

Dana Center  
**Mathematics**  
PATHWAYS

## Michigan Advisor Workshop for Mathematics Pathways

Vanessa Harris and Heather Ortiz

April 13, 2018 AFTERNOON

Jackson, MI



# LUNCH

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At 12:25 pm, be in your breakout rooms:

- Advisors and student affairs staff
- Mathematics faculty

# Communication

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- Why is it so important?
- Delivery of information to...
  - Students
  - Advisors
  - Other stakeholders



# Supporting and Advising Students

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# Advising Theories: Academic Coaching

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## Focus of Coaching

- Major/Career Path
  - Mathematics Course
- Goal-setting
- Motivation
- Academic and Future Planning

# Advising Theories: Advising as Teaching

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- Help the student to identify realistic academic goals and career aspirations by linking them to the student's interest and ability.
- Allow students to think critically about how to approach a given learning task, monitor comprehension, and evaluate progress toward the completion of a task.

# Advising Theories: Appreciative Advising

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## Disarm

Make a positive first impression with the student, build rapport, and create a safe, welcoming space.



## Dream

Inquire about students' hopes and dreams for their futures.



## Deliver

The student delivers on the plan created during the Design phase and the adviser is available to encourage and support students.



## Discover

Ask positive open-ended questions that help advisers learn about students' strengths, skills, and abilities.



## Design

Co-create a plan for making their dreams a reality.



## Don't Settle

Advisers and students alike need to set their own internal bars of expectations high.

Source: <http://www.appreciativeadvising.net/>

# Advisor Training

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- Who should be included?
- Components
- Delivery of Training
  - Existing training program
  - New training program



# Case Studies

- Review and respond to the 2 case studies assigned to your group.
- Discuss additional case studies if you have time.

**Goal:** Reflect on current institutional practices and policies that support students entering the right mathematics course for their programs of study.

Dana Center  
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PATHWAYS

### Advisor Workshop: Case Studies

**Instructions:** Each institutional team will review and respond to each case study below that presents an advising scenario focused on working with students and mathematics pathways. The goal of each case study is to provide institutional teams an opportunity to reflect on current institutional practices and policies that supports students entering the right mathematics course for their program of study.

**Case Study 1: Jeremy**

Jeremy is a first-semester freshman who is very excited about starting college. He is a first-generation student. He has a fear of mathematics, and his ACT scores placed him in College Algebra. He wants to be a doctor or an attorney. He is not realistic about his mathematics preparedness.

**Guiding Questions:**

- How would you advise and empower this student on the best Math Pathway that he should pursue?
- As an advisor, what resources would you connect the student to in support of his success in Math Pathways?

**Case Study 2: Jordan**

Jordan is a second-semester sophomore student who is transferring from the biggest feeder two-year community college. She is also interested in changing her major that could drastically change her time to degree completion. The four-year institution had just implemented mathematics pathways. Jordan just learned that her mathematics course from the two-year institution might not meet her mathematics requirement for the new major.

**Guiding Questions:**

- How could a review of the Math Pathways program assist this student in making choices that would support her degree goals?
- How can your institution better inform potential transfer students regarding changes to course applicability?

**Case Study 3: Taylor**

Taylor is a first-year student. Based on the Math Placement Test Taylor placed into Survey of Calculus. Taylor is concerned about this placement, but her advisor indicated that with the University's new focus on Math Pathways Taylor should perform well in the class as long as she puts in the effort. It is now the third week of classes and Taylor goes to see her advisor.

02/2014

The University of Texas at Austin  
Charles A. Dana Center

[www.dcmathpathways.org](http://www.dcmathpathways.org)

# Strategy 2: Adopt math pathways in programs



- 2017 Mini-Inventory of Math pathways in MI “Top 15”
- Begin with 4 programs:
  - Biological Sciences
  - Business Administration
  - Criminal Justice
  - Psychology
- Up to 12 programs over 3 years



# Michigan's "Top 15" Bachelor's Degrees

Name/Location	Political Science	Exercise Science	Mechanical Engineering (Pre-Engineering)	Communication	Accounting	Criminal Justice	Business Administration	Biology	Nursing	Psychology	Marketing	Social Work	English	Elementary Education	Health Administration	Health Science
Central Michigan University -- Mt. Pleasant	QR	QR	CAL	QR	CAL	QR	CAL	CAL	N/A	QR	QR	QR	QR	QR/CA	QR	QR
Eastern Michigan University -- Ypsilanti	QR	QR	CAL	QR	*	QR	QR	CAL or STAT	QR	QR	*	QR	QR	QR/CA	STAT	QR
Ferris State University -- Big Rapids	QR	N/A	QR	QR	QR	QR	QR	CA	QR	QR	QR	QR	QR	QR	QR	N/A
Grand Valley State University -- Allendale	QR	QR	CAL	QR	CA	QR	QR	CAL or STAT	QR	QR or STAT	CA	QR	QR	QR	N/A	N/A
Lake Superior State University -- Sault Ste. Marie	QR	QR or CA	CAL	QR	CA	CAL*	CA	CA	STAT	STAT	CA	N/A	QR	QR	N/A	N/A
Michigan State University -- East Lansing	CA	CA	CAL	CA	CAL	CA	CAL	CAL	CA or STAT	CAL	CAL	CA	CA	CA	N/A	N/A
Michigan Technological University -- Houghton	N/A	CAL	CAL	QR	CA	N/A	CA	CAL	N/A	CA	CA	N/A	QR	N/A	N/A	N/A
Northern Michigan University -- Marquette	QR	N/A	N/A	QR	CA	QR	QR	QR	QR	QR	CA	QR	QR	QR	N/A	N/A
Oakland University -- Rochester	QR	STAT	CAL	QR	QR	QR	QR	CA	QR	QR	QR	QR	QR	QR	N/A	CA or STAT
Saginaw Valley State University -- Saginaw	QR	STAT	CAL	CA/STAT/QR	CA	QR	CA	QR	STAT	QR	CA	QR	QR	QR	N/A	STAT
University of Michigan -- Ann Arbor	NR	CAL	CAL	QR or STAT	N/A	N/A	CAL	CAL or STAT	STAT	STAT	N/A	N/A	NR	+	N/A	N/A
University of Michigan -- Dearborn	CA	N/A	CAL	CA	CA	CA	CA	CA	N/A	CA	CA	N/A	CA	CA	N/A	N/A
University of Michigan -- Flint	QR	N/A	CAL	QR	N/A	QR	CAL	CA	QR	QR	QR	QR	QR	QR	QR	CA
Wayne State University -- Detroit	CA/STAT/QR	CA/STAT/QR	CAL	CA/STAT/QR	STAT	CA/STAT/QR	STAT	CA or STAT	CA/STAT/QR	STAT	STAT	CA/STAT/QR	CA/STAT/QR	CA	N/A	N/A
Western Michigan University -- Kalamazoo	QR	QR	CAL	QR	QR	QR	CA	CAL	QR	QR	QR	QR	QR	+	N/A	N/A

- **Business:** Accounting, Business Administration, Marketing
- **Liberal Arts:** Communication, English
- **Social Sciences:** Psychology, Social Work
- **STEM:** Biological Sciences, Mechanical Engineering
- **Health Sciences:** Health Administration, Health Science, Nursing
- **Career-Oriented:** Criminal Justice, Elementary Education, Exercise Science



# Quantitative Reasoning in Degree Pathways

University	Communication	Criminal Justice	English	Political Science	Psychology	Social Work
Central Michigan University -- Mt. Pleasant	QR	QR	QR	QR	QR	QR
Eastern Michigan University -- Ypsilanti	QR	QR	QR	QR	QR	QR
Ferris State University -- Big Rapids	QR	QR	QR	QR	QR	QR
Grand Valley State University -- Allendale	QR	QR	QR	QR	QR or STAT	QR
Lake Superior State University -- Sault Ste. Marie	QR	CAL*	QR	QR	STAT	N/A
Michigan State University -- East Lansing	CA	CA	CA	CA	CAL	CA
Michigan Technological University -- Houghton	QR	N/A	QR	N/A	CA	N/A
Northern Michigan University -- Marquette	QR	QR	QR	QR	QR	QR
Oakland University -- Rochester	QR	QR	QR	QR	QR	QR
Saginaw Valley State University -- Saginaw	QR	CA/STAT/QR	QR	QR	QR	QR
University of Michigan -- Ann Arbor	QR or STAT	N/A	NR	NR	STAT	N/A
University of Michigan -- Dearborn	CA	CA	CA	CA	CA	N/A
University of Michigan -- Flint	QR	QR	QR	QR	QR	QR
Wayne State University -- Detroit	CA/STAT/QR	CA/STAT/QR	CA/STAT/QR	CA/STAT/QR	STAT	CA/STAT/QR
Western Michigan University -- Kalamazoo	QR	QR	QR	QR	QR	QR
CA= College Algebra CAL=Calculus QR=Quantitative Reasoning STAT=Statistics N/A= Program Not Offered NR= No Required Math Course * = Business Math/May Not Transfer						



# College Algebra/Calc Prep in Degree Pathways

University	Biology	Mechanical Engineering (Pre-Engineering)	Accounting	Business Administration	Marketing
Central Michigan University -- Mt. Pleasant	CAL	CAL	CAL	CAL	QR
Eastern Michigan University -- Ypsilanti	CAL or STAT	CAL	*	QR	*
Ferris State University -- Big Rapids	CA	QR	QR	QR	QR
Grand Valley State University -- Allendale	CAL or STAT	CAL	CA	QR	CA
Lake Superior State University -- Sault Ste. Marie	CA	CAL	CA	CA	CA
Michigan State University -- East Lansing	CAL	CAL	CAL	CAL	CAL
Michigan Technological University -- Houghton	CAL	CAL	CA	CA	CA
Northern Michigan University -- Marquette	QR	N/A	CA	QR	CA
Oakland University -- Rochester	CA	CAL	QR	QR	QR
Saginaw Valley State University -- Saginaw	QR	CAL	CA	CA	CA
University of Michigan -- Ann Arbor	CAL or STAT	CAL	N/A	CAL	N/A
University of Michigan -- Dearborn	CA	CAL	CA	CA	CA
University of Michigan -- Flint	CA	CAL	N/A	CAL	QR
Wayne State University -- Detroit	CA or STAT	CAL	STAT	STAT	STAT
Western Michigan University -- Kalamazoo	CAL	CAL	QR	CA	QR
CA= College Algebra CAL=Calculus QR=Quantitative Reasoning STAT=Statistics N/A= Program Not Offered * = Business Math/Specific to Institution					



# Action Plan

## Action Plan for Mathematics Pathways for Academic Advising

Dana Center  
**Mathematics**  
PATHWAYS

**Institution Name:**

**Institution Contact  
Name and Email:**

Task	Which Essential Action is this task connected to?	Who is responsible?	Who needs to be involved?	Who needs to be informed?	Deadline

# Need help?

## Request for Technical Assistance

Institutions may request a technical assistance call with a content expert or implementation consultant. These calls can be used to:

- Problem-solve strategies to address specific challenges;
- Learn about topics related to math pathways;
- Learn about tools and resources;
- Create accountability to maintain momentum.

The Dana Center will accept requests for follow-up technical assistance at the workshop and will also send an email inviting requests approximately one month after the workshop.

Institutions requesting technical assistance are expected to:

- Convene a team of at least three people for the call,
- Ensure that all members of the team are prepared for the discussion,
- Provide information in advance that will help the consultant prepare. In general, the Dana Center offers one call, but may do additional calls if it is warranted.

<b>Institution Name:</b>		
<b>Contact Person:</b> Provide name, title, and email address		
<b>Date range when you would like to have a call (April-August 2018):</b>		
<b>Topics of Interest (circle all that apply)</b>		
Advising for math pathways	Aligning math pathways to programs	General Implementation of math pathways
Communication and engagement	Gateway math course design	Co-requisite math course design
Will submit topic later	Other (please specify):	

A Dana Center representative will make contact within two weeks to arrange for the technical assistance call.

03/2016

# Advising Resources – DCMP Resource Site

<http://www.dcmathpathways.org/>

The screenshot shows the homepage of the Dana Center Mathematics Pathways website. At the top left, it identifies the University of Texas at Austin, Charles A. Dana Center, College of Natural Sciences. A search bar and navigation links for 'CONTACT' and 'IMPLEMENTATION GUIDE' are in the top right. The main header includes the 'Dana Center Mathematics PATHWAYS' logo and a menu with 'The DCMP', 'Learn About', 'Take Action', 'Where We Work', and 'Resources'. The central banner features a photograph of students working together with the text 'The Right Math for the Right Student at the Right Time'. Below this, a dark blue box contains three columns of text and bulleted lists:

- The Dana Center Mathematics Pathways 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.
- It takes coordinated action across all...**
  - Levels of the system (national, state, institution, classroom)
  - Sectors of education (universities, colleges, K-12)
  - Roles (policy, administrators, faculty, student services)
- In order to...**
  - Redesign course and institutional structures that deter success;
  - Modernize mathematics content and instruction;
  - Eliminate policy barriers in placement, transfer, and



# Advising Resources – DCMP Resource Site

<https://dcmathpathways.org/learn-about/advisors-and-coordinators>

The screenshot shows the website interface for the Dana Center Mathematics Pathways. At the top, there is a navigation bar with the university logo, a search bar, and links for 'CONTACT' and 'IMPLEMENTATION GUIDE'. Below this is a main header with the 'Dana Center Mathematics PATHWAYS' logo and a menu with 'The DCMP', 'Learn About', 'Take Action', 'Where We Work', and 'Resources'. The main content area features a dark blue banner with the title 'Advisors and Coordinators' and a subtitle: 'Information for: Advising coordinators, advisors, and others who are leading mathematics pathways implementation.' Below the banner, there are two columns. The left column is titled 'Role in Mathematics Pathways' and contains a paragraph about the role of advising coordinators. Below the text is a video player with the title 'Temple Student interviews'. The right column is titled 'Learn More' and contains two sections: 'POLICY' and 'INSTITUTIONAL LEADERSHIP', each with a brief description of their roles.

# Advising Resources – DCMP Resource Site

The screenshot displays the Dana Center Mathematics Pathways website. At the top left, the logo for The University of Texas at Austin Charles A. Dana Center, College of Natural Sciences is visible. A search bar with the text "Site search" and a magnifying glass icon is located in the top right. Below the logo, the text "Dana Center Mathematics PATHWAYS" is prominently displayed. A navigation menu includes "The DCMP", "Learn About", "Take Action", "Where We Work", and "Resources". A large search bar with the placeholder text "Search All Resources" and a right-pointing arrow is centered below the navigation. Underneath the search bar, the heading "FILTER RESULTS" is shown. Three filter categories are listed: "LEVELS" with options "State", "Institution", and "Classroom"; "PROCESSES" with options "Getting Started", "Planning", "Implementing", and "Continuously Improving"; and "ROLES" with options "Policy", "Institutional Leadership", "Math Department", "Partner Disciplines", "Advisors and Coordinators", and "Researchers". Each option is preceded by a small square checkbox.

# Advising Resources – DCMP Resource Site

advising >

**FILTER RESULTS**

LEVELS	PROCESSES	ROLES	
<input type="checkbox"/> State	<input type="checkbox"/> Getting Started	<input type="checkbox"/> Policy	<input type="checkbox"/> Advisors and Coordinators
<input type="checkbox"/> Institution	<input type="checkbox"/> Planning	<input type="checkbox"/> Institutional Leadership	<input type="checkbox"/> Researchers
<input type="checkbox"/> Classroom	<input type="checkbox"/> Implementing	<input type="checkbox"/> Math Department	
	<input type="checkbox"/> Continuously Improving	<input type="checkbox"/> Partner Disciplines	



8 Results Page 1 of 1 Results Per Page 10

## Advising and Multiple Math Pathways (video)

Webinar that examines why it is important to focus on advising when implementing math pathways at scale and explores a step-by-step guide to develop a comprehensive advising plan using Dana Center resources and tools. (45:16)

**LEVEL: INSTITUTION**  
**PROCESS STAGE: IMPLEMENTING**  
**ROLE: INSTITUTIONAL LEADERSHIP, ADVISORS AND COORDINATORS**

**DOWNLOADABLE FILE(S)**

-  POWERPOINT
-  WEB LINK

## Spotlight

### What Students Need to Know: Mathematics Concept Inventories for Community College Workforce Education Programs

The Charles A. Dana Center at The University of Texas at Austin and Ivy Tech Community College of Indiana

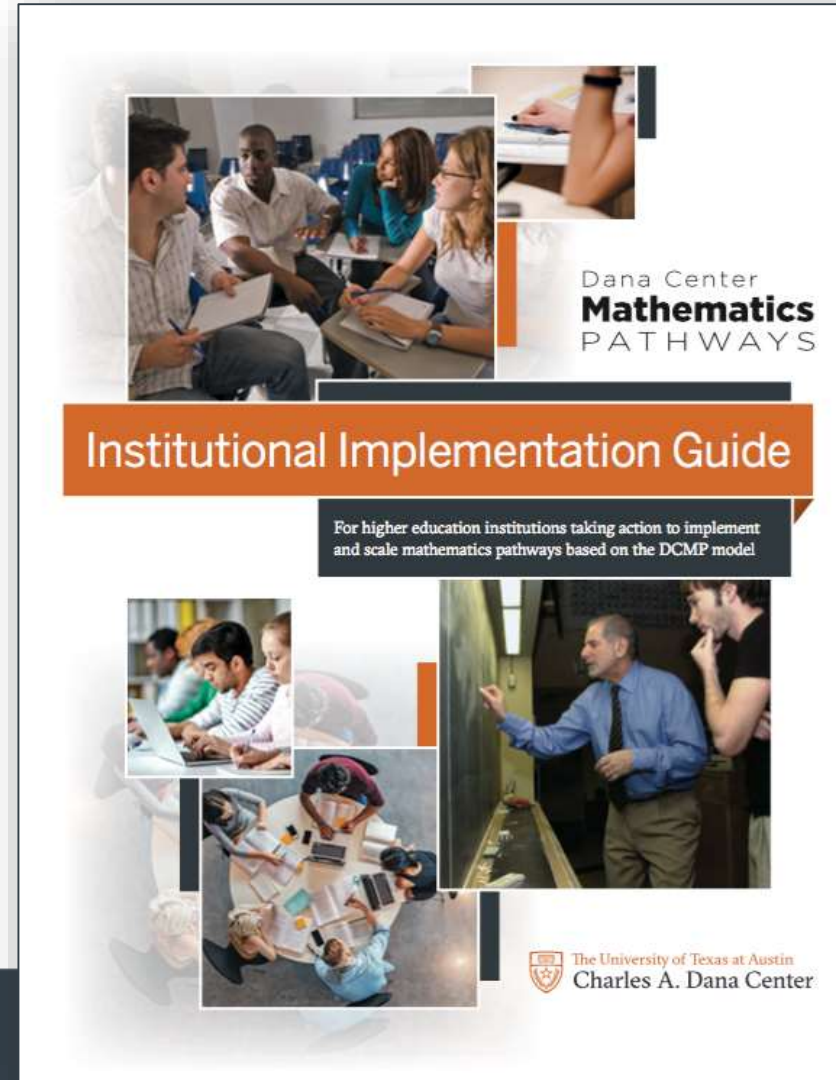
This publication includes a 2-page summary for each of the 34 programs of study available at Ivy Tech Community College of Indiana that offer certificates, technical certificates, and/or associate's degrees in a wide range of workforce education disciplines. Each summary details which mathematics concepts (from a comprehensive list developed by Ivy Tech) are highly relevant, relevant, minimally relevant, or not relevant for

# Institutional Implementation Guide (Print)

[www.dcmathpathways.org/implementation-guide](http://www.dcmathpathways.org/implementation-guide)

Print version can be downloaded from Dana Center Mathematics Pathways Resource Site.

Concise summary of 10 Essential Actions.



# Institutional Implementation Guide

Online version includes additional information and links to resources.

**Dana Center Mathematics PATHWAYS**

Implementation Guide  
For higher education institutions taking action to implement and scale mathematics pathways based on the DCMF model

RETURN TO DCMF RESOURCE SITE

john@txsacreative.com  
LOG OUT Progress saved

How to use this guide

- STAGE 1 Getting Started
  - ACTION 1 Communicate & maintain institutional commitment
  - ACTION 2 Establish leadership team
  - ACTION 3 Plan for communication and engagement over time
- STAGE 2 Planning
- STAGE 3 Implementing
- STAGE 4 Continuous Improvement

DOWNLOAD PDF VERSION

## STAGE 1 Getting started

### Laying the foundation for successful implementation

Implementing mathematics pathways is a transformative process that requires work across the institution. In short, it is faculty-driven, administratively-supported, and policy enabled. The first stage of implementation, Getting Started, focuses on how leaders can identify the needs of their institution, commit to action, and prepare to engage stakeholders.

The level of involvement from diverse stakeholder groups across the institution is outlined in the chart; use this information to support implementation activity in Stage 1.


#### Level of involvement from stakeholder groups

STAKEHOLDER GROUP	LEVEL OF INVOLVEMENT		
	HIGH	MEDIUM	LOW
High-level Administrators (e.g., presidents, provosts, vice presidents)		✓	
Departmental Leadership (e.g., deans, departments heads)	✓		

[www.dcmathpathways.org/implementation-guide](http://www.dcmathpathways.org/implementation-guide)

# Notes from the Field Series

## *Games-Based Advising at Northwest Vista College*



Dana Center  
**Mathematics**  
PATHWAYS

The University of Texas at Austin  
Charles A. Dana Center

Notes from the Field – Number 2 / 2017

### Games-Based Advising at Northwest Vista College

This summary is part of the Charles A. Dana Center's "Notes from the Field" series, which highlights examples of innovative practices from colleges, universities, and systems.

If an institution has multiple mathematics pathways in place and the ultimate goal of reform is to better meet the needs of students, then an essential element in the implementation process is **guiding students into the path that is best suited to their educational goals**. But what is the best way to communicate to freshmen—many of whom might already be feeling overwhelmed—what their course choices are and what the consequences of those choices might be? One college found success in an elegant, innovative solution.

#### Background

Northwest Vista College (NVC) in San Antonio, Texas, is one of five community colleges of the Alamo Colleges District and serves more than 17,000 students.<sup>1</sup> As part of ongoing efforts to better serve its students, the college established multiple mathematics pathways for STEM and non-STEM students.

#### TAKEAWAYS

- *Nontraditional approaches to student advising can have substantial impact on increasing student understanding and on guiding them to "right-fit" enrollment choices.*
- *The process of developing high-quality communication tools for students can help surface and address misconceptions among faculty and staff.*
- *Mathematics pathways can be linked to the overall student experience to help students prepare for the future and connect to their institution's mathematics pathways initiative.*

Dana Center Mathematics Pathways [www.dcmathpathways.org](http://www.dcmathpathways.org)

# Evaluation

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Continuous improvement is important to us. Please give us your feedback.

Thank you.

# Contact Information

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- General information about the Dana Center:  
[www.utdanacenter.org](http://www.utdanacenter.org)
- Dana Center Mathematics Pathways Resource Site:  
[www.dcmathpathways.org](http://www.dcmathpathways.org)
- To receive monthly updates about the DCMMP, contact us at:  
[dcmathpathways@austin.utexas.edu](mailto:dcmathpathways@austin.utexas.edu)
- Amy Getz (implementation, state-level work):  
[getz\\_a@austin.utexas.edu](mailto:getz_a@austin.utexas.edu)
- Paula Talley (implementation, state-level work):  
[paulatalley@austin.utexas.edu](mailto:paulatalley@austin.utexas.edu)
- Heather Ortiz(implementation, state-level work):  
[heather.ortiz@austin.utexas.edu](mailto:heather.ortiz@austin.utexas.edu)



# About the Dana Center

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The **Charles A. Dana Center** at The University of Texas at Austin works with our nation's education systems to ensure that every student leaves school prepared for success in postsecondary education and the contemporary workplace.

Our work, based on research and two decades of experience, focuses on K–16 mathematics and science education with an emphasis on strategies for improving student engagement, motivation, persistence, and achievement.

We develop innovative curricula, tools, protocols, and instructional supports and deliver powerful instructional and leadership development.



The University of Texas at Austin  
Charles A. Dana Center

2016