



LANCASTER INDEPENDENT SCHOOL DISTRICT STEM INITIATIVE

TRANSFORMING *a* DISTRICT *and a* COMMUNITY



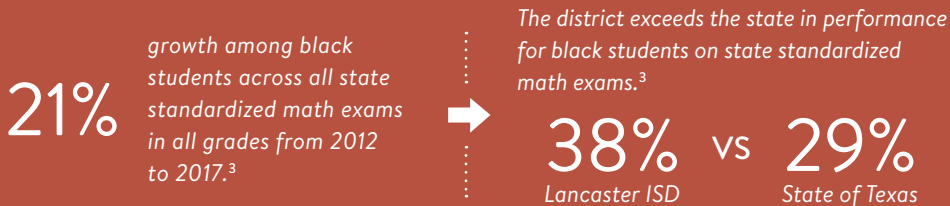
EDUCATE TEXAS
at COMMUNITIES FOUNDATION of TEXAS

LANCASTER ISD, THEN *and* NOW*

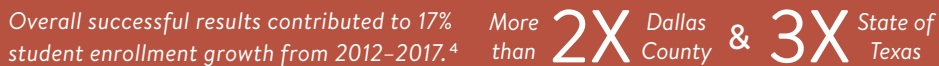
	2012–2013 ¹ First Year of Grant	2016–2017 ² Most Recently Available
STUDENT POPULATION	6,536	7,634
CAMPUSES	6 Elementary Schools	6
	4 Secondary Schools	4
	1 Alternative Learning Centers	1
DEMOGRAPHICS	78% African American	76%
	18% Hispanic	20%
	3% White	2%
	1% American Indian, Asian & Pacific Islander	1%
FOUR-YEAR GRADUATION RATE	83%	Economically Disadvantaged** 87%
FOUR-YEAR GRADUATION RATE	96%	98%
NUMBER OF TEACHERS	343	426
CREDENTIALS OF TEACHERS	248 Bachelor's Degrees	276
	86 Master's Degrees	143
	0 Doctoral Degrees	4

*Source: Texas Education Agency | **Economically disadvantaged is defined as students who are eligible for free or reduced-price lunch or other public assistance.

SUCCESSES of LANCASTER ISD



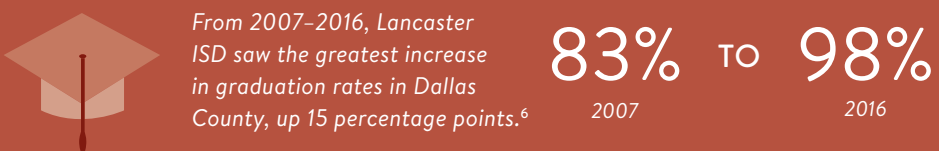
An important indicator of student engagement, this rate now exceeds both regional and state attendance rates.⁴



Students are experiencing notable success; examples include a Gates Millennial Scholar at Texas A&M University and a student accepted to West Point, the United States Military Academy. In 2017, one of Lancaster's high school students became the first in the district to win the International Space Settlement Design Competition, which engages students in collaborating and developing community models.⁵



In 2018, The Dallas Morning News identified Lancaster ISD as one of the top districts in the state when it comes to improving students' educational experience in the right direction.

LOOKING to the FUTURE

The U.S. Department of Education projects most jobs in 2020 will require strong skills in science, technology, engineering and math (STEM). Since Texas is expected to offer the nation’s second-highest percentage of these careers, the state’s schools must ensure that students – especially students who are part of low-income families or are people of color – are prepared for the marketplace of the future.

In 2012, Educate Texas, the Texas Instruments (TI) Foundation and the suburban Lancaster Independent School District (Lancaster ISD), located south of Dallas, collaborated to build a districtwide model for STEM education. The TI Foundation granted \$7 million over five years to the district to transform it

into one that engages students in problem-based learning (PBL) through the disciplines of STEM. Educate Texas served as the initiative’s technical advisor and helped the district develop an approach that emphasized three elements of STEM education: 1) awareness in elementary schools, 2) exposure and engagement in middle schools and 3) exploration and articulation of knowledge in high schools. With additional support from higher education partners, the workforce and the community, the effort reinvented student learning experiences, made STEM education accessible for all, and instilled community respect and pride. The initiative also created a model that can be replicated in districts throughout the state and the nation.

GETTING to WORK

THE FOUR PRIMARY GOALS OF THE LANCASTER ISD DISTRICTWIDE STEM INITIATIVE




REDESIGN LEARNING ✓

Offer rigorous education and relevant experiences that develop collaborative, critical thinking and creative problem-solving skills



BUILD PARTNERSHIPS ✓

Demonstrate how the district and civic, business and higher education partners can collaborate to help students achieve postsecondary success



DEVELOP TALENT ✓

Ensure that teachers and leaders are equipped to provide the knowledge students need to succeed in STEM disciplines



LEARN AND ADAPT ✓

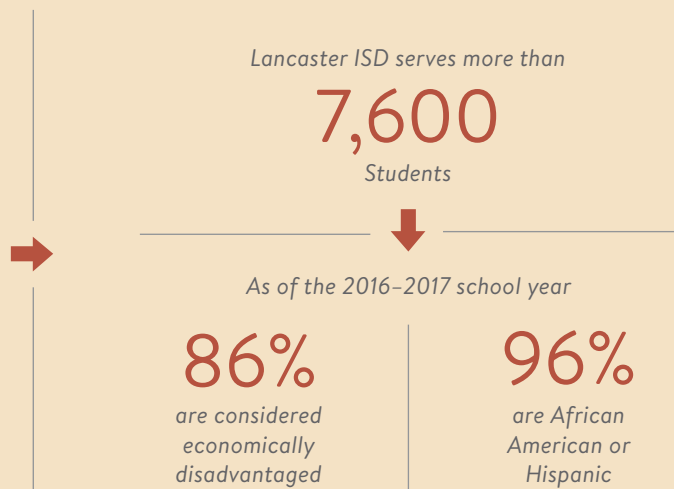
Develop a scalable, replicable model for districtwide STEM education

KEY PARTNERS IN THE INITIATIVE

LANCASTER ISD
A public school district located 15 miles south of Dallas in Lancaster, Texas

THE TI FOUNDATION
The philanthropic arm of Texas Instruments, which brought ideas and prior learning to the initiative

EDUCATE TEXAS
A public-private initiative of Communities Foundation of Texas that provided strategic assistance for framing the initiative and technical assistance to support Lancaster ISD throughout the grant



LAYING *the* GROUNDWORK, STRUCTURE *and* ACCOUNTABILITY

Educate Texas' role in the initiative began with building relationships among all levels of Lancaster ISD administrators and educators. After establishing a partnership based on trust, Educate Texas advised the district of best practices from other places; provided staff to support district planning, engagement and implementation; and annually tracked the district's progress toward full STEM integration, which highlighted lessons for continuous improvement.

EQUIPPING *the* FRONT LINES

Shifting a culture of high expectations to emphasize college and career readiness necessitates equipping teachers and administration with the required tools. The most critical juncture in implementing STEM education in Lancaster ISD was preparing teachers to facilitate PBL, which requires content expertise and innovative teaching methods – a departure from traditional methods of instruction that rely on textbooks and testing. While district leaders enthusiastically supported this approach, not everyone was on board. Just after the TI Foundation awarded the grant, Lancaster ISD experienced a 50% turnover among principals and teachers, according to the district's self-reported data. The loss of staff could have proved disruptive, but instead, it gave the district a fresh start. Educate Texas helped the district rethink its hiring process and consider the possibilities of strengthening teacher training for STEM learning. District and school leaders also received training to balance the short-term concerns of running schools with the long-term work of pushing a change in culture. For example, principals began seeking teachers with specific STEM expertise and credentials so that those teachers could support

This feedback evolved from a focus on specific activities to a reflective method of helping the district achieve long-term goals. This process worked well for decisions applying not only to Lancaster ISD, but also to Educate Texas' ongoing work of adapting the single-school Texas-STEM Academy⁷ model to a districtwide model to be replicated elsewhere.

student STEM clubs, mentor other teachers and interact with potential business and higher education partners. Principals also learned to support teachers in the steep learning curves of PBL techniques, instructional technology and the use of student data to improve instruction.

The next step was to create a more robust method of immersing teachers in PBL by engaging higher education partners. The district worked with the University of North Texas at Dallas to offer a special STEM master's degree and content specialization certificates. The program was particularly important for expanding college-level courses through the Advanced Placement program and dual credit agreements with local colleges. Lancaster ISD now requires all secondary math and science teachers to have a master's degree. From 2012 to 2017, the number of district teachers with advanced degrees nearly doubled. Now, the district exceeds the state average for percent of teachers with advanced degrees by 10 percentage points.

BROADENING *the* BASE *of* SUPPORT

An essential piece of the districtwide STEM model is to bring community organizations, higher education partners and businesses on board with the program and connect them with schools to provide mentoring, internships and explanatory visits to provide real-world perspective. In Lancaster ISD, colleges were asked to sign agreements allowing dual credit courses, provide graduate programs for teachers and make recruiting and informational trips to high school campuses. Cedar Valley College, a community college in Lancaster, is an example of an early partner that now serves students as a bridge to the University of North Texas. Bridge to Dentistry, a program at Texas A&M University, is another example and ensures there is a strong dental health pipeline for Lancaster ISD.

Businesses were also tapped for a range of activities, from sending STEM experts to speak to classes, to providing first-hand experiences for PBL activities, to providing internships and underwriting equipment and educational programs. Key community and high-growth industry partners from the energy, healthcare, engineering and environment sectors included Atmos Energy, Crescent Medical

Center, Dallas Arboretum, Dallas Southwest Engineering for Kids, Direct Energy, Dogwood Canyon Audubon Nature Park, Experience Aviation, Freese & Nichols Engineering Firm, National Society of Black Engineers, Pitsco and Texas Tech Health Science Center.



Lancaster ISD students gain first-hand experience through the STEM initiative.



ACHIEVING SUCCESS, EXCEEDING EXPECTATIONS

The grant concluded in 2017, with results that reached far beyond the walls of the district's classrooms. The district has seen student population growth at twice the rate of Dallas County – a sign of renewed community pride and trust – and its students now outperform their peers in math across the state, compete and rank among top teams in robotics in the state, and are being accepted to a broader selection of colleges and universities with highly selective admissions policies at a much higher rate. In 2017, the Lancaster ISD School Board was named one of three national winners of the Council of Urban Boards of Education's CUBE Award, which recognizes urban school boards that exhibit excellence in school board governance, academic improvement, educational equity and community engagement. In 2018, Lancaster ISD was named the statewide winner of the Small District category by the H-E-B Excellence in Education Awards program. The award recognizes commitment to student achievement through innovative programs, parent and community involvement and professional development opportunities for teachers and administrators. Perhaps the most dramatic impact has been on the city of Lancaster, where a renewed sense of civic pride and a commitment to excellence have drawn the attention of employers who can now recruit from a highly qualified talent pool, creating new opportunities for growth and success across the community.

Lancaster High School juniors who rank in the top 20 percent of their class are now guaranteed admission to the University of North Texas (UNT) through UNT's Eagle Advantage program. Students will have access to the Senior Year Experience, which offers campus events and programs, including college preparatory workshops.

"We are committed to ensuring that our students have the opportunity to have more choices and options when choosing their college or university. This program will give our students an early advantage to gain acceptance into a four-year university."

Creslond Fannin

*Former Lancaster ISD Executive Director
of College and Career Readiness*

REPLICATING *and* SCALING SUCCESS

In March 2018, the Richardson Independent School District announced a STEM feeder pattern, called the Berkner STEM Learning Community, with a three-year, \$4.6 million grant from the TI Foundation. Educate Texas will provide technical assistance for the initiative that supports 13 elementary schools, two junior high schools and Berkner High School, serving more than 10,000 students from 80 different countries. As part of its Texas-STEM designation by the Texas Education Agency, Berkner High School had already offered three STEM career strands for students: engineering robotics, aeronautical engineering and biotechnology. In the 2018-2019 school year the STEM Learning Community

enabled the school to introduce two new career strands: cybersecurity and STEM management.

Educate Texas' approach to the Richardson initiative reflects several key learnings from the work with Lancaster ISD. In particular, the larger goal of enhancing STEM education must work in conjunction with the district's individual vision. For Richardson, an important goal is to help alleviate the disparity in educational success between the more and less affluent schools across the district, enhancing college and career readiness for all students.



HOW *to* GET INVOLVED

You can contribute to the success of students in school, work and life by helping to support initiatives that transform the educational experience. Please connect with us at edtxdevelopment@cftexas.org for more information on how you or your organization can support Educate Texas' efforts.

To view our sources, please visit edtx.org/documentsources.
Learn more about Educate Texas at edtx.org.

