



Vision

All students have equitable access to and the opportunity for success in rigorous mathematics pathways that are aligned and relevant to their future aspirations, propelling them to upward economic and social mobility.

The Dana Center Mathematics Pathways (DCMP) model seeks to ensure that ALL students in higher education will be:

- **Prepared** to use mathematical and quantitative reasoning skills in their careers and personal lives,
- **Enabled** to make timely progress towards completion of a certificate or degree, and
- **Empowered** as mathematical learners.

Goal

By 2020, five states will have at least 75% of public colleges and universities in which the normative practice for how all students enter into and move through mathematics is an accelerated and aligned pathways model.

Four Principles

Institutions implement structural and policy changes quickly and at scale.

Mathematics pathways are structured so that:

1. All students, regardless of college readiness, enter directly into mathematics pathways aligned to their programs of study.
2. Students complete their first college-level mathematics requirement in their first year of college.

Institutions and departments engage in a deliberate and thoughtful process of continuous improvement to ensure high-quality, effective instruction.

Students engage in a high-quality learning experience in mathematics pathways that are designed so that:

3. Strategies to support students as learners are integrated into courses and are aligned across the institution.
4. Instruction incorporates evidence-based curriculum and pedagogy.

Institutional Funding

The DCMP model can help institutions improve retention and realize a return on investment by accelerating students' successful completion of developmental and entry-level mathematics courses, propelling them on a path towards a certificate, degree completion, and transfer.

Transfer and Advocacy

The Dana Center works across regions, systems, and states to align mathematics requirements to programs of study between transfer institutions, using the following strategies:

- Supporting articulation agreements between transfer institutions.
- Organizing and facilitating convenings with institutional leaders to increase communication and coordination on a regional, system- or state-level basis.
- Creating tools and resources to support inter-institutional program alignment.
- Encouraging the state-wide use of aligned entry-level mathematics courses.

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Administrator Supported

Tips from research and the field for the president and senior leadership team to support pathways implementation at scale:

1. Integrate all student success work—this is not just mathematics.

- a. Use mathematics pathways as a catalyzing step towards broader guided pathways.
- b. Tie pathways to the vision, strategic plan, and goals of the institution.
- c. Intentionally integrate accreditation, Achieving the Dream, GPS, and any other institution-wide efforts to support student learning and completion.

2. Establish a cross-functional leadership team to create a coherent student learning experience—this is not just curriculum.

- a. Designate a chair for the team who reports to the president regularly on the progress and obstacles.
- b. Include the institutional research office and student services professionals, along with faculty and academic leaders, from the beginning.
- c. Set a clear charge, permission to act, and timeline.
- d. Implement lead and lag accountability measures around key data points to be incorporated into the dashboard.
- e. Articulate that this work is not just a developmental, mathematics, or curriculum strategy—this is a college-wide effort for improved student learning and completion.

3. Use strategies for successful implementation.

- a. Empower faculty to take leadership roles.
- b. Map academic programs' setting of default mathematics requirements for each program of study (start with top 5 enrollment programs).
- c. Implement appropriate policies and acceleration strategies for early and continuous enrollment for students to complete mathematics requirements in the first year at the institution. Remember: Students do not do optional.
- d. Connect with DCMP regional coordinators, consultants, and staff.
- e. Support integrated professional learning (e.g., conferences; institutes; Dana Center resources, webinars, and workshops).
- f. Plan and allocate resources (time and/or money) and processes for professional learning.
- g. Include student services professionals and advisors as well as faculty in professional learning.
- h. Do not forget about adjunct faculty.
- i. Allow for learning from mistakes and failures.

4. Communicate, communicate, communicate.

- a. Communicate a sense of urgency that incorporates a sense of hope to make a difference in the lives of students.
- b. Develop and implement a communication plan for information to students, faculty, and staff.
- c. Communicate program pathways clearly to students and advisors.
- d. Develop a process to gather input from students, faculty, mid-level administrators, and advisors.
- e. Update the college community on the vision, goals, and progress of the work. Employees want to hear from the president.

Core Services, Support, and Research

	Implementation	Professional Learning	Strategic Collaborations	Advocacy	Curricular Materials
Core Services	<ul style="list-style-type: none"> Invited face-to-face and online learning opportunities Site visits Topical and recurring support webinars Opportunities for regional, system- and state-level mathematics pathways work including: <ul style="list-style-type: none"> Mathematics Pathways to Completion (MPC) project Building Pathways to Programs of Study (BMPPS) project Texas regional scaling coordinators Policy audits and landscape analysis of educational ecosystem: <ul style="list-style-type: none"> Transfer and applicability 	<ul style="list-style-type: none"> Invited face-to-face and online collaborative learning opportunities: <ul style="list-style-type: none"> Pedagogy Curriculum Co-requisite Conferences and special sessions Publications and blogs Support for faculty utilizing Dana Center curriculum: <ul style="list-style-type: none"> Online collegial community for faculty Network of professionals 	<ul style="list-style-type: none"> Achieving the Dream American Association of Community Colleges American Mathematical Association of Two-Year Colleges Complete College America Conference Board of Mathematics Sciences Jobs for the Future Mathematical Association of America Strong Start to Finish Transforming Post-Secondary Education in Mathematics 	<ul style="list-style-type: none"> Dana Center Mathematics Pathways Leadership Fellows program Publications, webinars, and videos Convenings to address emerging issues Transforming Post-Secondary Education in Mathematics Policy and legislative support 	<p>Developmental-level coursework: <i>Foundations of Mathematical Reasoning</i></p> <p>Non-algebraically intensive pathway coursework:</p> <ul style="list-style-type: none"> <i>Quantitative Reasoning</i> <i>Statistical Reasoning</i> <p>STEM-Prep/Pathway to Calculus coursework:</p> <ul style="list-style-type: none"> <i>Reasoning with Functions I</i> <i>Reasoning with Functions II</i> <p>Student Success coursework: <i>Frameworks for Mathematics and Collegiate Learning</i></p> <p>K-12 Transition coursework: 12th grade transition mathematics course</p>
Key Resources	<p>DCMP Resource Site: http://www.dcmathpathways.org</p> <p><i>DCMP Institutional Implementation Guide</i></p> <p><i>Texas Transfer Inventory</i></p>	<p><i>The Case for Mathematics Pathways</i></p> <p><i>Emerging Issues in Mathematics Pathways</i></p>	<p><i>Strategies for Continuous Enrollment in Mathematics Course Sequences</i></p> <p><i>Program of Study Research Briefs: Business, Communication, Criminal Justice, Education, Nursing, Social Work</i></p>	<p>Multidisciplinary discussion tools</p> <p><i>Rigor</i> brief</p>	<p><i>Curriculum Design Standards</i></p> <p><i>Mathematics Prerequisites for Success in Introductory Statistics</i></p> <p>Mathematics Launch Years Toolkit</p>
Evaluation of the Work					
Community College Research Center (CCRC)	<ul style="list-style-type: none"> Work with six states—as a part of the Mathematics Pathways to Completion (MPC) project—to gather baseline student- and college-level data, and conduct qualitative evaluation of what is necessary and sufficient for broadly scaling the DCMP model within a state 				
Dana Center Evaluation	<ul style="list-style-type: none"> Overall project data gathering and internal evaluation of the work: (1) gathering enrollment and completion information on mathematics pathways from Texas colleges; (2) documenting regional, system- and state-level work; and (3) interviewing faculty at colleges with a strong co-requisite implementation 				
Education Research Center (ERC)	<ul style="list-style-type: none"> Evaluation of student-level data at participating colleges using the Texas Higher Education Coordinating Board verified data Analysis includes descriptive statistics on student-level participation and propensity score matching of student outcomes. 				
MDRC	<ul style="list-style-type: none"> A Randomized Control Trial of the Dana Center curriculum and implementation (2015–2019) 				
Shore Research	<ul style="list-style-type: none"> Formative and summative evaluation of STEM-Prep <i>Reasoning with Functions I</i> and <i>Reasoning with Functions II</i> curricula 				
Texas Success Center (TSC)	<ul style="list-style-type: none"> Yearly survey to Texas colleges to gather data on DCMP model implementation 				