Accelerating Mathematics Pathways in Deep East Texas

The University of Texas at Austin Charles A. Dana Center

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Overview

Opening New Pathways for Texas Students

Many students in the Deep East Texas region have hopes and dreams of earning a college degree leading to a better life for themselves and their families. All too often, mathematics course completion has been a challenge to achieving those dreams. From misalignment of math courses with students' programs of study to student placement into long developmental sequences, it was clear the system needed to be transformed within and across the educational ecosystem.

With the support of the T.L.L. Temple Foundation, in 2017 the Charles A. Dana Center at The University of Texas at Austin embarked on an initiative to work with 11 higher education institutions and select K–12 partners in Deep East Texas to create better alignment of math courses to students' programs of study through the implementation of multiple mathematics pathways. The "Accelerating Mathematics Pathways in Deep East Texas" project also addressed key transfer and co-requisite issues across these institutions.

Mathematics Pathways: The Right Math at the Right Time for Each Student

Mathematics pathways refer to a course or sequence of courses students take to meet requirements for their programs of study. Mathematics pathways are a rapidly growing national movement in colleges and universities to align math courses more closely to students' intended majors and future careers—particularly in accelerating underprepared students' entry into credit–bearing coursework.

The Dana Center Mathematics Pathways (DCMP) began in 2013 and, to date, has conducted extensive work in more than 30 states. Its primary goal is to accelerate students' successful completion of their first college-level mathematics course during their first year while maintaining the academic rigor of those curricula.

DCMP also supports the use of "co-requisite" models of instruction for students who have been designated as underprepared. In a co-requisite model, students enroll directly in college-level courses and receive support through a concurrent course, lab, or tutoring program. When thoughtfully designed and carefully implemented, co-requisite support has been shown to substantially increase students' completion of credit-bearing, college-level courses.

Defining the Issue

The Critical Need for Cross-Institutional Alignment

Student completion of gateway mathematics courses has been particularly challenging for colleges and universities in many states and regions, including Deep East Texas.

In fact, according to Texas Education Agency measures, 68 percent of high school seniors were deemed not ready for college mathematics. Therefore, an overwhelming number of students were referred to developmental math courses when beginning college. First college-level math course completion rates for first-time-in-college students were lower at most institutions in this region compared to Texas community colleges overall.

When the Dana Center began the project with participating institutions, engagement in mathematics pathways work varied across Deep East Texas, with expertise existing in pockets on different campuses. Further, Texas House Bill 2223 was passed in 2017, mandating all Texas public higher education institutions to develop and implement co-requisite models for developmental education by fall 2020. At the time, there were also different levels of collaboration on key issues impacting students, such as transfer and applicability.

For these reasons, at the outset, the Center focused on building strong relationships and fostering conversations to create deeper collaboration and shared understanding across the participating institutions.

Deep East Texas Region Collaborators

From October 2017 through December 2019, the Dana Center worked with 11 colleges and universities to create more seamless alignment. These institutions included:

- Angelina College
- Kilgore College
- Lamar Institute of Technology
- Lamar State College—Orange
- Lamar State College—Port Arthur
- Lamar University
- Lee College
- Panola College
- Stephen F. Austin State University
- Texarkana College
- Texas A&M University—Texarkana





Elements for Success

A Comprehensive Approach to Change

Focusing on collaboration allowed the work to begin to better align mathematics courses within and across the institutions and to implement continuous improvement processes. The Dana Center supported institutions in delivering high-quality effective mathematics instruction that incorporated evidence-based curriculum and pedagogy central to improving course completion rates. The project focused on multiple strands of work. For a more detailed review of activities for each strand, please download the full report.



Leadership Professional learning on scaling math pathways for campus leaders and faculty



Faculty Capacity Supporting faculty in using accelerated math courses to reduce time to completion of creditbearing courses



Policy Exploring conditions and local policies needed to scale multiple math pathways



Student Advising

Developing tools and resources to advise students on the best pathway aligned for their programs of study



K–12 Transition Fostering collaboration with regional school districts to align transition courses with math pathways



Regional Infrastructure Building the infrastructure to lead math pathways work through developing tools and resources to assist mid-level leaders in change management

Outcomes & Impacts

Substantial Gains for Institutions and Their Students

Through this comprehensive approach, each of the 11 participating institutions in the Deep East Texas region experienced substantial gains in student completion of college-level math courses during the two-and-a-half-year period. Most important, the critical foundation of collaboration needed for successful mathematics pathways had been laid, positioning each institution to better support its students for years to come.

Creating Better Opportunities and Outcomes for Students



100% of the institutions now offer at least three mathematics pathways to meet quantitative core curriculum requirements needed for degree completion. Having

multiple pathways is essential for gateway math course alignment to programs of study and for transfer across institutions.



There was a 116% increase in completion of a collegelevel math course in two years. This increase translates to 633 additional students—who had been

identified as needing a developmental math course—who passed a college-level math course, putting them on the pathway to credential completion.



Long-term relationships formed across institutions to foster ongoing dialogue and

support continuous improvement, particularly around transfer and applicability.



Institutions increased co-requisite course enrollment in two years, from 17 percent in 2017 to 45 percent in 2019, on average.

For more detailed data on each of these successes, as well as individual breakdowns by institution, please download the full report.



Lessons Learned

Applying Key Learnings for Future Work

The Dana Center team guided the 11 participating institutions through essential, and sometimes challenging, work in establishing mathematics pathways. As with all comprehensive change, changing current systems takes time and consistent effort. Through this work in Deep East Texas, we learned several key lessons.

Changes in mathematics requirements are often dependent on university offerings. In doing this work, it is critical for community colleges and universities in a region to work together.

Progress on transfer issues requires partnership. Hosting regular, facilitated in-person meetings with the transfer partners is particularly important. This intentional interaction highlights the value of a regional approach in which transfer partners can more easily meet to resolve issues related to mathematics in programs of study.

Leadership changes impact momentum and innovation in pathways work. Innovation and change management are difficult, particularly when leadership teams change. Facilitating regular contact with the highest-level academic administrator is critical to maintaining momentum over time.

> To download the full report, Accelerating Mathematics Pathways in Deep East Texas, please visit www.utdanacenter.org/our-impact/impact-stories



The University of Texas at Austin Charles A. Dana Center

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