COLLEGE & WORKFORCE READINESS

TEXAS REGIONAL STEM DEGREE ACCELERATOR

ACTION GUIDE FOR STUDENTS & EDUCATORS

Dallas County
Community College District

The Foundation
DALLAS COUNTY COMMUNITY COLLEGE DISTRICT

1601 South Lamar St.
Dallas, TX 75215

Office: 214-378-1531

STEMINSIGHT.ORG

STEM DEGREE ACCELERATOR

ABOUT THE PROGRAM

BACKGROUND

The North Texas STEM Degree Accelerator is a three-year grant (2015-2018) funded by Educate Texas, a Communities Foundation of Texas Initiative, to combat the state's projected shortfall of 1 million STEM workers by 2018.

GOAL

Regional teams of education and workforce partners collaborate on the implementation of STEM degree programs aligned with high-demand regional workforce needs.

OUTCOMES

- Increase retention in STEM pathways by ensuring that STEM teaching practices are engaging and supportive.
- Ensure that institutional policies and systems support retention and completion of STEM pathways, particularly among underrepresented students.

DALLAS NORTH TEXAS REGION

WEST TEXAS

DALLAS/
NORTH TEXAS

EL PASO

HOUSTON/
GULF COAST

SOUTH TEXAS

- Partners will enhance classroom instruction, develop faculty teams, and expand an online STEM portal called STEM Insight
- Three waves of vertical teams consisting of education and workforce partners
- 102 Stakeholders over three years
    - Education - 69
        - High School – 14
        - Community College – 40
        - University – 15
    - Workforce – 33
- Courses – Math, Computer Science, Physics, IT, Engineering
- Expansion of STEM Insight to version 2.0

FINDINGS Three cohorts of vertical teams consisting of educators and industry professionals were formed to assess workforce needs regarding recently credentialed students (degree, certificate, certification) entering the workforce. This call to action resulted in the discovery of six focus areas that help to set up a pathway for solution driven practical application tools and resources to help prepare entry level employees to become successful in STEM careers.

ROLE OF THE VERTICAL TEAMS

- Develop a deep working relationship focused on HOW we teach students in computer and STEM field courses
- Identify areas of student struggle within those courses
- Work together to develop engaging, innovative learning activities (with an industry focus) to overcoming those barriers
- Try to integrate mathematics into as many of those activities as possible
- Test your ideas in the classroom, gathering information about whether your hypotheses are supported
- Share your ideas and findings with colleagues
- Continue your working relationship beyond this start, expanding the STEM field networks in the region.
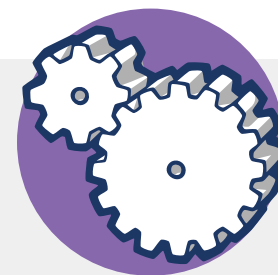
TEAM GOALS

CREATE exciting, engaging and implementable activities for team instructors.

ENHANCE individual learning (student, instructor, business representatives)

ASSIST student recognition of STEM curriculum value to life skills and work opportunities.

THE CONCERN A majority of students are unaware of the types of jobs available in STEM fields and are unable to see the connection between coursework and the theory learned in class. Students need more industry exposure through mentors, professional organizations, internships, externships, job shadow opportunities, or part-time employment to build awareness and to bridge the gap between theory and practice.

PROFESSIONALS

Entry level employees…
- Lack critical transferable skills, outside technical coursework, such as communication and analysis.
- Struggle with projects that involve incomplete information; unlike their school assignments.
- Underestimate the collaborative nature of industry and prefer to work in isolation.

EDUCATORS

- Students would benefit from class projects/ assignments that connect theory and practice.
- Students lack the prerequisite skills needed to be successful in learning new concepts and skills.
- Large classes (200+ students) lead to multiple-choice tests with poor student performance, despite review sessions.
- Students are coming to class unprepared and do not know how to study to retain information.

STUDENTS

- Feel academically prepared but don't quite understand how to promote better team effectiveness to drive solutions.
- Have not been introduced to mindfulness (situational awareness) tools to help in unpredictable classroom and work environments.
- Think college orientations or better training sessions can increase awareness or workforce needs.
- Want to know the top skills required to succeed in college and the workforce.

STEPS TO SUCCESSS Use the checklists below to help you prepare for college and workforce readiness.

COLLEGE *Check off the items as you complete them.*

Visit the Counselors Office
- Great resource for academic advising

Complete FAFSA
- Know your federal student aid options | **LINK**

Define Career Goals
- Don't just think about the money, consider what will make you happy

Research Your STEM Career
- STEMinsight.org | **LINK**

Take College Entry Exams
- SAT | **ABOUT**
- ACT | **ABOUT**

Join Student Clubs
- Gain volunteer hours
- Meet like-minded individuals
- Develop leadership skills and communication skills

Seek Mentors, Advisors, and Advocates
- Find people who can give you industry insight

Use Social Media Wisely
- Connect with industry leaders
- Share information about your industry
- Avoid profanity or inappropriate photos

CAREER *Check off the items as you complete them.*

Visit the Career Services Department on Campus
- Great resource for resume writing, interview training, and finding a job

Take a Skills Assessment
- Myers-Briggs | **LINK**
- StrengthsFinder | **LINK**
- Some schools offer free assessments for students

Take a Professional Head Shot
- Ask a student in the photography department
- Use your phone

Create a Portfolio or Resume
- Include school projects that demonstrate leadership

Create a LinkedIn Profile
- Develop a professional online profile for your resume
- Connect with others in your industry

Obtain Workplace Experience
- Utilize the summer to work as an intern to help build your resume experience
- STEMinsight.org | **LINK**

Pay Attention to Industry Trends
- Know the top skills required for your field

THE GOAL College and workforce readiness is a huge concern for industry professionals looking to fill the leaky STEM pipeline. The following steps will help to remedy those concerns while proposing solutions to develop skills to bridge the gap between academics and industry

ICON LEGEND 🎓 **STUDENT RESOURCES**   🧠 **EDUCATOR RESOURCES**

STEP 1
Identify industry needs and required skills related to the coursework being taught to inform students of the real-world application of what they are learning.

STEP 2
Provide opportunities for students to participate in group projects to foster an environment of a growth mindset which shapes better team work dynamics. *View link for mINiTERN video below.*

STEP 3
Provide examples of real world applications for new concepts or principles being taught.

STEP 4
Utilize industry case studies for students to work through and engage in open-ended questions to drive better resolutions using problem solving and critical thinking techniques.

STEP 5
Leverage industry connections. Invite industry professionals to share their career perspectives and current trends for the job market including insight into available opportunities.

BRIDGING THE GAP
From Classroom to Career

VIDEO Dallas/North Texas STEM Degree Accelerator Conference panel discusses the mINiTERN Program. The panel consists of Josh Duttlinger from Sharyland Utilities LP, Elizabeth Smith from Hunt Consolidated Inc., and student interns. **VIEW**
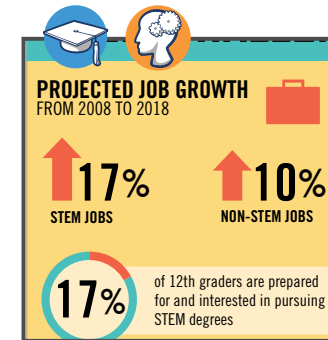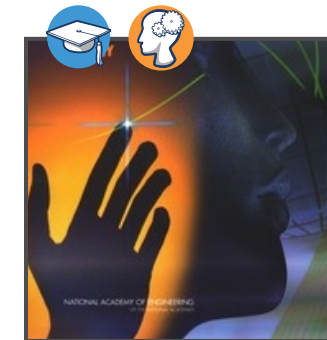
PROJECTED JOB GROWTH
FROM 2008 TO 2018

⬆ **17%** STEM JOBS   ⬆ **10%** NON-STEM JOBS

17% of 12th graders are prepared for and interested in pursuing STEM degrees
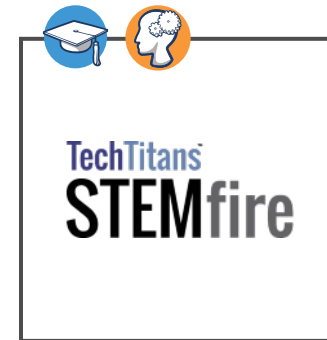
STEM Challenges
DCCCD
DOWNLOAD

The Engineer of 2020
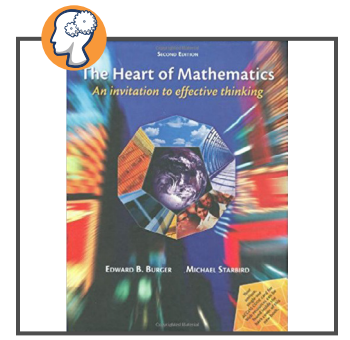Center for Public Policy Priorities
DOWNLOAD

STEMfire
TechTitans
VIEW

The Heart of Mathematics
Edward B. Burger and Michael Starbird
VIEW

Teaching Practices for Underrepresented Minority & First Generation Students
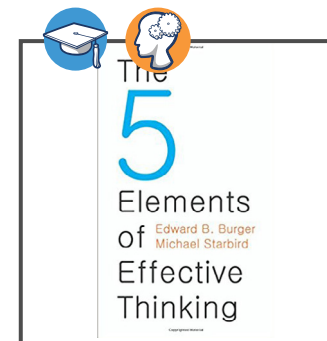Delta Program
DOWNLOAD

Collaborating with Industry
Center for Public Policy Priorities
DOWNLOAD

The 5 Elements of Effective Thinking
Edward B. Burger and Michael Starbird
VIEW

STEM-related Workplace Experience
STEM Insight
VIEW

Please note: Links to the listed websites are provided for information and convenience and do not constitute official endorsement by the colleges of DCCCD.

ABOUT THE PROJECT

The Texas Regional STEM Degree Accelerator (TRSDA) Project for Dallas/North Texas Region funded by the Helmsley Foundation administrated by Educate Texas and led by DCCCD began in 2016. The goal of TRSDA is to support teams who will ensure that more students earn STEM degrees and certificates that meet regionally-identified workforce needs.

Three cohorts of vertical teams consisting of K-12 educators, post-secondary educators from community colleges and universities, and industry partners were formed to assess workforce needs and establish classroom instruction methodologies to enhance student performance and improve engagement in STEM courses. Over the three year period, approximately 100 education and workforce stakeholders convened to establish best practices in math, computer science, physics, IT, and engineering courses.

The outcome of the vertical team's assessments of student engagement in coursework provided insight into six major focus areas to improve student retention into post-secondary STEM programs of study leading to an earned STEM credential. Action Guides for Students and Educators in the six areas 1) problem solving, 2) critical thinking, 3) college and workforce readiness, 4) collaboration, 5) time management, and 6) communication were created to share best practices and lessons learned.

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