

Emerging Solutions

Accelerating Equitable Mathematics Success Deep in the Heart of Texas



Dana Center
Mathematics
PATHWAYS



The University of Texas at Austin
Charles A. Dana Center

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Introduction

In the United States, mathematics is a barrier that prevents many students from reaching their educational goals. Research shows that math is a significant contributor to education equity gaps.¹ Students have differential access to quality math curricula and quality teachers, and the mathematics course sequences traditionally offered in schools and colleges fail to serve most students. Too often, mathematics serves as a gatekeeper that negatively affects primarily students who are Black, Latinx, or Indigenous, or who come from low-income backgrounds.

For three decades, the Charles A. Dana Center at The University of Texas at Austin has exposed the failures of mathematics education in the United States and worked to urgently strengthen and modernize mathematics, with a sharp focus on increasing equity. The Dana Center has led numerous initiatives to dismantle barriers to math achievement while implementing and scaling innovations to increase math equity and success.

In 2018, the Dana Center, with funding from the Greater Texas Foundation, piloted the *MathEquity Texas* initiative, which brought together leaders from across the state to expand and accelerate mathematics equity efforts. In over 18 months, the group participated in collective activities designed to encourage and support their individual efforts toward equity. Since inequities in mathematics access and success are not specific to Texas but are common nationwide, the purpose and approach of the initiative are relevant broadly. Thus, with the aim of informing additional, aligned efforts, this brief describes the initiative's process and shares perspectives from participants.

MathEquity Texas

Equity scholars have described some steps and necessary conditions to enact more equitable practices and policies.² For example, open conversations are important to the process of revealing, acknowledging, and addressing inequities. Data should be used in facilitating those conversations on different dimensions of equity with stakeholders who are situated at different levels of education systems and institutions. Adopting “equity mindedness” requires recognizing that inequities are a result of practices or policies that can be changed. Equity-minded leaders of education institutions view racial and ethnic inequities as their responsibility and accept accountability for the success of their students.



The Dana Center designed MathEquity Texas to promote data-informed conversations that would lead to changes in practices and policies. The Center invited a diverse group of leaders with influence and authority in their respective organizations and regions. The 20 individuals included representatives from K–12 districts, such as superintendents and district math coordinators; postsecondary institutions, such as college presidents, math department chairs, and math faculty; and philanthropic and community organizations.³ They were invited to meet virtually and in person to:

- Learn from research on the role of mathematics in education equity in both K–12 and higher education;
- Commit to putting learning into action within their institutions to revise, expand, or accelerate existing efforts; and
- Make their work public to inspire and influence others to take action.

Although participants may have been working to address inequities in their own institutions, the initiative provided them dedicated time and an environment in which to learn, hear from others doing similar work, and be supported and encouraged in advancing their equity goals in their institutions. These leaders were asked to not only make bold commitments to address disparities, but also to publicize their pledges in order to compel others to take action. Throughout the initiative, the participants were held accountable for their efforts as part of a community of educators sharing their struggles and successes.

Preparation for the in-person convening included reading selected articles on equity and attending a webinar to learn more about the initiative, build community with other participants, and learn from expert Pamela Burdman, the author of *The Mathematics of Opportunity: Rethinking the Role of Math in Educational Equity*. Burdman described some common misperceptions about math, such as:

- Math ability is innate: Only some people are good at math.
- There is a right way to do math: It lacks creativity or expression.
- Speed and acceleration matter: Process and depth are secondary.

The origin of MathEquity is the belief that if we can bring education leaders together and get this core group to commit in some way to deepening their pursuit of equity in their work. They can go back and use their authority to guide actionable change in their own organizations based on that commitment and also be a voice in the state.

Leslie Gurrola
Director of Programs and Strategy
Greater Texas Foundation

Participants learned about the dimensions of math—content, instruction, and assessment—that should be reconsidered and redesigned from an equity perspective. Their learning continued in the two-day, in-person meeting where they explored biases and inequities, analyzed data, and engaged in role-alike affinity groups.

In the session facilitated by Dr. Nicole Joseph, an assistant professor of mathematics education at Vanderbilt University, participants examined issues of individual and institutional biases that perpetuate inequities and how reducing inequities requires shifting power, resources, or opportunities to undersupported and minoritized groups. They shared challenges within their organizations and communities, such as resistance to talking about equity or a lack of availability of the disaggregated data that can reveal disparities in access and outcomes. Even when such data were available, there were still challenges in reviewing them with others in a nonconfrontational way.

In another session, participants reviewed their own institutional data as well as selected statewide data on students' college readiness in math. This data "snapshot" was disaggregated by race, ethnicity, and income. The Dana Center staff asked the following questions: What equity questions do these data raise? How are the disparities shown related to Texas college readiness policies? How do such policies act as structural barriers to equitable opportunities? These questions grounded participants in the goals of the convening while connecting directly to the pre-reading described above.

The convening also included sessions where individuals met in subgroups of policymakers (presidents, superintendents), practitioners (K–12 faculty, higher education faculty), and philanthropists. These role-alike subgroups shared, discussed, and refined their commitments. Participants appreciated the opportunity to hear from those in similar as well as in different roles and situations. Tony Martinez, who represented a K–12 district said, "We had people who were talking about issues not only at the classroom or practitioner level, but also at the agency level, statewide policy level, and higher ed level. It's something to continue to do, to bring all those stakeholders together, so that everyone is heard. Again, one of the most valuable things from the convening is that I heard from everyone." Hearing perspectives from different levels also helped to lay bare the structural barriers that students face at each level of education and in transitioning between them.

The culmination was the public commitments made by participants. As one attendee described it, "Each of us stood up and read our commitments, and we went and put them on the wall and we cheered for one another! It ended up in this really wonderful climax of people declaring these commitments and cheering one another along." While the verbal declarations were the highlight of the convening, the intention was to emphasize that the work for equity would continue to build.



After the in-person meeting, the role-alike affinity groups met virtually on a regular basis to share progress, setbacks, and potential next steps or solutions. They also consulted with the Dana Center staff for continued community, support, and problem solving. As one participant noted, the subsequent three meetings also served to hold the participants accountable for carrying out their commitments. Another participant described the follow-up calls as “very, very fruitful.” While individuals were attempting different approaches to improve equity in a variety of settings, they still recognized commonalities and felt community with one another. Martinez shared, “What did affect me was that, after each one of those meetings, you had that convening feeling—‘We’re in this together’ and ‘It’s a struggle, it’s not easy, but we’re each trying to do our small part.’”

During this period, the COVID-19 pandemic struck. While attention understandably shifted to responding to the immediate needs of their institutions and students in crisis, many members of the initiative quickly realized how the equity issues they were trying to solve were exacerbated. In the final round of follow-up calls, participants shared how the pandemic opened their eyes even further to inequities (e.g., access to technology for virtual learning) and to the actions that needed to be taken to eliminate them.

Selected Commitments

Each member of the MathEquity Texas community identified concrete actions to which they would commit themselves in the 2019–2020 academic year. The following selected commitments provide examples of how a member of each role-alike subgroup experienced that process of taking action toward their commitment.

Practice: Equity in classroom instruction

I commit to focus on pedagogical content knowledge (PCK) and its importance for credentialing new 2-year college mathematics faculty and in the professional development of current 2-year college mathematics faculty.

– Lucy H. Michal, Ph.D., El Paso Community College

Faculty members at El Paso Community College wrestled with the question “What does equity look like in the classroom?” Dr. Lucy Michal, a research projects assistant and former math faculty member, attended the MathEquity Texas convening to help answer this question. She returned to the college with a commitment to help faculty implement more equitable instructional practices. She knew that, while faculty were hired because of their expertise and knowledge, they had not necessarily learned the pedagogical and relational practices that can create a more equitable learning experience for students.

Dr. Michal recruited faculty for a new effort, designating it a “working group” to indicate to participants that they were expected to take actions and produce something tangible: a change in classroom practice. Their actions would be informed and inspired by research literature on equitable classroom pedagogy and interventions that have shown success in addressing inequities. The faculty working group met for two hours every three weeks over the course of a semester; each time, they were assigned a research article to read and were expected to post a reflection and engage in discussions.⁴ To demonstrate the college administration’s commitment to the endeavor, faculty participants were given one credit hour of release time.

The working group continues to meet every semester with new members. Faculty who participated are also mentoring other faculty who would like to learn more about equitable pedagogy but who cannot commit to be in the working group for an entire semester.



Dr. Michal reflected, “An understanding of equity really does take time to evolve and the understanding is something we can all work towards, but it’s critical that we have conversations around it. Every time you plan your next lesson, your assessment, you think about the students who are not engaged in the classroom, and you think about equity.” Notably, this effort also supports equitable faculty hiring and evaluation processes in including teaching practices in these considerations.

Policy: Equity in access to advanced math courses

I commit to review and change the process by which we identify students for accelerated math courses to actively seek and include underrepresented populations.

– Tony Martinez, Secondary Mathematics Coordinator,
Leander Independent School District

For many years in Leander ISD in Central Texas, tracking into advanced math courses began in the 2nd grade. The aim of the Programs for Advancement, Challenge, and Enrichment (PACE) Math was to start early to prepare students to take Algebra 1 in the 8th grade, making their later high school years available for Advanced Placement math courses. Enrollment in PACE was based on a screening test.

There are many research-based arguments for eliminating tracking in math⁵ and, in the case of Leander ISD, a program evaluation showed patterns of inequities by race and ethnicity in advanced math course taking. In addition, the district did not find that early acceleration consistently led to AP or other advanced math courses in the 11th and 12th grades; indeed, many students were not taking any math in their senior year, an unintended negative consequence of meeting all of their math requirements early.

Working with a coalition of elementary school principals and teachers, the district began planning a change process that would eliminate PACE one grade at a time starting in 2nd grade, leaving 5th grade as the starting point. They also sought to eliminate the screening test and to assess students more holistically for PACE. According to Martinez, “We knew that it would be a major effort to change people’s perceptions and minds here.” As the

group began broader communications about the proposed changes, the COVID-19 pandemic hit. Consequently, the school district was unable to administer the screening test, necessitating the use of other multiple measures to assess students. The district recommended that schools use students' grades, previous state and local assessment data, and other measures, as well as input from teachers and parents, to make placement decisions.

PACE now begins in the 3rd grade, bringing the district closer to its goal of eliminating tracking in mathematics. The school district continues its efforts to delay tracking start until 5th grade. Martinez noted that a serious negative consequence of designating some students as “advanced” so early is the production of mindset differences: “Students think of themselves as ‘good at math’ and ‘not good at math’—in elementary school! This needs to stop. If a student develops that mindset at an early age, we’re beat.”

Philanthropy: Communicating the priority of equity

I commit to using effective approaches to communicating and storytelling to amplify the voices of diverse students and education leaders and advocates to influence the narrative on addressing inequities in student success in Texas.

– Leslie Gurrola, Director of Programs and Strategy,
Greater Texas Foundation

Equity is one of the core values of Greater Texas Foundation.⁶ Although it is more common to see calls for equity now than it was 10 years ago, there are still often questions about what it means to pursue equity, and it is clear from the data on student outcomes that there is more work to do. It is important to continue to unpack the structures that create inequities, and it is critical to be vocal about equity as an ultimate aim—both of which occurred through the MathEquity Texas initiative.

For years, the foundation has had the goal of ensuring that students are on the right math pathway for their education and career goals, and that mathematics does not become a barrier to those goals. However, in examining data, it became clear that simply creating more and better opportunities for students in math does not necessarily eliminate inequities. Attention needs to be paid to who can take advantage of those opportunities, and how. Thus, funders like Greater Texas Foundation are stating more strongly that the work they support should improve outcomes equitably for students rather than exacerbating existing opportunity gaps.

Ms. Gurrola's commitment, similar to those of the other funders who participated in MathEquity Texas, is to use the foundation's communications tools and grantmaking to support opportunities to positively impact students' experiences. Ms. Gurrola added, “I think funders are playing an important role in pushing on that and making sure it stays a focus of the work.”

Lessons from MathEquity Texas

There are always challenges to pathbreaking work. While the participants in MathEquity Texas were positive about the experience and their efforts, they acknowledged that the work was neither smooth nor easy. Several mentioned questions of scale, that they wondered whether their targeted attempts at change would make a difference, or how they could increase their impact. One participant expressed it as a challenge of his limited sphere of influence: “What can I do?” Another individual described her “equity conflict” as whether to advocate for the appropriate steps for students to take in the current context or to reimagine the traditional goalposts of success. In general, participants expressed that, given competing priorities and expectations, and others' resistance to change, working to increase equity takes more time than they imagined.

The experiences and outcomes of MathEquity Texas reiterate the themes found in the literature on productive equity work.

The importance of working on equity as part of a community

As with most complex and difficult endeavors, collaboration is key. As one school district superintendent said, “There’s power in collaboration”—one gains resources and support for one’s efforts. MathEquity Texas created a community for the participants to learn together as well as from one another, and they were able to give and receive encouragement and inspiration.

As the initiative concluded, Mario Morin, chair of the South Texas College math department, said, “It was very motivating to see everyone’s passion in addressing this issue and it was wonderful to have made everyone’s acquaintance and to share our stories and support for one another! Texas is a very big state and as far apart as we sometimes are, we’re still connected and united in spirit.”

Acknowledgments

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Endnotes

¹ Burdman, P. (2018). *The mathematics of opportunity: Rethinking the role of math in educational equity*. <https://justequations.org/wp-content/uploads/je-report-r12-web.pdf>

Charles A. Dana Center at The University of Texas at Austin. (2020). *Launch Years: A new vision for the transition from high school to postsecondary mathematics*. Austin, TX: Author. <https://utdanacenter.org/launchyears>

² Center for Urban Education. (n.d.). <https://cue.usc.edu/about/equity/equity-mindedness/>
Fraga Leahy, F., & Marshall, A. (2019). Mathematics pathways and equity: Considering progress from multiple perspectives. In Hartzler, R., & Blair, R. (Eds.). *Emerging issues in mathematics pathways: Case studies, scans of the field, and recommendations*. Austin, TX: Charles A. Dana Center at The University of Texas at Austin. https://dcmathpathways.org/sites/default/files/resources/2019-04/Emerging-Issues-in-Mathematics-Pathways_Chapter14.pdf

³ A list of participants and their commitments can be found here: <https://www.utdanacenter.org/our-work/higher-education/mathequity-texas>.

⁴ For example: Harackiewicz, J. M., Canning, E. A., Tibbetts, Y., Priniski, S. J., & Hyde, J. S. (2016). Closing achievement gaps with a utility-value intervention: Disentangling race and social class. *Journal of Personality and Social Psychology*, *111*(5), 745–765. <https://doi.org/10.1037/pspp0000075>

⁵ https://www.nctm.org/News-and-Calendar/Messages-from-the-President/Archive/Robert-Q_-Berry-III/Initiating-Critical-Conversations-on-the-Discontinuation-of-Tracking/

⁶ The other core values are collaboration and partnership, innovation, sustainable impact, and integrity. See <https://www.greatertexasfoundation.org/about/vision-mission/>.

About this resource

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About the Dana Center

The Dana Center develops and scales math and science education innovations to support educators, administrators, and policy makers in creating seamless transitions throughout the K-14 system for all students, especially those who have historically been underserved.

We focus in particular on strategies for improving student engagement, motivation, persistence, and achievement.

The Center was founded in 1991 at The University of Texas at Austin. Our staff members have expertise in leadership, literacy, research, program evaluation, mathematics and science education, policy and systemic reform, and services to high-need populations.

For more information about the Dana Center Mathematics Pathways (DCMP), see www.dcmathpathways.org.

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