



Sheldon ISD STEM Academy

T-STEM Renewal Application

2019-2020

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Background

District Affiliation

SHELDON ISD

CD #: 101924

Region: 04

Mailing Address (Line 1): 11411 C E KING PKWY

Mailing Address (Line 2):

City, State, Zip: HOUSTON, TX 77044

School Affiliation

C E KING H S

CDC #: 101-924-001

Region:

Mailing Address (Line 1): 8540 C E KING PKWY

Mailing Address (Line 2):

City, State, Zip: HOUSTON, TX 77044

MICHAEL R NULL MIDDLE

CDC #: 101-924-043

Region:

Mailing Address (Line 1): 12117 GARRETT RD

Mailing Address (Line 2):

City, State, Zip: HOUSTON, TX 77044

C E KING MIDDLE

CDC #: 101-924-041

Region:

Mailing Address (Line 1): 8530 C E KING PKWY

Mailing Address (Line 2):

City, State, Zip: HOUSTON, TX 77044

Academy Information

T-STEM Academy Name:

Sheldon ISD STEM Academy

Are you currently in the 2018-2019 planning year or are a 2018-2019 planning grantee?

Yes

What grade level range will your academy serve in the 2019-2020 school year?

6-10

Grade Level	Number of Students	School / CDC # Where Students are Enrolled
6	60	MICHAEL R NULL MIDDLE (101924043)
6	60	C E KING MIDDLE (101924041)
7	60	MICHAEL R NULL MIDDLE (101924043)
7	60	C E KING MIDDLE (101924041)
8	60	MICHAEL R NULL MIDDLE (101924043)
8	60	C E KING MIDDLE (101924041)
9	120	C E KING H S (101924001)
10	120	C E KING H S (101924001)

Contacts

Superintendent

Job Title: Superintendent
Full Name: Mr. King Davis
Email: kingdavis@sheldonisd.com
Phone Number: 281-727-2006

Applicant

Job Title: Director of Advanced Academics and CTE
Full Name: Mrs. Karen Gallow
Email: karengallow@sheldonisd.com
Phone Number: 281-727-2052

IHE Liaison

Affiliation: San Jacinto College
Job Title: Chancellor
Full Name: Dr. Brenda Hellyer
Email: brenda.hellyer@sjcd.edu
Phone Number: 281-998-6100

IHE Liaison

Affiliation: San Jacinto College
Job Title: Associate Vice Chancellor for Student Success Partnerships
Full Name: Dr. Pamela Campbell
Email: pamela.campbell@sjcd.edu
Phone Number: 281-991-2672

Business Partner

Affiliation: McCord Development
Job Title: Director of Land Development & Government Affairs
Full Name: Mr. Richard Yarbrough
Email: ryarbrough@mccord.com
Phone Number: 713-860-3026

Narratives

Model Implementation

Which T-STEM model does the district intend to implement at this time? Within these models, there are variations. For this purpose campus is defined as a CDC number not a physical location.

School-Within-School: Multiple Campuses - A subset of students in grades 6-12 are enrolled in the T-STEM academy. This model typically spans a middle school and high school. This may also be applicable if 9th grade is on a separate campus due to physical space issues.

Endorsements

Identify the current endorsements that are offered:

- Science, Technology, Engineering, and Mathematics (STEM)
- Business and Industry
- Public Services
- Arts and Humanities
- Multi-disciplinary Studies

Certificates

Does this academy offer Associate Degrees to students?

No

TSIA

Does this academy administer the TSIA exam?

Yes

What ID number do students use when taking the TSIA exam?

College ID

Key Elements for Success

Provide a link to the job description, roles of design team, leadership team, and advisory board.

<https://sites.google.com/apps.sheldonisd.com/sheldon-isd-stem-academy/benchmark-1>

Provide a link to the final, signed, and executed MOU.

<https://sites.google.com/apps.sheldonisd.com/sheldon-isd-stem-academy/benchmark-3>

Provide a link to the academy's master schedules.

<https://sites.google.com/apps.sheldonisd.com/sheldon-isd-stem-academy/benchmark-4>

Provide a link to the academy's written admission policy and enrollment application.

<https://sites.google.com/apps.sheldonisd.com/sheldon-isd-stem-academy/benchmark-2>

Provide a link to the academy's written recruitment plan including a timeline of recruitment and enrollment events, and recruitment materials for distribution at feeder schools and other appropriate locations in the community

<https://sites.google.com/apps.sheldonisd.com/sheldon-isd-stem-academy/benchmark-2>

Provide a link to the academy's internship and externship opportunities.

<https://sites.google.com/apps.sheldonisd.com/sheldon-isd-stem-academy/benchmark-5>

Free-Response

Describe how the Academy will recruit, support, and retain highly qualified teachers.

Sheldon ISD STEM Academy recruits and selects highly-qualified teachers who demonstrate in-depth content knowledge and innovative, student-centered instructional practices. Teacher applicants must share in the expectation that all students can succeed in a rigorous, supportive small learning community. Via an extensive STEM-specific interview process, STEM administrators select teachers with a growth mindset who are committed to ongoing professional learning aligned to the T-STEM mission and vision.

Sheldon ISD implements a logic model that is designed to guide the recruitment, support and retention of T-STEM teachers. This plan was developed by Sheldon ISD elementary and middle school teachers, administrators and business partners at the Smithsonian Summit in Washington, D.C., that was hosted at Howard University and sponsored by Shell, CSTEM and the Smithsonian Science Center. The plan offers several incentives to support STEM teachers: a stipend for all T-STEM teachers; a common planning period, in addition to a conference period; weekly time for professional learning communities (PLCs) that allow the district STEM facilitator to build instructional capacity; support from a campus STEM team leader and STEM Academy leader; quality professional development at state and local STEM conferences and ongoing opportunities with University of Texas at Tyler, Buck Institute and district STEM facilitators; and the opportunity to earn a STEM certification with the National Institute of STEM Education for which Sheldon ISD will incur the expense. Summer professional learning includes PBL, AVID, Project Lead the Way, team planning, and the College Board Institutes. In 2019, Sheldon ISD middle school and high school teachers will continue their work at the STEM Summit at Xavier University. The logic model for recruiting and retaining teachers can be found at the Sheldon ISD STEM Academy website.

The Sheldon ISD STEM Academy also implements a mentoring and induction program for newly hired staff and an annual professional development plan that targets research-based strategies. In addition, T-STEM teachers will be provided opportunities for externships, formative peer observations, and collaboration with feeder pattern schools, industry, and IHE partners. The academy uses survey information, advisory meetings, and informal observations to ensure that the staff has a voice in professional development and school improvement aligned to the T-STEM blueprint.

Describe the current STEM pathways available at the academy.

The Sheldon ISD STEM Academy enrolls all program students in a STEM pathway that prepares them for college and 21st century careers. In middle school, academy students in grades 6-8 participate in Project Lead the Way Gateway modules and in advanced core classes.

In grades 9-12, the academy offers STEM pathways in advanced math and advanced science. In addition, four years of coherent sequences in computer science and engineering pathways utilizes Project Lead the Way and culminates in capstone classes that require students to research, design and construct a solution to an open-ended science or engineering problem. Students will be required to obtain feedback and guidance from STEM professionals and to present their work to outside reviewers.

STEM personal graduation plans provide opportunities for students to graduate with a STEM endorsement at the distinguished level with at least one performance acknowledgement. Coursework includes opportunities for students to earn a certification and 15 or more college hours that transfer to an Associate degree and a Baccalaureate degree. Via real-world challenges, the STEM pathways engage students as they collaborate to think critically, design solutions, and communicate their learning--lifelong skills that will support their academic plans and career choices.

Sheldon ISD values and adheres to the College Board equity and access principles regarding open enrollment for Advanced Placement. T-STEM academy students will have access to the following Advanced Placement courses and exams: English Language and Composition; English Literature and Composition; Studio Art; Music Theory; Chemistry; Biology; Physics I; Calculus AB; Statistics; World History; U.S. History; U.S. Government and Politics; Macroeconomics; Spanish Language and Culture; Spanish Literature and Culture; French Language and Culture; Computer Science A; and Computer Science Principles.

Describe how strategic alliances with industry partners and IHEs will support the Academy. The description should include details regarding the role of each IHE, business, and/or community partnership; along with parent/family partnerships and communication conventions with the Academy.

The roles and responsibilities of institutions of higher education (IHE) and business/industry partners will be clearly communicated in Memoranda of Understanding (MOU) and written partnership agreements. Institutions of higher education are essential to student advising and to the development of course sequences regarding college courses transferable to an associate or bachelor's degree, as well as high-demand certificates and certifications as per data from the Texas Workforce Commission. Industry and business partners not only provide job shadowing, career exploration, and work-based learning experiences but also serve as mentors who provide feedback and support STEM activities. Through their interaction with business partners, students develop an appreciation for the soft skills and appropriate workplace behaviors that are integrated into their STEM and AVID courses. In addition to serving on the STEM Advisory Council, business and industry partners assist students with pursuing employment opportunities after high school graduation, and contribute valuable feedback to students as they complete capstone projects and develop skills essential to college and careers.

Two industry partners that support the Sheldon ISD STEM Academy are LyondellBasell Chemical Company and McCord Development. While LyondellBasell has long supported Sheldon ISD, it specifically began work with the SISD STEM program in 2017. Since then, it has provided guest speakers for career talks, professional development at the plant for STEM teachers, participated at STEM Showcases, attended the STEM conference in Washington, D.C., sponsored student attendance at the Women in Industry conference, and served on the SISD STEM Advisory Board. Likewise, McCord Development, the local land developer of Generation Park, provides venues for STEM service learning, opportunities for teachers to learn from STEM professionals, mentoring for student projects, and guest speakers for project-based learning launches. For example, Generation Park professionals shared the importance of cross-functional teams as middle school students designed and implemented a campus breezeway beautification project, which translated into a math PBL.

The STEM Advisory Board includes IHE and business/industry stakeholders who provide insight regarding STEM curriculum, certifications, instructional resources and training that impact teaching and learning. Leaders with decision-making authority from Sheldon ISD, the IHE, and business partners, as well as parent, staff, and student representatives, assume active roles during the Advisory Board meetings to address the following topics: academy design, governance, operations, accountability, curriculum, and professional development; data sharing and monitoring as per the T-STEM blueprint; outcomes-based measures and annual reports; guidance for improvement, sustainability and funding; and minimizing staff turnover. District and campus personnel utilize various networking channels to establish and expand strategic alliances that support STEM. Opportunities include, but are not limited to, the area Chamber of Commerce, the Career and Technical Education Advisory Council, IHE partnerships, parent and community organizations, local/regional businesses, professional organizations, and Sheldon ISD vendors.

The Sheldon ISD STEM Academy communicates with all stakeholders via district and campus websites, social media, local newspapers, email, meetings, School Messenger, Remind, STEM Expos, and parent conferences. Parents participate in and attend STEM events, and parent communication is provided in English and in Spanish.

Describe the Academy's work-based and contextual learning in the curriculum.

At Michael R. Null Middle School and C.E. King Middle School, Sheldon ISD STEM Academy students use industry software and simulators via Project Lead the Way Gateway modules and Paxton Patterson stations to experience contextual learning in state-of-the-art STEM Labs. Their core content teachers plan and implement project-based learning to contextualize learning and to engage students in real-world problem solving.

Likewise, at C.E. King High School, STEM Academy teachers create work-based and contextual learning via their core content curriculum and in their respective career pathways. Core teachers implement best practices for project-based learning (PBL) that connects content to real-world problems, field studies, and industry professionals. Virtual learning opportunities via tools such as Nepris supplement the experiences that occur off site and provide additional avenues for students to make connections between content knowledge and its applications to their lives and career goals. In addition, the Project Lead the Way curriculum requires students to utilize industry-based software such as Python, Inventor and Autodesk. Sheldon ISD STEM capstone courses, internships, and practicums will also allow students to gain valuable exposure to professional work environments and to develop skills that give them a competitive edge in attaining their college and career goals.

Since the summer of 2017, STEM students have had experiences with industry personnel on a regular basis through summer camps, PBLs, mentoring opportunities, and the STEMtastic after school clubs. These include professionals such as computer scientists, chemical engineers, electrical engineers, civil engineers, and land developers. The STEM Academy maintains a log of the work-based learning experiences.

Describe the STEM-focused extracurricular activities (field experiences, clubs, and competitions) offered to students.

STEM-focused activities will include a STEM Buddies program, where high school STEM students work with middle school STEM students as they complete STEM activities. This provides an opportunity for older students to become role models who motivate younger students to develop skills in science, technology, engineering and mathematics. Another benefit of this program is that it supports the development of relationships among STEM students and will lead to retaining middle school students in the program throughout their high school years.

STEM clubs at both the middle and high school levels provide additional extension and enrichment opportunities with coding, robotics and drones. Students who participate in STEM Club robotics prepare for the local robotics competitions yearly. The STEM Ambassadors are comprised of students who apply to participate in the organization. STEM Ambassadors learn to articulate the benefits of the Sheldon ISD STEM Academy and serve as official representatives during STEM events. They are an important part of the recruitment process, and they teach visitors about the advantages of the STEM Academy model and learning through PBLs.

The Sheldon ISD STEM Academy hosts STEMtastic events after school twice monthly. The events include opportunities for guest speakers, experiments, and STEM challenges. In addition, field trips provide opportunities for PBL launches, multidisciplinary learning, and STEM-focused team building. During the 2018-2019 T-STEM planning year, Sheldon ISD STEM Academy students participated in field activities that included a lesson at iFly Indoor Skydiving where they experienced a state-of-the-art wind tunnel. A tour of the University of Houston Cullen College of Engineering assisted students in developing a vision to support their college goals and a purpose for utilizing the engineering design process. A trip to the Houston Museum of Natural Science served as the focus for a PBL launch while a Skype session with author Erika Sanchez gave students the opportunity to develop professional communication skills after reading and discussing one of the author's books.