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Closing Knowledge Gaps: A Research Agenda for Advancing Latino and English Learner Mathematics Success



Introduction

UnidosUS conducted a landscape analysis and literature review to understand how students, particularly Latinos and English learners, experience the Algebra I-to-STEM pipeline. Building on this work, this research agenda synthesizes existing evidence, highlights emerging themes and identifies critical gaps in the knowledge base regarding Latino students, English learners and mathematics education. By integrating research and policy perspectives, the agenda seeks to inform future research, practice and policy efforts aimed at expanding equitable access to mathematics and STEM pathways.

This work revealed that Algebra I and subsequent mathematics coursework serve as a critical gateway to postsecondary education; economic mobility; and careers in science, technology, engineering and mathematics (STEM). Research consistently underscored that progression through an advanced mathematics pathway is associated with college enrollment and persistence, STEM participation, and positive long-term economic outcomes (Byun et al. 2015; Douglas and Attewell 2017; Edosomwan et al. 2024; Heavin and Ma 2022). Students who complete Algebra I before ninth grade enter high school on an accelerated mathematics pathway, positioning them to reach advanced coursework and strengthen their college admissions competitiveness. At the same time, completing Algebra I by the end of ninth grade still provides important benefits, including an increased likelihood of meeting college admission requirements and persisting through postsecondary education.

Yet access to these opportunities is not evenly distributed. Across the mathematics pipeline, Latino students and English learners continue to encounter disparities in course availability, placement, quality instructional resources and transitions from secondary to postsecondary education. While 77% of white students persist on an accelerated mathematics track, only 60% of Latino and Black students do (Irizarry 2021, as cited in UnidosUS 2026). Research also suggests that these differences are not shaped solely by academic preparation, but also by policies and practices that influence who is identified for accelerated pathways, who receives access to rigorous coursework, and who is provided with the supports necessary to succeed. As a result, mathematics often functions as a mechanism that

either expands opportunity or reinforces existing inequities, with important implications for college access, degree attainment and participation in STEM fields (Irizarry 2021; Morton and Riegle-Crumb 2020; Ngo and Velasquez 2020; Powers and An 2023).

To complement the literature review, UnidosUS commissioned three research studies that provide a more nuanced understanding of Latino students, English learners and their experiences across key stages of the mathematics pipeline. Together, the literature review and commissioned studies provide the foundation for this UnidosUS math research and policy agendas, helping to identify both promising areas for future inquiry and opportunities for policy action.



Key Findings from UnidosUS Math Policy Project Research¹

Our literature review and commissioned research show that Algebra I and subsequent courses sit at the center of the opportunity structure for Latino students and English learners. They function as gateways to selective colleges, STEM fields and long-term economic security, but under current policies, they often operate as gatekeepers.

Latino Students and English Learners Are Distinct Populations

An important consideration noted across the reports is that while Latino students and English learners may overlap, they are distinct populations. While many English learners are Latino and many Latino students have experience as English learners, the groups are not synonymous. Latino students may experience barriers related to race, ethnicity and access to opportunity, while English learners may encounter additional barriers associated with language proficiency, language-related placement decisions, newcomer status, interrupted formal schooling or access to language development supports. The research suggests that some policies and practices support both groups, while others must be tailored to address their distinct experiences and needs.

Placement Practices and Tracking

Across K-12 and college systems, the research documents how a lack of course availability and subjective placement policies lead to tracking that makes Latino students and English learners less likely than white students to take Algebra I by ninth grade. For example, a study found that only 23% of Hispanic students and 15% of Black students took Algebra I prior to ninth grade, compared to 33% of white students and 54% of Asian students (LaFave 2019, as cited in Lai et al. 2026). Similar disparities persist in the transition from high school to college. Research finds that English learners must exceed their school's average math course-taking by at least three advanced mathematics courses to achieve comparable enrollment rates at four-year colleges (Black et al. 2025; Callahan et al. 2024, as cited in Zahner et al. 2026). Moreover, Latino students are disproportionately affected by the “math trap,” a phenomenon in which students are required to repeat mathematics courses in college

despite having completed equivalent coursework in high school (Ngo and Velasquez 2020, as cited in UnidosUS 2026).

Accelerated Algebra and Support Mechanisms

Evaluations of major reforms show a pattern: Strategies that simply expand access, such as algebra-for-all policies, without adequate support for educators or students frequently expand enrollment without expanding learning or improving outcomes. However, targeted, support-rich approaches, such as double-dose algebra, yield more substantial and equitable gains. Stronger outcomes emerge when course placement policies include multiple objective measures and access is paired with academic support (and in the case of English learners, language-integrated support). Scoping and state-level reviews, drawing on more than 80 studies, consistently show that instruction that takes into account students' cultural and linguistic backgrounds, along with discussion-rich, humanizing mathematics activities, enables English learners to engage in rigorous reasoning, participate in mathematical discourse and build durable mathematical identities.

Policy Connections and Levers

For policy and school system leaders, the evidence suggests that student success in Algebra I and subsequent mathematics coursework is shaped not only by the students' academic preparation, but also by the way schools and districts design opportunities to learn. District-level studies show that differences in mathematics participation and completion among Latino students and English learners are influenced by several key factors:

- How schools define and measure student readiness for advanced coursework
- Which mathematics pathways are available and how they are communicated to students and families
- How counseling, placement policies and course recommendation processes influence student trajectories
- How data is used to monitor student progress and inform decision-making

- Whether families receive clear, multilingual information about math course options and pathways

Across studies, researchers consistently found that access to advanced mathematics is shaped by school and district decisions about course offerings, placement practices, instructional quality, data use and family engagement. As a result, disparities in mathematics participation and success are not simply the result of individual student characteristics. They are also influenced by the policies and practices that determine who has access to rigorous coursework and the support needed to succeed. These findings suggest that improving outcomes requires coordinated action across multiple areas, including course placement, instruction, family engagement and accountability systems.

Overall, the research suggests several interconnected policy priorities. First, states, districts and schools should expand equitable access to advanced mathematics pathways through universal course availability and placement practices that rely on multiple measures of mathematical readiness rather than singular indicators or proxies. Second, access must be accompanied by the academic supports, high-quality instructional materials, and culturally and linguistically responsive instruction necessary for students to succeed in rigorous coursework. Third, families should have clear, timely and multilingual information that enables informed decision-making about mathematics pathways. Finally, education systems should strengthen accountability through the use of disaggregated data by tracking enrollment, course completion and progression through advanced mathematics pathways across student groups.



Research Gaps

In addition to the research that has been conducted, several important areas remain underexplored and warrant further attention from researchers, policymakers, educators and community leaders:

Stronger Differentiation Between Latino Students and English Learners in Algebra I

Much of the existing research examines Latino students and English learners together because these populations often overlap. However, the commissioned studies consistently found that Latino students and English learners are not synonymous groups and may experience mathematics pathways differently due to factors related to race, ethnicity, language proficiency, educational background and access to language supports. Future research should move beyond treating these populations as interchangeable and explore both their shared and distinct experiences. Important areas for future study include:

- How mathematics enrollment rates and outcomes differ among Latino students who have never been classified as English learners, current English learners, former English learners and English learners from non-Latino backgrounds.
- The extent to which language proficiency, classification, newcomer status and interrupted formal education influence access to Algebra I, advanced mathematics coursework and STEM pathways.
- Differences in how Latino students and English learners experience mathematics identity development, tracking, acceleration and access to rigorous coursework.
- Longitudinal research that examines how mathematics trajectories evolve over time for Latino students, English learners and former English learners across K-12, postsecondary education and STEM pathways.
- How instructional approaches that take into account students' cultural and linguistic backgrounds can address the distinct needs and strengths of each population.



Modernized Mathematics Pathways

States and districts, often in partnership with postsecondary institutions, are increasingly exploring modernized mathematics pathways that provide alternatives beyond the traditional Algebra I-to-Calculus sequence. These pathways may include integrated mathematics, statistics, data science, quantitative reasoning and other courses designed to better align mathematics learning with students' postsecondary and career goals. Additional research is needed to understand how pathway modernization affects educational quality and outcomes for Latino students and English learners. Future research should include, but not be limited to:

- Whether modernized mathematics pathways expand access to rigorous coursework or unintentionally create new forms of tracking and stratification.
- How pathway modernization affects participation and success in advanced mathematics courses among Latino students, English learners and other historically underserved student populations.
- How states, districts and postsecondary institutions can align mathematics pathways to create seamless transitions between high school, college and workforce preparation programs.
- Longitudinal studies examining the relationship between mathematics pathway selection and postsecondary persistence, degree completion, STEM participation and economic mobility.



Artificial Intelligence in the Mathematics Education Context

Research on artificial intelligence (AI) has recently taken off, yet academic journals, reports and papers may lag current developments by one to two years. Since AI is a newer, constantly shifting topic, much-needed future research should include, but not be limited to:

- How algorithmic bias — such as historical, representational or measurement bias — impacts Latino students and English learners in mathematical settings.
- How AI is being used in mathematics instruction and whether it expands or replaces high-quality teaching and learning opportunities. Research should examine whether AI serves as a supplement to effective mathematics instruction or becomes a substitute for teacher-led learning, particularly in under-resourced schools that Latino students and English learners are more likely to attend.
- What types of AI tools and models are available to Latino students and English learners and how differences in access affect learning outcomes. Research should investigate whether these student populations have equitable access to high-quality, AI-enabled learning supports — such as intelligent tutoring systems and adaptive mathematics platforms — or primarily rely on general-purpose generative AI tools, as well as how those differences shape mathematics engagement, achievement and pathway progression.
- The effectiveness of personalization methods by classroom AI software and how it may or may not benefit Latino students and English learners in both high school and postsecondary environments.
- Student and educator experiences with AI, including how these technologies influence access to advanced coursework and mathematics self-efficacy.
- How AI instruction may support or compromise explicit teaching of mathematics language for English learners.
- The unique experiences of English learners and Latino students with AI and how it can affect their mathematics trajectories.
- Privacy, data governance and ethical considerations surrounding the collection and use of student data in AI-enabled educational environments.



Family Engagement and Algebra/Mathematics Success

While research on family engagement in middle and high school is plentiful, it seldom acknowledges the intersection between family engagement, Algebra I, advanced mathematics pathways and STEM careers. Additional research should focus on:

- How families understand and how well schools convey the value of Algebra I as a gateway course, placement policies, advanced mathematics pathways and the significance of each pathway for attaining various career goals.
- Effective family engagement strategies for multilingual and multicultural families in increasing enrollment and success in Algebra I, advanced mathematics coursework and college preparatory pathways.
- The assets, knowledge and forms of cultural wealth that Latino and English learner families bring to mathematics learning.
- The design of efficacious approaches to integrate the assets, knowledge and forms of cultural wealth that families bring into instructional materials, pedagogy, etc.
- The role of family, community and cultural assets in shaping mathematics achievement and persistence among Latino students and English learners, including where these experiences overlap and where they diverge.

Early Mathematics Curriculum

For students to succeed in Algebra I and subsequent courses, they must have established a solid foundation in mathematics. Inequities in the preparation students receive often emerge long before students enter middle or high school. Future research should focus on:

- How access to high-quality mathematics instruction in elementary and middle school influences later Algebra I participation and success.
- The adequacy of teacher preparation (both pre-service and in-service) for rigorous, culturally and linguistically responsive early mathematics instruction.
- The extent to which elementary and middle school mathematics instructional practices, curricula, and scope and sequence incorporate culturally and linguistically responsive practices for Latino students and English learners.
- Early indicators that predict successful progression into advanced mathematics pathways.
- The role of bilingual and dual-language instructional models in developing mathematical understanding.
- Longitudinal studies that follow students from elementary school through college to better understand when and how opportunity gaps emerge across the entire mathematics pipeline.
- Longitudinal studies that focus on how trajectories and outcomes deviate for English learners starting in elementary school.

Community-Based and Asset-Oriented Approaches

While much of the research focuses on schools and policy systems, less attention has been paid to the strengths, resources and expertise within communities and the role of community-based organizations in supporting mathematics learning. Future research could investigate:

- How community-based organizations support mathematics learning by building on students' cultural wealth, multilingualism, lived experiences and community knowledge.
- The impact of out-of-school learning opportunities, including after-school programs, mentoring initiatives and community-based STEM experiences.
- Strategies that connect mathematics learning to real-world community issues, students' lived experiences, and the social and navigational capital available within families and communities.
- Effective partnerships among schools, community-based organizations, institutions of higher education and families that strengthen mathematics pathways and expand opportunities for Latino students and English learners.
- How community-based organizations serve as trusted intermediaries, advocates and resource hubs that help students and families access and persist in mathematics and STEM opportunities.



Conclusion

To ensure policies are effective in expanding equitable access to mathematics pathways and supporting student success, they must be informed by research on the experiences, opportunities and barriers facing Latino students and English learners. Research plays a critical role in shaping policies that influence students' access to and success in mathematics pathways. The four reports at the center of this math policy project point to a common conclusion: Supporting Latino students and English learners in realizing their full potential in mathematics requires more than increasing access to Algebra I. Success depends on how students are identified for advanced coursework, the supports they receive once enrolled, the quality of instruction they experience, and the extent to which policies recognize and build upon their linguistic, cultural and community assets. Together, the studies demonstrate that mathematics pathways are shaped by decisions made across multiple levels of the education system, from classroom practices and district placement policies to state accountability systems and postsecondary course structures.

While important progress has been made in understanding the Algebra I-to-STEM pipeline, significant questions remain about the effects of emerging technologies, the role of community-based supports, family engagement, early mathematics learning, the influence of early mathematics experiences and the policies that best promote equitable outcomes across different educational settings. The evidence suggests that equitable mathematics pathways are most likely to emerge when access is paired with meaningful supports and placement systems rely on multiple measures rather than narrow indicators. At the same time, the research highlights the importance

of engaging families, communities and community-based organizations as partners in supporting mathematics achievement and long-term STEM participation. Policymakers, educators, researchers and community leaders can help ensure that mathematics serves as a pathway to college, careers and economic mobility rather than a barrier to them by centering student strengths, mathematics pathways and opportunities. The research gaps identified in this agenda highlight important opportunities for future policy development. These gaps have direct implications for how states, districts, higher education institutions and community-based organizations design equitable mathematics pathways and systems. As policymakers consider new reforms, ongoing research can help identify which strategies effectively expand opportunity, strengthen achievement and increase participation in STEM pathways for Latino and English learner students.

Ultimately, the research reviewed in this agenda informs many of the policy priorities identified in the UnidosUS Math Policy Agenda. The evidence suggests that expanding opportunity in mathematics requires coordinated action across course placement, pathway design, instructional quality, student supports, family engagement and accountability systems. As states continue modernizing mathematics pathways and preparing students for an increasingly technology-driven economy, research can help ensure that reforms expand rather than restrict opportunity. By aligning policy decisions with evidence and centering the experiences and strengths of Latino students and English learners, education systems can create mathematics pathways that prepare more students for postsecondary success, STEM participation and economic mobility.



UnidosUS Math Policy Project Research Summaries

	San Diego State University, California State University Fresno Zahner et al.	Council of the Great City Schools Lai et al.	West Ed Chu et al.	UnidosUS Delgado
Dimension	Fostering Student Success in Algebra I: Themes from a Scoping Review Focused on Latinx Students and English Learners	Advancing Algebra I Success by Grade Nine: Barriers and Promising Practices for Latino and English Learner Students	Quality Algebra Learning for English Learners and Latinos: A Scan of State Outcomes and Initiatives	Opening the Gate: Literature Review on Algebra and College Math Access for Latino Students and English Learners
Primary Purpose	Map the post-2015 research landscape on policies, school structures and instructional practices that affect Algebra I opportunities and outcomes for Latinos and English learners and identify themes and gaps relevant to policy and practice.	Understand how large urban districts structure access, placement and completion of Algebra I/ Integrated Math I by grade nine for English learner and Latino students and surface system-level barriers and levers for improvement.	Scan state-level outcomes and initiatives related to algebra learning for English learners and Latinos and articulate principles of “quality learning” situated within an ecological framework.	Synthesize research (2010-2025) on two key junctures in the mathematics pipeline where policy decisions are especially consequential for Latino students and English learners: 1) eighth grade Algebra I placement and secondary pathways, and 2) college entry-level mathematics, including remedial/developmental and gateway courses like Math 101/corequisite models. It examines how tracking, sorting, resource inequities, policy reforms, language demands and cultural factors interact across K-16 to shape opportunities and outcomes.
Population Focus	Historically marginalized secondary mathematics learners with emphasis on Latino students and English learner/ multilingual learners; also touches on Black students and other minoritized groups.	Latino students and English learners in large urban districts; attention to how these overlapping but distinct groups experience Algebra I access and completion.	English learners and Latino students in grades six through twelve nationally, attending to diversity within each group (e.g., proficiency, documentation, status, migration, race/ethnicity, schooling histories).	Latino students and English learners, including subgroups (e.g., white Latino, non-Black Latino, Black Latino) and language-minority students more broadly. Focuses on how race, class and language status intersect in mathematics placement, repetition and advancement.
Core Research Questions	- Which grade nine mathematics placement policies and pathways are associated with broad student access? - Which school-level structures (e.g., scheduling, supports, advising, remediation/ corequisite structures) support achievement and progression? - How do culturally and linguistically responsive instructional practices support learning, participation and persistence? - How do policies, structures and instruction interact in gateway courses like Algebra I?	- 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 nine? - 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 nine?	- What principles define “quality algebra learning” for English learners and Latinos? - To what extent are state education agencies (SEA) initiatives aligned with those principles through initiatives and investments? - How do demographic shifts and National Assessment of Education Progress (NAEP) outcomes contextualize these efforts?	- How do tracking and placement practices across secondary and postsecondary mathematics pathways produce or mitigate systemic inequities for Latino students and English learners? - What are the effects of major mathematics policy reforms on this population? - How do identity, culture and language shape student experiences of Algebra I and gateway college mathematics? - How do teacher distribution and instructional resources contribute to or alleviate inequities?

UnidosUS Math Policy Project Research Summaries

	San Diego State University, California State University Fresno Zahner et al.	Council of the Great City Schools Lai et al.	West Ed Chu et al.	UnidosUS Delgado
Methods: Data Sources	Systematic scoping review using ERIC and Scopus; search define strings combining algebra/secondary mathematics topics, English learner/multilingual/Latino terms, and secondary settings; 1867 records identified, 88 studies included after screening.	Council key performance indicator (KPI) data on Algebra I/Integrated Math I completion; prior Council district program review reports; district survey responses; focus groups and working groups; interviews with leaders and staff in mathematics, English learner services, counseling, placement, advising and student supports.	Document and initiative scan of SEAs; analysis of NAEP mathematics trends; demographic data (Digest of Education Statistics); design includes sample SEA snapshots (e.g., District of Columbia [DC] Office of the State Superintendent of Education [OSSE], New York State Education Department [NYSED]) and an appendix on NAEP mathematics trends.	Systematic coding and analysis of peer-reviewed and policy research across multiple states and policy contexts (2010-2025), including quantitative evaluations of reforms (e.g., early algebra acceleration policies, Education Value-Added Assessment System [EVAAS] placement, double-dose algebra, development-education reforms), studies of student experiences and identities, and syntheses on teacher preparation for English learners.
Methods: Analytic Approach	Structured evidence table (e.g., focus, populations, context, methods, theoretical framework, findings, implications); inductive coding into categories (e.g., policies, school structures, pedagogy, other); thematic analysis using sensitizing concepts from prior English learners/mathematics syntheses.	Thematic analysis of KPI patterns and qualitative data to identify variation in completion rates, barriers (e.g., language-readiness conflation) and systemic features (e.g., placement criteria, supports, counseling data).	Ecological framing: links classroom pedagogy, materials, professional learning and systems; uses five “quality learning” principles as analytic lens; examines differences in NAEP outcomes for English learners and Latinos by state.	Literature banking; inductive and deductive coding on literature; thematic analysis of different dimensions of the Algebra I-to-STEM pipeline.
Findings: Policies and Placement	Early access to Algebra I (e.g., eighth grade) increases odds of advanced mathematics and strengthens belonging, especially for English learners and Black students, but inequitable placement and representation can blunt these benefits. Achievement-based, transparent rules reduce racial and income effects on placement compared to subjective recommendations influenced by deficit beliefs. High repetition rates with limited improvement reveal flaws in “repeat the course” policy approaches.	English learner completion rates by grade nine vary dramatically (1.4%-100%, median 61.4%), with many districts below 50%; there is similar variation for Latino students, indicating that district systems are central. Placement criteria are inconsistently implemented and overly subjective; English proficiency is often used as a proxy for mathematics readiness, leading to delayed or misaligned placements, especially for newcomers and students educated in other languages/countries.	States differ in how explicitly their policies target Algebra I access and quality learning for English learners and Latinos; some have more coherent guidance and investments, while others rely on generic mathematics or English learner policies with limited attention to Algebra I as a gateway. NAEP trends show that states with stronger, aligned efforts sometimes have better or improving outcomes for English learners and Latinos, while others stagnate, suggesting policy design matters.	Latino and English learner students enroll in Algebra I at much lower rates than white peers and are more likely to repeat Algebra I in ninth grade even after passing it in eighth grade, leading to “curricular disruption” and being knocked off accelerated tracks. Racially segregated, under-resourced schools concentrate students of color, low-income students and English learners in lower tracks, while white and affluent students access better-resourced, college prep pathways. At the high school-to-college transition, misalignment between high school “college readiness” and community college placement leads many Latino and English learner students into unnecessary remedial mathematics, creating a “math trap” characterized by repeated levels and little upward movement. Overall, placement practices across middle school, high school, and college systematically advantage white, affluent, English-proficient students and disproportionately hold Latino and English learner students in lower tracks and redundant coursework.

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Findings: School Structures and Supports	Hierarchical sequences and tracking disproportionately place long-term English learners and minoritized students in lower tracks, limiting access to advanced mathematics and college eligibility. Structural supports (e.g., summer interventions, extra college-readiness math, dual language programs, integrated curricula, accommodations) help but often remain fragmented or insufficient. Teacher race/ethnicity and dual certification are associated with higher student scores and advanced course-taking; unstructured co-teaching arrangements and deficit-oriented parent engagement views undermine support.	Algebra I completion by grade nine is downstream of earlier structural decisions: middle school pathways, availability of prealgebra and accelerated options, eighth grade Algebra I offerings, transition planning, and bridge programs. Access policies that don't build in corequisite supports, tutoring, double-dose courses, bilingual supports or language-integrated mathematics instruction may increase enrollment without improving completion. Counseling capacity, preparation and caseloads, plus limited data infrastructure, constrain the system's ability to guide students and monitor pathways.	At the state level, investments are uneven across teacher practice, instructional materials and professional learning aligned with the five principles. Some SEAs support integrated language-mathematics guidance and discourse-based instruction, while others focus mainly on test prep or generic mathematics professional development (PD). Many states are still catching up to rapid demographic shifts, with systemic capacity not matching the growth in secondary English learner and Latino populations.	Structures such as accelerated sequences, repeat course policies and developmental education requirements often expand access without enough support, producing mixed or negative effects for Latino and English learner students in low-capacity schools and colleges. In contrast, support-rich models like double-dose algebra, corequisite statistics and equity-minded dual-credit programs improve course completion, GPA, graduation and time to degree without separating students into inequitable learning tracks. College systems that rely only on placement tests overassign Latino and English learner students to remediation, while transcript-based and multiple-measures placement approaches are more promising but must be carefully designed to prevent new forms of tracking.
Findings: Pedagogy and Classroom Practice	Culturally and linguistically responsive practices (e.g., translanguageing, multimodal representations, community-based contexts, everyday academic language connections) support strong algebraic reasoning and sensemaking for multilingual students. Discourse-rich environments (e.g., accountable talk, small group inquiry, whole-class discussions, mathematical language routines) expand opportunities to explain, justify and generalize. Humanizing, identity-affirming pedagogy and dignity-centered relationships increase persistence, particularly for Black and Latino students and multilingual learners.	Access without aligned instructional supports (e.g., language development integrated with rigorous mathematics, bilingual/home language resources, co-teaching that is collaborative, bridge programs) is insufficient; pedagogy that treats language as central, not peripheral, is necessary to translate increased enrollment into successful completion.	Five principles are proposed as a blueprint for classroom practice in algebra. Principle 1: rigor in ideas/practices; Principle 2: purposeful focus on language for learning math (e.g., integrated modalities, genres, symbol systems, technical vocabulary); Principle 3: participation that moves from belonging to agency via sustained, reciprocal discourse; Principle 4: pedagogy that affirms identities and connects mathematics to futures; Principle 5: critical awareness using mathematics to analyze inequities and sociopolitical contexts.	Many mainstream mathematics teachers have limited preparation for teaching English learners; generic certification is insufficient. When teachers are supported to enact culturally and linguistically responsive pedagogy, both English learners and English-proficient peers show larger gains in prealgebra skills and academic vocabulary. This suggests that gateway courses must integrate rigorous mathematics with deliberate language and identity-affirming practices rather than treating language as peripheral or a prerequisite.

UnidosUS Math Policy Project Research Summaries

	San Diego State University, California State University Fresno Zahner et al.	Council of the Great City Schools Lai et al.	West Ed Chu et al.	UnidosUS Delgado
Findings: Identity, Belonging and Agency	Placement and tracking decisions shape students' mathematical identities and sense of belonging; underrepresentation in advanced classes dampens belonging for minoritized students even when they access higher-level coursework. Cases like Leyla (<i>transfronteriza</i> student) show how language and credit structures can constrain identity development and opportunity. Humanizing, autonomy-supportive environments (e.g., "homeplace" classrooms) and collective responsibility strengthen identities and engagement.	English learners and Latinos encounter both racial/ethnic and language-based barriers; when systems equate language proficiency with readiness or isolate English learners in non-credit or misaligned mathematics pathways, belonging and agency are undermined. Effective counseling and family engagement can support students to understand pathways and advocate for themselves, but current capacity is limited.	Belonging is framed as an environmental condition, not just an individual feeling; quality interactions (e.g., sustained, reciprocal discourse) are central to building both belonging and agency. Identity-affirming pedagogy is explicitly tied to long-term futures (e.g., college, careers, civic participation), positioning English learners and Latinos as capable mathematicians and change agents.	Student identity, culture and language are central to how Latino and English learner students experience Algebra I and remedial/gateway mathematics. Belonging, family context and cultural capital shape whether students see themselves as capable mathematicians and whether they persist in advanced pathways. Policies and practices that ignore or undermine these dimensions reinforce alienation and self-doubt; those that affirm identity and leverage cultural/community wealth can strengthen engagement and agency. Linguistically responsive, culturally sustaining instruction helps reposition English learners from "not ready" to capable participants.
Findings: Assessment and Data	Literature documents that English-medium assessments can obscure multilingual learners' mathematical understanding and reinforce lower placements; integrated assessment and accommodations are key. The review calls for more diverse evidence (beyond small qualitative case studies) to inform policy and system redesign.	Many districts lack robust data systems to track who accesses Algebra I by grade nine, who completes, who repeats, who advances, and where barriers emerge by subgroup; accountability is diffused. English-heavy placement tests and cut scores drive inequities when not balanced with multiple measures and opportunities to demonstrate mathematics knowledge beyond English proficiency.	At the NAEP level, trends show differentiated performance for English learners and Latinos across states; the report suggests coupling outcome data with nuanced understanding of state initiatives to interpret patterns. The authors argue for using data to inform ecological interventions rather than isolated technical fixes.	Placement tests and traditional cut-score systems overassign Latino and English learner students to remediation and repeat courses, even when transcripts and prior performance suggest readiness. Across high school and college, many students, especially Latino, never advance beyond the highest mathematics level they reached in high school. This review argues for multiple-measures placement (e.g., grades, coursework, predictive indicators), transcript-based approaches, and careful monitoring of who repeats, stalls, or advances, by race and language status.
Implications: Policy Levers	Adopt transparent, achievement-based placement rules that minimize bias; treat Algebra I as a gateway but ensure support; address tracking and course repetition policies; invest in dual-certified teachers and equity-focused professional learning; and redesign policies with attention to language, identity and power.	Set Algebra I by grade nine as a default expectation while reworking readiness criteria to separate English proficiency from mathematics knowledge, build robust prealgebra and middle-school pathways, integrate corequisite supports and bilingual resources, expand counseling capacity, and strengthen data systems and family communication about mathematics pathways and stakes.	Encourage SEAs to embed the five principles into standards, curricula and English learner guidance; align initiatives across teacher pedagogy, materials and PD; plan for demographic realities (e.g., rapid growth of secondary English learners and Latinos); and use NAEP and other data to evaluate and refine systemic efforts.	Use multiple measures and transparent placement with safeguards to support balanced enrollment and equitable outcomes while enabling the monitoring of racial and linguistic gaps. Pair broader access to early Algebra I and gateway mathematics access with funded supports. Ensure gateway courses are taught by teachers prepared in culturally and linguistically responsive mathematics. Shift accountability to track who enrolls in, repeats, and completes these courses by subgroup and use those data to disrupt tracking.

UnidosUS Math Policy Project Research Summaries

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Implications: Practice and Research	Promote classroom designs that foreground multilingual resources, discourse and humanizing pedagogy; conduct more large-scale mixed-methods studies that connect classroom practice to system-level outcomes; and continue developing mathematics language routines and trajectories that account for linguistic diversity.	For practice: Build corequisite and language integrated supports into Algebra I, and train counselors and teachers on English learner/Latino mathematics pathways. For research: Examine how specific district placement and support models impact subgroup outcomes over time.	For practice: Use the five principles as a planning tool at classroom, school and district levels, and design PD that helps teachers operationalize rigor, language, identity and critical awareness in algebra units. For research: Deepen SEA-level case studies to understand how policy configurations translate into NAEP and other outcomes.	For practice: Use multiple measures placement, build corequisite and double-dose supports that integrate language and rigor, and staff gateway math with teachers prepared to teach English learners. For research: Design causal and implementation studies that center Latino/English learners, explain why similar policies have different effects, and pinpoint the practices and supports that help these students succeed in Algebra I and gateway mathematics courses.

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About UnidosUS

UnidosUS is a nonprofit, nonpartisan organization that serves as the nation's largest Hispanic civil rights and advocacy organization. Since 1968, we have built a stronger America by creating opportunities for Latinos and breaking down barriers to expand economic and social progress for all. UnidosUS partners with an Affiliate Network of nearly 300 community-based organizations across the United States and Puerto Rico. For more information on UnidosUS, visit www.unidosus.org or follow us on Facebook, Instagram, LinkedIn, X and Threads.

About the Math Policy Project

The Math Policy Project responds to a national imperative: For over a decade, U.S. students have experienced historic declines in mathematics achievement, which have disproportionately affected Latino students, English learners, and students from low-income backgrounds, underscoring the urgent need for a coherent, research-informed policy response.

Goal: The UnidosUS Math Policy Project seeks to advance a research-informed policy agenda to improve student success rates in Algebra I by the

ninth grade and college-level Math 101 during the freshman year, with a special focus on solutions that are effective for Latino students and English learners.

UnidosUS launched the Math Policy Project to explore how Latino students and English learners experience the Algebra I-to-STEM pipeline. The initiative focuses on understanding the policies, practices and institutional conditions that influence students' progression through secondary mathematics, postsecondary gateway courses, and ultimately STEM-related educational and career pathways. UnidosUS is uniquely positioned to address this crisis by combining its expertise in policy research, advocacy and community partnership. The project involves commissioning high-quality research that identifies effective strategies and policies and developing a research and policy agenda.

This research agenda was made possible with the support of the following collaborators: Gina Delgado, Ed.D., senior program manager, Latino Knowledge Lab; Lina Lenis, policy analyst, K-12, Education Policy; Viviana López Green, senior director, Latino Knowledge Lab; and members of the Marketing and Communications staff.



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