemporary STEM education research, language proficiency is not a prerequisite for content instruction; it is an outcome of effective content instruction (Lee & Stephens, 2020). Districts often operationalize Algebra I readiness through overly narrow criteria such as fixed cut scores on state tests and benchmark assessments. Moreover, these assessments may not be validated for ELs (Abedi, 2002). When thresholds are derived from English-medium assessments and used as criteria, they can conflate linguistic proficiency with mathematical preparation. Students' sense of belonging also matters. Morales-Chicas and Graham (2021) found that enrolling in and successfully passing eighth-grade Algebra I was protective for mathematics belonging for Black and Latino students. By not viewing Latino students as ready for Algebra I placement, schools risk reinforcing deficit thinking.

Gaps in the Literature

The literature points to a set of cross-cutting system barriers rather than a single cause. Policy and accountability incentives can push premature Algebra I placement without adequate support. Fixed tracks, strict cut scores, limited appeals, remediation-first pathways, and simple course repeats operate as consistent rationing mechanisms across districts. Language-designated program structures act as hidden gates when ELP is embedded in eligibility rules or when schedules force a trade-off between language services and Algebra I. Resource distribution patterns—including section supply, teacher assignment, pacing, and content coverage—determine whether paper access becomes real completion. Information and advising systems also mediate whether eligible students enroll and persist.

Several gaps remain in the research. First, district-level decision rules are often undocumented. More research is needed on who sets placement thresholds, how cut scores are calculated, what happens when indicators disagree, how appeals are evaluated, how late entrants are accommodated, and how EL status is weighed alongside mixed indicators. Second, implementation fidelity and variation across schools need further study, especially by EL proficiency level, newcomer status, long-term EL status, years in program, reclassification history, home language group, and dual identification as an EL and a student with a disability; current, former, ever, and never English learner frameworks are especially important for making these distinctions visible (Thompson et al., 2023). Third, more longitudinal evidence is needed for students placed at or near cutoffs, including Algebra I timing, pass rates, repeats, and progression to geometry, Algebra II, precalculus, calculus, and STEM coursework.

Finally, readiness indicators and support models need stronger validation. The distinction between academic readiness and linguistic support need should be explicit in policy and research, because conflating mathematical ability with English language proficiency delays EL access even when mathematics indicators are sufficient. Comparative studies of EL experience and success in bilingual, co-taught, sheltered-with-access, and mainstream-with-support Algebra I models remain limited. Intersectional analyses are also needed because Latino and EL students may

experience compounded barriers related to race/ethnicity, language status, socioeconomic status, disability status, segregation, teacher assignment, counselor access, and classroom belonging. These research gaps support a district-level study that examines how staff involved in placement, advising, and EL supports describe barriers, district responses, and policy priorities for improving Algebra I access and completion by the end of grade 9.

Connecting the Literature to the Study

The literature points to Algebra I completion by the end of grade 9 as the result of cumulative district and school decisions rather than a single course-placement event. Students' access to and success in Algebra I are shaped by how districts define readiness, organize mathematics pathways, assign students to courses, provide academic and language supports, communicate with families, and monitor outcomes over time (Brown et al., 2018; LaFave, 2019; Patrick et al., 2020; Remillard et al., 2017; Umansky et al., 2024). For English learners and Latino students, these systems matter because both groups may experience barriers to rigorous mathematics pathways, while English learners may also face additional barriers related to English language proficiency, language-service requirements, assessment practices, and transcript interpretation (Kanno & Kangas, 2014; Lee & Stephens, 2020; Patrick et al., 2020; Umansky et al., 2024). This study is ultimately guided by a view that positions Algebra I access and completion as a system-level outcome related to four interconnected domains:

1. **Mathematical readiness and placement processes.** Districts influence access through the criteria used to determine readiness, the evidence considered in placement decisions, and the extent to which placement systems distinguish mathematical knowledge from English language proficiency. Readiness definitions that rely narrowly on test scores, subjective judgments, or English-medium indicators may underestimate students' mathematical understanding, particularly for English learners (Abedi, 2002; Schleppegrell, 2007; Snipes & Finkelstein, 2015; Wilkinson, 2019). A more equitable approach uses math-specific, multiple measures and allows students to demonstrate understanding in varied ways (Lee & Stephens, 2020; Patrick et al., 2020; Snipes & Finkelstein, 2015).
2. **Course access, instructional supports, counseling, and collaboration.** Placement into Algebra I does not guarantee successful completion. Students' outcomes also depend on whether Algebra I is available, whether schedules allow access, whether counselors and school staff provide informed advising, and whether students receive supports that sustain access to grade-level mathematics (Baker et al., 2023; Barnett et al., 2012; Vazquez Cano et al., 2023). For English learners, collaboration among mathematics, English learner, counseling, and school leadership staff is especially important to ensure that language-development needs are addressed without delaying access to mathematics (Council of the Great City Schools, 2009, 2016a; Lee & Stephens, 2020; Umansky et al., 2024).
3. **Mathematics pathways and family engagement.** Algebra I completion by the end of grade 9 is shaped well before students enter high school. Elementary and middle school course sequences, early acceleration opportunities, bridge programs, re-entry points, and transcript review processes all influence whether students arrive in grade 9 on track for Algebra I (Brown et al., 2018; LaFave, 2019; National Council of Teachers of Mathematics,

2014; Smith, 1996; Spielhagen, 2006). Families also need clear, timely, and accessible information about course pathways, placement criteria, appeals, graduation requirements, and the long-term importance of Algebra I timing (Brooks, 2022; Good et al., 2010; Housel, 2020; Torrez, 2004).

4. **Data infrastructure, monitoring, and shared accountability.** Districts need timely, disaggregated data to determine who has access to Algebra I, who completes the course, who is diverted into other pathways, who repeats or fails, and who progresses to subsequent mathematics coursework. Monitoring should include English learner status, race/ethnicity, gender, school, course pathway, time in program, and other relevant characteristics (Allensworth et al., 2021; Allensworth & Easton, 2007; Patrick et al., 2020; Thompson et al., 2023; Umansky et al., 2024). Shared accountability across mathematics, English learner, counseling, assessment, data, and school leadership functions is necessary to ensure that identified barriers lead to coordinated action (Council of the Great City Schools, 2009; Lee & Stephens, 2020; Umansky et al., 2024).

This framing connects the barriers identified in the literature to the district policies, practices, and system conditions and supports the study's distinction between English learners and Latino students as overlapping but distinct groups. Some barriers apply broadly to both groups and to other historically underserved students, while others are specific to English learners because they stem from language classification, English language proficiency measures, language-service schedules, or assumptions that conflate English language proficiency with mathematical readiness. (See Appendix E.)

PART II

Research Questions and Methodology

The barriers identified in the literature review informed the study's focus on access, placement, and readiness. Because Algebra I completion by the end of grade 9 is shaped by decisions made across multiple grade levels, this study examines not only whether students complete the course, but how district systems structure the opportunity to do so. The analysis focuses on the policies, practices, and implementation conditions that influence course access, placement decisions, advising, language supports, and academic readiness for English learners (ELs) and Latino students.

Research Questions

This study is guided by one overarching question: *"What district policies, practices, and system conditions are associated with English learners' and Latino students' access to, placement in, and successful completion of Algebra I by the end of grade 9 in large urban school districts?"* Within this broader frame, the study addresses two research questions:

- **Research Question 1.** What barriers do district administrators identify as most limiting English learners' and Latino students' access to and completion of Algebra I by the end of grade 9?
- **Research Question 2.** What district actions and conditions are associated with stronger or improving Algebra I completion outcomes for English learners and Latino students by the end of grade 9?

The research questions collectively examine how Algebra I completion is related to district and school systems with particular attention to placement criteria, course sequencing, advising, language access, academic supports, family communication, and data monitoring. This approach allows the study to identify recurring barriers, promising district actions, and implications for policy, technical assistance, and implementation support.

Study Design and Data Sources

This study used mixed methods to examine district-level barriers, practices, and policy conditions affecting English learners' and Latino students' access to and completion of Algebra I by the end of grade 9. The analytic approach combined a descriptive analysis of mathematics access and achievement indicators, a review of prior Council Strategic Support Team (SST) reports (EL program reviews), and primary data collection from district practitioners involved in English learner services, mathematics instruction, course placement, advising, and student supports. (See Appendix A for study participants and Appendix B for SSTs.)

Phase 1: Key Performance Indicators Review. Phase 1 involved analyzing EL Algebra I completion data² collected annually by the Council of the Great City Schools. Specifically, the Council of the Great City Schools' 2025 Academic KPI Report,³ the most recent publication, provided district-level English learner academic indicators for SY 2023–24. These data were used to examine variation in EL Algebra I completion⁴ by the end of grade 9. (See Appendix C.)

Summary of Council Academic KPI Analysis

To contextualize district performance, the Council analyzed SY 2023–24 Academic Key Performance Indicator data on the percentage of first-time ninth graders who completed Algebra I or equivalent integrated mathematics coursework by the end of grade 9 across 53 reporting Council-member districts. For each student group, the denominator consists of first-time ninth graders in that group, and the numerator consists of those first-time ninth graders who completed Algebra I or equivalent Integrated Math coursework by the end of grade 9. The analysis examined district-level completion rates for English learners, Latino males, Latino females, and all students; grouped districts into completion-rate bands and quartiles; reviewed top-quartile performance and improvement patterns; and compared Algebra I completion with related grade 9 indicators, including earning a B average or better and failing one or more core courses. These data were used descriptively to identify variation across districts and student groups, not to determine causality. The full KPI analysis, including detailed tables and figures, is provided in Appendix C.

Substantial variation in Algebra I/Integrated Math completion by the end of grade 9. The KPI analysis shows substantial variation in Algebra I/Integrated Math completion by the end of grade 9, especially for English learners. In SY 2023–24, among first-time ninth-grade English learners, Algebra I/Integrated Math completion rates ranged from 1.4 percent to 100.0 percent across reporting districts, with a district median of 61.4 percent. More than one-quarter of districts reported English learner completion rates below 50 percent, while fewer than one-quarter reported rates of 75 percent or higher. Latino male and Latino female completion rates also varied widely.

Consistent district top performers across student groups. Dallas, Denver, Fayette County, Jefferson, Miami, Minneapolis, Palm Beach, and Tulsa appeared in the top quartile for all three focal student groups: English learners, Latino males, and Latino females. Improvement over time was more concentrated; Atlanta, Baltimore City, East Baton Rouge, Miami, and Palm Beach appeared in the top quartile for improvement from SY 2018–19 to SY 2023–24 across all three focal groups. However, strong Algebra I completion did not always align with stronger performance on other grade 9 indicators. Dallas and Miami showed the clearest overlap

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² The KPI for Algebra I completion by the end of grade 9 includes equivalent integrated mathematics courses. Algebra I completion by the end of grade 9 is defined as the percentage of first-time ninth graders who completed Algebra I or equivalent Integrated Math coursework by the end of grade 9. The numerator is the number of first-time ninth graders who completed the coursework by the end of grade 9, and the denominator is the total number of first-time ninth graders in the applicable student group.

³ Council of the Great City Schools. (2025). *Academic key performance indicators*. https://resources.finalsite.net/images/v1763486961/cgcsorg/uxj5pgyojudcgrxqgxvh/AcademicKPIReportFULLREPORT_FINAL.pdf

⁴ The KPI for Algebra I completion by the end of grade 9 includes equivalent integrated mathematics courses.

between top-quartile Algebra I completion and related grade 9 outcomes such as grade 9 GPA and lower core-course failure.

Varying district contexts of top performers. District enrollment and English learner enrollment ranges overlapped across higher- and lower-performing quartiles, suggesting that differences in outcomes may reflect policy and practice conditions across multiple factors identified in this study, rather than any relation to district size or EL enrollment.

Phase 2: Review of Prior CGCS Strategic Support Team Report Findings. Phase 2 involved a review of prior CGCS Strategic Support Team reports (i.e., EL program reviews) in which mathematics access challenges were more apparent. These reviews are conducted at the request of member districts to identify system-level strengths, challenges, and recommendations for improving student achievement and district operations. (See Appendix B.) For this study, the report reviews focused on recurring system-level barriers and district conditions related to mathematics access, course sequencing, placement decision-making, counseling and advising, language access, and academic supports for English learners.

Phase 3: Survey and Focus Groups. Phase 3 involved primary data collection through a survey, which generated 25 responses from 19 districts, and focus group sessions with district leaders and staff. Across the survey, focus groups, working groups, and interviews, the study engaged approximately 70 unique district personnel representing 32 of the Council's 81 member districts. The 32 districts participating in these data-collection activities are not the same set as the 53 districts included in the KPI analysis, although some districts participated in both components of the study.

Study Population

This study focuses on two closely related but distinct student populations—English learners and Latino students. EL status reflects a student's English language development and instructional-service context, while Latino identity reflects a student's race/ethnicity; in the U.S. context, the two groups overlap substantially but are not the same. In most large urban districts, Latino students make up a significant share of EL enrollment, but not all Latino students are ELs; ELs may be of any race or ethnicity. Studying Latino students helps illuminate broader inequities in mathematics access by race/ethnicity, while a focus on ELs illuminates the additional effects of language classification, service structures, and placement practices on Algebra I access and completion by the end of grade 9. Table 1 provides an overview of policies and practices identified in the literature as shaping Algebra I access and completion by the end of grade 9, distinguishing where these factors are specific to English learners, specific to Latino students, or affect both groups.

Table 1. Shared and Group-Specific Factors Shaping Algebra I Access and Completion by the End of Grade 9 for English Learners and Latino Students

Policy or Practice	Considerations
Mathematical Readiness and Student Placement Processes	
Districtwide expectations for Algebra I access <i>(Lee & Stephens, 2020; Patrick et al., 2020; Remillard et al., 2017; Umansky et al., 2024)</i>	General: Clear, consistent expectations for Algebra I access, paired with appropriate supports to promote success once enrolled. • ELs: Use of EL status or English language proficiency in ways that do not delay access; placement processes that avoid default routing of newcomers and long-term ELs into lower-level sequences. • Latino students: Implementation of district expectations in ways that address racial/ethnic disparities in access to Algebra I and earlier advanced mathematics opportunities.
Placement and readiness systems <i>(Abedi, 2002; Lee & Stephens, 2020; Patrick et al., 2020; Schleppegrell, 2007; Snipes & Finkelstein, 2015; Wilkinson, 2019)</i>	General: Transparent, consistent placement systems that validly assess readiness for mathematics coursework. • ELs: Distinction between English language proficiency and mathematical readiness; use of placement tools that accurately capture mathematical knowledge regardless of language proficiency. • Latino students: Use of placement criteria that minimize subjectivity, rigid cut scores, and biased assumptions about readiness.
Coordination among mathematics, English learner, and counseling staff <i>(Council of the Great City Schools, 2009, 2016a; Lee & Stephens, 2020; Umansky et al., 2024)</i>	General: Structured collaboration that aligns placement decisions, supports, scheduling, and pathway planning. • ELs: Coordination that incorporates recognition of mathematical knowledge ELs bring as well as EL-specific needs, including language services and scheduling considerations.
Counseling Staff, Course Offerings, Instructional Supports, and Collaboration	
Counseling and advising capacity <i>(Baker et al., 2023; Falco, 2017; Good et al., 2010; Schmidt et al., 2012; Torrez, 2004; Vazquez Cano et al., 2023)</i>	General: Sufficient advising capacity to support scheduling access, transition planning, family engagement, and clear communication of mathematics pathways. • ELs: Counselor knowledge of second-language development, EL graduation requirements, and the role of EL status in scheduling decisions. • Latino students: Culturally responsive, asset-oriented advisors who believe in Latino students' ability to take advanced mathematics.

Table 1. Shared and Group-Specific Factors Shaping Algebra I Access and Completion by the End of Grade 9 for English Learners and Latino Students, continued

Policy or Practice	Considerations
Counseling Staff, Course Offerings, Instructional Supports, and Collaboration	
Language access within mathematics instruction <i>(Council of the Great City Schools, 2016a; Kanno & Kangas, 2014; Lee & Stephens, 2020; Schleppegrell, 2007; Wilkinson, 2019)</i>	General: Instructional models that maintain access to grade-level, rigorous mathematics coursework. • ELs: Availability of language supports within grade-level mathematics and access to home-language supports or bilingual instruction where appropriate.
Support structures tied to access and acceleration <i>(Barnett et al., 2012; Morales-Chicas & Graham, 2021; Snipes & Finkelstein, 2015; Stoelinga & Lynn, 2013)</i>	General: Access to supports that enable on-time progression into advanced mathematics pathways while addressing unfinished learning. • ELs: Provision of additional time and language-related supports without requiring placement into lower tracks or repeat-course models.
Mathematics Pathways and Family Engagement	
Middle school mathematics pathways <i>(Brown et al., 2018; Common Core Standards Writing Team, 2023; LaFave, 2019; Morton & Riegle-Crumb, 2020; National Council of Teachers of Mathematics, 2014; Patrick et al., 2020; Smith, 1996; Spielhagen, 2006)</i>	General: Equitable access to advanced coursework in grades 6–8 to support Algebra I enrollment by grade 9, with attention to early opportunity gaps. • ELs: Pathway structures that account for newcomers, interrupted formal education, and prior learning that may not align directly with U.S. course labels or transcripts. • Latino students: Attention to early opportunity gaps in K–8 mathematics, including access to rigorous instruction, advanced coursework, experienced teachers, and in-class opportunities to develop algebraic thinking.
Family-facing communication and engagement <i>(Brooks, 2022; Good et al., 2010; Housel, 2020; Torrez, 2004)</i>	General: Clear, transparent, multilingual communication about Algebra I pathways, placement criteria, appeals, and sequencing. • ELs: Communication that explains how EL identification, language services, placement, and graduation requirements intersect. • Latino students: Use of culturally responsive outreach, advisory structures, and proactive communication about advanced mathematics opportunities.

Table 1. Shared and Group-Specific Factors Shaping Algebra I Access and Completion by the End of Grade 9 for English Learners and Latino Students, continued

Policy or Practice	Considerations
Data Infrastructure Capacity and Monitoring	
Data systems and equity monitoring <i>(Allensworth & Easton, 2007; Allensworth et al., 2021; Council of the Great City Schools, 2025; Patrick et al., 2020; Thompson et al., 2023; Umansky et al., 2024)</i>	General: Timely, disaggregated data systems that support monitoring of access, placement, and outcomes across student groups. • ELs: Data collection and reporting that distinguishes among current ELs, former ELs, newcomers, long-term ELs, and proficiency levels, and by ethnicity. • Latino students: Data that clearly report race/ethnicity-based participation and outcomes, in addition to overall averages.

Some dynamics related to Algebra I access and success are shared, while others are group-specific. Both ELs and Latino students can be affected by structural barriers such as limited course offerings in schools, inadequate academic advising, ineffective family communication, and rigid mathematics pathways that reduce opportunities to complete Algebra I by the end of grade 9, amplifying the impacts of limited resources and support (Patrick et al., 2020; Umansky et al., 2024). Simultaneously, ELs face additional barriers tied specifically to English language proficiency and EL program design. For example, districts may conflate English language proficiency with mathematical readiness, rely on English-medium placement tools that do not validly capture mathematical knowledge, or schedule language services in ways that compete with access to core mathematics coursework. Newcomer and long-term ELs may also face distinct risks, including automatic placement into lower-level mathematics sequences or pathways focused on English language development (ELD) that limit access to advanced coursework. Finally, some issues can affect both groups, though in different ways. For example, standardized assessment scores may provide evidence of Latino students' mathematical readiness that counters staff judgments. However, those same scores may underidentify ELs who are ready for advanced mathematics when the assessments are administered in a language the students are still acquiring.

Understanding the Applicability of Findings Across Student Groups: A Note on Student Groups and Systemic Barriers

Although this report focuses on English learners and Latino students, many of the barriers discussed are not unique to these student groups. Improving Algebra I access and success for English learners and Latino students requires attention to both broad systemic inequities that affect multiple student groups and the unique language-related factors that may impact English learners' educational experiences. Strategies that address both dimensions are likely to benefit a wider range of students while ensuring that the particular needs of English learners are not overlooked.

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In particular, barriers affecting Latino students—such as inequitable access to advanced coursework, inconsistent placement practices, limited counseling capacity, rigid mathematics pathways, and uneven access to experienced teachers and academic supports—often reflect broader patterns of discrimination, residential segregation, concentrated poverty, and historical underinvestment in schools and communities of color (Haskins & Tienda, 2011; Logan & Parman, 2025). As a result, students from other racial, ethnic, linguistic, and historically underserved groups may experience similar challenges, particularly when they attend the same schools and are exposed to the same systemic conditions as Latino students.

At the same time, some barriers discussed in this report are more specific to English learners because they stem directly from language classification, English language proficiency measures, language-service structures, and the ways that language development is incorporated into placement, scheduling, and instructional decisions. These language-related barriers can affect students regardless of race or ethnicity but are most directly associated with the experiences of English learners.

Limitations

A few limitations are important to note. First, the focus group and survey findings rely on self-reports from district administrators and staff. As a result, responses may reflect participants' perceptions, roles, and available information rather than the full range of district practice or school-level implementation. To guard against overreliance on any single account, the study triangulated participant responses with available data from the Council's Key Performance Indicators data collection, public sources, district documents, prior Council reports, member checks, and multiple meetings held separately with different groups of district staff. The study is descriptive and does not examine causality; therefore, findings should be interpreted as identifying patterns, barriers, and associated practices rather than determining which policies or practices caused differences in Algebra I outcomes. Second, although all Council-member districts were invited to participate in the survey and working groups, only a subset participated. Participants may have been those experiencing the greatest challenges with access to and completion of Algebra I, or those already engaged in efforts to improve Algebra I outcomes for English learners and Latino students. Nevertheless, the KPI review suggests that participating districts represented a wide range of contexts and outcomes, including districts with both higher and lower levels of Algebra I completion by the end of grade 9. Finally, English learners and Latino students are identified using state and district processes; the Council uses the student groupings as reported by districts.

PART III Findings

This section presents the findings on the district policies, practices, and system conditions associated with English learners' and Latino students' access to and completion of Algebra I by the end of grade 9. The research questions and findings presented in Part III can be summarized as follows:

- **Research Question 1: What barriers do district administrators identify as most limiting English learners' and Latino students' access to and completion of Algebra I by the end of grade 9?** The most significant barriers are interconnected and often emerge at multiple points in students' trajectories, including placement criteria, course sequencing, counseling capacity, language access, instructional supports, family communication, and data systems.
- **Research Question 2: What district actions and conditions are associated with stronger or improving Algebra I completion outcomes for English learners and Latino students by the end of grade 9?** Districts with stronger or improving outcomes appear to have more coherent systems for preserving access to grade-level coursework, identifying students' support needs, monitoring student group outcomes, and using data to guide placement, advising, and intervention decisions.

The findings draw on direct engagement with districts through a survey, focus groups, and working groups contextualized by analyses of relevant Council Key Performance Indicators and past program reviews.⁵ Overall, the findings indicate that Algebra I access and completion by the end of grade 9 result from cumulative decisions across the following four domains:

Mathematical
Readiness and
Student
Placement
Processes



Counseling Staff,
Course Offerings,
Instructional
Supports, and
Collaboration



Mathematics
Pathways and
Family
Engagement



Data
Infrastructure
Capacity and
Monitoring

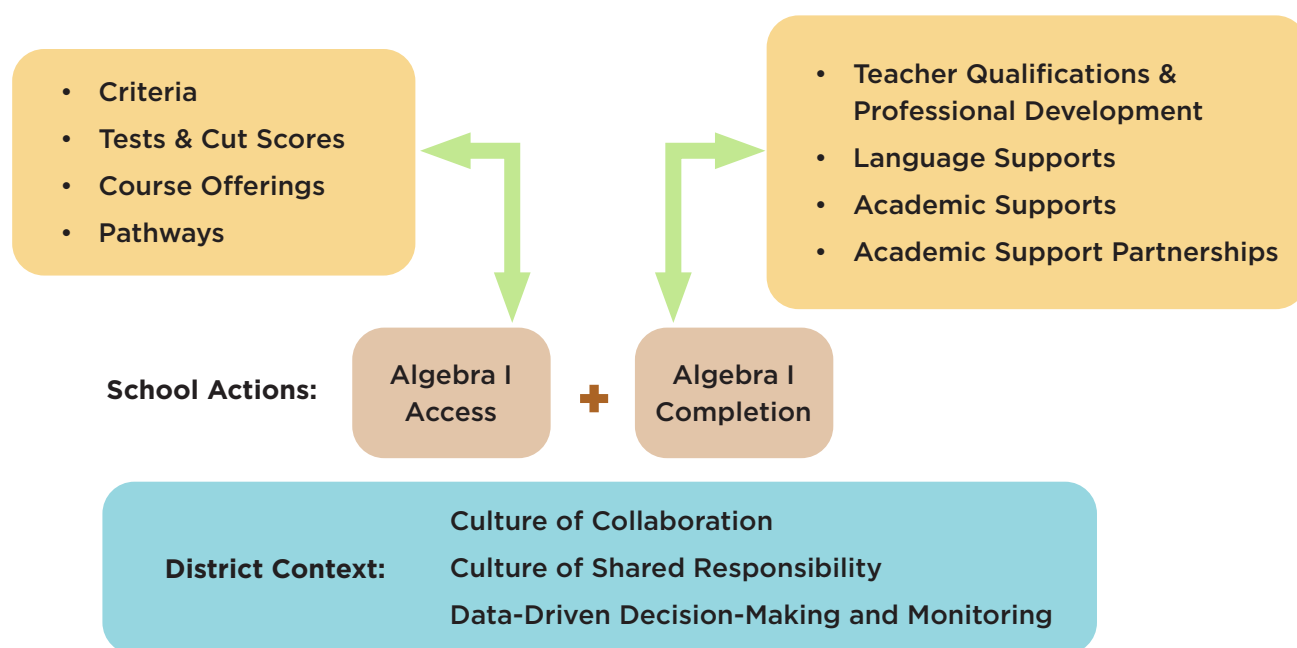


⁵ See Appendix C for an overview of Algebra I completion outcomes using Council of the Great City Schools Key Performance Indicator data, including cross-district variation, student group comparisons, and trends over time. These quantitative findings establish the scope and magnitude of differences in access and success, highlighting how outcomes vary across districts and student groups.

1. **Mathematical readiness and student placement processes.** This domain examines how districts define readiness for Algebra I, what evidence is used to make placement decisions, whether placement criteria are transparent and consistently applied, and whether English language proficiency is distinguished from mathematical preparation. It also considers whether readiness systems use multiple measures and whether students have opportunities to demonstrate mathematical understanding through varied modalities.
2. **Counseling staff, course offerings, instructional supports, and collaboration.** This domain examines whether students have access to the advising, course availability, instructional supports, and cross-departmental collaboration needed to enter and complete Algebra I successfully. It includes counseling capacity, master scheduling, staffing, availability of supported or bilingual Algebra I sections, co-requisite supports, collaboration among mathematics, English learner, counseling, and school leadership staff, and opportunities for students to participate in placement and pathway decisions and receive proactive guidance about rigorous mathematics options.
3. **Mathematics pathways and family engagement.** This domain examines how elementary and middle school mathematics pathways position students to complete Algebra I by the end of grade 9. It includes access to pre-algebra and accelerated pathways, flexible entry and re-entry points, transition supports, transcript review for students entering from other systems or countries, and family-facing communication about placement criteria, course sequences, appeals, and the importance of Algebra I timing.
4. **Data infrastructure capacity and monitoring.** This domain examines whether districts have the data systems and accountability routines needed to monitor Algebra I access, placement, completion, course failure, repetition, and progression to subsequent mathematics coursework. It also considers whether data are disaggregated by student group, including English learner status, race/ethnicity, gender, school, course pathway, newcomer status, long-term English learner status, and other relevant characteristics.

Figure 1 provides an overview of the underlying factors that emerged in the data collection from school districts. Barriers to Algebra I access and completion are rarely isolated to a single policy or practice and depend heavily on how district systems work together to support English learners' and Latino students' timely access to and success in Algebra I by the end of grade 9. Access is associated with placement criteria, tests and cut scores, course offerings, and mathematics pathways, while completion—earning credit for or passing Algebra I—depends on teacher qualifications and professional development, language supports, academic supports, and support partnerships. These factors operate within a broader district context that includes collaboration, shared responsibility, and data-driven decision-making and monitoring.

Figure 1. District Context and School Actions Associated with Algebra I Access and Completion by the End of Grade 9



Research Question 1: What barriers do district administrators identify as most limiting English learners' and Latino students' access to and completion of Algebra I by the end of grade 9?

The data reveal various barriers for English learners and Latino students. These barriers are often interconnected and emerge at multiple points within the locus of control for school districts, from early course sequencing and placement decisions to counseling, family communication, and access to instructional supports. It is also critical to acknowledge that broader conditions shape access and completion outcomes in ways that are not specific to English learners or Latino students alone. ELs and Latino students, including both Latino ELs and Latino non-ELs, are often enrolled in schools experiencing higher levels of poverty. Such schools are frequently associated with limited resources, course offerings, or certified teachers—factors that may limit access to and completion of Algebra I by the end of grade 9, but do not singularly affect ELs and Latino students. With this broader context in mind, the analysis focuses on areas of district policy and practice that are especially important to ELs' and Latino students' access to and completion of Algebra I by the end of grade 9. Table 2 summarizes the key barriers identified.

Table 2. Summary of Barriers to Algebra I Access and Completion by the End of Grade 9 for English Learners and Latino Students

Key Barriers	How the Barrier Limits Access and Completion
I. Mathematical Readiness and Student Placement Processes	
Misconceptions about English language development	[ELs] English language proficiency is used as a proxy for mathematical ability, leading to below-grade-level placement.
Inconsistent and subjective definitions and measures of mathematical readiness	[ELs and Latino Students] Lack of clear, multi-measure criteria results in variable and inequitable placement decisions.
Assessment practices that misrepresent mathematical readiness	[ELs] English-medium assessments without accommodations underestimate ELs' mathematical knowledge.
Universal placement approaches that delay or divert English learners from Algebra I or place them in the course without sufficient support	[ELs] One-size-fits-all policies may delay students new to the U.S. (i.e., newcomers), limit long-term ELs' access to Algebra I pathways, or place students in Algebra I without sufficient language and academic support.
II. Counseling Staff, Course Offerings, Instructional Supports, and Collaboration	
Limited counseling and advising capacity	[ELs and Latino Students] High counselor caseloads limit access to timely advising on Algebra I placement, pathways, and supports. [ELs] Limited EL-specific expertise further constrains informed placement and advocacy.
Limited and constrained course offerings	[ELs and Latino Students] Scheduling conflicts, staffing shortages, and limited course offerings reduce access to Algebra I and advanced mathematics pathways. [ELs] ELD course requirements and language-service schedules can further constrain access when they compete with Algebra I or other core mathematics courses.
Inconsistent instructional scaffolding and support	[ELs] Uneven language supports limit ELs' ability to succeed in grade-level mathematics.
Limited cross-departmental collaboration	[ELs] Lack of coordination across math, EL, and counseling staff leads to fragmented placement and support decisions.

Table 2. Summary of Barriers to Algebra I Access and Completion by the End of Grade 9 for English Learners and Latino Students, continued

Key Barriers	How the Barrier Limits Access and Completion
III. Mathematics Pathways and Family Engagement	
Limited and misaligned mathematics pathways and sequencing	[ELs and Latino Students] Rigid course sequences and lack of re-entry points prevent students from reaching Algebra I by grade 9.
Rigid and exclusionary gateway criteria	[ELs and Latino Students] Early or inflexible cut points (e.g., grade 5 tests) restrict access, particularly for ELs and late entrants.
Limited family awareness and engagement in mathematics pathways	[ELs and Latino Students] Lack of clear, multilingual information constrains families' ability to advocate for appropriate placement.
IV. Data Infrastructure Capacity and Monitoring	
Limited data capacity for monitoring access and outcomes	[ELs and Latino Students] Inadequate data systems prevent identification of gaps in enrollment, placement, and success.
Diffused accountability for monitoring student access and success	[ELs] Unclear ownership across departments weakens follow-through and continuous improvement.

I. Mathematical Readiness and Student Placement Processes

Placement processes impact whether students are recognized as ready for Algebra I or routed into lower-level course sequences. This section examines how readiness definitions, assessment practices, English language proficiency assumptions, and universal placement policies can affect access to advanced mathematics pathways for ELs and Latino students. Districts have written policies as well as unspoken practices that determine eligibility, but these criteria may reflect unfounded assumptions about particular groups, including Latino students and students who are still developing English. Staff involved in placement may hold implicit biases or be unfamiliar with how students demonstrate mathematical knowledge before mastering English and, as a result, may hold lowered expectations for both student groups.

Barriers affecting Latino students—such as inequitable access to advanced coursework, inconsistent placement practices, limited counseling capacity, rigid mathematics pathways, and uneven access to experienced teachers and academic supports—often reflect broader patterns of discrimination, residential segregation, concentrated poverty, and historical underinvestment in schools and communities of color. As a result, students from other racial, ethnic, linguistic, and historically underserved groups may experience similar challenges, particularly when they attend the same schools and are exposed to the same systemic conditions as Latino students. (See *Study Population* section in Part II.)

Misconceptions about English language development. In decisions about placing English learners into Algebra I courses, staff members' understanding of mathematical readiness in the context of English language development plays a pivotal role. Specifically, when staff members make student placement decisions based on students' English language proficiency levels rather than their mathematical knowledge, it often results in below-grade-level mathematics placements. For instance, EL coordinators in one district reported that students were placed into a mathematics track that culminated in "ELL Algebra," a course that did not satisfy the state's requirements for college admission. In other words, a student could successfully complete every course in the EL-designated mathematics sequence but remain ineligible for college admission because the sequence did not meet the state's course requirements.

Within-district inconsistent and narrow definitions of mathematical readiness. Districts vary widely in the number and types of metrics they use to define mathematical readiness. The 25 survey responses from 19 districts revealed variation in both the number of metrics used and the specific combinations of metrics used to define "readiness for Algebra I." In some cases, responses revealed inconsistent understandings within the same district of the district's definition of readiness for Algebra I. The majority of responses indicated that districts use between three and five metrics, usually including meeting a mathematics placement test score threshold (cut score) and passing prior course(s) with a certain grade. Both metrics can pose barriers for English learners. English-medium assessments may fail to capture English learners' mathematical knowledge when administered without accommodations, and English learners may not be placed in mathematics courses on a pathway that enables them to complete Algebra I by the end of grade 9.

Assessment practices that misrepresent the mathematical readiness of ELs. Placement tests are the most common criterion used in responding districts, which may be foreclosing access to advanced mathematics pathways if the assessments are administered without linguistic accommodations for ELs (Abedi, 2002; Snipes & Finkelstein, 2015). These assessments may produce unreliable results for accurate mathematics course placements because they reflect a student's English language proficiency more than their mathematical knowledge. Nonetheless, districts are increasingly using scores from standardized assessments to sort students into advanced middle school mathematics courses, purportedly to prepare them for Algebra I and other high school mathematics courses (Patrick et al., 2020; Snipes & Finkelstein, 2015). Overreliance on standardized assessments to determine students' readiness in mathematics can narrow access to advanced pathways and discourage educators from using performance tasks to better assess the content knowledge of students for whom standardized assessments may not be valid (Abedi, 2002; Lee & Stephens, 2020; Wilkinson, 2019).

Universal placement approaches that delay or divert English learners from Algebra I or place them in the course without sufficient support. Districts moving toward universal Algebra I enrollment no later than grade 9 may expand access without necessarily ensuring successful completion if they do not also provide language and academic supports responsive to students' needs. Blanket policies, in particular when applied to ELs in ways that treat the group as a monolith, fail to address their unique needs. District examples illuminate how at both ends of the spectrum, ELs face hurdles in accessing advanced mathematics pathways:

- ***Newcomers.*** Blanket placement policies for students new to U.S. schools (i.e., newcomers) entering middle school or later can delay ELs' access to Algebra I. It is not uncommon for

districts to have policies that automatically place newcomers into a yearlong pre-algebra sequence of courses, regardless of whether the student has learned algebraic content in their home country. *Students with interrupted formal education* (SIFE) face additional hurdles when they are automatically placed in even lower-level classes, such as “foundational mathematics.”

- **Long-term ELs.** Students who have remained in EL programs for more than five years face the consequence of being placed in ELD-focused classes, without accessing advanced mathematics because of their EL status. District-determined course trajectories for long-term English learners may place students in ELD-focused sequences that limit their access to advanced mathematics.

II. Counseling Staff, Course Offerings, Instructional Supports, and Collaboration

Structural barriers, including insufficient cross-departmental collaboration, shape whether students are recognized as prepared for Algebra I and scheduled into the course. These barriers also influence whether students are provided the counseling, course offerings, and instructional supports needed to succeed. Across districts, eligibility decisions were shaped not only by formal placement criteria but also by how staff interpreted readiness, assessment results, English language proficiency, and universal access policies for different groups of ELs. These decisions can restrict access when assessments do not validly capture students’ mathematical knowledge, when English language proficiency is treated as evidence of mathematical ability, or when policies designed to expand access do not account for students new to U.S. schools (i.e., newcomers), long-term ELs, and students with varied prior schooling. As a result, written policies and informal practices may reinforce lowered expectations rather than identify the supports students need to succeed in Algebra I.

Limited counseling and advising capacity. Counseling capacity emerges as one of the most powerful structural determinants of mathematics access. This is no surprise, as counselors have significant influence over—and, in some cases, control—scheduling and placement decisions. Counselors also provide students and families with information about course options and graduation requirements and can advocate for students when placement criteria are contested. An IES Oregon study, for example, found that EL mathematics enrollment was 88 percent in schools with counselors, compared to 77 percent in schools without counselors, and that, unfortunately, 17 percent of Oregon high schools attended by ELs lacked counselors (Vazquez Cano et al., 2023). One district reviewed by the Council had a counselor-to-student ratio of approximately 650:1, underscoring the limited advising capacity available to support individualized placement and pathway decisions (Council of the Great City Schools, 2016b). When counselors are unavailable or overtaxed, Latino students and ELs are both affected as they lose a major source of information and influential lever to access advanced mathematics.

For ELs in particular, having counseling staff alone is insufficient if they lack a solid understanding of how ELs can demonstrate “readiness” when their command of English is still developing. It is important for relevant staff to understand that students in the early stages of English acquisition can demonstrate algebraic competence in their home language or through non-linguistic representations that may not be captured by standardized assessments in English (Schleppegrell, 2007; Wilkinson, 2019). If existing counselors are unprepared to navigate EL-specific pathway considerations, ELs lose access to the primary institutional advocate in the placement process.

Limited and constrained course offerings. ELs' and Latino students' access to advanced mathematics, specifically Algebra I in grades 7 and 8, is contingent on whether the school offers these courses and, if so, whether they have access to them. EL access to Algebra I is further hampered by a number of factors, including the shortage of teachers who are dually certified in secondary mathematics and English learner instruction, such as English as a Second Language (ESL) or English Language Development (ELD) where applicable, as well as the following hurdles:

- Insufficient prioritization of all students' needs in the development of the master schedule.
- Scheduling and graduation plans that require English learners to take English language development (ELD) courses, leaving less room for other credit-bearing coursework.
- Reluctance to enroll ELs in more than one mathematics class or in mathematics and career and technical education (CTE) classes concurrently.

Some barriers discussed in this report are more specific to English learners because they stem directly from language classification, English language proficiency measures, language-service structures, and the ways that language development is incorporated into placement, scheduling, and instructional decisions. These language-related barriers can affect students regardless of race or ethnicity but are most directly associated with the experiences of English learners. (See *Study Population* section in Part II.)

Inconsistent instructional scaffolding and support. Instructional scaffolds are important for developing the academic language that all students need to support mathematical understanding and reasoning. Mathematics instruction for English learners, in particular, requires attention to the language students need to think mathematically, process information, and explain their reasoning. Language development instruction, therefore, should not take place in isolation, but should be integrated with mathematics instruction. Districts vary in how instructional supports are provided for ELs in advanced mathematics courses. In districts where language differentiation during Algebra I content instruction is determined at the school site, the instructional language supports are inconsistent across the district. In districts where the responsibility to determine and provide such language supports is primarily left to an already overextended English learner office without effective collaboration between the mathematics and EL departments or shared accountability for EL success in mathematics, language supports during Algebra I class time may be insufficient.

Limited cross-departmental collaboration. The asset-oriented placement of ELs and the provision of instructional supports for success in Algebra I require intentional, systematic, and timely collaboration among the counseling, mathematics, and English learner departments. Such cross-functional collaboration is not easy, however, given staff caseloads and schedule challenges. Cross-departmental collaboration is facilitated when the roles and responsibilities of each department are well-defined and a sense of shared accountability for EL success in mathematics is present. The respective role definition, assigned responsibilities, and shared accountability shape the level of involvement of EL staff and educators in placement and/or readiness decisions for ELs in mathematics courses. Survey responses about EL staff involvement ranged from merely "being informed but not directly involved" to "making or approving the EL placement decisions." The lowest level of involvement—"informed but not directly involved"—was the most

frequent response, with the second most common response being “I recommend/advise on placement/readiness decisions.”

III. Mathematics Pathways and Family Engagement

Algebra I completion by the end of grade 9 is shaped not only by the placement decision made at a single point in time, but by the mathematics pathways, entry points, and family-facing information systems that determine whether students remain on track for Algebra I and subsequent advanced coursework. Across districts, placement decisions were shaped by district policies, district-defined criteria, and the staff assigned to implement them. The approaches varied widely and included:

- Districtwide policies to enroll all students in Algebra I by grade 9;
- District-determined targeted enrollment in Algebra I by grade 9 at high-impact schools for specific students, such as students with interrupted formal education;
- Site-based placement decisions that reflect varying degrees of compliance with district-provided guidance, with the level of support provided to ELs and Latino students placed in Algebra I by grade 9 also determined by the school site; and
- Training provided by EL departments to counselors and staff involved in making student placement decisions to build their understanding of language development for asset-oriented placements.

Variations matter because mathematics pathways can either create multiple opportunities for students to enter or re-enter advanced coursework or make access dependent on rigid course sequences, early sorting decisions, or school-level discretion. These barriers are compounded when families do not receive timely and accessible information about course options, placement criteria, graduation implications, and ways to advocate for appropriate placement. As a result, pathway design and family engagement practices play a central role in determining whether Algebra I placement by grade 9 is a meaningful opportunity or an unevenly implemented expectation.

Limited and misaligned mathematics pathways and course sequencing. Grade 9 Algebra I completion is substantially determined by what happens in grades 6, 7, and 8, building on mathematical learning that begins in the elementary grades. High-quality, grade-level mathematics instruction should develop students’ algebraic thinking and conceptual understanding over time, so they are prepared to enroll in and complete Algebra I by the end of grade 9. District-established mathematics pathways and course sequences designed for continuously enrolled students may fail to provide access to students who enroll after middle school, those with interrupted formal education, or those who have studied algebraic content in their home country but not as part of separate courses recognized in the U.S. Examples illuminating this challenge include:

- Several districts lack a defined graduation pathway for students entering the system in grade 9 or later.
- Newcomers have been placed in courses for which they do not earn mathematics or science credit.

- Some districts lack timely, asset-oriented transcript evaluation processes that recognize algebraic content students completed in other countries, leading to placement in lower-level mathematics courses that limit access to advanced mathematics sequences.

High school graduation pathways, therefore, need additional points of access and criteria to ensure that ELs and older students new to the district, many of whom may enroll at different times throughout the school year, are recognized for their mathematical knowledge and have access to advanced mathematics pathways that support successful graduation.

Rigid and exclusionary gateway criteria. Districts that aim to identify students early, such as in grade 5, for advanced mathematics sequences, may be prematurely closing off access for many students. Gateways set in later grades, such as grade 9, may provide greater access, but they can also close off access for students with nontraditional educational paths. Criteria fixed to specific grade levels or screening dates during the school year may exclude students who arrive in later grades or throughout the school year.

- The use of academic indicators from late elementary school, such as grade 5 MAP mathematics scores, to sort students into later course pathways raises concerns. These decision points may occur too early to capture students' developing mathematical potential and may particularly disadvantage English learners who are assessed in a language they are still acquiring.
- Gateways in middle school or grade 9 can pose hurdles for students entering in late middle school or grade 9, especially for ELs and students new to the U.S. (i.e., newcomers), if the criteria and process fail to consider their particular circumstances related to English language proficiency, missing transcripts, and having studied advanced mathematics outside of the United States. For newcomers from countries where mathematics is taught as an integrated subject rather than in standalone courses such as Algebra I or Geometry, transcript equivalency processes can make it challenging to award credit for Algebra I or other advanced mathematics courses.

The exclusionary effects of rigid placement criteria may be compounded when district policies provide limited opportunities to appeal initial decisions or make midyear placement changes. This can create particular challenges for students who enter a district after established placement points or experience high mobility. Across 25 survey responses representing 19 districts, respondents reported considerable variation in the flexibility of placement processes. Most indicated that at least one mechanism was available—such as a midyear placement change, a formal family or student appeal, or a counselor or administrator override—while a smaller share reported no formal option for reconsidering an initial placement. Clear and flexible review processes can serve as an important safeguard, allowing districts to consider new evidence and make more asset-oriented placement decisions for English learners, Latino students, and other highly mobile students.

Limited family awareness and engagement in mathematics pathways. Family engagement is a critical component of effective, asset-oriented placement processes. Effective placement processes ensure that families of students underrepresented in advanced mathematics courses, such as English learners and Latino students, are aware of requirements, pathways, and how to advocate for their students. Families need timely and relevant information, communicated in their home language, as well as opportunities to advocate for their children's appropriate placement, particularly where structural counseling and instructional deficits may otherwise limit access. District practices include:

- Capitalizing on EL and/or Hispanic Advisory Councils to conduct outreach. A Council-member district shared that it conducts 8,000 annual outreach calls to families.
- Holding events such as Freshman Day to share graduation requirements and placement options within mathematics pathways, including pathways that lead to Algebra I and subsequent advanced mathematics coursework.

IV. Data Infrastructure Capacity and Monitoring

Data capacity and accountability emerged as recurring hurdles to ensuring and monitoring EL and Latino enrollment and success in advanced mathematics courses. Districts need timely, disaggregated data to determine whether students are accessing Algebra I, successfully completing the course, and remaining on track for subsequent mathematics coursework. Yet inadequate data collection and reporting systems often limit analysis of enrollment and outcomes by EL status, Latino ethnicity, school, grade level, course pathway, and English learner typology, such as newcomer or long-term EL status. At the same time, responsibility for monitoring EL success in mathematics is often diffuse across mathematics, counseling, school leadership, and English learner departments, making it difficult to identify who owns the data, who acts on it, and how schools are held accountable for improvement. These data and accountability gaps can prevent districts from seeing where students are being diverted from advanced mathematics pathways and from responding before those barriers become cumulative.

Limited data capacity for monitoring access and outcomes. Limited and outdated data systems thwart staff efforts to identify trends in Latino student and EL enrollment and success in advanced mathematics courses and fail to support comparative analyses of Algebra I enrollment and completion data for non-ELs and other student groups. Practitioners identified important data-related inquiries to include:

- **Participation.** What are the 3- and 5-year trends for Algebra I participation and completion for ELs in grades 7, 8, and 9, and how do these compare to non-EL and other student groups? What are the data trends at the district and school-site levels?
- **Success.** What is the definition of success and completion? Does it mean receiving a passing grade in the course or just taking the course? What are the comparative grades received by ELs, non-ELs, and other student groups? What percentage of each student group fails and retakes Algebra I? What do the school-site-level data show?
- **Course-taking and completion by English learner typology.** What are the Algebra I course-taking and success outcomes for students new to the U.S. (i.e., newcomers) and long-term ELs? When do they enter the advanced mathematics pathway? What are the reported completion rates for students at different stages of English acquisition?

Diffuse accountability for monitoring student access and success. Diffuse accountability may create additional challenges for English learners because responsibility for English language development and access to grade-level content spans multiple departments. Although collaboration among mathematics and English learner staff is essential, it can be difficult to sustain, particularly in secondary mathematics, where few teachers are qualified to provide both mathematics instruction and English language development. In the absence of clearly defined roles, responsibility for monitoring instruction and student outcomes may fall informally to EL teachers or English learner departments. This lack of clarity can hinder effective data use at the school and district levels by creating uncertainty about who leads outcome monitoring, how departments collaborate, how schools are held accountable, and who has the authority to act when the data reveal gaps.

Research Question 2: What district actions and conditions are associated with stronger or improving Algebra I completion outcomes for English learners and Latino students by the end of grade 9?

The second research question examines the district-level actions and conditions associated with stronger or improving Algebra I completion outcomes for English learners and Latino students. Its purpose was to move beyond identifying barriers and illuminate how districts are expanding access while also supporting successful completion. Across the data, stronger or improving districts appear to share several conditions. These include clearer expectations for Algebra I access by grade 9, inclusive of ELs and Latino students, placement systems that permit entry into grade-level coursework without conflating English language proficiency with mathematics knowledge, embedded language and academic supports, more coherent middle school pathways, effective approaches to family outreach, and more routine use of disaggregated data to monitor progress and guide support.

I. Mathematical Readiness and Student Placement Processes

Mathematical readiness and student placement processes shape whether students are granted access to Algebra I and positioned to succeed once enrolled. Districts with stronger or improving outcomes appear to sustain access to grade-level coursework while pairing placement with appropriate supports.

Guaranteed access and completion support through universal Algebra I placement no later than grade 9. Some districts ensure Algebra I placement by grade 9 through a universal placement process. For example, Minneapolis Public Schools and Baltimore City Public Schools automatically enroll students into Algebra I in grade 9 if they have not already completed the course. Additionally, Dallas Independent School District uses an acceleration model, where certain students are automatically enrolled in advanced mathematics courses in middle school, based on grade 5 mathematics assessment. Specifically, students scoring in the top 40 percent are automatically placed in an advanced middle school mathematics pathway leading to Algebra I in grade 8, with a parental opt-out option. All other students are enrolled in a pathway that includes Algebra I by grade 9. This policy contributed to substantial growth in the district's Latino Algebra I completion rate before high school (Castaño et al., 2025; Ferrero, 2025; Texas Education Agency, 2026). Chicago Public Schools implemented a holistic and nuanced process, using multiple data points

(both quantitative and qualitative) for schools to place students meeting broader indicators of student potential in grade 8 Algebra I.

Districts with stronger outcomes also pair universal placement policies with complementary approaches that sustain access while supporting student success:

- **Ensuring access to Algebra I for all students by grade 9**, regardless of EL or newcomer status (Baltimore City Public Schools; Minneapolis Public Schools).
- **Expanding middle school Algebra I course offerings across the district**, including through virtual hubs for schools without on-site Algebra I courses and synchronous classes offered before, during, or after school (Chicago Public Schools).
- **Providing additional supports alongside Algebra I placement**, such as targeted interventions, an additional mathematics class that does not replace core coursework, and summer bridge programs that address knowledge gaps before students enter grade 9 (Chicago Public Schools; Los Angeles Unified School District; Minneapolis Public Schools).
- **Monitoring successful course completion rather than enrollment alone**, including whether students earn Algebra I credit, thereby shifting the focus from access alone to successful completion (Minneapolis Public Schools).

II. Counseling Staff, Course Offerings, Instructional Supports, and Collaboration

Structural conditions shape whether students placed in Algebra I receive the supports necessary to succeed. Districts with stronger or improving outcomes appear to create coherence among instructional rigor, support for students, and support for teachers to improve instructional practices, particularly practices that address gaps in knowledge and scaffold instruction for ELs.

Coherent instructional systems that align rigor with embedded language and content supports.

Several districts have worked to create cohesion between rigor and support for teachers and students. In particular, Denver creates standards-aligned and research-based materials for teachers' instructional purposes and ensures their consistent use across classrooms. East Baton Rouge Parish Public Schools similarly provides high-quality instructional materials with EL supports embedded into lesson plans, allowing teachers to incorporate scaffolding even if they are not EL-certified. District approaches that support these conditions include:

- **Embedding English learner supports across the listening, speaking, reading, and writing domains within instructional materials** (East Baton Rouge Parish Public Schools).
- **Expanding teachers' access to instructional planning time and professional learning** (Georgia Department of Education; Minneapolis Public Schools).

Integrated professional learning and instructional supports that are accessible and actionable for teachers. Districts with stronger outcomes emphasize professional learning systems that are clearly structured and accessible to teachers. These supports help ensure that instructional strategies for English learners are consistently implemented across classrooms rather than dependent on individual teacher capacity. This includes providing planning time, embedded supports within materials, and opportunities for teachers to build expertise in integrating language and content instruction. Examples include:

- **Expanding teacher access to planning time and instructional supports** (Minneapolis Public Schools).
- **Embedding English learner supports within high-quality instructional materials** (East Baton Rouge Parish Public Schools).
- **Creating opportunities for middle school teachers to earn certification to teach Algebra I** (Chicago Public Schools).

Use of home-language and bilingual supports to sustain and expand access to grade-level mathematics while developing English language proficiency. Member districts have also used home-language and bilingual support systems to help ensure that English learners have access to Algebra I coursework. These supports allow students to engage with grade-level mathematics content while developing English language proficiency, rather than delaying access to core coursework. In Miami-Dade County Public Schools, secondary schools can offer Bilingual Curriculum Content (BCC), a bilingual support model delivered by teachers proficient in students' home languages. In the School District of Palm Beach County, Algebra I is offered in Spanish, providing home-language access to grade-level mathematics content.

III. Mathematics Pathways and Family Engagement

Mathematics pathways and family engagement shape whether students remain on track to access and complete Algebra I by the end of grade 9. Rigid pathways and limited information can restrict access. By contrast, districts with stronger or improving outcomes appear to design mathematics pathways that prepare students earlier and create clearer trajectories into Algebra I by the end of grade 9. District family engagement that includes deliberate efforts to explain the mathematics pathway empowers families to advocate for their children when placements are made into mathematics courses.

Structuring middle school mathematics pathways to prepare students to complete Algebra I by the end of grade 9. Districts with stronger outcomes appear to prioritize mathematics pathways in grades 6–8 that position students to access Algebra I in time to complete it by the end of grade 9. Latino students benefit from pathways that emphasize early preparation, coherence across grade levels, and opportunities for students to build the foundational knowledge required for success in high school mathematics. ELs also benefit when these pathways include language supports that allow them to develop algebraic understanding while continuing to acquire English (Minneapolis Public Schools).

Designing and implementing effective engagement of multilingual families. Districts with stronger outcomes provide robust and effective engagement of multilingual families to ensure they understand the advanced mathematics pathways, their children's potential, and their

language-related needs. Beyond translating written materials or providing interpretation during meetings and calls, the districts hold workshops and information sessions specifically focused on the mathematics pathways or actively reach out to multilingual families through phone calls. Even if no language barrier exists, culturally respectful family engagement efforts that accommodate childcare needs and work-schedule limitations are essential.

IV. Data Infrastructure Capacity and Monitoring

Data infrastructure capacity and monitoring shape districts' and schools' accountability for ensuring Algebra I access by grade 9 for ELs and Latino students. Teachers, families, school leaders, and district leaders should all be able to easily access and monitor data to understand student growth and areas for improvement.

District-level routine data monitoring and check-ins. Districts that monitor their schools' mathematics data tend to better understand their student population's needs. Atlanta Public Schools monitors school data to understand how students perform in Algebra I across the district.⁶ These efforts contribute to results-driven supports in mathematics classrooms.

Districts use different indicators to monitor students' Algebra I access and success, including:

- **Enrolling in Algebra I by grade 9** (Des Moines Public Schools; Memphis-Shelby County Schools).
- **Earning Algebra I course credit by the end of grade 9** (Omaha Public Schools; St. Paul Public Schools).
- **Passing Algebra I with a grade of C or better** (Chicago Public Schools; The School District of Palm Beach County).
- **Passing the Algebra I end-of-course examination or state assessment** (Atlanta Public Schools; Durham Public Schools).
- **Demonstrating proficiency on a district benchmark or common assessment** (Kansas City Public Schools; Orange County Public Schools).
- **Tracking students' postsecondary enrollment and performance, including whether they enroll in remedial mathematics** (Minneapolis Public Schools).

Data infrastructure to improve Algebra I progress monitoring. Districts must also adequately create data-tracking infrastructure to easily facilitate progress monitoring. Atlanta Public Schools co-created a dashboard alongside end-users—administrators, counselors, and others—incorporating their feedback into iterations of the tool to provide a rich yet not complicated set of student data for placement decision-making. The result was a user-friendly dashboard with disaggregated student data, including mathematics formative assessment scores as early as grade 5, that is searchable and sortable and can filter school-level enrollment shares by race, EL status, and economic status. The dashboard empowers APS' educators and administrators to make placements and monitor disparities in Algebra I enrollment.

6 Atlanta Public Schools. (n.d.). APS insights. Retrieved July 8, 2026, from <https://apsinsights.org/data-explorer/>

PART IV

Recommendations and Policy Implications for Completion of Algebra I by the End of Grade 9

The findings presented above in Part III suggest that expanding Algebra I access by grade 9 is necessary but insufficient unless districts also build the system conditions and implement the practices that allow English learners (ELs) and Latino students to complete the course successfully. Specifically, the findings point to placement and decision-making processes, course pathways and access to them, language supports, the capacity and focus of counseling and advising, family communication and participation in decision-making, and data monitoring as key factors shaping whether access results in completion and students' degree of success. These findings indicate a need for responses that address both entry into Algebra I and the conditions for success once students are enrolled. Districts must not only expect enrollment in Algebra I by grade 9, but also organize the policies, resources, professional learning, cross-departmental collaboration, and data routines needed to ensure that English learners and Latino students complete the course successfully and have the option and proactive guidance to continue into advanced mathematics pathways. State supports and resources should reinforce these district efforts.

Districts must not only expect enrollment in Algebra I by grade 9, but also organize the policies, resources, professional learning, cross-departmental collaboration, and data routines needed to ensure that English learners and Latino students complete the course successfully and have the option and proactive guidance to continue into advanced mathematics pathways, empowered by state supports and resources.

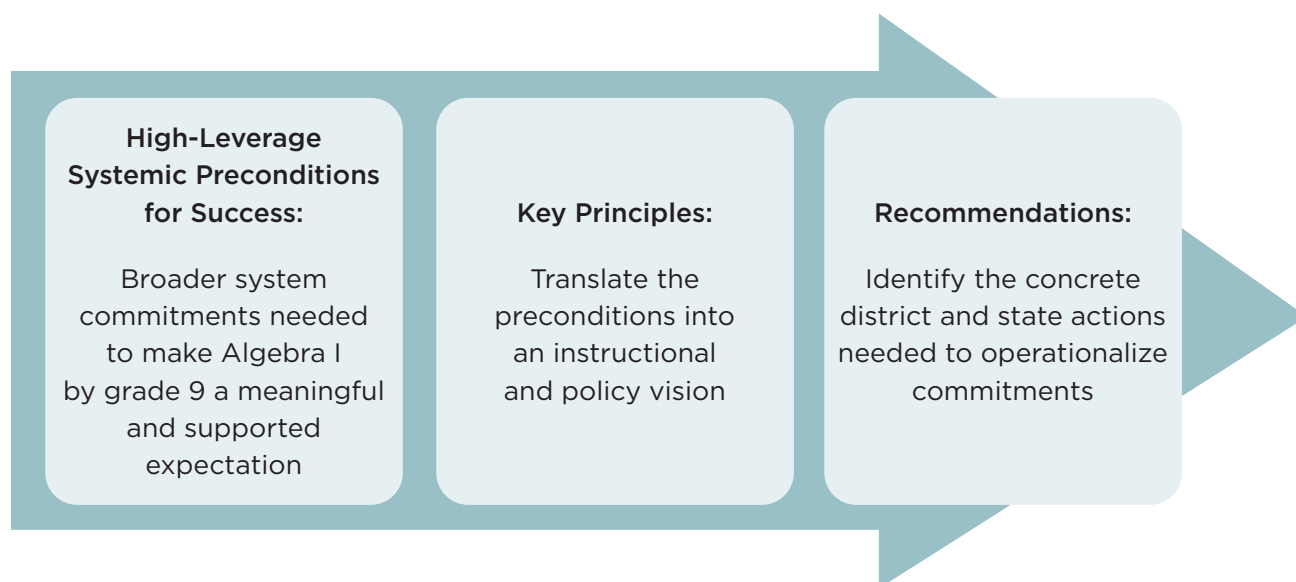
Algebra I Completion by the End of Grade 9 as a Default Expectation for English Learners, Latino Students, and All Students

Because English learners' and Latino students' language, culture, background knowledge, and experiences are assets that should inform coherent and rigorous learning experiences, and because Algebra I continues to function in many systems as a gateway to advanced mathematics, college readiness, STEM pathways, and broader postsecondary opportunity, districts should treat completion of Algebra I, or an equivalent ninth-grade-level mathematics course, by the end of grade 9 as a default expectation for all students. This expectation should not depend on school-level discretion, informal advising, early tracking decisions, or placement criteria that conflate English language proficiency with mathematical readiness. Instead, district systems should be designed to recognize and build on students' assets, ensure timely placement, provide the language and academic supports needed to succeed, and monitor whether access leads to successful completion across student groups.

Improving Algebra I access, completion, and success by the end of grade 9 is the central measurable goal of this project. The *High-Leverage Systemic Preconditions for Success*, *Key Principles*, and *Recommendations* that follow are organized around this goal, describing the system commitments, instructional principles, and concrete policy actions needed to make Algebra I by grade 9 not only a goal but a supported and measurable outcome in practice. (See Figure 2.)

- **High-Leverage Systemic Preconditions for Success.** The high-leverage systemic preconditions for success name the broader system commitments needed to make Algebra I completion by the end of grade 9 a meaningful and supported expectation—a fundamental belief in students’ ability to succeed and the system’s moral responsibility to provide access to rigorous grade-level mathematics; shared accountability across departments; asset-based views of students’ language, culture, and background knowledge; and investment in teachers’ capacity to support diverse learners.
- **Key Principles.** The key principles translate these commitments into an instructional and policy vision grounded in rigorous tasks, academic language development, strategic scaffolding, multiple ways of demonstrating mathematical understanding, and students’ mathematical agency and belonging.
- **Recommendations.** The recommendations identify the concrete district and state supports needed to operationalize these commitments through placement policy, readiness criteria, academic and language supports, middle school pathways, family engagement, and disaggregated data systems.

Figure 2. High-Leverage Systemic Preconditions for Success, Key Principles, and Recommendations Supporting Algebra I Completion by the End of Grade 9



High-Leverage Systemic Preconditions for Success

The key principles and recommendations that follow rest on several high-leverage systemic preconditions for success. Consistent with the Council's *Framework for Re-envisioning Mathematics Instruction for English Language Learners*,⁷ these preconditions begin from the premise that English learners and Latino students can engage in rigorous, grade-level mathematics when district systems are organized to provide access, supports, and accountability—not when access is delayed until students are presumed “ready.” These preconditions function as the non-negotiable system commitments needed to translate Algebra I by grade 9 from a placement goal into a supported pathway for successful completion.

- I. **Fundamental expectation of access for all students.** English learners, Latino students, and other historically underserved student groups have been disproportionately affected by policies that shape access to and completion of Algebra I by the end of grade 9 (Patrick et al., 2020; Umansky et al., 2024). These policies include those that have limited access and provided insufficient support to meet the learning needs of diverse learners, perpetuating deficit views around students' capabilities and goals. All students, with sufficient support delivered by knowledgeable teachers, can be expected to participate and succeed in rigorous grade-level coursework, including Algebra I by the end of grade 9—preparing them to succeed in advanced coursework and pursue broader opportunities.
- II. **Culture of shared accountability paired with targeted support.** Coordinated leadership and accountability structures across departments foster the shared commitment required to implement policies and supports effectively (Council of the Great City Schools, 2009). These efforts expand access and promote success in Algebra I for English learners and Latino students. To help students meet their educational goals, districts need structures that support schools, teachers, and students. Accountability structures, informed by data, enable monitoring of progress toward goals for course content access and completion. These accountability structures should include effective leadership with defined priorities, data monitoring resources, and targeted school support where needed.
- III. **Belief in background knowledge, culture, and language as assets.** English learners' and Latino students' unique experiences support high-level learning. The home language and life experiences of students, including informal ways of expression, are assets for mathematical reasoning and provide a springboard that teachers can use to develop academic language and support mathematical understanding. Incorporating a diverse array of experiences, backgrounds, and knowledge assets into the Algebra I classroom enriches the learning experience for all, allowing students to engage wholly with the instruction and access the content fully while amplifying agency, authority, and identity (Council of the Great City Schools, 2016a).

7 Council of the Great City Schools. (2016a). *A framework for re-envisioning mathematics instruction for English language learners*. <https://files.eric.ed.gov/fulltext/ED580863.pdf>

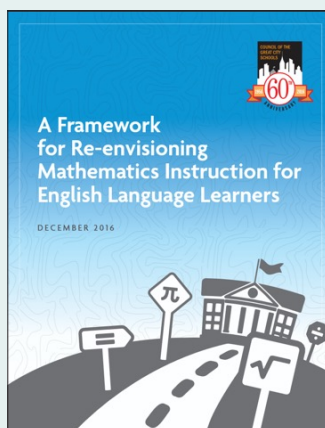
IV. **Honoring the role of teachers.** Classroom teachers are professionals who can empower students and improve student performance when they receive the necessary supports, such as differentiated professional learning that builds their capacity to promote the success of English learners and Latino students. Teachers shape students' learning experiences, and professional supports should acknowledge and expand their impact.

Key Principles

The key principles and associated recommendations that follow are grounded in the Council's *Framework for Re-Envisioning Mathematics Instruction for English Language Learners*. That framework begins from the premise that English learners, and all students, can meet college- and career-readiness standards in mathematics when they are provided rigorous, grade-level instruction, high-cognitive-demand tasks, opportunities to communicate mathematical reasoning, and targeted language supports that do not reduce the quality or complexity of the mathematics. While developed with English learners in mind, the framework's emphasis on rigorous access, asset-based instruction, multiple representations of mathematical understanding, and mathematical agency is applicable to all learners, including Latino students. Of particular relevance to ELs, the framework emphasizes that mathematical understanding and language development are interdependent. Students develop mathematical ideas as they explain, represent, justify, and refine their reasoning, and they develop academic language through meaningful participation in mathematics. It follows, therefore, that the central policy question is not whether students are "ready" for Algebra I but whether district systems are organized to provide the rigorous instruction, language supports, advising, pathways, and accountability needed for students to succeed. The following principles adapt the Council's mathematics framework (practices in brackets) to the district policy and systems issues examined in this report.

1. **Maintain high expectations and access to grade-level mathematics [Employing Rigorous Tasks and Assignments].** The Council's mathematics framework rejects the idea that English learners should be delayed from rigorous grade-level mathematics instruction until they demonstrate full English language proficiency. In the context of Algebra I, this means districts should begin with the expectation that ELs have access to Algebra I in time to complete the course by the end of grade 9 and then determine the language supports needed for successful completion. Districts should also begin with the expectation that Latino students have access to Algebra I by grade 9 and then identify the academic, advising, pathway, or other supports needed for successful completion.
2. **Treat language as integral to mathematics learning, not as a gatekeeper [Supporting Academic Language and Conversations].** The framework emphasizes the interdependence of language and mathematics. Policy and practices should therefore distinguish English language proficiency from mathematical readiness. EL status, specifically the English language proficiency level, should inform the language supports students receive in Algebra I, not determine whether they are allowed to enroll.

3. **Pair rigor with strategic supports [Using Strategic Scaffolding].** The Council's framework is clear that scaffolding should provide access to rigorous mathematics, not lower the level of content or cognitive demand. For Algebra I access and placement policy, this means avoiding both unsupported placement and delayed access. Districts should pair Algebra I enrollment with co-requisite supports that sustain access to grade-level content.
4. **Use multiple ways for students to demonstrate mathematical understanding [Employing Multiple Modes and Representations in Mathematics].** Because students may show mathematical reasoning through oral explanations, writing, diagrams, tables, symbols, gestures, home language, or other representations, placement systems should not rely too heavily on English-medium standardized assessments or narrow criteria. Readiness systems should use multiple measures and allow students—especially ELs and students with prior schooling outside the United States—to demonstrate mathematical knowledge in varied ways.
5. **Support mathematical agency, identity, and belonging [Encouraging Productive Struggle].** The Council's mathematics framework emphasizes agency and authority. Students need opportunities to see themselves and be recognized by others as mathematically capable. Districts should examine whether placement, advising, course sequencing, and classroom supports communicate high expectations for ELs and Latino students or instead reinforce assumptions about limited ability.



A Framework for Re-envisioning Mathematics Instruction for English Language Learners

The Council of the Great City Schools' (2016a) *Framework for Re-envisioning Mathematics Instruction for English Language Learners* defines a vision for aligning rigorous, grade-level mathematics instruction with the language development needs of English learners. It provides a research-based theory of action and a set of instructional principles—such as maintaining high cognitive demand, fostering mathematical discourse, using multiple representations, and applying strategic scaffolds—that help educators support simultaneous growth in mathematical understanding and academic language. In addition, the framework offers detailed criteria for evaluating instructional materials and designing classroom practices to ensure they are standards-aligned, linguistically responsive, and accessible to diverse learners while preserving rigor.

Recommendations

Recommendations translate the study’s findings into implications for district and state policy, practice, and investment for improving Algebra I access and successful completion by the end of grade 9 for English learners and Latino students. The recommendations that follow are grounded in the *High-Leverage Systemic Preconditions* and *Key Principles* outlined above.

Recommendation 1: Review and revise criteria and placement processes to ensure English learners and Latino students access Algebra I in time to complete it by the end of grade 9.

Algebra I access and completion by the end of grade 9 are supported by placement systems that treat Algebra I by grade 9 as a default expectation, not as an opportunity dependent on school-level discretion, informal advising, or early tracking decisions. District policies and placement criteria should operationalize this expectation for all students and include a process for monitoring whether placement decisions result in the desired outcome of access to Algebra I, or an equivalent grade-level mathematics course, by grade 9 for all student groups.

Related Preconditions			
I. Fundamental expectation of access for all students.	II. Culture of shared accountability paired with targeted support.	III. Belief in background knowledge, culture, and language as assets.	IV. Honoring the role of teachers.

Considerations for Structuring District Policy and Investments

Districts seeking to ensure that English learners and Latino students access Algebra I by grade 9 should review and revise placement criteria and processes to design placement systems that identify students’ mathematical knowledge, determine the supports needed for successful completion, and monitor whether all student groups are placed on a pathway to complete Algebra I, or an equivalent grade-level mathematics course, by the end of grade 9.

Expect that grade 9 students who have not completed Algebra I previously enroll in Algebra I.

District placement policies should aim to place students into Algebra I as early as they are mathematically ready, with grade 9 serving as the latest expected point of access for students enrolled in the system in or prior to grade 9. This requires a placement process organized along a continuum, with multiple entry points in elementary school, middle school, and the transition into high school. Students who need additional support or who are learning English should not be diverted into lower-level or delayed sequences by default. Instead, placement should be paired with academic supports that help close knowledge gaps while keeping students on track for successful Algebra I completion by the end of grade 9.

Align placement criteria to mathematical readiness. Districts should review placement criteria to ensure that decisions are based on evidence of mathematical readiness rather than factors that are only indirectly related—or entirely unrelated—to students’ ability to succeed in Algebra I. Criteria such as English language proficiency, English language arts performance, literacy

measures, attendance, engagement, or prior course-taking may create unnecessary barriers when used as proxies for mathematical readiness. A review of placement criteria should examine whether:

- English learners are expected to meet a higher or different bar than non-English learners, such as a required English language proficiency level, English language arts score, or literacy indicator.
- Prior mathematics coursework is being used as a gatekeeping criterion affecting both ELs and Latino students when they did not have meaningful access to those courses because of scheduling constraints, staffing shortages, limited course offerings, newcomer status, or differences in prior schooling.
- Accelerated mathematics identification processes are disproportionately excluding English learners, Latino students, and other students arriving after the decision points (grade level or time in the school year), or other student groups from pathways leading to Algebra I by grade 9.
- Assessment instruments validly measure mathematical knowledge for students who are still developing English language proficiency.
- Master schedules require English learners to choose between English language development services and core mathematics instruction, rather than allowing students to access both.

Review placement decisions through cross-functional expertise. Districts should establish formal review processes for placement decisions that require additional context or expertise. Mathematics leaders, English learner specialists, counselors, data staff, and school administrators should be involved in joint problem-solving for less common or more complex cases, including students new to the U.S. (i.e., newcomers), students with interrupted formal education, students with foreign transcripts, and students whose prior mathematical learning does not align neatly with U.S. course labels. This cross-functional review process can help ensure that English language proficiency, incomplete records, unfamiliar transcripts, or interrupted schooling are not mistaken for lack of mathematical ability. It also reinforces shared responsibility for placement decisions across the departments that shape students' access to mathematics pathways.

Make placement review and appeals transparent. Districts should create a transparent, well-known, and accessible placement review and appeals process. Families, students, counselors, teachers, and English learner staff should understand how to request a placement review, what evidence may be considered, who participates in the decision, and when placement changes can occur. This information should be communicated clearly and in families' home languages. A meaningful review and appeals process provides an important safeguard when initial placements are based on incomplete information, narrow assessment data, or assumptions about student readiness. It also empowers families, students, and informed educators to advocate for placement decisions that more accurately reflect students' mathematical knowledge and long-term pathway needs.

Recommendation 2: Ensure the district’s definition of readiness includes multiple modalities for expressing mathematical knowledge.

Algebra I access and completion by the end of grade 9 are supported by systemwide conceptions of readiness based on high expectations and math-specific, multi-measure evidence for all student groups, regardless of English language proficiency, socioeconomic status, disability status, or whether a student is neurodivergent.⁸ Readiness should reflect students’ mathematical knowledge and preparation for coursework along the pathway to Algebra I by grade 9, rather than English language proficiency, single assessment cut scores, informal judgments, or early tracking decisions alone. In this sense, readiness is best understood as a continuum of mathematical development, with appropriate supports, rather than a single placement threshold.

Related Preconditions			
I. Fundamental expectation of access for all students.	II. Culture of shared accountability paired with targeted support.	III. Belief in background knowledge, culture, and language as assets.	IV. Honoring the role of teachers.

Considerations for Structuring District Policy and Investments

Districts should review and revise how they define readiness so that placement decisions are grounded in students’ mathematical knowledge and potential to succeed, with the appropriate language and academic supports, not in narrow indicators that may underestimate what students know and can do. A strong readiness definition should help districts identify what students are prepared to do mathematically, what supports they need to succeed, and how they can demonstrate understanding through multiple modalities.

Define readiness as mathematical preparation and potential for success with language and academic supports. Districts should develop a shared, systemwide definition of readiness for Algebra I completion by the end of grade 9. This definition should be grounded in high expectations and clarify the mathematical knowledge, skills, and practices students need along the pathway to Algebra I. Rather than treating readiness as a single cut score or one-time placement decision, districts should view readiness as a continuum of mathematical development that can be supported over time. A common definition can help reduce inconsistent school-level interpretation and ensure that educators, counselors, English learner staff, families, and students have a shared understanding of what readiness means. It should also specify the types of evidence that may be used to inform placement decisions, including both quantitative and qualitative data. The purpose of this evidence should be to increase access to Algebra I by grade 9 for English learners, Latino students, and other student groups—not to create additional screens that delay access.

Use multiple measures to identify mathematical knowledge. Districts should ensure that readiness determinations are based on multiple sources of math-specific evidence. No single measure is likely to capture the full range of students’ mathematical understanding, particularly

8 Lai, D., & Uro, G. (2026). *Supporting dually identified students in dual language immersion*. Council of the Great City Schools.

for students who are developing English language proficiency, students with interrupted schooling, students with disabilities, or students whose prior learning occurred outside the district or outside the United States. Readiness evidence may include, but should not be limited to:

- Performance on mathematics assessments or screeners aligned to prerequisite algebraic concepts.
- Prior mathematics coursework and grades, when students had meaningful access to those courses.
- Student work samples, performance tasks, projects, or problem-solving demonstrations.
- Teacher evidence of mathematical reasoning, conceptual understanding, and persistence with complex tasks.
- Evidence of prior learning from home-country transcripts or other records, where appropriate.
- Student explanations using oral language, writing, diagrams, symbols, tables, manipulatives, home language, or other representations.

Using multiple measures helps districts avoid overreliance on any one indicator and creates more opportunities for students to demonstrate mathematical understanding in ways that may not be fully captured by standardized assessments.

Validate measures of readiness for English learners and diverse learners. Districts should examine whether the tools used to determine readiness validly measure mathematical knowledge for students who are still developing English language proficiency. Assessments administered only in English, or tasks with heavy language demands, may underestimate what English learners know mathematically. Similarly, students with disabilities or neurodivergent students may need multiple opportunities or formats to demonstrate understanding. A review of readiness tools should examine whether:

- Assessment tasks measure English reading proficiency rather than mathematical reasoning.
- Students have access to appropriate linguistic accommodations or supports.
- Performance patterns differ by English learner status, newcomer status, disability status, race/ethnicity, or other student characteristics.
- Measurement instruments have been normed using populations with demographic characteristics similar to those of the district's students.
- Teachers and placement teams understand how to interpret assessment results alongside other evidence of student learning.

This review should help districts determine whether existing instruments are appropriate for placement decisions or whether additional performance tasks, interviews, or other measures are needed.

Distinguish English language proficiency from mathematical readiness. District policy and readiness systems should make clear that English language proficiency is not a prerequisite for Algebra I placement. English language proficiency data should be used to determine the language-related supports students need to succeed in Algebra I, not whether they are allowed to access the course. A student may need support with academic vocabulary, mathematical

discourse, reading word problems, or explaining reasoning in English while still demonstrating strong mathematical understanding. Placement systems should therefore avoid using English language proficiency levels, English language arts scores, literacy indicators, or teacher perceptions of verbal participation as proxies for mathematical ability. Instead, English language proficiency data should help districts answer, “What language, instructional, and assessment supports will allow this student to engage successfully with grade-level mathematics?”

Use readiness evidence to identify supports, not delay access. Districts should use readiness evidence to determine the supports students need, rather than to justify delayed access to Algebra I. When students show partial readiness or uneven preparation, the district response should be to provide targeted academic and language supports while preserving the pathway to Algebra I by grade 9. This may include co-requisite support courses, tutoring, bridge programs, home-language supports, bilingual supports where appropriate, targeted skill-building, or instructional models that integrate language development and mathematics content. In this way, readiness becomes a tool for planning instruction and support, not a gatekeeping mechanism. The central policy question shifts from whether students should be allowed to access Algebra I to what supports are necessary to ensure they complete it successfully by the end of grade 9.

Recommendation 3: Enhance Algebra I access with language and academic supports.

Access to Algebra I is strengthened when students have co-requisite supports, tutoring, extended learning opportunities, home-language supports where appropriate, bilingual supports when instruction or assistance is delivered in students’ home languages, and instruction that integrates language development with rigorous mathematics learning. These supports should be designed to sustain access to Algebra I rather than delay placement, ensuring that English learners can engage with grade-level mathematics while acquiring English language proficiency.

Related Preconditions			
I. Fundamental expectation of access for all students.	II. Culture of shared accountability paired with targeted support.	III. Belief in background knowledge, culture, and language as assets.	IV. Honoring the role of teachers.

Considerations for Structuring District Policy and Investments

Districts should pair Algebra I access with a coherent system of language, academic, and instructional supports. The purpose of these supports is not to lower expectations or create separate pathways, but to help students succeed in rigorous Algebra I coursework while addressing unfinished learning, developing academic language, and strengthening students’ confidence as mathematical learners. Co-requisite courses, tutoring, language supports, bridge programs, and other support models should be assigned using multiple sources of evidence, communicated clearly to students and families, and implemented in ways that sustain students’ access to grade-level mathematics.

Design co-requisite supports that sustain Algebra I access. Districts should design co-requisite support models that allow students to enroll in Algebra I while receiving additional academic and language support. These models should be based on multiple data sources, including quantitative indicators such as assessment results and grades, as well as qualitative evidence such as student work, teacher observations, family input, and student interest. This broader evidence base can help districts identify the knowledge and potential of English learners and Latino students without relying on narrow measures that may underestimate readiness. The process for identifying students who may benefit from targeted support should be flexible, well-documented, and clearly communicated. Students and families should understand which supports are being recommended, how those supports connect to Algebra I success, and whether they have options throughout the process. Co-requisite supports should maintain access to Algebra I, not serve as another gate students must pass before being allowed to enroll.

Provide in-school supports that address mathematical and language needs. Districts should ensure that students can receive meaningful support during the school day from qualified educators. These supports may include in-school interventions, mathematics support periods, co-taught Algebra I sections, mathematics tutorial labs, or strategic double-dose courses. The strongest models address both mathematical concepts and language-development needs, helping students build algebraic reasoning while also developing the academic language needed to explain, justify, and represent mathematical thinking. For English learners, co-teaching and collaboration between mathematics and English learner specialists can be especially valuable. These models allow students to access grade-level Algebra I content while receiving scaffolds for mathematical vocabulary, discourse, reading, writing, and problem-solving. When designed well, in-school support structures help students remain on track for completion rather than being redirected into lower-level or non-credit-bearing courses. Similarly, when language acquisition practices are implemented school-wide across content areas, mathematics teachers are more likely to be supported in addressing academic language in their classes.

Extend learning time without replacing grade-level coursework. Districts should also consider supports that extend learning beyond the regular class period, school day, or school year. Tutoring, after-school support, winter academies, summer bridge programs, asynchronous practice, and other extended learning opportunities can give students additional time to strengthen prerequisite skills and address misconceptions without removing them from Algebra I pathways. For example, summer bridge programs can provide academic enrichment for students entering grade 9 or preparing to enroll in Algebra I. These types of supports are especially useful when students are close to readiness but need focused opportunities to consolidate key concepts before or during Algebra I enrollment.

Use ongoing practice and feedback to build mathematical confidence. Student supports should provide sustained opportunities for practice, feedback, and revision over time. Algebra I success often depends on students having repeated opportunities to work through problems, confront and correct common misconceptions, review errors, and strengthen conceptual understanding. Tutoring, mathematics labs, intervention blocks, and structured practice routines can help students build fluency and confidence while also reinforcing their identity as capable mathematics learners. These supports should include innovative approaches that help make mathematics learning more relevant to students' lived experiences and career aspirations, promoting agency rather than

remediation alone. Students benefit when support settings give them opportunities to explain their reasoning, compare strategies, ask questions, revise their work, and see progress over time. In this way, academic support becomes part of a broader strategy for strengthening mathematical belonging and persistence.

Invest in professional learning for mathematics and language integration. Districts should invest in sustained, high-quality professional learning for mathematics teachers, English learner teachers, and other staff who support Algebra I access and completion. Professional learning should help educators understand how to scaffold rigorous mathematics content, integrate English language development, and support students with unfinished learning in algebraic thinking. Educators also need opportunities to examine student work, plan collaboratively, and learn how to maintain cognitive demand while providing appropriate scaffolds. Professional learning should move beyond general awareness of English learner needs. Teachers need practical strategies for supporting mathematical discourse, vocabulary development, multiple representations, student explanations, and language-rich problem solving.

Integrate academic language development into Algebra I instruction. Districts should ensure that academic language development is embedded within Algebra I instruction rather than treated as separate from mathematics learning. Latino students and ELs alike need frequent opportunities to use language to describe patterns, justify solutions, compare strategies, construct arguments, and explain mathematical reasoning. These practices align with the Council's mathematics framework, which emphasizes that language development and mathematical understanding develop together when students engage in rigorous mathematical tasks and conversations. Academic language supports may include structured mathematical discussions, sentence frames, visual representations, home-language connections, vocabulary routines, writing-to-explain tasks, and opportunities for students to revise and refine explanations.⁹

Recommendation 4: Strengthen elementary mathematics instruction and middle school pathways to ensure Algebra I placement by grade 9.

Algebra I access and completion by the end of grade 9 are supported by elementary mathematics instruction and middle school pathways that build the mathematical foundations needed for Algebra I. Moreover, algebraic thinking is a strand that unfolds across a K-12 curriculum (National Council of Teachers of Mathematics, 2014).

K-12 mathematics pathway design requires careful and strategic consideration of multiple factors that can either facilitate or hinder English learners' and Latino students' access to Algebra I. Pathways should include multiple entry and re-entry points rather than relying on a single early gateway that may exclude English learners, Latino students, late-entering students, or students whose prior mathematical knowledge is not fully captured by district records or English-medium assessments.¹⁰ Strengthened pathways may include:

- Expanded opportunities for ELs and Latino students in elementary schools to participate in rigorous mathematics instruction and pathways leading to Algebra I by grade 9;

9 Council of the Great City Schools. (2016a). *A framework for re-envisioning mathematics instruction for English language learners*. <https://files.eric.ed.gov/fulltext/ED580863.pdf>

10 See Daro and Asturias (2019) for discussion of mathematics pathway design options.

- Middle school course sequences that include support classes, acceleration options, and opportunities to enter or re-enter Algebra I pathways;
- Academic supports such as transition planning, bridge programs, and targeted skill-building opportunities; and
- Transcript review and valid evaluation processes that recognize prior mathematical learning and support appropriate placement for students entering from other school systems or countries.

Related Preconditions			
I. Fundamental expectation of access for all students.	II. Culture of shared accountability paired with targeted support.	III. Belief in background knowledge, culture, and language as assets.	IV. Honoring the role of teachers.

Considerations for Structuring District Policy and Investments

Districts should strengthen the full K–9 mathematics pathway so that students are not dependent on a single placement decision in grade 8 or grade 9 to access Algebra I. This requires attention to the quality of elementary mathematics instruction, the design of middle school course sequences, the availability of multiple on-ramps into Algebra I, the structure of master schedules, and the capacity of teachers to support students with varied mathematical and language-development needs.

Strengthen elementary mathematics foundations for Algebra I readiness. Districts should review elementary mathematics curricula and instructional practices to ensure that students have sustained opportunities to develop the concepts and practices that support later success in Algebra I. This includes attention to the development of algebraic thinking¹¹ and key mathematical practices such as making sense of problems, reasoning, constructing arguments, modeling, using appropriate tools, attending to precision, identifying patterns, and expressing regularity in mathematical reasoning. For English learners, this review should also examine how elementary mathematics instruction addresses the language demands of mathematics learning. Students need opportunities to develop the academic language required to explain reasoning, describe patterns, justify solutions, and engage in mathematical discourse.¹² Strengthening elementary mathematics instruction, therefore, means attending to both mathematical content and the language students need to participate fully in rigorous mathematics.

Design middle school pathways with multiple on-ramps to Algebra I. Districts should create multiple on-ramps to Algebra I pathways during middle school and at the transition to grade 9. Rather than relying on a single early gateway or one placement decision, districts should design course sequences that allow students to enter, re-enter, or accelerate into Algebra I pathways at multiple points. This is especially important for newcomer students, students with interrupted

11 Common Core Standards Writing Team. (2023). *Progressions for the Common Core State Standards for mathematics* (February 28, 2023). Retrieved July 21, 2026, from <https://mathematicalmusings.org/wp-content/uploads/2023/02/Progressions.pdf>

12 Council of the Great City Schools. (2016a). *A framework for re-envisioning mathematics instruction for English language learners*. <https://files.eric.ed.gov/fulltext/ED580863.pdf>

formal education, students entering from other school systems, and students whose prior schooling outside the United States may not align neatly with U.S. course labels. Middle school pathways should include a range of options, such as accelerated courses, support classes, bridge opportunities, and transition planning. These structures can help districts expand access to a greater pool of students while ensuring that students receive the academic support needed to succeed once enrolled in Algebra I.

Align schedules and course structures to ensure access to core mathematics. Districts should ensure that master schedules do not force English learners to choose between English language development services and core mathematics instruction. English language development should support access to grade-level content, not displace it. When schedules require trade-offs between ELD services and Algebra I or other core mathematics courses, students may be delayed or diverted from pathways needed to complete Algebra I by the end of grade 9. Districts should also review course structures to ensure that students receive credit-bearing mathematics instruction and are not placed into non-credit-bearing or lower-level courses that limit their ability to progress. This is particularly important for students new to the U.S. (i.e., newcomers) and late-entering students, who may need both language support and timely access to mathematics courses that count toward graduation and advanced coursework pathways.

Review early mathematics acceleration and identification processes for equitable access. Districts should examine accelerated mathematics identification processes to determine whether they disproportionately exclude English learners, Latino students, students who enroll after established decision points, or other student groups from pathways leading to Algebra I in time for completion by the end of grade 9. Early identification systems may appear neutral but can limit access when they rely heavily on English-medium assessments, narrow cut scores, or decision points that occur before students have had an adequate opportunity to demonstrate mathematical potential. A review of acceleration processes should examine who is identified for advanced mathematics, who is not, what criteria are used, and whether students have later opportunities to enter accelerated pathways. Districts should ensure that accelerated opportunities are not restricted to students who pass through a single early gate but remain available through multiple measures and multiple points of entry.

Invest in teacher capacity to support Algebra I pathways. Districts should invest in supporting new and existing teachers to develop deeper mathematics content knowledge, particularly in the middle grades, so that more students have access to strong pre-algebra and Algebra I instruction. This may include expanding opportunities for teachers to earn mathematics credentials, thereby increasing the number of Algebra I courses, and strengthening middle school mathematics professional learning focusing on the pedagogical skills needed to help students who are still developing algebraic understanding. Districts can strategically support new Algebra I teachers with professional learning that deepens their understanding of algebraic reasoning, effective questioning strategies, rich mathematical tasks, classroom discourse, analysis of student work, and the use of formative assessment to support student learning.

Build collaboration between mathematics and English learner staff. Districts should develop structures that allow mathematics teachers, English learner specialists, and English learner departments to collaborate in support of students' success in Algebra I pathways. Teachers need

accessible systems for seeking guidance on how to support English learners in mathematics, including how to scaffold language without lowering the cognitive demand of the mathematical content. These structures may include co-planning time, instructional coaching, collaborative data reviews, professional learning communities, or designated points of contact between mathematics and English learner departments.

Recommendation 5: Cultivate family awareness of pathways and Algebra I content.

Algebra I access and completion by the end of grade 9 are supported by family awareness of course sequences, placement criteria, appeals, graduation requirements, and why Algebra I timing matters. In keeping with the Council's *Framework for Re-envisioning Mathematics Instruction for English Language Learners* and its asset-based stance toward students' language, culture, and background knowledge, family engagement should treat multilingual families as partners in pathway decisions rather than as recipients of after-the-fact placement information.

Family-facing communication about mathematics pathways should be proactive, accessible, and connected to key decision points such as middle school course selection, the grade 8-to-9 transition, newcomer placement, and placement appeals. Families need information that explains not only where students are placed, but how mathematics pathways operate, what Algebra I or equivalent coursework makes possible, what supports are available, and how families can advocate for appropriate placement. This communication should be multilingual, culturally responsive, and coordinated across mathematics, counseling, multilingual learner, and family engagement functions.

Related Preconditions			
I. Fundamental expectation of access for all students.	II. Culture of shared accountability paired with targeted support.	III. Belief in background knowledge, culture, and language as assets.	IV. Honoring the role of teachers.

Considerations for Structuring District Policy and Investments

Districts should ensure that families have the information, language access, and opportunities for two-way engagement needed to understand and influence mathematics pathway decisions. Family engagement should not be limited to translating placement notices after decisions are made. Instead, districts should create proactive communication systems that help families understand Algebra I pathways, recognize the importance of completing Algebra I by the end of grade 9, and advocate for appropriate placement and supports.

Communicate the importance of Algebra I and the mathematics pathways. Districts should provide families with clear information about why Algebra I by grade 9 matters for students' future coursework, access to advanced mathematics, graduation requirements, and postsecondary opportunities. Families should understand how Algebra I fits into the broader mathematics sequence, what course students are taking now, what course comes next, what supports are available, and why delayed placement can limit later opportunities. Districts should make mathematics pathways visible by providing family-facing materials that explain course options from middle school through high school, including accelerated mathematics pathways that lead

to earlier Algebra I access, grade-level pathways, support courses, bridge opportunities, and options for students entering the district after traditional placement points. These materials should also clarify how placement decisions are made, what evidence is considered, how supports are assigned, and how Algebra I or equivalent coursework connects to college- and career-ready pathways.

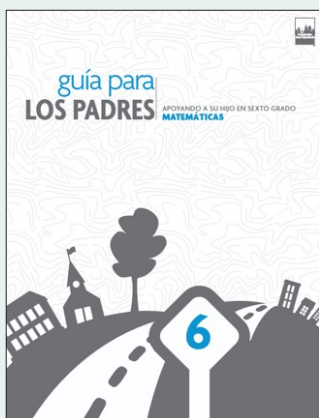
Provide accessible, multilingual, and culturally responsive communication. Districts should communicate mathematics pathway information in practical terms, avoiding technical language and using formats families can understand and use. Information should be available in families' home languages and preferred formats, including translated materials, interpretation, visual course maps, family workshops, counselor-family conferences, and other accessible communication channels. Families should also receive timely placement notifications that explain not only the placement decision, but the rationale for the decision, the supports available to help students succeed, and the options for asking questions or requesting a placement review.

Make placement review and appeals accessible to families. Districts should ensure that the mathematics placement review and appeals process is transparent, well-known, and accessible to families. Families, students, counselors, teachers, and English learner staff should understand how to request a placement review, what evidence may be submitted, who participates in the decision, and when placement changes can occur. For multilingual families, access to the review process may require interpretation, translated materials, and staff who can explain placement options in culturally and linguistically responsive ways. The appeals process should not depend on families knowing how to navigate the system on their own. Instead, districts should proactively communicate review and appeal options at key transition points, including middle school course selection, the grade 8-to-9 transition, newcomer intake, and any point when students are placed outside the expected pathway to Algebra I by grade 9.

Engage families through two-way communication. Districts should move beyond one-way communication and create opportunities for families to ask questions, share information about their children's prior learning, and participate in pathway decisions. Proactive outreach to multilingual families may include information sessions, advisory council meetings, counselor-family conferences, transition events, newcomer orientation sessions, and direct outreach through phone calls, texts, or family liaisons. These engagement opportunities should be designed as two-way communication channels. Families may have important information about students' prior coursework, mathematical strengths, home-country schooling, language background, or aspirations that can support more accurate placement decisions. Treating families as partners helps districts make better-informed decisions and reinforces the expectation that English learners and Latino students should have full access to rigorous mathematics pathways.

Coordinate family engagement across departments. Districts should coordinate family-facing communication across mathematics, counseling, English learner services, school leadership, and family engagement functions. Families often receive fragmented and sometimes contradictory information when different departments communicate separately about course placement, English language development services, graduation requirements, or academic supports. A coordinated approach helps ensure that families receive consistent messages about Algebra I expectations, placement criteria, available supports, and steps for requesting review. This coordination is especially important for English learners and students new to the U.S. (i.e.,

newcomers), whose course schedules may be shaped by both mathematics placement and language service requirements. Districts should ensure that staff who communicate with families can explain how these systems interact and how students can access both English language development and rigorous mathematics coursework without being diverted from the path to Algebra I by grade 9.



Spanish Mathematics Parent Roadmaps for K-8 and High School

The Council of the Great City Schools has developed content and grade-specific parent roadmaps that provide detailed information on the expectations in college and career readiness standards for mathematics. These roadmaps include examples of grade-level focus in the content area, using parent-friendly language; sample progressions of learning across three grade levels; and tips for parents on communicating with teachers about their child's work and supporting student learning at home (Council of the Great City Schools, n.d.).

Recommendation 6: Use disaggregated data and shared accountability to monitor access and completion.

Algebra I access and completion by the end of grade 9 are supported by timely, disaggregated data systems and shared accountability for acting on the data. This includes tracking access, placement, course grades, course failure, and progression to the next mathematics course, with data disaggregated by EL status, EL typology, race, and ethnicity. Districts need to know not only who gains access to Algebra I, but also who is diverted, who completes the course by earning credit or passing, who fails or repeats the course, and who progresses to the next mathematics course.

Algebra I access and completion cannot rest with mathematics departments, English learner offices, counselors, or schools alone. Sustained improvement depends on shared accountability across mathematics, English learner services, counseling, assessment, data, school leadership, and family engagement functions. This includes clarifying who monitors access and outcomes, who acts when gaps emerge, and how departments coordinate placement, scheduling, instructional support, and family communication.

Related Preconditions

I. Fundamental expectation of access for all students.

II. Culture of shared accountability paired with targeted support.

III. Belief in background knowledge, culture, and language as assets.

IV. Honoring the role of teachers.

Considerations for Structuring District Policy and Investments

Districts should build data systems and accountability routines that allow leaders and practitioners to monitor whether English learners and Latino students are accessing Algebra I, completing the course successfully, and progressing into subsequent mathematics coursework. Data should be used not only for reporting, but for continuous improvement: identifying gaps, diagnosing barriers, and coordinating timely action across departments and schools.

Build dashboards that track Algebra I access and success. Districts should develop dashboards that allow school and district staff to monitor Algebra I placement, enrollment, course grades, failures, credit completion, course repetition, and progression to the next mathematics course. These dashboards should make it possible to identify whether students are on track to complete Algebra I, or an equivalent grade-level mathematics course, by the end of grade 9. Dashboards should disaggregate outcomes by school, grade level, course pathway, English learner status, EL typology, race and ethnicity, disability status, and other relevant factors. This level of disaggregation is essential for identifying whether access gaps are concentrated in particular schools, pathways, student groups, or course sequences.

Monitor access, completion, and degree of success. Districts should track Algebra I access, completion, and degree of success as related but distinct outcomes. Enrollment alone does not indicate success, and completion alone does not show which students were denied or diverted from access in the first place. A strong monitoring system should therefore answer several questions:

- Which students are enrolled in Algebra I or equivalent coursework by grade 9?
- Which students are not enrolled, and what courses are they taking instead?
- Which students are placed into lower-level, support-only, or non-credit-bearing mathematics courses?
- Which students complete Algebra I by the end of grade 9?
- Which students fail, repeat, or withdraw from Algebra I?
- How successful are students in the course, as measured by indicators such as course grades, credit earned, and end-of-course examination results?
- Which schools or student groups show persistent gaps in access, completion, degree of success, or progression?

Monitoring all three dimensions helps districts distinguish between systems that expand enrollment without adequate support and systems that support students through successful course completion and continued advancement.

Establish shared accountability across departments. Accountability for Algebra I access and completion should be shared across the departments and staff who influence placement, scheduling, instruction, advising, and family communication. Mathematics departments, English learner offices, counseling teams, school leaders, assessment staff, data teams, and family engagement staff should each have clearly defined roles in monitoring and improving outcomes. Shared accountability may include:

- Joint review of Algebra I enrollment, completion, and course progression by mathematics and English learner staff.
- Joint review of course grades, credit completion, and graduation progress by counseling and content-area staff.
- Regular meetings among school leaders, counselors, mathematics leads, and English learner staff to address placement or support gaps.
- Clear protocols for identifying students who are off track and assigning responsibility for follow-up.
- District-level monitoring of whether schools are implementing placement, scheduling, and support expectations consistently.

These routines help prevent Algebra I access from becoming the responsibility of one department alone. They also ensure that when gaps emerge, districts have a process for determining who will act, what supports will be provided, and how progress will be monitored.

Conduct regular equity audits by school and student group. Districts should conduct regular equity audits to examine whether English learners, Latino students, students new to the U.S. (i.e., newcomers), long-term English learners, students with disabilities, and other student groups have equitable access to Algebra I pathways. These audits should examine both districtwide patterns and school-level variation. Equity audits should look for patterns such as disproportionate placement into lower-level mathematics courses, lower Algebra I enrollment by grade 9, higher failure or repeat rates, lower credit completion, or weaker progression into the next mathematics course. They should also examine whether placement criteria, course availability, master schedules, staffing patterns, or support models are contributing to these gaps. Findings should lead to targeted supports for schools, revisions to placement criteria, adjustments to course offerings, professional learning, changes in scheduling, or additional family outreach where needed.

Link Algebra I data to broader grade 9 success indicators. Districts should connect Algebra I monitoring to broader grade 9 indicators, such as GPA, core-course failure, credit accumulation, attendance, and progression toward graduation. Algebra I completion is an important milestone, but it is also part of a larger grade 9 success system. Students who complete Algebra I but struggle across other core courses may need additional academic, advising, or language supports. Linking Algebra I data to broader grade 9 indicators can help districts determine whether Algebra I access is part of a coherent support system or whether students are being placed into Algebra I without sufficient support to succeed across the full high school transition. These data routines can also help identify schools or student groups that need additional interventions before course failure or credit loss becomes cumulative.

Use data routines to evaluate and improve strategy. Districts should use data not only to describe gaps, but to evaluate whether strategies are improving access and completion for English learners and Latino students. For example, districts expanding the number of certified secondary mathematics teachers, implementing co-requisite supports, summer bridge programs, bilingual Algebra I sections, revised placement criteria, or new family outreach strategies should examine whether those efforts are associated with improved enrollment, course grades, credit completion, and progression to the next mathematics course. A strong data routine should include regular

cycles of review, action, and follow-up. District and school teams should identify gaps, examine possible causes, implement targeted responses, and return to the data to determine whether the response is working. Over time, these cycles can help districts refine placement policies, improve supports, and ensure that Algebra I completion by the end of grade 9 becomes a measurable and supported outcome for English learners, Latino students, and all students.

Translating Principles into Action

Appendix D provides an implementation crosswalk that connects the report's five key principles to specific, actionable strategies for both districts and states, intended to serve as a practical resource for education leaders and show how the report's findings and recommendations can be translated into coordinated action across multiple levels of the education system. Building on the recommendations in Part IV, the appendix illustrates how broad principles can be operationalized through policy, practice, and resource allocation. For each principle, Appendix D identifies concrete actions that districts can take to improve Algebra I access and successful completion by the end of grade 9 for English learners and Latino students. It also highlights complementary state-level actions that can strengthen local implementation through guidance, accountability systems, funding, professional learning, data collection, and policy supports.

PART V

Conclusion

Improving Algebra I success by the end of grade 9 for English learners (ELs) and Latino students requires more than expanding course enrollment. The findings from this study show that Algebra I completion is related to a set of connected district and school systems, including how students are placed, how readiness is defined, how middle school pathways are structured, how language and academic supports are provided, how families receive information, and how leaders monitor access and outcomes. In other words, Algebra I success is not only a question of whether students can succeed in rigorous mathematics. Rather, it is a question of whether district systems are organized to recognize students' mathematical knowledge, provide timely access, and deliver the supports needed for completion.

This study also shows that English learners and Latino students experience both shared and distinct barriers. Latino students may encounter broader racial and ethnic disparities in access to advanced mathematics opportunities, while English learners face additional barriers tied to language classification, English-medium assessments, scheduling of EL services, and placement practices that may conflate English language proficiency with mathematical readiness. These barriers are especially consequential when they lead to delayed Algebra I placement, lower-level course sequences, or fewer opportunities to enter advanced mathematics pathways. Districts seeking to improve Algebra I completion by the end of grade 9 must therefore address both general inequities in mathematics access and the specific ways that English learner status can function as a gatekeeper.

The substantial variation in Algebra I completion rates across large urban districts suggests that stronger outcomes are possible. In SY 2023–24, English learner completion rates varied widely across reporting districts, and some districts demonstrated stronger or improving outcomes for English learners and Latino students. These patterns point to the importance of district policy and implementation choices. District size, EL enrollment, and student demographics alone do not explain differences in Algebra I completion. Instead, the evidence points to the need for coherent systems that combine high expectations, math-specific placement, embedded supports, strong pathways, family communication, and routine data monitoring.

A central implication of this study is that districts should treat Algebra I by grade 9 as a default expectation, rather than a selective opportunity for some students. Default access, however, is not sufficient by itself. Universal or expanded placement policies must be paired with co-requisite supports, tutoring, bridge opportunities, bilingual or home-language supports where appropriate, and professional learning that helps teachers integrate language development with rigorous mathematics instruction. The goal is not to lower standards or place students without support. Instead, it is to organize supports so that students can engage in grade-level mathematics while continuing to build the academic language, prerequisite knowledge, confidence, and mathematical agency needed for success.

The study also points to the need to redefine readiness. Readiness should not be treated as a fixed label or a single test score. It should be understood as a continuum of mathematical development, informed by multiple sources of evidence. Placement systems should rely on math-specific indicators, including prior coursework, grades, student work, performance tasks, demonstrated prerequisite knowledge, teacher evidence, and, where appropriate, home-country transcripts or other evidence of prior learning. English language proficiency should guide the language supports a student receives, not determine whether the student is allowed to access Algebra I.

Because Algebra I completion by the end of grade 9 is shaped well before high school, districts must also strengthen elementary mathematics instruction and middle school pathways. Students need multiple opportunities to progress in algebraic thinking,¹³ enter accelerated or supported pathways, and re-enter grade-level sequences when earlier placement decisions, mobility, newcomer status, or interrupted schooling have disrupted their progress. For students entering U.S. schools after traditional gateway points, districts need asset-based transcript review and placement processes that recognize prior mathematical learning even when it does not align neatly with U.S. course titles.

Families are also essential partners in improving Algebra I access and success. Clear and proactive communication about mathematics pathways, placement criteria, appeals, graduation requirements, and the long-term importance of Algebra I timing can help families advocate for appropriate placement and supports. This communication should be multilingual, culturally responsive, and connected to key decision points such as middle school course selection, the grade 8-to-9 transition, newcomer intake, and placement review processes.

Finally, sustaining improvement requires stronger data systems and shared accountability. Districts need to know not only who completes Algebra I, but who is enrolled, who is diverted from Algebra I pathways, who earns credit, who repeats the course, who progresses to the next mathematics course, and where barriers emerge by student group, school, and pathway. These data should be disaggregated by factors such as English learner status, race and ethnicity, EL typology, including newcomer and long-term EL status, gender, and disability status. Data routines should bring together mathematics, English learner, counseling, school leadership, assessment, and data staff so that responsibility for Algebra I access and success is shared rather than fragmented across departments.

The UnidosUS K-12 Math Policy Project calls for research that can inform a coherent, evidence-based policy agenda to improve Algebra I completion by the end of grade 9, particularly for Latino students and English learners. This study contributes to that agenda by showing that the most promising path forward requires a systemic understanding. Districts and states must move beyond narrow placement debates and instead build systems that make rigorous mathematics accessible, supported, transparent, and accountable. When districts combine default access to Algebra I by grade 9 with math-specific readiness criteria, embedded language and academic supports, coherent middle school pathways, meaningful family engagement, and disaggregated

13 Common Core Standards Writing Team. (2023). *Progressions for the Common Core State Standards for mathematics* (February 28, 2023). Retrieved July 21, 2026, from <https://mathematicalmusings.org/wp-content/uploads/2023/02/Progressions.pdf>

monitoring, they create the conditions for English learners and Latino students not only to enter Algebra I, but to complete it successfully and continue toward advanced mathematics, college readiness, and expanded postsecondary opportunity.

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APPENDIX A

Districts Involved in Data Collection

Through a variety of data collection and engagement activities, 32 of 81 Council-member districts participated in the study. The participating districts are listed in Table A1, along with the ways in which they participated.

Table A1. District Engagement in the CGCS-UnidosUS Algebra I Study

District	May 7 Focus Group	May 28 Focus Group	June 25 Working Group	Survey Respondent	District Conversation
Albuquerque Public Schools				✓	
Arlington Independent School District		✓			
Atlanta Public Schools	✓	✓	✓	✓	
Austin Independent School District		✓			
Baltimore City Public Schools	✓			✓	
Chicago Public Schools		✓		✓	
Dayton Public Schools		✓			
Des Moines Public Schools		✓		✓	
District of Columbia Public Schools		✓			
Durham Public Schools		✓	✓	✓	

Table A1. District Engagement in the CGCS–UnidosUS Algebra I Study, continued

District	May 7 Focus Group	May 28 Focus Group	June 25 Working Group	Survey Respondent	District Conversation
Duval County Public Schools		✓	✓		
East Baton Rouge Parish Public Schools			✓	✓	
Fresno Unified School District		✓			
Guilford County Schools	✓			✓	
Hillsborough County Public Schools		✓			
Houston Independent School District		✓			
Jackson Public Schools			✓		
Jefferson County Public Schools			✓	✓	
Kansas City Public Schools	✓		✓	✓	
Little Rock School District		✓		✓	
Los Angeles Unified School District					✓
Madison Metropolitan School District		✓	✓	✓	
Memphis– Shelby County Schools	✓			✓	

Table A1. District Engagement in the CGCS–UnidosUS Algebra I Study, continued

District	May 7 Focus Group	May 28 Focus Group	June 25 Working Group	Survey Respondent	District Conversation
Metro Nashville Public Schools			✓		
Minneapolis Public Schools					✓
Oklahoma City Public Schools			✓		
Omaha Public Schools				✓	
Orange County Public Schools				✓	
St. Paul Public Schools		✓		✓	
The School District of Palm Beach County	✓			✓	
The School District of Philadelphia			✓		
Tulsa Public Schools				✓	

APPENDIX B

Council of the Great City Schools Strategic Support Teams

The Strategic Support Teams (SSTs) constitute the protocol that the Council of the Great City Schools has employed over the past 25 years to improve student performance and district operations among its members. At the request of a member district, the Council assembles a team of experts from urban school districts to conduct organizational, instructional, management, and operational reviews. The comprehensive reviews identify best practices and areas for growth and provide actionable recommendations to improve student achievement. The resulting EL program review reports have often identified significant areas for improvement and have also served as foundations for district improvement efforts.

SST Review Findings: Recurring System-Level Barriers

The Council has conducted over a dozen reviews of EL programs or of EL aspects within broader instructional reviews. The analysis of three selected reviews identified system-level barriers to English learners' access to grade-level mathematics and advanced coursework, including seven recurring factors that help explain EL underrepresentation in advanced mathematics.¹⁴ Five explanatory factors were present in all three EL program SSTs reviewed for this study:

- **Below-grade-level mathematics instruction for ELs.** Findings from classroom observations documented English learners engaged in tasks below grade level, including grammar drills, drawing activities, or operational-step-only procedures, with limited scaffolding for grade-level algebraic content, expressions, or underlying mathematical principles. These experiences, compounded over time, result in students being further removed from grade-level expectations and subsequent readiness for Algebra I by grade 9.
- **EL programs physically located in lower-resource schools.** In all three districts, EL programs were disproportionately located in lower-income, lower-resource schools with fewer advanced course offerings, while higher-resourced schools offered more advanced courses.
- **Inadequate counselor capacity, lack of EL-specific training, and ineffective collaboration.** All three districts documented counselor ratios exceeding national norms and limited counselor preparation for EL pathways. One had a counselor-to-student ratio of approximately 650:1, compared with a national norm of 300–400:1. Counselors lacked an understanding of EL needs, and collaboration between counselors and the EL department was lacking.
- **Inability to track English learner mathematics progress longitudinally.** All three districts lacked the data infrastructure to track individual ELs' mathematics course-taking from grade 6 through grade 9.

¹⁴ Council of the Great City Schools (2010, 2014, 2016b)

- **ELs absent from district strategic plans and accountability metrics.** In all three districts, ELs were largely invisible in district strategic plans and college/career readiness initiatives. For example, one district had no EL-specific strategies in its AP access policies.

Two explanatory factors were present in two of the three reviewed EL program SSTs:

- **No credit-bearing pathway for grade 9 English learner entrants.** Two districts lacked a defined graduation and credit-accumulation pathway for English learners who enrolled for the first time in grade 9 or later. Students new to the United States who were designated as newcomers in one district received no credit for their mathematics and science courses.
- **English language proficiency used as a proxy for mathematical readiness.** In two of the districts, English language proficiency level was being used as a criterion for mathematics placement decisions, effectively sorting students by language proficiency rather than mathematical knowledge. In one district, EL coordinators were automatically placing students into a mathematics course sequence that culminated in “ELL Algebra,” which did not satisfy the state’s requirements for college admission.

APPENDIX C

Understanding Context and District Performance: Council of the Great City Schools Academic Key Performance Indicators Analysis

The relevant trends emerging from the KPI data analysis presented in this section use SY 2023-24 figures, unless otherwise noted.¹⁵ This analysis examined the percentage of first-time ninth graders who completed Algebra I or equivalent *Integrated Math* coursework by the end of grade 9 in 53 Council-member districts reporting data for SY 2023-24, with particular attention to variation among English learners (ELs) and Latino students. For each reported student group, the numerator is the number of first-time ninth graders who completed Algebra I or equivalent *Integrated Math* coursework by the end of grade 9, and the denominator is the total number of first-time ninth graders in that student group. These quantitative findings illustrate the extent of variation in access and success, identify where disparities are most pronounced, and show why disaggregated analysis is necessary to understand district performance. The following key patterns from the KPI analysis are especially important for contextualizing the study's findings and research questions:

- **District performance is not uniform across student groups.** While most of the 53 reporting Council-member districts have Algebra I completion rates in the 50.0–74.9 percent range, the distribution of districts varies across student groups. Across the districts, English learners show lower completion rates than Latino students. In other words, districts that perform strongly overall or for one student group do not necessarily show the same level of performance across groups, underscoring the need to examine group-specific access and completion patterns.
- **Some districts are producing substantially stronger results for English learners.** Algebra I completion for English learners varies dramatically across reporting districts, ranging from 1.4 percent to 100.0 percent, with a district median of 61.4 percent.

Distribution of Districts by Percentage of First-Time Ninth Graders Completing Algebra I/Integrated Math by the End of Ninth Grade

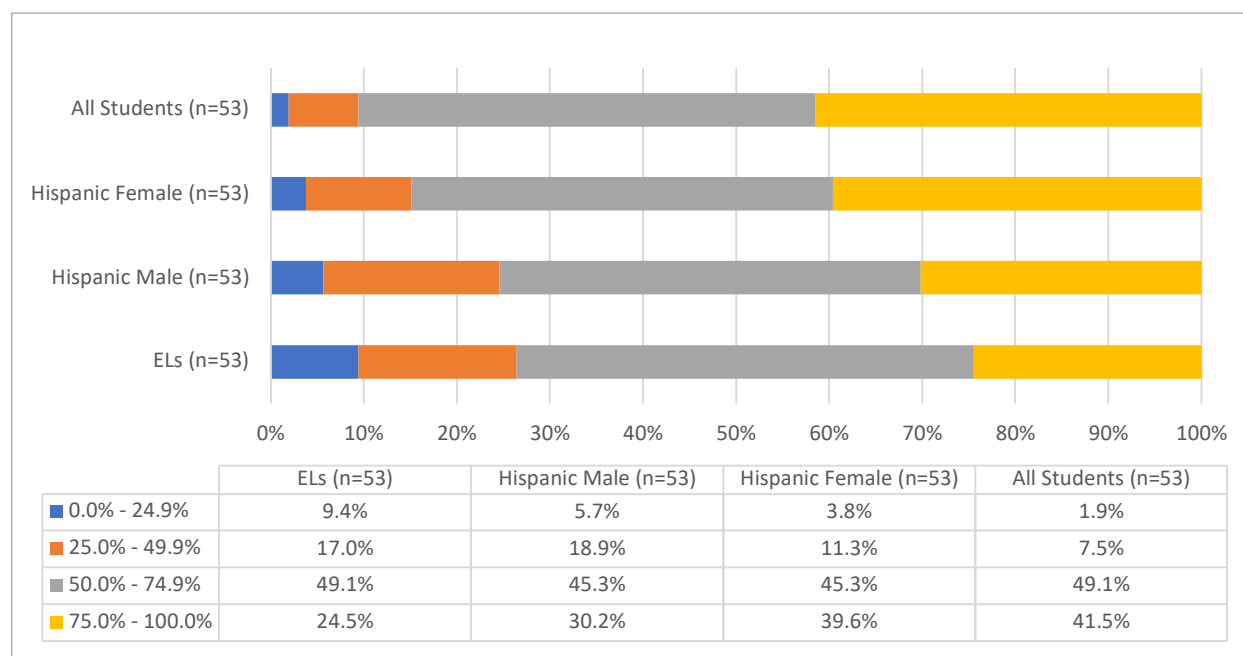
Access to and completion of Algebra I by the end of grade 9 remain uneven across Council-member districts, particularly for English learners. Figure C1 groups the 53 reporting Council-member districts according to the *percentage of students who successfully completed Algebra I/Integrated Math by the end of grade 9 in SY 2023-24*. The figure illustrates the distribution of districts across four completion-rate bands (0.0–24.9 percent, 25.0–49.9 percent, 50.0–74.9 percent, and 75.0–100.0 percent) for English learners, Latino males, Latino females, and all students. This district-level view highlights both the concentration of districts within each performance band and differences in how access and successful completion are distributed across student groups.

¹⁵ The Council uses standardized codes to identify districts and student groups in its Academic Key Performance Indicator data.

Most districts report completion rates in the 50.0–74.9 percent range, but students' experiences vary substantially by group. (See Figure C1.)

- **English learners.** ELs are the most likely group to be concentrated in the lower completion bands. More than one-quarter of reporting districts (26.4 percent) report EL completion rates below 50 percent, including 9.4 percent of districts in the lowest completion band (0.0–24.9 percent). Only 24.5 percent of districts report EL completion rates of 75 percent or higher.
- **Latino males.** Latino males also experience comparatively lower completion rates than other student groups. Nearly one-quarter of districts (24.6 percent) report completion rates below 50 percent, while 30.2 percent of districts report completion rates of 75 percent or higher.
- **Latino females.** Latino females are more likely than English learners and Latino males to be in districts with higher completion rates. Only 15.1 percent of districts fall below 50 percent completion, while 39.6 percent report completion rates of 75 percent or higher, closely resembling the distribution for all students.

Figure C1. Distribution of 53 Reporting Districts by Percentage of First-Time Ninth Graders Completing Algebra I/Integrated Math by the End of Ninth Grade, by Student Group in SY 2023–24



Note. For each student group, the completion rate is the percentage of first-time ninth graders who completed Algebra I or equivalent Integrated Math coursework by the end of grade 9. The denominator is the number of first-time ninth graders in the student group.

Source. Council of the Great City Schools. (2025). *Academic key performance indicators*. https://resources.finalsite.net/images/v1763486961/cgcsorg/uxj5pgyojudcgrxqgxvh/AcademicKPIReportFULLREPORT_FINAL.pdf

Rates of English Learner Algebra I/Integrated Math Completion by the End of Grade 9 by Quartile Groups of Districts

Table C1 summarizes the distribution of Algebra I/Integrated Math completion rates for English learners, Latino males, and Latino females across the 53 reporting districts, extending the data presented in Figure C1. Specifically, Table C1 provides a more detailed view of how districts are distributed along the Algebra I completion indicator for each student group. Because districts differ in EL and Latino enrollment shares, language backgrounds served, and community context, these data should be interpreted descriptively. The table shows how rates vary across districts but is not intended to explain why these differences exist. For each student group, reporting districts were sorted by Algebra I/Integrated Math completion rates and divided into four approximately equal-sized district groups, each comprising 13 or 14 districts.

- **English learners.** The percentage of English learners who completed Algebra I by the end of grade 9 in SY 2023–24 ranged from a low of 1.4 percent to 100.0 percent across reporting Council-member districts, with a median completion rate of 61.4 percent. The top quartile ranged from 76.1 percent to 100.0 percent, with a median completion rate of 78.2 percent. The bottom quartile ranged from 1.4 percent to 48.5 percent, with a median completion rate of 29.7 percent.
- **Latino males.** Algebra I completion rates for Latino males ranged from 6.5 percent to 100.0 percent across reporting districts. The top quartile included districts with completion rates between 76.8 percent and 100.0 percent. The bottom quartile ranged from 6.5 percent to 51.7 percent. Substantial variation remained across districts, indicating that access to and successful completion of Algebra I by the end of grade 9 were far from consistent for Latino males.
- **Latino females.** Latino female completion rates ranged from 4.8 percent to 100.0 percent across reporting districts. The top quartile included districts with completion rates between 80.5 percent and 100.0 percent. The bottom quartile ranged from 4.8 percent to 55.5 percent—a wide range indicating substantial disparities across districts. Across all quartiles, Latino females generally demonstrated higher completion rates than Latino males.

Table C1. District Completion-Rate Ranges for First-Time Ninth Graders Completing Algebra I/ Integrated Math by the End of Grade 9, by District Quartile and Student Group, SY 2023–24

Student Group	Bottom Quartile Districts	Lower Middle Quartile Districts	Upper Middle Quartile Districts	Top Quartile Districts
Focal Student Groups				
English Learners	1.4%-48.5% (n=14)	51.2%-61.4% (n=13)	62.1%-75.0% (n=13)	76.1%-100.0% (n=13)
Latino Males	6.5%-51.7% (n=14)	54.2%-70.2% (n=13)	70.4%-76.0% (n=13)	76.8%-100.0% (n=13)
Latino Females	4.8%-55.5% (n=14)	58.0%-72.0% (n=13)	72.7%-80.0% (n=13)	80.5%-100.0% (n=13)

Note. For each student group, the completion rate is calculated as the number of first-time ninth graders who completed Algebra I or equivalent Integrated Math coursework by the end of grade 9 divided by the total number of first-time ninth graders in that student group. Districts were ranked separately for each student group and divided into four approximately equal-sized groups based on their completion rates.

Source. Council of the Great City Schools. (2025). *Academic key performance indicators*. https://resources.finalsite.net/images/v1763486961/cgcsorg/uxj5pgyojudcgrxqgxvh/AcademicKPIReportFULLREPORT_FINAL.pdf

District Performance and Progress on the First-Time Ninth-Grade Algebra I/Integrated Math Completion Key Performance Indicator

To build on the patterns shown above, this section looks more closely at specific districts in the Academic KPI data. It examines which districts appear most often in the top quartile for SY 2023–24 Algebra I/Integrated Math completion by the end of grade 9, which districts show the strongest improvement (i.e., percentage-point increase) over time from SY 2018–19 to SY 2023–24, and whether strong Algebra I completion for the focal student groups—English learners, Latino males, and Latino females—is also accompanied by stronger results on related grade 9 indicators. The subsections that follow describe these district patterns in more detail—first, for SY 2023–24 performance; then, for improvement over time from SY 2018–19 to SY 2023–24; and finally, for the relationship between Algebra I completion and other grade 9 indicators.

Summary of Key Performance Indicators Analysis Findings

Across the district analyses, several patterns stand out:

- **Broad success across student groups is concentrated in a small set of districts.** Eight districts—Denver, Fayette County, Miami, Minneapolis, Palm Beach, Tulsa, Jefferson, and Dallas—appear in the top quartile for all three focal student groups (English learners, Latino males, and Latino females).
- **Broad improvement over time is even more concentrated.** Five districts—Atlanta, Palm Beach, East Baton Rouge, Miami, and Baltimore City—appear in the top quartile for improvement for all three focal student groups (English learners, Latino males, and Latino females).
- **Alignment with other grade 9 outcomes is limited.** Only a small number of districts—most notably Dallas and Miami—show strong overlap between top-quartile Algebra I completion for the focal student groups and related indicators such as grade 9 GPA and (low rates of) core-course failure.

Algebra I Completion by the End of Grade 9 in SY 2023-24

To better understand how districts were achieving success in Algebra I/Integrated Math completion by the end of grade 9, an analysis was conducted to identify which districts appeared in the top quartile within specific student groups in the Academic KPI data. This approach was used to identify patterns in whether districts were showing strong results for English learners, Latino males, and Latino females, or whether strong performance was concentrated in particular student groups. The following bullets describe how often districts appear in the top quartile across the focal student groups included in the analysis. In the KPI report, districts are ranked separately within each student group, so the bullet points synthesize how frequently a district appears among the higher-performing districts across groups rather than presenting a single overall ranking.

- **Top quartile for all three focal student groups.** Eight districts—Denver, Fayette County, Miami, Minneapolis, Palm Beach, Tulsa, Jefferson, and Dallas—appear in the top quartile for all three focal student groups: English learners, Latino males, and Latino females.
- **Top quartile for two of the three focal student groups.** Albuquerque, Austin, Chicago, Detroit, and Newark appear in the top quartile for two of the three focal student groups.
- **Top quartile for one of the three focal student groups.** Baltimore City and Philadelphia appear in the top quartile for one of the three focal student groups.

Algebra I Completion by the End of Grade 9 Change from SY 2018-19 to SY 2023-24

To identify where improvement in Algebra I/Integrated Math completion by the end of grade 9 was most evident between SY 2018-19 and SY 2023-24, an analysis examined which districts appeared in the top quartile for percentage-point change within each reported student group in

the Academic KPI data. This approach was used to identify patterns in whether districts were showing the largest gains across the focal student groups alone or across a broader set of student groups. The KPI analysis reports this indicator separately for each student group, and a greater positive change indicates greater improvement over time. A small number of districts showed broad improvement in Algebra I completion from SY 2018–19 to SY 2023–24, while most districts appeared in the top quartile for improving Algebra I completion for a smaller number of student groups.

The bullets below show how often districts appear in the top quartile of reporting districts for improvement across the focal student groups included in the analysis. In this section, the focal student groups are English learners, Latino males, and Latino females. Because districts are ranked separately within each student group, the bullet points summarize how broadly districts appear among the higher-improving districts across groups rather than presenting a single overall ranking.

- **Top quartile for all three focal student groups.** Five districts—Atlanta, Palm Beach, East Baton Rouge, Miami, and Baltimore City—appear in the top quartile for all three focal student groups: English learners, Latino males, and Latino females.
- **Top quartile for two of the three focal student groups.** Orange County and Toledo appear in the top quartile for two of the three focal student groups.
- **Top quartile for one of the three focal student groups.** Kansas City, Milwaukee, Pittsburgh, and Philadelphia appear in the top quartile for one of the three focal student groups.

District Context by Algebra I Completion by the End of Grade 9 Quartile in SY 2023-24

Further examination of EL-specific data is shown in Table C2, which provides key descriptive data about ELs, organized by the quartile distribution of their completion of Algebra I by the end of grade 9. The examination of EL-specific descriptive data aims to discern any patterns that could explain differences in completion rates. These indicators suggest that variation in completion rates is not driven by district size alone, as enrollment ranges overlap substantially across all quartiles. Similarly, EL enrollment counts vary widely across both lower- and higher-performing districts. The descriptive analysis does not show a consistent relationship between district EL enrollment and Algebra I completion. Districts serving larger EL populations appeared in both higher- and lower-performing quartiles.

Table C2. District Characteristics by Quartile of Algebra I/Integrated Math Completion Among First-Time Ninth-Grade English Learners, SY 2023–24

Variable	Bottom Quartile (n=14)	Lower Middle Quartile (n=13)	Upper Middle Quartile (n=13)	Top Quartile (n=13)
District Enrollment Range (#)	18,321–847,030	12,075–207,561	27,900–109,797	29,205–334,090
District EL Enrollment Range (#)	414–129,769	362–29,055	1,846–26,661	5,154–69,075
District EL Enrollment Range (%)	2.2%–20.9%	1.7%–35.4%	3.7%–36.9%	12.1%–45.3%

Note. Quartiles are based on English learner Algebra I/Integrated Math completion rates, not on district enrollment or English learner enrollment characteristics. Accordingly, the contextual ranges shown in the table may overlap across quartiles.

Source. Lai, D., Barner, D., Phicadu, D., & Uro, G. (2026). *English learners in America's great city schools: Demographics, achievement, and staffing* (Vol. III). Council of the Great City Schools.

Review of Related Key Performance Indicators in SY 2023-24

There is substantial interest in whether systems that expand access to Algebra I also provide the broader supports needed for academic success in grade 9 for English learners and Latino students. Prior literature suggests that Algebra I access and completion are best understood not as isolated outcomes, but in relation to the larger set of conditions that shape students' course-taking, academic performance, and persistence in grade 9. Table C3 examines this question by comparing districts' top-quartile status for Algebra I/Integrated Math completion by the end of grade 9 with their top-quartile status on two other grade 9 indicators for the same focal groups—students **earning a B average or better in all grade 9 courses** and students **failing one or more core courses**. For the course-failure KPI, districts in the top quartile are those with the lowest percentages of students failing one or more core courses, so top-quartile placement reflects stronger outcomes on that measure.

Table C3. Alignment of First-Time Ninth Graders Completing Algebra I/Integrated Math by the End of Grade 9 and Related Grade 9 KPIs for the Focal Student Groups, SY 2023–24

Pattern across focal-group KPIs	Districts
Strongest overlap across Algebra I completion and related grade 9 KPIs	Dallas; Miami
Top quartile for Algebra I completion with overlap on at least one additional grade 9 KPI	Chicago; Detroit; Newark
Top quartile mainly for Algebra I completion, with limited or no overlap on related grade 9 KPIs shown here	Albuquerque; Austin; Baltimore City; Denver; Fayette County; Jefferson; Minneapolis; Palm Beach; Philadelphia; Tulsa

Note. The focal student groups in this study are English learners, Latino males, and Latino females. For the “Ninth Grade Students Who Failed One or More Core Courses” KPI, districts in the top quartile have the *lowest* percentages of students failing one or more core courses.

The data suggest that strong Algebra I completion for the focal groups is not always paired with equally strong results on other grade 9 indicators. A smaller group of districts shows alignment between Algebra I completion and broader academic outcomes, while many others show top-quartile performance in Algebra I completion alone. This distinction is important because it helps identify whether high Algebra I completion may be part of a broader system of supports for grade 9 success or whether it may reflect a more targeted Algebra I access strategy.

- **Only a small number of districts show strong overlap across grade 9 key performance indicators.** Dallas and Miami stand out most clearly, with both appearing in the top quartile for all three focal groups in Algebra I completion and also appearing repeatedly on the grade 9 GPA and/or course-failure indicators. Chicago, Detroit, and Newark also show overlap between Algebra I completion and at least one additional grade 9 indicator, though across fewer focal-group and KPI combinations.
- **Most other districts appear in the top quartile primarily for Algebra I completion rather than across the related grade 9 indicators.** Denver, Fayette County, Jefferson, Minneapolis, Palm Beach, and Tulsa each appear in the top quartile for all three focal groups in Algebra I completion, but do not also appear in the top quartile for the related GPA or course-failure indicators shown here. Other districts, such as Albuquerque, Austin, Baltimore City, and Philadelphia, show more limited overlap across the three KPIs.

These descriptive statistics do not allow for determining causality. Instead, they point to patterns that warrant further examination. In particular, the data suggest that districts such as Dallas and Miami may have systems or supports that promote broader grade 9 success for the focal groups, not only Algebra I completion. By contrast, districts that show top-quartile performance mainly on Algebra I completion may have more focused access strategies or may be expanding Algebra I participation without yet showing comparable results on broader grade 9 academic indicators. The qualitative data collection phase of this study helps deepen understanding of the policies, practices, and implementation conditions that may explain these district patterns.

APPENDIX D

Connecting Key Principles to Recommendations for District and State Supports

Appendix D connects the key principles to the policy and systems recommendations identified in Part IV. Each table shows how the principles can be translated into district policy and guidance, district resource decisions, and state-level supports that advance Algebra I access and completion by the end of grade 9 for English learners and Latino students. The tables are intended to help districts and states move from broad commitments—such as maintaining rigorous expectations, distinguishing language development from mathematical readiness, pairing access with supports, using multiple ways to demonstrate understanding, and fostering mathematical agency—to concrete actions.

Principle 1. Maintain high expectations and access to grade-level mathematics.

Principle 1 emphasizes that English learners and Latino students should have access to rigorous, grade-level mathematics, with supports organized around success rather than used as a reason to delay access. The related recommendations focus on making Algebra I by grade 9 the default expectation, pairing placement with language and academic supports, and strengthening the elementary and middle school pathways that prepare students for timely Algebra I placement. Table D1 identifies the district policy actions, resource investments, and state supports needed to translate this principle into clear placement expectations, coherent supports, and sustained access to grade-level mathematics.

Table D1. Policy, Resource, and Support Considerations for Maintaining High Expectations and Access to Grade-Level Mathematics

Principle 1: Maintain high expectations and access to grade-level mathematics.		
[District] Policy and Guidance	[District] Resources	[State] Support
Recommendation 1: Review and revise criteria and placement processes to ensure English learners and Latino students access Algebra I in time to complete it by the end of grade 9.		
- Adopt policy that establishes Algebra I by grade 9 as a default expectation rather than an opportunity dependent on school-level discretion, informal advising, or early tracking decisions. - Clarify that EL status should not restrict access to grade-level mathematics. - Operationalize Algebra I by grade 9 for all student groups through guidance delineating placement criteria and review processes. - Monitor whether placement decisions result in access to Algebra I, or an equivalent grade-level mathematics course, by grade 9.	- Provide tools and professional learning that help schools schedule students into Algebra I while identifying supports needed for completion. - Develop staff capacity to address less common placement cases, including newcomers and late-entering students. - Train and support staff to use master schedule planning to prevent course availability or staffing constraints from becoming placement criteria.	- Provide guidance and technical assistance to foster understanding that EL status should not restrict access to grade-level mathematics. - Support investments that expand Algebra I offerings, including teacher credentialing and professional learning. - Encourage or require reporting on Algebra I access and completion by student group.
Recommendation 3: Enhance Algebra I access with language and academic supports.		
- Frame default Algebra I by grade 9 enrollment as access plus completion support, not solely focused on enrollment. - Define rigorous grade-level mathematics instruction to include addressing related language demands, coupled with data-driven targeted supports needed for completion.	- Provide instruction that integrates language development with rigorous mathematics learning. - Provide co-requisite supports, tutoring, extended learning opportunities, and bilingual or home-language supports where appropriate. - Invest in professional learning for mathematics and EL teachers to scaffold rigorous mathematics and address language development without lowering cognitive demand.	- Support districts in selecting instructional materials and maintaining rigorous instruction for ELs while addressing language demands. - Fund or incentivize staffing models that support rigorous Algebra I access for ELs and Latino students.

Table D1. Policy, Resource, and Support Considerations for Maintaining High Expectations and Access to Grade-Level Mathematics, continued

Principle 1: Maintain high expectations and access to grade-level mathematics.		
[District] Policy and Guidance	[District] Resources	[State] Support
Recommendation 4: Strengthen elementary mathematics instruction and middle school pathways to ensure Algebra I placement by grade 9.		
- In curricular and instructional planning frameworks, treat elementary mathematics instruction and middle school pathways as core equity levers that develop algebraic thinking and support access to Algebra I by grade 9. - Ensure K–8 mathematics instruction develops algebraic thinking and that middle grades course sequencing fosters access to Algebra I.	- Invest in professional learning to build middle-grades mathematics content knowledge and Algebra I credentialing to expand Algebra I or equivalent courses in middle school. - Create multiple entry and re-entry points into Algebra I pathways, including support classes, acceleration options, transition planning, and bridge programs.	- Support the development and implementation of mathematics pathways that align with college-entrance mathematics requirements and provide multiple entry and re-entry points during middle school and grade 9. - Invest in and strengthen teacher education programs, including alternative licensure programs, to expand the number of certified mathematics teachers.

Principle 2. Treat language as integral to mathematics learning, not as a gatekeeper.

Principle 2 emphasizes that English language proficiency should inform the supports students receive in Algebra I, not whether they are allowed to access grade-level mathematics. The related recommendations focus on revising placement criteria to exclude English language proficiency as a proxy for mathematical readiness, defining readiness through math-specific and multi-measure evidence, and pairing Algebra I placement with language and academic supports. Furthermore, the recommendations include considerations for monitoring and fostering accountability for the effectiveness of efforts to remove English language proficiency as a barrier to Algebra I enrollment and completion by the end of grade 9. Table D2 identifies the district policy actions, resource investments, and state supports needed to ensure language development is integrated into mathematics learning rather than used to delay access.

Table D2. Policy, Resource, and Support Considerations for Treating Language as Integral to Mathematics Learning

Principle 2: Treat language as integral to mathematics learning, not as a gatekeeper.		
[District] Policy and Guidance	[District] Resources	[State] Support
Recommendation 2: Ensure the district's definition of readiness includes multiple modalities for expressing mathematical knowledge.		
- Define readiness using multiple sources of mathematics-specific evidence from coursework, assessments, student work, and other demonstrations of mathematical understanding along the pathway to Algebra I by grade 9. - Do not define readiness using single assessment cut scores, informal judgments, or early tracking decisions alone. - Do not use English language proficiency as a proxy for mathematics knowledge. - Use English language proficiency to inform language supports, not to exclude students from Algebra I.	- Build mathematics leaders' and educators' understanding of language acquisition, the language demands of mathematics learning, and how students may demonstrate mathematical readiness at different levels of English language proficiency. - Develop shared messaging and professional learning from mathematics and English learner departments.	- Support local review of placement tools for validity with English learners. - Develop or support performance tasks that evaluate mathematical knowledge without relying on English language proficiency. - Provide guidance on evaluating internationally completed mathematics coursework and recognizing prior learning. - Consider statewide contracted services for foreign transcript evaluation.
Recommendation 3: Enhance Algebra I access with language and academic supports.		
- Ensure that attention to developing academic language and language supports is embedded in mathematics instruction and does not replace access to grade-level mathematics. - Use co-requisite support models that ensure Algebra I completion rather than delaying access.	- Provide bilingual or home-language supports where appropriate, co-teaching, tutoring, and extended learning opportunities. - Invest in sustained professional learning that illustrates how ambitious mathematics instruction can naturally support language acquisition.	- Provide guidance and resources around mathematics language demands, scaffolding, and instructional materials specifically for mathematics. - Support teacher-preparation and certification pathways that build educators' capacity to teach mathematics effectively to English learners.

Table D2. Policy, Resource, and Support Considerations for Treating Language as Integral to Mathematics Learning, continued

Principle 2: Treat language as integral to mathematics learning, not as a gatekeeper.		
[District] Policy and Guidance	[District] Resources	[State] Support
Recommendation 6: Use disaggregated data and shared accountability to monitor access and completion.		
- Monitor whether EL status, newcomer status, long-term EL status, or language proficiency is associated with diversion from Algebra I pathways. - Clarify who acts when data show language-related barriers to access or completion.	- Create data routines that bring mathematics, English learner, counseling, and school leadership staff together to review access and completion. - Expand data collection and reporting capability to disaggregate EL status by ELP level, long-term EL, and newcomer typology. - Provide resources to enable educators to act on identified areas of need.	- Require or encourage data disaggregation that distinguishes current ELs, former ELs, newcomers, and long-term ELs. - Provide technical support when data trends suggest language-based barriers to accessing and completing Algebra I by the end of grade 9.

Principle 3. Pair rigor with strategic supports.

Principle 3 emphasizes that access to Algebra I must be paired with supports that sustain rigorous, grade-level content rather than lowering expectations or delaying placement. The related recommendations focus on making Algebra I by grade 9 the default expectation, providing co-requisite academic and language supports, strengthening elementary and middle school pathways, and using data to monitor whether access leads to successful completion. Table D3 identifies the district policy actions, resource investments, and state supports needed to align rigorous coursework with the supports students need to succeed.

Table D3. Policy, Resource, and Support Considerations for Pairing Rigor with Strategic Supports

Principle 3: Pair rigor with strategic supports.		
[District] Policy and Guidance	[District] Resources	[State] Support
Recommendation 3: Enhance Algebra I access with language and academic supports.		
- Pair Algebra I enrollment with language and academic supports that enable successful completion. - Avoid both unsupported placement and delayed access through remediation-only pathways. - Document support models clearly and disseminate widely in linguistically and culturally responsive ways so schools, families, and educators understand how students will be supported.	- Provide co-requisite supports, double-dose or support courses where appropriate, tutoring, summer or winter bridge programs, in-school intervention, and mathematics tutorial labs. - Invest in teacher professional learning on scaffolding content, integrating language development, and addressing gaps in algebraic reasoning. - Support teachers in unpacking the language demands of mathematics standards to make coherent pedagogical connections to English Language Development (ELD). - Support joint development (mathematics and EL departments) of units of study and/or lesson plans that illustrate integrated ELD standards in service of meeting mathematics standards.	- Support funding for extended learning, co-requisite models, and teacher professional learning. - Provide technical assistance on scaffolding that sustains rigor and cognitive demand in mathematics. - Examine and support mechanisms to award dual credit for mathematics content and ELD support where appropriate.

Table D3. Policy, Resource, and Support Considerations for Pairing Rigor with Strategic Supports, continued

Principle 3: Pair rigor with strategic supports.		
[District] Policy and Guidance	[District] Resources	[State] Support
Recommendation 4: Strengthen elementary mathematics instruction and middle school pathways to ensure Algebra I placement by grade 9.		
- Design middle school pathways with support classes, acceleration options, transition planning, and bridge programs rather than a single fixed gateway. - Ensure master schedules do not force trade-offs between ELD services and core mathematics.	- Provide transition and bridge supports that help students enter or re-enter Algebra I pathways. - Fund EL instructional support in mathematics in middle school. - Create systems through which mathematics teachers can access the expertise of English learner specialists and receive co-planning support.	Support multiple on-ramps into Algebra I pathways during middle school and grade 9.
Recommendation 6: Use disaggregated data and shared accountability to monitor access and completion.		
- Monitor not only completion, but also grades, repeats, progression to the next mathematics course, and broader grade 9 outcomes for disaggregated student groups. - Use data to determine where supports are producing stronger outcomes and where students may be placed without sufficient support.	- Develop dashboards that track enrollment, credit earning, course grades, repeats, and progression by student group and school. - Create joint review cycles across mathematics, English learner, counseling, and data teams.	- Support the development of dashboards for use in equity audits that examine access and completion. - Provide technical support when data suggest supports are not sufficient for successful completion.

Principle 4. Use multiple ways for students to demonstrate mathematical understanding.

Principle 4 emphasizes that students should be able to show mathematical understanding through multiple measures, representations, and forms of evidence, especially when English-medium assessments or incomplete records may not fully capture what they know. The related recommendations focus on revising placement criteria, defining readiness through multiple modalities, creating flexible pathway entry points, and ensuring families understand how

placement decisions are made and reviewed. Table D4 identifies the district policy actions, resource investments, and state supports needed to make placement and readiness systems more valid, transparent, and responsive to students' mathematical knowledge.

Table D4. Policy, Resource, and Support Considerations for Using Multiple Ways to Demonstrate Mathematical Understanding

Principle 4: Use multiple ways for students to demonstrate mathematical understanding.		
[District] Policy and Guidance	[District] Resources	[State] Support
Recommendation 1: Review and revise criteria and placement processes to ensure English learners and Latino students access Algebra I in time to complete it by the end of grade 9.		
- Ensure placement decisions are inclusive and involve staff with relevant knowledge of mathematics, English language acquisition, and data. - Provide transparent appeals and review processes when initial placement does not reflect students' mathematical knowledge.	- Create placement protocols for students new to the U.S., long-term ELs, and late-entering students whose prior mathematical knowledge may not be captured by district records. - Provide counselor training on EL graduation requirements, mathematics pathways, transcript reviews, and placement policies for asset-based placements.	- Clarify expectations for fair placement and access regardless of EL status. - Support districts in developing transcript evaluation and placement-review guidance.
Recommendation 2: Ensure the district's definition of readiness includes multiple modalities for expressing mathematical knowledge.		
- Use math-specific, multi-measure evidence to define readiness. - Avoid relying too heavily on English-medium assessments, narrow cut scores, or informal judgments when determining the readiness of ELs. - Include prior coursework, student work, performance tasks, teacher evidence, and home-country transcripts where appropriate.	- Develop or adopt valid placement tools and performance tasks that allow multiple ways to show mathematical understanding. - Train staff to interpret mathematical evidence for ELs and students with prior schooling outside the United States.	- Support the development of language-accessible placement tools, including performance tasks that reveal students' mathematical knowledge along the continuum of algebraic learning. - Provide guidance on using multiple measures and evaluating prior international coursework.

Table D4. Policy, Resource, and Support Considerations for Using Multiple Ways to Demonstrate Mathematical Understanding, continued

Principle 4: Use multiple ways for students to demonstrate mathematical understanding.		
[District] Policy and Guidance	[District] Resources	[State] Support
Recommendation 4: Strengthen elementary mathematics instruction and middle school pathways to ensure Algebra I placement by grade 9.		
• Include multiple entry and re-entry points into Algebra I pathways rather than a single early gateway. • Provide valid evaluation processes that recognize prior mathematical learning.	• Offer support classes, acceleration options, transition planning, and bridge programs. • Invest in valid foreign transcript review processes with the aim of building on students' knowledge and awarding credits.	• Provide clear course-equivalency guidance for evaluating mathematics coursework completed by students in other countries or school systems. • Encourage pathway designs that avoid exclusion caused by early or narrow gateway criteria.

Principle 5. Support mathematical agency, identity, and belonging.

Principle 5 emphasizes that placement, instruction, supports, and family engagement should communicate that English learners and Latino students are mathematically capable and belong in rigorous mathematics pathways. The related recommendations focus on pairing Algebra I access with supports that build confidence and persistence, cultivating family awareness and advocacy, and using disaggregated data to identify where student groups are being excluded, diverted, or underserved. Table D5 identifies the district policy actions, resource investments, and state supports needed to strengthen students' mathematical agency, identity, and belonging while monitoring whether systems are producing equitable access and completion.

Table D5. Policy, Resource, and Support Considerations for Supporting Mathematical Agency, Identity, and Belonging

Principle 5: Support mathematical agency, identity, and belonging.		
[District] Policy and Guidance	[District] Resources	[State] Support
Recommendation 2: Ensure the district's definition of readiness includes multiple modalities for expressing mathematical knowledge.		
• Frame readiness as a continuum of mathematical development rather than a fixed-ability judgment. • Remove criteria that communicate lowered expectations or conflate English language proficiency with mathematical capability.	• Provide professional learning that builds an asset-oriented understanding of English learners' and Latino students' mathematical knowledge and potential. • Support joint messaging from mathematics and English learner departments that conveys the asset-oriented belief that all students can learn advanced mathematics.	• Encourage audits of placement criteria and outcomes for disproportionate exclusion. • Support guidance that discourages fixed-ability tracking and promotes multiple measures. • Support the expansion of professional learning for counselors and teachers working with English learners.
Recommendation 4: Strengthen elementary mathematics instruction and middle school pathways to ensure Algebra I placement by grade 9.		
• Design pathways that allow students, including students new to the U.S. (i.e., newcomers) and those with foreign transcripts, to enter or re-enter advanced mathematics rather than being permanently sorted by early decisions. • Review accelerated mathematics identification processes for disproportionate exclusion.	• Provide bridge programs, acceleration options, and targeted skill-building opportunities that allow students to build confidence and momentum. • Invest in teacher learning focused on mathematical discourse, rich tasks, student work analysis, and productive struggle.	• Support the development and implementation of multiple on-ramps and re-entry points in middle school and grade 9 pathways, including enrichment mathematics experiences, that foster students' agency, identity, and belonging in mathematics. • Provide professional learning resources that connect rigorous mathematics, academic language, belonging, and student agency.

Table D5. Policy, Resource, and Support Considerations for Supporting Mathematical Agency, Identity, and Belonging, continued

Principle 5: Support mathematical agency, identity, and belonging.		
[District] Policy and Guidance	[District] Resources	[State] Support
Recommendation 5: Cultivate family awareness of pathways and Algebra I content.		
- Treat multilingual families as partners in pathway decisions rather than as recipients of after-the-fact placement information. - Make communication proactive, accessible, linguistically and culturally responsive, and connected to key decision points.	- Provide translated course maps, placement notifications, appeals information, and family-facing explanations of Algebra I timing and supports. - Use advisory councils, transition events, counselor-family conferences, and proactive outreach to build awareness and agency.	- Support translation of graduation, college-admission, and career-pathway requirements related to mathematics. - Provide model family-facing communication resources that districts can adapt.
Recommendation 6: Use disaggregated data and shared accountability to monitor access and completion.		
- Use data to examine whether placement, advising, course sequencing, and supports reveal high expectations or reinforce assumptions about limited ability. - Create shared accountability for acting when student group data reveal gaps in access, completion, or progression.	- Develop dashboards and review routines that make visible who gets access, who is diverted, who repeats, who earns credit, and who progresses. - Use joint instructional and placement review cycles to address barriers. - Conduct family surveys to assess whether advising, placement, and supports convey high or low expectations for ELs, Latino students, and other student groups.	- Encourage and support regular district equity audits of placement and outcomes by school and student group. - Support data systems and technical assistance that help districts identify and respond to barriers.

APPENDIX E

Policies and Practices Influencing Algebra I Access and Success by Grade 9 for English Learners and Latino Students

English learners' and Latino students' access to and completion of Algebra I by the end of grade 9 are shaped by the interaction of district policy, school-level implementation, and cross-departmental practice. Table E1 explains dynamics relevant to all students as well as Latino students and English learners specifically.

Table E1. Policies and Practices Influencing Algebra I Access and Completion by the End of Grade 9 for English Learners and Latino Students

Policy or Practice	Influence on Access and Success
Mathematical Readiness and Student Placement Processes	
Districtwide expectations for Algebra I access <i>(Lee & Stephens, 2020; Patrick et al., 2020; Remillard et al., 2017; Umansky et al., 2024)</i>	Districts shape access through the extent to which Algebra I by grade 9 is treated as a systemwide expectation for all students or as a school-by-school placement decision. For all students, universal or default enrollment policies can reduce variation across schools and shift the policy question from whether students should access Algebra I to what supports they need to succeed once enrolled. • Latino students: Universal or default enrollment policies can help reduce the effects of early sorting, uneven access to advanced coursework, and school-level variation in expectations. • English learners: Universal or default enrollment policies are especially important when EL status, English language proficiency, or language-service schedules might otherwise delay access to Algebra I.
Placement and readiness systems <i>(Abedi, 2002; Lee & Stephens, 2020; Patrick et al., 2020; Schleppegrell, 2007; Snipes & Finkelstein, 2015; Wilkinson, 2019)</i>	Districts influence access through how they define “readiness,” what measures they use to identify students for Algebra I, and whether placement decisions are standardized, transparent, and reviewed across student groups. For all students, multi-measure placement systems are more likely to support equitable access than systems relying on narrow cut scores or informal staff judgment. • Latino students: Transparent and consistently applied criteria can reduce the influence of subjective assumptions, early tracking, or biased perceptions of readiness. • English learners: Placement systems should distinguish mathematical preparation from English language proficiency so that English-medium assessments or language status do not function as proxies for mathematical readiness.

Table E1. Policies and Practices Influencing Algebra I Access and Completion by the End of Grade 9 for English Learners and Latino Students, continued

Policy or Practice	Influence on Access and Success
Mathematical Readiness and Student Placement Processes, continued	
Coordination among mathematics, English learner, and counseling staff <i>(Council of the Great City Schools, 2009, 2016a; Lee & Stephens, 2020; Umansky et al., 2024)</i>	Access is shaped by whether the staff responsible for mathematics pathways, EL services, and course scheduling share responsibility for placement and support decisions. For all students, coordination among mathematics, counseling, and school staff helps align course placement, graduation requirements, and academic interventions. • Latino students: Coordinated advising and pathway planning can help ensure that students are not excluded from Algebra I pathways because of inconsistent implementation or limited access to information. • English learners: Collaboration with EL staff is especially important because, when these functions operate separately, ELs may be placed based on language-service needs rather than mathematics trajectory.
Counseling Staff, Course Offerings, Instructional Supports, and Collaboration	
Counseling and advising capacity <i>(Baker et al., 2023; Falco, 2017; Good et al., 2010; Schmidt et al., 2012; Torrez, 2004; Vazquez Cano et al., 2023)</i>	Counselors influence students' access to Algebra I through course scheduling, pathway advising, graduation planning, and family communication. For all students, counseling capacity affects whether students and families receive accurate information about Algebra I placement, course sequences, and college- and career-ready mathematics pathways. • Latino students: Culturally responsive advising and proactive family communication can help counter limited access to pathway information and ensure that students are encouraged toward rigorous mathematics options. • English learners: Districts need counselors who understand EL-specific course-taking considerations, including language-service requirements, transcript evaluation, and the distinction between English language proficiency and mathematical readiness.
Language access within mathematics instruction <i>(Council of the Great City Schools, 2016a; Kanno & Kangas, 2014; Lee & Stephens, 2020; Schleppegrell, 2007; Wilkinson, 2019)</i>	Districts affect success by determining whether ELs receive language supports inside grade-level mathematics rather than being routed away from mathematics. These language-access considerations apply specifically to English learners, including English learners who are Latino. Practices such as bilingual Algebra I, co-teaching, tutoring, and co-requisite support models can help students access courses and develop mathematical understanding and academic language concurrently.

Table E1. Policies and Practices Influencing Algebra I Access and Completion by the End of Grade 9 for English Learners and Latino Students, continued

Policy or Practice	Influence on Access and Success
Counseling Staff, Course Offerings, Instructional Supports, and Collaboration, continued	
Support structures tied to access and acceleration <i>(Barnett et al., 2012; Morales-Chicas & Graham, 2021; Snipes & Finkelstein, 2015; Stoelinga & Lynn, 2013)</i>	Districts influence success by deciding whether struggling or linguistically developing students are offered Algebra I with supports or delayed through alternative/remediation pathways. For all students, co-requisite models, double-dose mathematics, tutoring, summer bridge programs, and skill-building cycles sustain access to grade-level content while addressing unfinished learning. • Latino students: Supports can help reduce the impact of earlier opportunity gaps in K–8 mathematics and expand access to advanced pathways. • English learners: Support structures should also address language-development needs without delaying Algebra I placement or routing students into lower-level or non-credit-bearing courses.
Mathematics Pathways and Family Engagement	
Middle school mathematics pathways <i>(Brown et al., 2018; Common Core Standards Writing Team, 2023; LaFave, 2019; Morton & Riegler-Crumb, 2020; National Council of Teachers of Mathematics, 2014; Patrick et al., 2020; Smith, 1996; Spielhagen, 2006)</i>	Grade 9 Algebra I completion is strongly influenced by course-taking opportunities in grades 6–8. For all students, district decisions about pre-algebra access, accelerated pathways, compacted math, eighth-grade Algebra I, summer bridge options, and transition planning determine whether students enter high school on pace for Algebra I or already behind the sequence needed for advanced mathematics. • Latino students: Attention to early opportunity gaps in K–8 mathematics is especially important, including access to rigorous instruction, experienced teachers, advanced coursework, and in-class opportunities to develop algebraic thinking. • English learners: Pathway structures must also account for students new to the U.S. (i.e., newcomers), students with interrupted formal education, language-development needs, and prior learning that may not align directly with U.S. course labels or transcripts.

Table E1. Policies and Practices Influencing Algebra I Access and Completion by the End of Grade 9 for English Learners and Latino Students, continued

Policy or Practice	Influence on Access and Success
Mathematics Pathways and Family Engagement, continued	
Family-facing communication and engagement <i>(Brooks, 2022; Council of the Great City Schools, n.d.; Good et al., 2010; Housel, 2020; Torrez, 2004)</i>	Families' ability to advocate for appropriate mathematics placement depends on whether districts provide accessible information about Algebra I, course sequences, placement criteria, appeal options, and graduation implications. For all students, clear family-facing information can make mathematics pathways more transparent. • Latino students: Culturally responsive outreach, advisory councils, transition events, and proactive communication can help ensure that families understand advanced mathematics opportunities and placement processes. • English learners: Communication must be available in preferred home languages and explain how EL identification, language services, placement decisions, and graduation requirements intersect.
Data Infrastructure Capacity and Monitoring	
Data systems and equity monitoring <i>(Allensworth & Easton, 2007; Allensworth et al., 2021; Council of the Great City Schools, 2025; Patrick et al., 2020; Thompson et al., 2023; Umansky et al., 2024)</i>	Districts influence both access and accountability through the data they collect, review, and act on. For all students, systems that monitor Algebra I enrollment and completion by grade level, school, race/ethnicity, EL status, newcomer status, long-term EL status, and former EL status allow leaders to identify where students are being diverted from Algebra I pathways and where supports are producing stronger outcomes. • Latino students: Data should be disaggregated by race and ethnicity to identify patterns in access, completion, and progression that may be hidden in overall averages. • English learners: Data systems should also distinguish by EL status, time in program, former EL status, English language proficiency level, and other relevant typologies so districts can identify whether language-related factors are affecting access or success.

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