



Application for T-STEM Designation - New/Provisional

2017-2018

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Texas Education Agency
Application for T-STEM Designation
Statutory Authority: Texas Education Code §39.235

Overview of Designation

In order to operate as a Texas Education Agency (TEA)-approved Texas - Science, Technology, Engineering, and Math (T-STEM) Academy, a district must seek and receive T-STEM designation from TEA. In order to receive the T-STEM designation, a school must exhibit key traits from the T-STEM Academy Design Blueprint included in this application. The intent of this designation is to ensure that districts operating T-STEM Academies: integrate all the key characteristics of well-researched and well-designed STEM education while serving students who may not have otherwise considered the fields of science, technology, engineering, and math.

Benefits of Designation

Recognition as an Approved T-STEM Academy:

Schools designated by TEA as state-approved T-STEM Academies will receive various forms of media recognition including, but not limited to: identification on TEA's website as a state-approved T-STEM Academy and recognition in press releases.

Participation in T-STEM Convenings:

Special events hosted by TEA for T-STEM Academy administrators and principals to provide input on policies and procedures that impact T-STEM Academies.

Membership in the T-STEM Network:

Frequently opportunities are provided for principals, teachers, and students in designated T-STEM Academies through the T-STEM network to share best practices through conferences and technical assistance sessions. Membership in the T-STEM Network allows T-STEM Academies to access online exemplars, professional development, and webinars.

Access to Professional Development and Technical Assistance:

Designated T-STEM academies will have access to high-quality technical assistance which includes advice and information from a Leadership Coach who has successfully facilitated the design and implementation of the majority of T-STEM Academies operating in Texas.

Strength of T-STEM Model:

- Through the designation process, TEA will recognize those T-STEM Academies that effectively incorporate T-STEM Design Blueprint elements. The designation process will enable districts and their partners to engage in the research and planning necessary to ensure that their T-STEM Academies are set up in the most effective way possible.
- The T-STEM Blueprint provides a framework for T-STEM Academies to access college and career opportunities that support post-secondary success.

Questions about Completing the Application

Who can fill out a T-STEM Academy designation application?

Any district or charter school campus may apply to be designated as a T-STEM Academy. Potential applicants are encouraged to carefully review the [T-STEM Design Blueprint](#) to determine readiness for implementation of the model.

Any district or charter school campus that is utilizing 2016-2017 as a planning year, and if designated will begin implementation at the beginning of the 2017-2018 school year.

Will have to fill out the same application each year?

No. New designation applicants and those T-STEM Academies that are provisionally designated will complete the comprehensive form. T-STEM Academies that are fully designated must complete the abbreviated T-STEM designation application yearly. The abbreviated renewal application will require a designated T-STEM Academy to provide updates regarding changes in the design and operation of the Academy. However, the primary focus of the annual renewal will be to gather evidence on the Academy's progress along the T-STEM Academy Design Blueprint continuum.

Will this application be required for T-STEM Academy grantees in the future?

Yes. In future funding cycles, completion of this application will be a program requirement for T-STEM Academy grant recipients.

Who can I contact for help filling out this application?

- **New applicants** may contact the T-STEM Program Manager at tstem@tea.state.tx.us.
- **2016-2017 designated T-STEM Academies** may contact their current T-STEM coach.

Application Information

General Information:

- A district or charter must submit a separate application with the required attachments on behalf of each proposed T-STEM Academy.
- The application must be submitted via the online system by **5:00pm, March 31st, 2017**
- A campus must be designated prior to the beginning of the school year in order to operate as a T-STEM Academy for that year. T-STEM Academy approval is valid for a maximum of one year. T-STEM Academy designated must be applied for each year via the TEA T-STEM designation process.

Timeline & Process:

- March 31st, 2017: Applications are due to TEA in order to open a campus as a designated T-STEM Academy during the 2017-2018 school year.
- June 2017: Districts submitting applications by March 31st, 2017 will be notified of the selection or non-selection of the campus as a designated T-STEM Academy on or about June 2017. Applications submitted prior to the March 31st, 2017 deadline may be approved prior to June 2017.
- The district will receive a notification letter of selection or non-selection for each campus it proposes to operate as a T-STEM Academy.

Required Attachments:

- **Official signature:** Official signature of a district or charter official authorized by the local board to bind the applicant organization in a legally binding contractual agreement.

Required Supporting Documents:

- The Academy must have current versions of the following documents on file.
- Each applicant is required to provide an assurance that each of the supporting documents is current for the 2017-2018 school year, signed by all parties, and provides detailed information regarding the specific assurance.
 - **Dual Credit MOU**
 - **Professional Development Plan**
 - **Business/Industry Agreement**
 - **2017-2018 Master Schedule**

Questions:

T-STEM Program Manager
tstem@tea.state.tx.us

Required T-STEM Academy Design Program Elements

The following design elements are the minimum required components that must be demonstrated through this application in order to be designated as a T-STEM Academy:

- A campus must be designated prior to the beginning of the school year to operate as a TEA designated T-STEM Academy for that year. T-STEM Academy designation is valid for a maximum of one year school year. Any campus wishing to be a designated T-STEM Academy must apply each year via the TEA T-STEM designation process.
- The T-STEM Academy must serve grades 9 through 12 and may serve grades 6, 7, and 8.
 - If an academy implements a 9-12 model, it must at least serve students in 9th grade.
 - If an academy implements a 6-12 model, it must, at a minimum, serve students in 9th grade and a middle school grade.
- A campus will select their campus model from one of the options below:
 - Stand-Alone Academy Single Campus: All students are enrolled in the T-STEM Academy.
 - Stand-Alone Academy Multiple campuses: All students on each campus are enrolled in the T-STEM Academy. This model typically spans a middle school and a high school for those academies that are serving students in grades 6-12.
 - School-within-School: A subset of student enrolled in grades 9-12 are enrolled in the T-STEM Academy.
 - 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 a high school
 - School-within-School Other Grade Levels: all students enrolled in grades 6-12 or 9-12 are enrolled in the T-STEM Academy but other grade levels exist on the campus (such as grades K-5).
 - Other: Applicant must describe their model in detail.
- All designated T-STEM Academies are required to report student enrollment on the PEIMS Indicator during submission 1 (Fall Snapshot), 3, and 4. Submission data must be in alignment with the model selected above.
- A campus must implement during the initial designation year. Campuses that intend to enter a planning year should not apply for designation until they are ready to begin implementation.

I. Mission Driven Leadership:

- The Academy's mission statement and planned advisory board must reflect the mission and vision of the T-STEM Initiative.
- The Academy must use program review and formative evaluation to achieve its mission and goals.
- The Academy must promote leadership development and collaboration within the Academy and T-STEM Network.
- For Academies that include 6th, 7th, and 8th grades, leadership teams from the middle school and high school must collaborate on a regular basis.

II. Academy Culture and Design:

- The T-STEM culture must foster positive student identities through meaningful adult and peer relationships.
- All students graduating from the Academy must be prepared for postsecondary coursework and careers in the STEM fields through the integration of the Governor's economic workforce clusters and AchieveTexas STEM cluster into the curriculum.
- The Academy must support all students to graduate high school with four years of math, four years of science, four years of STEM electives, an Endorsement (with a primary focus on STEM endorsements), and a Performance Acknowledgement for a Distinguished Level of Achievement.

III. Student Access, Success, and Persistence:

- The Academy must have a clear plan for student support and success to achieve persistence rates above 70%.
- The Academy must instill the expectation that students expand their participation and leadership in STEM activities outside the classroom and provide the opportunity to do so.

IV. Teacher Selection, Development, and Retention:

- The Academy faculty must possess extensive subject knowledge and integrate project based learning (PBL) and STEM pedagogy into the classroom.
- The Academy must adopt and implement a plan for sustained professional development.

V. Curriculum, Instruction, and Assessment:

- The Academy must align curriculum, instruction, and assessment to provide students with rigorous STEM focused instruction.
- The Academy must deliver Innovative STEM programs that are well-defined, embed critical thinking and problem solving, foster innovation and invention, and are aligned to state and/or national standards, and industry expectations.
- The Academy must integrate science, technology, engineering, and mathematics throughout the curriculum.
- The Academy must continually monitor student progress through assessments and data collection.
- The Academy must promote STEM literacy and prepare students with 21st Century skills.
- The Academy must support three years of STEM electives at middle school and four years of STEM electives at high school.

VI. Strategic Alliances:

- The Academy must promote family involvement in student success.
- The Academy must integrate business partnerships into the curriculum and student learning experience.
- The Academy must partner with IHEs and college/career-preparation entities to ensure that students graduate with college credits and prepared for postsecondary success.

VII. Sustainability and Advancement:

- The Academy must have a plan for continuous improvement and growth.
- The Academy must adopt and implement a plan for sustained professional development.

Scoring of the Application

- Each applicant will be reviewed by T-STEM subject-matter experts from across the state.
- New applicants will be reviewed based on the proposed plan and a follow up with the applicant, if necessary.
- Each applicant will receive a notification letter from TEA indicating which designation category it has been assigned: Designated, Provisionally Designated, or Denied.
- The T-STEM Academy Design Blueprint has been consolidated in the application to highlight priorities for the planning period of designation. Applicants should focus on the benchmarks presented in answering the questions.

CONTACTS

1.1 T-STEM Academy

T-STEM Academy Name	Southwest High School
Mailing Address - Line 1	6400 Westpark, Suite 200
Mailing Address - Line 2	
Mailing City	Houston
Mailing Zip Code	77057

1.2 School District

School District name	Southwest Schools
Mailing Address - Line 1	3333 Bering Dr
Mailing Address - Line 2	
Mailing City	Houston
Mailing Zip Code	77057

1.3 Education Service Center Region	04
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1.4 Person Completing this Application

Name Prefix	Ms.
First Name	Gale
Last Name	Nealy
Job Title	Mathematics/Science Curriculum Specialist
Phone	(713) 784-6345
Email	gnealy@swschools.org

1.5 Academy Principal/Director

Name Prefix	Mr.
First Name	Ralph
Last Name	Butler
Job Title	Principal
Phone	(713) 784-6345
Email	rbutler@swschools.org

1.6 Superintendent

Name Prefix	Dr.
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First Name	Brenda
Last Name	Arteaga
Phone	(713) 784-6345
Email	barteaga@swschools.org

1.7 T-STEM Academy Partner Information

Institute of Higher Education Partner (dual credit provider)	Houston Community College
STEM Business Community Industry Partner	Chevron

1.8 Authorized School District or Charter Official

Name Prefix	Ms.
First Name	April
Last Name	Armwood
Job Title	Chief Innovations & Academics Officer
Phone	(713) 784-6345
Email	aarmwood@swschools.org
Uploaded Signature	View Uploaded Document

Provisions and Assurances Agreement

If designated, the T-STEM Academy assures the following the minimum required components will be implemented in the 2017 school year.

- A campus must be designated prior to the beginning of the school year to operate as a TEA designated T-STEM Academy for that year. T-STEM Academy designation is valid for a maximum of one year school year. Any campus wishing to be a designated T-STEM Academy must apply each year via the TEA T-STEM designation process.
 - The T-STEM Academy must serve grades 9 through 12 and may serve grades 6, 7, and 8.
 - If an academy implements a 9-12 model, it must at least serve students in 9th grade.
 - If an academy implements a 6-12 model, it must, at a minimum, serve students in 9th grade and a middle school grade.
 - A campus will select their campus model from one of the options below:
 - Stand-Alone Academy Single Campus: All students are enrolled in the T-STEM Academy.
 - Stand-Alone Academy Multiple campuses: All students on each campus are enrolled in the T-STEM Academy. This model typically spans a middle school and a high school for those academies that are serving students in grades 6-12.
 - School-within-School: A subset of student enrolled in grades 9-12 are enrolled in the T-STEM Academy.
 - 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 a high school
 - School-within-School Other Grade Levels: all students enrolled in grades 6-12 or 9-12 are enrolled in the T-STEM Academy but other grade levels exist on the campus (such as grades K-5).
 - Other: Applicant must describe their model in detail.
 - All designated T-STEM Academies are required to report student enrollment on the PEIMS Indicator during submission 1 (Fall Snapshot), 3, and 4. Submission data must be in alignment with the model selected above.
 - A campus must implement during the initial designation year. Campuses that intend to enter a planning year should not apply for designation until they are ready to begin implementation.
1. Mission Driven Leadership:
 - The Academy's mission statement and planned advisory board must reflect the mission and vision of the T STEM Initiative.
 - The Academy must use program review and formative evaluation to achieve its mission and goals.
 - The Academy must promote leadership development and collaboration within the Academy and T-STEM Network.
 - For Academies that include 6th, 7th, and 8th grades, leadership teams from the middle school and high school must collaborate on a regular basis.
 3. Academy Culture and Design:
 - The T-STEM culture must foster positive student identities through meaningful adult and peer relationships.
 - All students graduating from the Academy must be prepared for postsecondary coursework and careers in the STEM fields through the integration of the Governor's economic workforce clusters and AchieveTexas STEM cluster into the curriculum.
 - The Academy must support all students to graduate high school with four years of math, four years of science, four years of STEM electives, an Endorsement (with a primary focus on STEM endorsements), and a Performance Acknowledgement for a Distinguished Level of Achievement.
 - The T-STEM Academy must cohort T-STEM students in core classes.
 5. Student Access, Success, and Persistence:
 - The Academy must have a clear plan for student support and success to achieve persistence rates above 70%.
 - The Academy must instill the expectation that students expand their participation and leadership in STEM activities outside the classroom and provide the opportunity to do so.
 7. Teacher Selection, Development, and Retention:
 - The Academy faculty must possess extensive subject knowledge and integrate project based learning (PBL) and STEM pedagogy into the classroom.
 - The Academy must adopt and implement a plan for sustained professional development.

☒ the applicant assures that the above minimum required T-STEM Designation components will be implemented in the 2017-2018 school year.

BACKGROUND

2.0 Is your campus currently designated as an Early College High School (ECHS) through the TEA ECHS designation process?

No

2.1 First year of T-STEM Academy Operation

2017

**2.2 Academy Model:
What is the design of the T-STEM Academy requesting designation?**

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 a high school.

2.3 Target Population

What is the grade level range of students your academy will serve?

6th-12th

The T-STEM academy must serve grades 9-12 and may serve grades 6,7, and 8.

If an academy implements a 9-12 model, it must serve at a minimum grade 9 during the initial designation school year.

If an academy implements a 6-12 model, it must serve at a minimum grade 9 and one middle school grade during the initial designation school year.

Current (if applicable) and projected student enrollment:								
Grades of students to be served	6th	7th	8th	9th	10th	11th	12th	Total Enrollment
2017-2018 projected enrollment	150	150	140	40	38	25	25	568
2016-2017 enrollment (if designated in the 2016-2017 school year)	79	76	107	38	10	13	1	324

County-District-Campus numbers where students from each grade level are enrolled:							
Grades of students to be served	6th	7th	8th	9th	10th	11th	12th
9-Digit CDC #:	101838041	101838041	101838041	101838001	101838001	101838001	101838001

BENCHMARKS

T-STEM Blueprint Instructions

The T-STEM Academy Design Blueprint consists of seven benchmarks that drive the success of an Academy. Each benchmark highlights program requirements and offers a rubric score of developing, implementing, mature, or role model. T-STEM Academies use this tool to measure growth and progress along the continuum.

All seven benchmarks are included in the application. However, applicants may notice the program requirements are not numbered sequentially. This is because not all program requirements are included in the Designation Application. Applicants are not expected to meet or even consider all program requirements at this stage in the process. Instead, those program requirements that form the building blocks of a successful designated Academy are included in the Designation Application. Focused consideration of those particular program requirements will mean a successful applicant will have a strong foundation as a designated T-STEM Academy. The technical assistance that comes as a result of designation will allow the designated Academy to implement the Blueprint Benchmarks' full program requirements over time.

Benchmarks 1-4, 6 & 7

Applicants should first review the program requirements for each benchmark presented in the body of the application. The questions that follow pertain to those specific requirements (i.e. Benchmark 1 questions pertain to Benchmark 1 program requirements). Applicant responses should reflect a close consideration of the highlighted rubric areas in the context of what the campus has in place currently and could feasibly implement during the first designated year. Applications will be scored on the response's evident understanding of the continuum of growth along the rubric, evidence of existing programs, and feasible plan to move forward for each requirement.

Benchmark 5: Curriculum, Instruction, and Assessment

Applicants should review the program requirements presented in each section and rate the campus's existing system in the rubric's check boxes. Applicants are then asked to justify the ratings with evidence, reflection, and a plan to move forward, bearing in mind that with designation comes the tools and assistance necessary to progress along the continuum. Successful applicants will reflect an understanding of Benchmark 5 and are not necessarily expected to have all elements in place before designation.

Benchmark 1: Mission-Driven Leadership

Program Requirements

1.2.C.	Develops and demonstrates support from an advisory board (AB) consisting of representatives from the Academy, school board, district, community, higher education, and STEM businesses to support and guide facility requirements, resource acquisition, curriculum development, internship, externships, and student/community outreach to ensure a successful 6-20 STEM academic and career pipeline.
1.3.A.	Integrates and assesses the level of mission-driven and data-driven decision making evident in the daily work of the Academy.
1.4.A.	For 6-12 campuses, middle school and high school leadership teams regularly collaborate to advance 6-12 alignment and student retention in STEM.

Key Elements for Success

- Job descriptions and roles for design team, leadership team, and advisory board
- Mission is posted and can be articulated by teachers, staff, students, key stakeholders, etc.
- MOUs with T-STEM Centers

	Developing	Implementing	Mature	Role Model
1.2.C.	Advisory Board (AB) established.	AB positions and subcommittees are identified.	AB develops innovative and creative approaches to support Academy mission and vision.	AB addresses major shifts in STEM, educational standards, industry expectations, and analyzes SWOT of Academy, resulting in measurable action items.
1.3.A.	Little or no evidence of data-driven and mission-driven decision making.	Data is used to design student interventions, Annual Action Plan (AAP), and to inform teaching and learning aligned to the mission.	Teachers work interdependently as teams to review data across content areas, develop targeted interventions, and develop common formative assessments.	The Academy's continual analysis of results for improvement is critical to the school's system of interventions and culture of celebration.
1.4.A.	Academy leadership occasionally collaborates with each other (6th - 12th), with T-STEM centers, and T-STEM Coaches.	Academy leaders and staff collaborate with each other (6th - 12th), and with T-STEM Centers and Coaches to integrate STEM teacher preparation, teaching, and learning. <i>And meets criteria from Developing</i>	Academy plans with regional T-STEM Center, vertical alignment teams 6th - 12th (at least quarterly), and meets with their T-STEM Coach, virtually or Face-to-Face (at least monthly). <i>And meets criteria from Developing and Implementing</i>	Academy dialogues on a regular, ongoing basis in vertical alignment teams (6th - 12th), with T-STEM Centers and Coaches, and utilizes available T-STEM resources to improve student achievement and teacher preparation. <i>And meets criteria from Developing, Implementing, and Mature</i>

Benchmark 1: Mission-Driven Leadership

- Program Requirement 1.3.A. addresses the use of data to drive design, decision making, and program review in a T-STEM Academy.
- Designated campuses will be expected to meet or exceed "Implementing" on the rubric above (Data is used to design student interventions, Annual Action Plan, and to inform teaching and learning aligned to the mission) by the end of the first designated year.

Describe below how the campus will meet or exceed this expectation.

Southwest High School supports a collaborative culture that encourages our teachers to work together with the ultimate goal of constantly improving students' ability to learn and succeed. As a STEM Academy, Southwest High School has established the following systems:

- * Administrative Meetings → Principals, Deans of Instruction, District Mathematics/Science Curriculum Specialist, Learning Coach meet before the start of each semester and twice during the semester to analyze STEM End-of-Course (EoC) results, STEM staffing, professional development, STEM conferences, supplies, etc.
- * Project Lead The Way (PLTW) Meetings → All PLTW and Gateway teachers, Principals, Deans of Instruction, District Mathematics/Science Curriculum Specialist, campus Learning Coach, District Learning Coach meet monthly to discuss instruction, assessment data, upcoming projects, material and concerns.
- * JASON Learning Meeting → Jason Learning Science teachers, District Mathematics/Science Curriculum Specialist, campus Learning Coach meet monthly to discuss unit assessments data, projects, field trips, materials and concerns.
- * Professional Learning Communities (PLC) → Teachers meet every Friday in their PLC team to plan, analyze data and discuss best practices.
- * Learning Coaches Meeting → Once monthly, all district-wide Learning Coaches as well as the district Learning Coach meet to plan and support teachers' Project Based Learning (PBL) projects.
- * Student Intervention → All teachers meet bi-monthly with the district's Intervention Specialist to discuss students' academic and behavioral concerns and determine appropriate interventions.
- * Parent/Teacher Conferences → Teachers meet each semester with parents to discuss the progress of their child. Parents and teachers may call for additional conferences during the semester. In addition to the conferences, student feedback is provided through progress reports, report cards and parents can monitor their child's grades through an online program.
- * Common Planning Time → Teachers meet daily in either content or grade-level teams to collaborate, plan, and support teaching and learning.

- Program Requirement 1.2.C. details the requirements for an Academy's advisory board (AB).

List the planned AB members and their job title (example: John Smith, School Board Member; Jan Smith, STEM Business Leader, etc.). Detail how this board will support the Academy work.

Southwest High School has established a STEM Advisory Board. This board provides a forum for open discussion and problem-solving related to student achievement. The STEM Board provides all stakeholder groups a real voice in achieving STEM school goals and their efforts influence our STEM program. Our STEM Advisory Board is designed to increase the participation in our STEM education programs. They increase the cooperation between STEM education and the private sector by encouraging more collaboration between all stakeholders. Therefore, this enables our STEM education to be more inclusive of the science, technology, engineering and mathematics reflected in the local business/industry market in the Houston area. Most of all, the STEM Advisory Board can promote, improve, and directly influence STEM education, culture, and student achievement in our STEM Academy. Our STEM Advisory Board also assist in the preparation of our STEM students for college or workforce entry in STEM fields.

The Southwest High School STEM Advisory Board meets quarterly - Fall, Spring, Summer.

Southwest High School STEM Advisory Board:

- * Linda Stearns - Texas PLTW Certification Officer, UT-Tyler, Higher Educational Leader
- * Bryttie Kurkenbruh - Microsoft; Major Account Executive, Government Solutions Team, Business Leader
- * LaTravia Hubbard - Program Analyst, Law Firm Operations ELM Solutions, Community Leader
- * Diego Masimo, SW Alum - Engineer, Chevron, Business Leader
- * Karen Franklin - World Youth Foundation, Community Leader
- * Raynese Edwards - CEO, Outside In Consultant, Business Leader
- * Shalin Shah - Chief Financial Officer, Flat Rock Development, LLC, School board member
- * 1 STEM parent
- * 1 STEM teacher
- * 1 STEM 11th grade student
- * 1 STEM 12th grade student
- * Ralph Butler - School Principal
- * April Armwood - District Chief Innovations & Academics Officer
- * Shevonne Elliott - District Learning Development Coach
- * Gale Nealy - District Mathematics/Science Curriculum Specialist

The mission of our STEM Advisory Board is to support and offer input regarding academy operations such as facility requirements, resource acquisition, curriculum development, internship, externships, and student/community outreach.

Program Requirement 1.1.A: Provide the Academy mission statement below.

The Southwest High School STEM Academy mission is to provide students a rigorous, interdisciplinary learning environment focused on science, technology, engineering and mathematics, to foster the joy of discovery, and to promote a collaborative culture of ethical and innovative problem-solving.

- Program Requirement 1.4.A details the requirements for 6th-12th campuses to collaborate on a regular basis to advance 6th-12th alignment and student retention in STEM.

Describe below how the campus will meet or exceed this expectation. If Academy is 9th-12th write, "Not Applicable".

Southwest High School and Southwest Middle School share the same campus. Because they share the same faculties, there is daily planning and collaboration between the principals and deans. The two campuses share the same learning coach and counselor, who also regularly collaborate with the rest of the team.

Please note the following collaborative systems:

* District-level PLC Meetings → Teachers meet each Friday in their PLC teams by content to plan, analyze data and discuss best practices.

* T-STEM Conference → A select group of STEM teachers attended the February 2017 conference in Dallas. The campus Learning Coach, Southwest Middle School Dean of Instruction and the District Mathematics/Science Curriculum Specialist also attended. The teachers and District Mathematics/Science Curriculum Specialist presented a collage of conference sessions to the entire district STEM teachers.

* PLTW Conferences → All secondary PLTW teachers and a selection of elementary PLTW-Launch teachers attended the 2016 national PLTW conference and the 2017 Texas PLTW conference. The Middle and High school Deans, District Mathematics/Science Curriculum Specialist, District Learning Coach and The Chief Innovations & Academics Officer met during the conference to debrief on sessions that can benefit our Middle and High school campuses.

* The District Mathematics/Science Curriculum Specialist conducts ongoing weekly walkthroughs and planning with all STEM teachers to ensure that teachers maintain a rigorous and innovative STEM curriculum.

* JASON Learning Meetings → All JASON Learning teachers meet with the District Mathematics/Science Curriculum Specialist to plan and discuss projects, assessments data, materials and concerns.

* Project Lead The Way (PLTW) Meetings → All PLTW and Gateway teachers, Principals, Deans of Instruction, District Mathematics/Science Curriculum Specialist, campus Learning Coach, District Learning Coach meet monthly to discuss instruction, assessment data, upcoming projects, material and concerns.

Benchmark 2: T-STEM Academy Culture and Design - Blueprint

Texas Science, Technology Engineering and Mathematics

Benchmark 2: T-STEM Academy Culture and Design

Program Requirement: 2.1 Personalization

- 2.1.A** Addresses in AAP and strategic plan the details for remaining small, allowing for personalization and maintaining collaborative learning communities of students.
- 2.1.B** Plans and implements a non-graded student advisory program that is regularly scheduled, noted in the master calendar/schedule, and focuses on personalizing the student experience, (builds relationships with students and parents, develops character, and fosters global literacy).
- 2.1.C** Develops a process for hearing and responding to student voice.

Key Elements for Success		Example Artifacts	
- Student IGPs w/ CCRS, Endorsements, and Performance Acknowledgement plans - Master schedule for advisory - Student enrollment		- Opportunities for orientation sharing and team building activities both on- and off-site - Advisory class curriculum - Student goal setting and reflection logs - Teacher mentors assigned to students - Pre- and post-assessments of advisory class goal - Students sit on advisory board and/or have voice in student work products, clubs, competitions, governance, and course offerings - School wide activities to build/share culture - Student ambassadors serving as classroom greeters and/or guide tour groups - Teacher/student ratios, actual class sizes - Surveys documenting students' elective requests	
Developing	Implementing	Mature	Role Model
1. District and Academy resources are allocated to ensure teaching staff and facilities remain small.	1. Annual Action Plan and Academy handbook address plan for maintaining personalized, small, learning communities.	1. Students are regularly afforded multiple opportunities to build relationships with staff and peers such as working in academic and/or competitive teams horizontally and vertically.	1. Protocols are developed to ensure students have a clear and documented voice in the Academy (student council, advisory committee to the director, suggestion box, etc.
2. Student advisory is regularly scheduled and focuses on relationships, building school capital, developing and fostering global literacy.	2. Advisory class has written curriculum with goals, expectations, scope, sequence, and pacing guides.	2. Teachers work in teams to develop systemic advisory programs with horizontally and vertically aligned student outcomes.	2. Annual resources are allocated to develop, revise, and sustain advisory program with input from students, teachers, parents, and external partners.
	<i>And meets criteria from Developing</i>	<i>And meets criteria from Developing and Implementing</i>	<i>And meets criteria from Developing, Implementing, and Mature</i>

Texas Science, Technology Engineering and Mathematics

Benchmark 2: T-STEM Academy Culture and Design**Program Requirement: 2.1 Personalization**

- 2.1.D** Arranges for a flexible school day with blocks of time that support student learning (tutorials, collaboration, meetings).
- 2.1.E** Celebrates high quality student work through student exhibits on-site, web-based, and/or in state and national forums.
- 2.1.F** Provides every 6th – 12th student with an individualized STEM-focused high school graduation plan that addresses: four years of math and science; an Endorsement in STEM, Business and Industry, Public Service, or Arts and Humanities; identifies target areas for Performance Acknowledgements; and is at least annually reviewed and revised with the counselor, student, and family.

Example Artifacts

- Honor roll, grade level/school-wide celebrations
- Classroom and building displays
- Number of students participating in student exhibits
- Agendas/signatures for IGP meetings with students and family
- IGP, record folder/portfolio, 6th-16th course plan
- Master schedule, tutoring schedule
- Minutes/action items from site based committees, etc.
- Website showcasing student work
- Documentation of at least annual 6th – 12th IGP meetings with parents and students

Developing	Implementing	Mature	Role Model
1. Academy develops a flexible schedule that supports student success.	1. Schedule is developed with input from teachers, counselors, content coaches, extracurricular and internship/capstone requirements.	1. Teachers work in teams to adjust daily schedule to facilitate interdisciplinary PBL.	1. Schedule is adjusted to meet student needs according to data, student, teacher, and parent voice; intervention and extension plans.
2. Academy regularly schedules for students to share their knowledge and work products.	2. Students participate in panel presentations, debates, academic fairs, webinars, online challenges, competitions, design challenges, etc.	2. Resources are allocated to provide students with opportunities to participate in state and national forums, conferences, and competitions (financial, facilities, staffing, transportation, etc.).	2. Academy establishes protocols with input from key stakeholders to gauge the effectiveness of student participation in competitions, challenges, etc. towards promoting college and career readiness as well as Academy goals.
3. Academy develops IGP for each 6 th – 12 th student that addresses STEM pathways, THECB College and Career Readiness Standards.	3. Student, counselor, and family regularly review and revise the IGP to address student goals for courses, grades, Endorsements, Performance Acknowledgements, college entrance exams, PSAT/ACT/SAT, career aspirations, etc.	3. Annually reviews and revises IGP according to previously established protocols and timelines.	3. Mentors are assigned to students to develop intervention contracts to address deficiencies or acceleration opportunities in IGP.
	<i>And meets criteria from Developing</i>	<i>And meets criteria from Developing and Implementing</i>	<i>And meets criteria from Developing, Implementing, and Mature</i>

Texas Science, Technology Engineering and Mathematics

Benchmark 2: T-STEM Academy Culture and Design**Program Requirement: 2.2 Culture**

- 2.2.A** Collaborates with stakeholders to develop a new handbook or modify the existing handbook with clear procedures, policies, and consequences that support the development of a strong T-STEM culture.
- 2.2.B** Involves all stakeholders in developing a culture of respect, responsibility, trust, and meaningful adult and peer relationships throughout the Academy in order to foster positive student identities.
- 2.2.C** Creates a professional learning community environment of collaboration, teaming, and high expectations among administrators, teachers, and stakeholders, with a focus on and a commitment to the learning of each student.

Example Artifacts

- Handbook, attendance/discipline goals/data
- Customs and celebrations, modeling lessons for respect, responsibility, trust
- Student, teacher, parent surveys address culture
- Sharing of ideas and strategies and joint problem-solving are widespread.
- School developed common vocabulary for evidence of "good teaching"
- PLC protocols and expectations (meeting times, book studies, goals, results based on interventions, reflections on results – new actions, etc.)
- Collaborative planning of learning and teaching activities
- Widespread teamwork involving teachers and support staff
- Peer walkthroughs, lesson evaluations, and critical friends reflections

Developing	Implementing	Mature	Role Model
1. Handbook is developed to address student, parent expectations and a culture of respect, responsibility and trust. 2. Professional Learning Community (PLC) is developed which supports staff devoting effort, energy, time, and resources into incorporating valuable new strategies into their practice.	1. Handbook addresses key tenets of cultural beliefs of Academy (student ability and achievement, efficacy and effort, power, distributed leadership, cultural sensitivity, proactive and reflective practice, etc.). 2. An inquiry-based continuous improvement orientation to practice is pervasive, with data informing practice and learning widely shared. <i>And meets criteria from Developing</i>	1. Handbook is developed with input from key stakeholders with clear policies, procedures, and consequences (attendance, discipline, student contracts, teacher extended days, etc.). 2. Staff regularly and consistently plans together, collaborates and shares ideas through meetings, website resources, teaming, team teaching etc., and garners input from external experts. <i>And meets criteria from Developing and Implementing</i>	1. There is a high degree of commitment to school-wide professional values and a strong sense of cohesion and consistency of approach, with protocols to analyze, build, and assess effectiveness of culture. 2. A desire to do the best for <i>all</i> students pervades the school as evidenced by protocols for regular and deep school-wide dialogue about good teaching, assessment, learning, projects, and successes of individual students. <i>And meets criteria from Developing, Implementing, and Mature</i>

Benchmark 2: T-STEM Academy Culture and Design - Responses

- Applicants should consider the program requirements listed above as they pertain to a student's individualized learning experience.

Describe the campus's efforts to support students to reach this goal. This description should include plans for: an advisory period, a positive school culture, enhanced relationships with parents, and responding to student voice.

Southwest High School supports a collaborative culture that encourages our teachers to work together with the ultimate goal of constantly improving students' ability to learn and succeed.

* STEM students will be assigned a mentor for the school year. The mentors will encourage students to see STEM in a different light. The role of the mentor is to encourage students to pursue STEM by showing the creative, diverse and unexpected career paths that can result from degrees in these fields.

* STEM students will have an advisory period for the 2017-2018 school year.

* The Southwest High School will host a 4-day STEM Orientation each summer for entering 9th grade students.

* STEM students will maintain a Reflection Log which contains regular entries by the student, detailing their experiences and emotions with regards to their learning process.

* Monthly Newsletters will go out to parents with information on upcoming projects, field trips, parent/teacher conferences, community events, etc.

* STEM students will set their own goals for projects, assessments, and assignments for their classes. STEM students will use their Reflection Logs to measure and track the progress of their goals.

* Students participate in Project Based Learning (PBL) where they are engaged in meaningful inquiry of personal interest to them and where collaboration and personalized learning are emphasized. PBL is an effective and enjoyable way to learn and develop deeper learning competencies required for success in college, career and civic life.

* Students participate in Capturing Kids Hearts, a program where students are taught to take personal responsibility, make high quality decisions, build relationship successfully and communicate professionally.

* Safe and Civil Schools offers practical programs and inspiring staff development services that help our teachers:

- > Develop better management strategies in schools.
- > Learn effective classroom management procedures
- > Implement school-wide positive behavior support and response-to-intervention for behaviors.
- > Design and implement a better school improvement plan.

* AVID, Advancement Via Individual Determination, is a program which holds students accountable to the highest standards and it provides academic and social support. In addition to preparing all students for college and post secondary opportunities.

* Project GRAD is a program that support high school students at critical junctures of their educational path to make sure they make and accomplish their goals.

* All 8th grade students are enrolled in a College and Career Readiness course for one semester.

Applicants should consider the program requirements listed in the "Benchmark 2 Program Requirements" link above as they pertain to postsecondary college and career success.

- 6th-12th STEM-focused high school graduation plan: IGP with Endorsement, Performance Acknowledgement, and Distinguished Achievement.
- 6th-12th STEM career and college exploration, and college readiness preparation with students and parents to include college transition plan.
- Collaboration with IHE.
- All students should graduate with 12-30 hours college credit and be prepared for postsecondary coursework in STEM fields.

6th-12th STEM-focused High School Graduation Plan

Southwest Middle School students in grades 6 – 8 have the option of participating in courses in the areas of computer science and engineering for Project Lead the Way (PLTW) Gateway curriculum and JASON Learning is integrated in all middle school science classes. To better prepare our students for the mathematics high school curriculum and address many of the critical components in the PLTW Gateway curriculum, students in grade 8 have the option to enroll in Algebra I.

We offer endorsements based on students' interest. A student may earn an endorsement by successfully completing the curriculum requirements for the endorsements and completing an internship. Currently, high school students enrolled in Southwest Schools have an option to participate in one of 4 endorsements:

- * STEM (engineering and computer science)
- * Public Service
- * Arts and Humanities
- * Multidisciplinary

Our 8th - 12th grade students and administrative team collaboratively use Personal Graduation Plans (PGP) to ensure desired outcomes for college and career readiness for each of our students. Our students PGP is a working document used by our administrative team to track student completion of graduation requirements.

6th-12th STEM Career, College Exploration, College Readiness Preparation with Students and Parents

Students in Southwest Schools have multiple opportunities to engage in career and college exploration through events such as:

- * Annual college fair events
- * College recruiters
- * Annual Career Day / College Day
- * Parent Session for College - We provide our parents with information and how to apply for:
 - > FAFSA (Federal Student Aid)
 - > scholarships
- * Test Preparation - Students are required to attend campus college prep tutorials for ACT, SAT, and TSI.
- * Field Trips for students and parents - Parents are urged to participate in field trip events that help promote college readiness and provide opportunities to learn about financial aid, first-generation college preparation, and what to expect from the college curriculum.

The college transition plan includes skills that will help students to understand the expectations of moving successfully from high school to college. Before students exit their 8th grade year, both students and parents have to meet with the school counselor and principal to discuss the personal graduation plan.

Collaboration with IHE

- * Houston Community Center (HCC) - Students are able to receive Dual Credit options through HCC.
- * University of Texas at Tyler (UT-Tyler) - For 2017-2018, we will collaborate with UT-Tyler for Advance Dual Credit in Introduction to Engineering Design and Principles of Engineering.

All Students Should Graduate with 12-30 Hours College Credit

Southwest Schools, in partnership with the post-secondary institution Houston Community College offers dual credit courses that meet the requirements of both a high school diploma and two-year college degree. Such an experience increases students' opportunities to engage in rigorous courses in the post-secondary curriculum.

Current students have the opportunity to graduate with 12 or more college credit hours from Houston Community

College, with an academic option to obtain an Associate degree in Science beginning the 2017 - 2018 school year.

- Program requirement 2.2.C. highlights the importance of a strong Professional Learning Community for the success of all students.
- Review at the rubric continuum and tools in Example Artifacts from a successful Academy.

Describe how the campus will use these tools to progress into a "Mature" campus over time. "Staff regularly and consistently plans together, collaborates and shares ideas through meetings, website resources, teaming, team teaching, etc., and garners input from external experts." This description may include inquiry-based approaches, data informed decision making, Professional Learning Communities, collaboration, and integration of technology.

The primary purpose and function of the Southwest High School professional learning community is the continuous professional learning of our teachers. Continuous and sustained adult learning enhances quality teaching which benefits our students instruction and learning.

Our professional learning community tracks the performance of our students. When data indicate that students are not learning to expectations, our teachers examine all factors that could contribute to these results and identify the challenges. Their next step is to create new outcome statements for the students which addresses their low performance.

Teachers also examine and select new teaching practices they believe are the best options to improve student learning. Simultaneously, they establish new goal(s) for their own learning that will target their acquisition of new knowledge and skills required of the new practices. These decisions prepare them for higher-quality teaching of their students.

The PLC teams determine what they need to learn in order to ensure their teaching produces successful learning for their students. In this way, students are the prime benefactors of the professional learning community robust data study and targeted professional learning.

In this way, teachers gain increased respect and status as true professionals -- a gain for our school, the teachers, and the students. This shared leadership role allows our teachers to make valid and significant decisions regarding teaching and learning -- within, of course, the parameters of national, state, and district policies and regulations.

* PLC → Teachers meet in their PLC teams each Friday for 2.5 hours.

* STEM Teachers participate in Walk Throughs at least once each 6-week grading period. Feedback is discussed during that week's PLC meeting in order to develop a shared understanding of learning progressions. This will also foster a teacher learning mentality that would include research of best practices and their applications and the use of evidence to positively impact learning. .

Texas Science, Technology Engineering and Mathematics

Benchmark 3: Student Outreach, Recruitment, and Retention**Program Requirement: 3.1 Recruitment and 3.2 Open Access**

- 3.1.A** Develops structures and processes for marketing and recruitment to encourage participation from underserved students and families (transportation or plans for transportation to the school, child care for family events, and translation of all recruitment and marketing materials).
- 3.1.B** Actively partners with feeder middle and/or elementary schools to develop student interest in STEM education and to increase advancement rates from middle school STEM to high school STEM.
- 3.1.C** Develops a systemic recruitment plan that includes students, parents, counselors, teachers, district, and community.
- 3.2.A** Develops an admission policy to include an open access, lottery-based selection process that encourages applications from all students. The application will not be based on state assessment scores, discipline history, teacher recommendation, minimum GPA, or other requirements that would be used to limit selection.
- 3.2.B** Consists of a population that is 50% or greater economically disadvantaged and underrepresented students.

Key Elements for Success		Example Artifacts	
Written admission policy and application with lottery explained		- Recruitment schedule and locations (schools, churches, community centers, etc.) - Brochures and marketing items in English, Spanish, and/or relevant second language - Survey data (community input, enrollment trends, etc.) - STEM feeder school crosswalk recruiting curriculum - Plan to recruit with feeder schools - Documented support efforts (transportation, child care, etc.) - Needs assessment - Number and percentage of students matriculating from middle school STEM to high school STEM	
Developing	Implementing	Mature	Role Model
1. Academy details a plan and process for marketing to and recruiting from appropriate communities and feeder schools to reach high need and underrepresented students. 2. Academy has at least 50% economically disadvantaged and underrepresented students, via an open, lottery based admission policy, where the application <i>does not</i> include requirements that might deter students such as STAAR, grades, teacher recommendation, discipline, or attendance.	1. Marketing and recruitment plan developed with input from key stakeholders, and targets feeder pattern, community needs, and cultural relevance. 2. Clearly communicated admission policy that indicates target enrollment goals and implements support processes structures such as transportation, child care, etc. to meet goals. <i>And meets criteria from Developing</i>	1. Marketing plan highlights Academy's STEM pathways and Endorsements; and industry and higher education partners. Recruitment efforts include Academy staff, students, and parents. At least 80% of 8 th grade MS STEM students matriculate to HS STEM Academy. 2. Academy tracks enrollment data and indicates some increases in recruitment/enrollment rates. <i>And meets criteria from Developing and Implementing</i>	1. Students and staff from Academy collaborate with feeder schools to develop, deliver, and monitor recruitment results from STEM crosswalk engagement lessons conducted at the feeder middle schools. At least 90% of 8 th grade MS STEM students matriculate to HS STEM Academy. 2. Academy employs a needs assessment to analyze demographic trends to ensure equitable access and recruitment of greater than 50% economically disadvantaged and underrepresented students and sustains a full complement of students at each grade level. <i>And meets criteria from Developing, Implementing, and Mature</i>

Texas Science, Technology Engineering and Mathematics

Benchmark 3: Student Outreach, Recruitment, and Retention**Program Requirement: 3.3 Student Support and Retention**

- 3.3.A** Develops and implements systemic, tiered strategies for student support and retention (outreach, early intervention strategies, mentoring, tutoring, counseling, and other supports for academic and socio-emotional growth).
- 3.3.B** Hosts 5th – 6th and 8th – 9th orientation session(s) and summer bridge program(s) to facilitate successful student transitions and retention into a STEM-focused, college preparatory, project-based learning environment.
- 3.3.C** Provides all students with opportunities and the expectation to assume roles of responsibility within the classroom, Academy, and community.
- 3.3.D** Supports and monitors 6th – 12th student participation in STEM activities both within and outside the classroom to ensure that all students engage in STEM clubs, STEM competitions, and STEM field experiences.
- 3.3.E** Hosts parent seminars to develop deep understanding and commitment to the rigor of college readiness and the high expectations of a STEM Academy.

Example Artifacts

- Student, parent, staff contracts - Student retention and persistence plan - Orientation and bridge agendas - Exit interviews - IGPs Minutes from persistence meetings, retention/attrition data		- Program adjustments due to student and community voice - Copies of trainings and participation of parents/community - Satisfaction/interest surveys from students, parents, community, staff, etc. - Lists of clubs, service learning projects, STEM activities, STEM field experiences, and planned competitions	
Developing	Implementing	Mature	Role Model
1. Academy develops a strategic plan for student retention and persistence, and maintains persistence rates above 70%.	1. Student persistence rates range between 70-80% and the strategic plan addresses research-based supports such as annual IGP review, parental involvement, tiered interventions, and cultural relevance.	1. Student persistence rates range between 81-90%, and the strategic plan includes yearly metrics, analysis of why students leave, and a plan to identify and prevent at-risk students from leaving.	1. Campus engages in ongoing dialogue to address persistence data (lack of course credit, leaving the Academy) and uses data to ensure persistence rates above 90%.
2. Academy develops student orientation/summer bridge program(s), student clubs, and plans for external STEM activities and competitions.	2. The orientation/summer bridge program sets priorities and includes a timeline with skills, tools, and resources for students to successfully transition to a STEM environment.	2. The orientation/summer bridge program is implemented as planned and continually refined annually, with a complete scope and sequence and supporting materials.	2. The orientation/summer bridge program monitors initial student success, identifies struggling students early on, and ensures those students have additional support.
3. Students can select from a small number of leadership opportunities available.	3. The staff encourages students to select leadership opportunities.	3. The staff monitors student involvement in leadership and STEM activities, clubs, and competitions; and develops interventions for students who have minimally participated.	3. Student leadership is evidenced in nearly every non-classroom related initiative or event and at least 90% of students participate in leadership and/or STEM activities, clubs and competitions.
4. Academy creates STEM Academy orientation for parents and stakeholders.	4. Opportunities exist for parents and stakeholders to participate in service learning, and/or attend student presentations.	4. At least bi-annual opportunities exist for parents and stakeholders to participate in STEM activities.	4. Annual parent and stakeholder participation goals are developed and monitored for continued improvement.
	<i>And meets criteria from Developing</i>	<i>And meets criteria from Developing and Implementing</i>	<i>And meets criteria from Developing, Implementing, and Mature</i>

Benchmark 3: Student Outreach, Recruitment, and Retention

- Review Program Requirement 3.1.A/B/C and 3.2.A/B.

Describe the Academy's open-access admission policy, the marketing, and recruitment plan to parents, students, and the community; and partnering with feeder schools to increase advancement rates in STEM from elementary to middle to high school.

As an open-enrollment charter school, the only requirement for admittance into Southwest Schools is a student's residency. Admission and enrollment of students shall be open to persons who reside within the geographic boundaries stated in the approved original charter application or amended thereafter. Southwest Schools has been approved by original charter and amendment to admit students from 8 counties and 154 ISDs.

Application forms will be printed and distributed through the Accountability/Operations Department prior to November 1.

Current students recommit by returning a completed Application form and community students who come in are give an Application form.

As application forms come in, names of students are placed on grade level rosters in chronological order of receipt.

Each grade level is given an enrollment cap of 24 students per class. Once enrollment caps are met, students are placed on a "Wait List".

The total number of students enrolled at Southwest Schools shall not exceed the number of students approved in the charter or subsequent amendments and will be based on classroom capacity.

If space is available an eligible student will be admitted and enrolled on any day of the week and will be counted as and considered a charter student immediately.

Southwest Schools requires all applicants for admission to submit a completed application in order to be considered for admission. This includes the current student population at each campus who seek re-enrollment. Southwest School will have open registration annually from November 1 – January 1

Students make "application" to an open enrollment charter school through the "Application Form". By law the Application form requires demographic information only. . . .a one pager.

At the end of the "Open Registration" period letters are sent to parents to indicate the student(s) have been accepted for enrollment at the school.

Enrollment packets are then distributed to students who have received an acceptance letter.

Students are formally enrolled once the completed enrollment packet has been received and verified.

After January 1 if a campus has any vacant seats on the Master Grade Level Roster, any inquiry to the school can fill out an application and enrollment packet and be accepted to the school for the upcoming year.

Marketing activities for Open Enrollment are coordinated through the Community Relations and Fund Development Department, in partnership with campus leadership. Campus teams will participate in neighboring school activities, when able, to promote our STEM curriculum and partner STEM organizations. Marketing materials are produced using STEM as a focal point for recruitment efforts.

- STEM Academies host orientation, summer bridge, and college preparatory seminars for parent and students; encourage student leadership, monitor student participation in STEM activities, clubs, competitions and field experiences; and develop intervention plans for students who minimally participate.
- STEM Academies maintain persistence rates above 70%, with a goal of at least 90%

Describe the campus plan to progress to "Mature" on the continuum for Program Requirement 3.3 Student Support and Retention (review the "Benchmark 3 Program Requirements" link at the top of this page).

Summer STEM Bridge Orientation Program

Entering 9th graders are required to attend a 4-day Summer STEM Bridge orientation program where the emphasis is on the various areas of STEM. The Summer STEM Bridge program provides entering students with the tools necessary to navigate a successful transition to Southwest High School. Students will have the opportunity to connect with other incoming 9th graders and STEM teachers. These students completed their Personal Graduation Plan (PGP) in the 8th grade.

During the Summer STEM Bridge Orientation, students entering the STEM Academy will receive an advisor and mentor.

The 4-day academic program emphasizes increasing students' mathematics/science skills, introducing them to high school and stimulating their interest in science and engineering as a potential career path.

Each day, students participate in activities that include problem solving, study, research, writing and communication skills incorporated with biology, chemistry, physics, design concepts, and field excursions. Activities are led by Southwest High School teachers, District Mathematics/Science Curriculum Specialist and 11th and 12th grade STEM students. Every lesson is followed by hands-on activities to ensure full understanding of the subject being taught.

Benchmark 4: Teacher Selection, Development, and Retention

4.1.E.	Provides opportunities for ongoing professional development to improve teachers' content knowledge, technology embedded instruction, integrative STEM pedagogy, college and career readiness standards, instructional strategies for ensuring a successful P-20 pipeline, and leadership capacity.
4.2.A.	Develops a Professional Development (PD) plan for a sustained professional development model of continuous learning based on student results, teacher development, and the short- and long-term goals of the Academy.
4.2.B.	Adopts a systemic professional development model of continuous learning that addresses prioritized needs as informed and evaluated by multiple sets of quantitative and qualitative data (student assessment data, instructional/classroom evaluations, technological developments, workforce demands, demographic changes, and community/societal expectations and needs).
4.2.C.	Sustains a PLC by instituting job-embedded ongoing opportunities for continuous learning, peer coaching/mentoring, STEM externships, and participation in STEM teacher and leader cadres for teachers and administrators (research-based practices, content competence, new instructional strategies, technology integration, reflective inquiry, and student artifact analysis).
4.3.C.	Adopts and implements a plan for new teachers to include orientation, induction, acculturation, mentoring, professional development, and administrative support.
4.3.D.	Designs or employs innovative programs to support the recruitment and selection of highly qualified STEM teachers.

Key Elements for Success

- Master schedule with common planning time
- Teacher turnover rate
- Teacher mentoring program
- Written recruitment plan

	Developing	Implementing	Mature	Role Model
4.1.E	Academy has authority to hire "best" qualified for goals of the Academy and STEM blueprint requirements.	Develops a written plan for creative recruiting to ensure high qualified, effective teachers.	Develops annual needs assessment and actively implements a teacher recruitment and placement program.	Resources are allocated for recruitment of best qualified candidates, with the Academy partnering with teacher preparation programs such as UTeach, to recruit highly qualified teachers for Academy needs.
4.2.A. 4.2.B.	Develops PD plan with clear pedagogy expectations, aligned with mission goals, teacher needs, and student needs	Academy regularly uses diverse assessment tools/processes, enhanced media, adult learning theories, professional reflection time, problem-solving protocols, and self-paced learning with computer and human interaction for support, coaching, mentoring, and collegial interaction.	Needs assessment and PD plan address teacher and student retention to include teacher, student, and parent voice in decision-making process.	Meaningful partnerships with external organizations ensure progressive expectations for educators' application of content knowledge, curriculum design, and delivery.
4.2.C.	Develops a PLC plan that identifies ways in which teachers will work in collaborative teams to build shared knowledge and formative/summative data.	Teachers collaboratively develop 6th - 12th common essential student outcomes which reflect their efforts to build shared knowledge regarding best practice, (STEM integration, college and career readiness, 21st century skills.).	Teachers collaboratively clarify the criteria they use to judge quality of student work and criteria is consistently applied horizontally and vertically.	Teachers participate in externships and mentorships with higher education and industry. PLC plan is annually monitored, evaluated, and revised for effective practice.
4.3.C	Develops an Orientation plan aligned to Academy mission and vision, and teacher enculturation.	Induction plan addresses Academy expectations for instructional skills; interactions with students, parents, and community; classroom management; assessment of learning; technology; professional development; and mentoring.	Induction process is clearly enunciated, consistently practiced, and evaluated and revised for effectiveness.	Each new teacher participates in the induction process, is assigned a mentor teacher, understands the strategic goals of the Academy, and completes a Needs Assessment that identifies areas for individual professional development.
4.3.D.	Common planning time within the school day focuses on PLC collaboration.	Teams develop team-time norms, set goals, and evaluate effective use of team-time for curriculum development, student artifact reflection, parental involvement, etc. <i>And meets criteria from Developing</i>	Teams develop common metrics to measure and inform, in order to identify strengths and weakness in their individual practice, and to collaboratively improve their individual and collective efforts to help all students learn. <i>And meets criteria from Developing and Implementing</i>	Collaborative school-level planning is judged effective as evidenced by student learning outcomes. <i>And meets criteria from Developing, Implementing and Mature</i>

Benchmark 4: Teacher Selection, Development, and Retention

- Review program requirements for benchmark 4 in the link above.

Describe how the Academy will recruit, support, and retain highly qualified teachers. This should include plans for:

- Teacher recruitment and retention plan
- Sustained professional development (PD) plan which incorporates project-based learning and an integrated STEM curriculum into instructional practices based on qualitative and quantitative student data. (A timeline of planned PD will be uploaded in Benchmark 7.)
- A job-embedded Professional Learning Community with common planning times for collaboration.
- New teacher support (new to Academy and/or teaching profession).

Teacher Recruitment and Retention Plan

STEM teachers are chosen based on their strength in mathematics, science, technology, and their interest in teaching STEM courses. To retain our STEM teachers, mathematics and science teachers are paid a stipend each school year.

Professional Development

Teachers would have opportunities to attend professional development similar to the ones that were provided this year.

- * PLTW teachers are trained during the summer months at University of Texas (UT) at Tyler.
- * All teachers attended a 3 day Problem Based Learning (PBL) training in August 2016.
- * All teachers attended a follow-up PBL training in January, 2017.
- * Learning Coaches will attend a 3 day PBL training June, 2017.
- * STEM teachers are required to attend all STEM conferences.
- > T-STEM
- > PLTW (national and regional)
- > JASON Learning (national and regional)
- > STEM (national and regional)

Professional Learning Community (PLC)

Teachers meet with their PLC Team each Friday for 2.5 hours in order to analyze data, plan for learning, evaluate current practices, research new methods and best practices as well as develop relational trust amongst team members.

New Teacher Support

New STEM teachers receive support from their PLC team, District Mathematics/Science Curriculum Specialist, Learning Coach, and Dean of Instruction. In addition, all new teachers participate in the district's monthly "Learning Series" training.

Benchmark 5: Curriculum, Instruction, and Assessment

Example Artifacts: 5.1

- Course syllabi, lesson plans, unit lessons, PBL, scope, sequence, pacing guides
- Lessons include STEM standards, state standards, national standards, college and career readiness standards, 21st century skills
- Benchmark schedule, course passing rates, retention rates
- Student portfolios, IGPs, counseling, advising, college crosswalk, and feedback loop
- Plans for PSAT, Accuplacer, TSI, CTE, interventions, etc.
- Horizontal and vertical alignment of curriculum
- Students graduate with Endorsements & Performance Acknowledgements

In Benchmark 5, all program requirements are scored individually. There are no separate metrics. Assess the level of implementation for the program requirements below according to the standards to the right.		Developing Investigate, Research, and Create	Implementing Formalize, Revise, and Publish	Mature Data-driven evaluation of effectiveness of program requirements	Role Model Continually assesses to document successes and challenges with action plans implemented to correct deficiencies in performance
5.1.A.	Aligns curriculum, instruction, and assessment (such as, but not limited to, Texas CCRS, national and state standards, content, context, culture, cognitive level, competencies, skills, processes, 21st century skills, and STEM synthesis).	<i>Role Model</i>			
5.1.B.	Develops a scope, sequence, and pacing guide for a vertically and horizontally aligned curriculum centered on state standards, career and college readiness standards, STEM integration, and industry expectations.	<i>Role Model</i>			
5.1.C.	Develops an assessment and intervention plan to address gaps in student achievement and areas for extension.	<i>Mature</i>			
5.1.D.	Supports and encourages all students to successfully complete four years of mathematics, four years of science, four years of STEM electives, and at least one Endorsement in STEM, Business and Industry, Public Services, or Arts and Humanities, with a primary focus on a STEM Endorsement; and earn a Distinguished Level of Achievement as well as a Performance Acknowledgement in order to graduate college ready.	<i>Implementing</i>			
5.1.E.	Offers dual credit, articulated concurrent enrollment, AP or IB courses that all students will graduate with 12-30 college credit hours.	<i>Mature</i>			
5.1.F.	Establishes curriculum expectations, monitoring, and accountability mechanisms that are reflectively revised to ensure a constancy of mission purpose (aligned resource allocation, integrated STEM curriculum development, teacher professional growth, and student results).	<i>Role Model</i>			

5.1 Rigor

- Review the program requirements for Benchmark 5.1 Rigor on the previous page.

Describe how the Academy will progress along the continuum. This should include plans for:

- Alignment of curriculum and instruction as supported by assessment
- Assessment/intervention or acceleration plans for students
- Plan for four years of math, science, and 12-30 college credit hours (dual credit/AP/IB)
- HS Endorsements available to Academy students

Alignment of Curriculum and Instruction

Southwest Schools uses DMAC Solutions which is a web-based software suite designed to assist in the development and management of the District's curriculum and assessment of data. Teachers, Content Specialist and leaders work on curriculum alignment to the Texas Essential Knowledge and Skills (TEKS) and to ensure accuracy throughout the school year. The district provides curriculum Based Assessments (CBA) each 6 weeks during the fall semester and a benchmark in the spring semester. Each teacher develops a Plan-of-Action after each CBA of how they will reteach objectives that their students did not master. Their plans must include how this is done inside of class time and outside of class time. In addition, targeted intervention is put in place to remediate skills. Students that have consistent concerns are discussed and supported through Response to Intervention (RtI). Technology is readily available and that students may use it for research, for assignments, and if needed, for remediation.

Assessment/Intervention or Acceleration Plans for Students

In addition to the district CBAs, teachers develop unit assessments with their Professional Learning Community (PLC) team in order to gauge students progress through formative assessments. From these formative assessments, teachers and students decide a course of action for acceleration and/or remediation.

Plan for Four Years of Math, Science, and 12-30 College Credit Hours

Students in Southwest Schools start in the eighth grade building their college and career plan by selecting classes for high school and choosing an endorsement and pathway.

- * 9th grade students review a plan to get from their freshman to senior year and eventually to a two- or four-year college. Students are encouraged to take more challenging classes early on instead of waiting until their junior or senior years. Take TSI for dual credit courses.
- * Our 10th grade students start thinking about colleges and careers that might be a good fit and they start exploring those options.
- * 11th grade students seek out internships, externships, job shadowing, and summer job opportunities that align with the careers they are interested in. They go on college tours and visits.
- * College entrance exams, ACT and SAT, are taken in the junior and/or senior year.
- * 12th grade students visit universities to narrow their list and then apply to colleges.

HS Endorsements

We have two pathways - Engineering and Computer Science through PLTW. Starting the 2017-2018 school year, we will add PLTW - Biomedical Science pathway. Our school offers 4 endorsements: STEM, Public Service, Arts and Humanities, and Multidisciplinary.

Identify the endorsement areas that the T-STEM Academy will be offering to students in the 2017-2018 school year by checking each individual endorsement area.

- ☒ STEM (All designated T-STEM academies are required to offer the STEM endorsement)
- ☒ Business and Industry
- ☒ Public Service

- ☒ Arts and Humanities
- ☒ Multidisciplinary Studies

Benchmark 5: Curriculum, Instruction, and Assessment

Example Artifacts: 5.2

- Defined engineering coursework (Infinity Project, Project Lead the Way)
- Student journals, student presentations, peer performance assessment rubrics, and peer mentors
- Self-paced learning, student contracts, progress reports, exit interviews, parent/teacher/student conferences
- Lessons include work force clusters, expert practitioners, field-based learning, research of current issues, PBLs, guest speakers, differentiation, intervention and acceleration plans, student choice
- Number of offerings and number of students participating in co-curricular activities, clubs, academic teams, and competitions (UIL, Brain Bowl, Science Olympiad, Model UN, FIRST, BEST, Vex etc.)
- Design conceptual internships, identify STEM opportunities, business partners, scientific organizations, and universities
- IGP w/capstone project (research, annual review, and analysis)

In Benchmark 5, all program requirements are scored individually. There are no separate metrics. Assess the level of implementation for the program requirements below according to the standards to the right.		Developing Investigate, Research, and Create	Implementing Formalize, Revise, and Publish	Mature Data-driven evaluation of effectiveness of program requirements	Role Model Continually assesses to document successes and challenges with action plans implemented to correct deficiencies in performance
5.2.A.	Delivers innovative STEM programs that are well-defined, embed critical thinking and problem solving, innovation and invention, and are aligned to state and/or national standards and industry expectations.	Role Model			
5.2.B.	Supports and encourages students to complete three years of STEM electives at middle school and four years of STEM electives at high school.	Role Model			
5.2.C.	Develops performance-based and project-based assessments aligned to these innovative programs and state/national/industry standards.	Role Model			
5.2.D.	Develops and implements a plan for supporting accelerated student achievement for students with demonstrated deficiencies or proficiencies in mathematics and science, to promote all students graduating ready for enrollment in credit-bearing postsecondary courses (e.g. Algebra I enrollment by 8th grade).	Role Model			
5.2.E.	Incorporates into the curriculum work-based contextual learning with a global perspective.	Role Model			
5.2.F.	Participates in extra-curricular academic activities centered on science, technology, engineering, and mathematics; i.e. STEM field experiences, clubs, and competitions.	Mature			
5.2.G.	Develops 6th-12th students' portfolios of interest in: STEM capstone projects, STEM internship opportunities, and global STEM college, degree, and career explorations. Requires all high school students to complete an internship, and/or a STEM-related capstone project, presentation, and defense; primarily focused in the state's STEM-related economic development clusters (information and computer technology, energy, petroleum refining and chemical products, advanced technologies and manufacturing, aerospace and defense, biotechnology and life sciences.).	Developing			

5.2 STEM-Focused Curriculum

- Review program requirements for Benchmark 5.2 STEM-Focused Curriculum on the previous page.

Describe how the Academy will progress along the continuum. This should include plans for:

- Well-defined STEM programs that are aligned with state, college and career readiness, and industry standards and embed critical thinking and problem solving, and foster innovation and invention
- Three years of STEM electives at middle school and four years of STEM electives at high school. For high schools, list the CATE elective pathways and courses that support each Endorsement offered by the Academy
- Performance and project-based assessments aligned to state, college and career readiness, and industry standards
- Work-based and contextual learning in the curriculum
- STEM-focused extracurricular activities (field experiences, clubs, and competitions)
- STEM-related internships and/or senior capstone projects, presentation, and defense
- Plan for 6th-12th student STEM portfolios

Well-Defined STEM Programs At the Southwest Middle School, JASON Learning is in grades 6 - 8 for all students. We also have PLTW-Gateway for grades 7th and 8th with plans of offering PLTW-Gateway to our 6 grade students in the 2018-2019 school year. PLTW is offered to our 9th -12th grade students. Students can have endorsements in Engineering or Computer Science. We will begin to offer Biomedical Science during our 2018-2019 school year. Three Years of STEM Electives at Middle School and Four Years of Stem Electives at High School At our middle school, we offer JASON Learning to our 6th - 8th grade students. PLTW-Gateway is offered to 7th and 8th grade students. High School PLTW-Engineering • Introduction to Engineering Design • Principals of Engineering • Computer Science Principals • Civil Engineering and Architecture • Capstone: Engineering Design and Development. High School PLTW-Computer Science • Computer Science Essentials • Computer Science Principals • Computer Science A • Cybersecurity Performance and Project-Based Assessments PLTW assessment and curriculum experts collaborate with PLTW pilot teachers and use industry best practices to develop and test End-of-Course (EoC) assessments. PLTW validated the EoCs through a multi-year process to ensure the accuracy of the assessments, and the assessments are continuously updated to ensure validity and reliability. [Note: PLTW uses EoC instead of EOC] Work-based and Contextual Learning in the Curriculum Starting their second year of PLTW, all students will job shadow professionals. During their third and fourth years, PLTW students are required to have either a work-based job or have an internship in their endorsement area. STEM-focused Extracurricular Activities Our school has a Science Club, Robotics Club, and a STEM Club for Girls. Our Robotics Club participate in competitions and they won second place in their last competition. The Science Club and the Girls' STEM Club participate in the following programs and competitions: * C-STEM Challenge * Robotics STEM-related Internships and/or Senior Capstone Projects, Presentation, and Defense The PLTW-Engineering students in the capstone course, Engineering Design and Development will have a capstone project to complete. Plan for 6th - 12th Students STEM Portfolios The 9th - 12th grade students are required to maintain portfolios. We are currently developing portfolios for our 6th - 8th grade students who are enrolled in the PLTW-Gateway courses.

Describe the current STEM pathways available at the academy and list all industry certifications that students have the opportunity to earn by graduation.

We currently have two STEM pathways at our high school; Engineering and Computer Science. Engineering * Introduction to Engineering Design (IED) - This is a foundation course. Students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects. They work both individually and in teams to design solutions to a variety of problems using 3-D modeling software, and use an engineering notebook to document their work. * Principals of Engineering (POE) - This is a foundation course. This survey course exposes students to some of the major concepts that they will encounter in a postsecondary engineering course of study. Through problems that engage and challenge, students explore a broad range of engineering topics, including mechanisms, the strength of materials and structures, automation, and kinematics. The course applies and concurrently develops secondary level knowledge and skills in mathematics, science, and technology. * Computer Science Principles - Using Python® as a primary tool and incorporating multiple platforms and languages for computation, this course aims to develop computational thinking, generate excitement about career paths that utilize computing, and introduce professional tools that foster creativity and collaboration. Computer Science Principles helps students develop programming expertise and explore the workings of the Internet. Projects and problems include app development, visualization of data, cybersecurity, and simulation. * Civil Engineering and Architecture - Students learn important aspects of building and site design and development. They apply math, science, and standard engineering practices to design both residential and commercial projects and document their work using 3-D architectural design software. * Engineering Design and Development - The knowledge and skills students acquire throughout PLTW Engineering come together in Engineering Design and Development as they identify an issue and then research, design, and test a solution, ultimately presenting their solution to a panel of engineers. Students apply the professional skills they have developed to document a design process to standards, completing Engineering Design and Development ready to take on any post- secondary program or career. Computer Science * Computer Science Essentials - With emphasis on computational thinking and collaboration, this year-long course provides an excellent entry point for students to begin or continue the PLTW Computer Science K-12 experience. Computer Science Essentials will expose students to a diverse set of computational thinking concepts, fundamentals, and tools, allowing them to gain understanding and build confidence. * Computer Science Principles - See information above. * Computer Science A - Computer Science A focuses on further developing computational-thinking skills through the medium of Android™ App development for mobile platforms. The course utilizes industry-standard tools such as Android Studio, Java™ programming language, XML, and device emulators. Students collaborate to create original solutions to problems of their own choosing by designing and implementing user interfaces and Web-based databases. * Cybersecurity - Cybersecurity introduces the tools and concepts of cybersecurity and encourages students to create solutions that allow people to share computing resources while protecting privacy. Nationally, computational resources are vulnerable and frequently attacked; in Cybersecurity, students solve problems by understanding and closing these vulnerabilities.

Benchmark 5: Curriculum, Instruction, and Assessment

Example Artifacts: 5.3

- Peer observations, mentors, cross-curricular teams
- Walkthroughs, observations, model lessons
- Data informs scaffolding, re-teaching, and extension
- Team planning that defines student products, assessments, rubrics, and standards for cross-curricular and other PBLs, teacher research on STEM field expectations, current issues, and technology.
- Student presentations include digital materials, peer and internal/external expert evaluation
- Academy teachers have mentors at university and industry level that provide input to curriculum development
- Year-at-a-glance checklist documenting course coverage of state standards, 21st century skills, college readiness standards throughout grading period

In Benchmark 5, all program requirements are scored individually. There are no separate metrics. Assess the level of implementation for the program requirements below according to the standards to the right.		Developing Investigate, Research, and Create	Implementing Formalize, Revise, and Publish	Mature Data-driven evaluation of effectiveness of program requirements	Role Model Continually assesses to document successes and challenges with action plans implemented to correct deficiencies in performance
5.3.A.	Incorporates data-driven instruction.	Role Model			
5.3.B.	Creates an environment for shared teacher responsibility and accountability for student learning across programs, content areas, and classrooms.	Implementing			
5.3.C.	Organizes instructional expectations around problem-based and project-based learning with clearly defined learning outcomes for students and teachers that address state and national performance standards, college and career readiness standards, and industry expectations.	Implementing			
5.3.D.	Ensures teachers' use of the aligned scope and sequence and integration across the disciplines.	Mature			
5.3.E.	Ensures teachers' use of high-quality curricular materials aligned with state and national standards, college and career readiness standards, and industry standards.	Role Model			
5.3.F.	Provides opportunities for students to exercise choice and voice within a relevant and rigorous context.	Mature			

5.3 Instructional Practices

- Review the program requirements for Benchmark 5.3 Instructional Practices on the previous page.

Describe how the academy will progress along the continuum. This should include plans for:

- Data driven instruction
- Shared teacher responsibility and accountability (PLC)
- Project Based Learning (PBL)
- Alignment of scope and sequence with state, CCRS, and industry standards
- Students exercise choice/voice within relevant and rigorous curriculum

Data Driven Instruction

Teachers meet with their Principal and Dean of Instruction after each Curriculum Based Assessment (CBA). The discussion is centered around how the teacher will reteach each objective where students did not master at least 70 % of the objective. Teachers also receive the support of the campus learning coach and content specialist to modify and improve instruction.

Shared Teacher Responsibility and Accountability (PLC)

Teachers meet each Friday with their PLC Team. STEM teachers participate in Walk Throughs at least once each 6-week grading period. Feedback is discussed during that weeks' PLC meeting.

Project Based Learning (PBL)

PBL is the district's initiative for this school year. All district teachers attended a 3-day training in August 2016 and a 3-day follow-up training in January. Learning Coaches were hired for each campus and at the district level to help teachers with the implementation, fidelity, and sustainability of PBL.

Alignment of Scope and Sequence with State, CCRS, and Industry Standards

We use Texas Essential Knowledge and Skills (TEKS) Resources System in our district. The Texas Curriculum Management Program Cooperative (TCMPC) provides content and support for an online curriculum management system known as the TEKS Resource System. The content includes curriculum components and sample unit assessment items aligned to the most current versions of the State Board of Education-adopted standards (TEKS) for the following subject areas:

- English Language Arts and Reading (K-12)
- Spanish Language Arts and Reading (K-4)
- Mathematics (K-12)
- Science (K-12)
- Social Studies (K-12)
- Spanish translated versions of Mathematics, Social Studies, and SLAR (K-4)
- We also have the ability to add and modify documents in the system so that we can fully align all of the standards.

Students Exercise Choice/Voice

PLTW students choose their endorsement at the end of their 8th grade year and have the opportunity to change twice during their high school career. Tutoring is designed as enrichment and support by allowing students to meet with teachers during their "office hours", similarly to that of colleges and universities.

Students are encouraged to advocate for themselves and their classmates when there is a school issue and/or concern through surveys, meetings and/or focus groups.

Benchmark 5: Curriculum, Instruction, and Assessment

Example Artifacts: 5.4

- Project Based Learning (PBL)
- Systemic expectations for number of presentations per class, documentation of students presenting to internal and external panels
- Design teams, group projects, multiage projects, simulations, robotics teams, green teams
- Project scenarios based on real-world issues (Future City, FIRST, Odyssey of the Mind, etc.)

In Benchmark 5, all program requirements are scored individually. There are no separate metrics. Assess the level of implementation for the program requirements below according to the standards to the right.		Developing Investigate, Research, and Create	Implementing Formalize, Revise, and Publish	Mature Data-driven evaluation of effectiveness of program requirements	Role Model Continually assesses to document successes and challenges with action plans implemented to correct deficiencies in performance
5.4.A.	Promotes instructional strategies that challenge students to think critically, innovate and invent to solve real-world, contextual problems.	Role Model			
5.4.B.	Exposes students to critical readings in STEM-related fields and requires students to demonstrate their understanding of STEM disciplines in a work-based, contextual environment.	Mature			
5.4.C.	Offers standards-based STEM programs that incorporate integrative STEM literacy and innovative instructional tools.	Role Model			
5.4.D.	Promotes applied and collaborative learning, and provides students with opportunities to present/defend their work to peers, community, industry, and university leaders.	Mature			
5.4.E.	Promotes a rich culture that incorporates a natural use of current technologies to enhance instruction, curriculum, teaching, and learning, and STEM literacy.	Implementing			

5.4. STEM Education Integration

- Review the program requirements for Benchmark 5.4. STEM Integration on the previous page.

Describe how the Academy will progress along the continuum. This should include plans for:

- Students apply critical thinking, innovation and invention, to problem-solve real-world scenarios.
- Student exposure to STEM related fields and understanding of STEM disciplines in a work-based, contextual environment
- Students present/defend their learning (PBLs and capstone projects) to external experts
- Use of current technologies to enhance instruction, curriculum, teaching and learning, and STEM literacy

Students Apply Critical Thinking, Innovation and Invention

Throughout the PLTW program, students step into the varied roles engineers play in our society, discover new career paths and possibilities, and develop engineering knowledge and skills. In addition, as students work in teams to design and test solutions, they're empowered develop in-demand, transportable skills like collaboration, critical thinking, and communication.

Student Exposure to STEM Related Fields and Understanding of STEM Disciplines in a Work-based

PLTW courses integrate equipment, technology, and supplies into the curriculum to give students hands-on experiences and opportunities to apply what they learn in a meaningful way. Students have access to equipment and software employed by industry, so that they can see the real-world implications of what they learn.

Each student is assigned to a mentor where they are able to explore career options. Students in the 11th and 12th grades are required to participate in internships, externships, and/or job shadowing. Students are also encouraged to seek summer job opportunities that are aligned with the career they are interested in.

Students Present/Defend Their Learning (PBLs and Capstone Projects to External Experts)

In the PLTW courses, students problem solve with a team. For example, in the capstone course, Engineering Design and Development, students must complete a capstone project and present their project to their teacher as well as an Engineer from the same field as their project.

Use of Current Technologies

All PLTW software are current and up to date. Students have access to equipment and software employed by industry, so that they can see the real-world implications of what they learn.

Benchmark 5: Curriculum, Instruction, and Assessment

Example Artifacts: 5.5

- Academy-developed process in place to identify STEM and content relevant vocabulary and just-in-time literature
- Plan for vertical and horizontal expectations, per grade level, of STEM vocabulary and relevant literature
- Literature- and language-rich environment which includes technical language journals, articles, periodicals, current events newspapers, online resources, webinars, and texts
- STEM-focused strategies and activities such as word walls, student journals, literature circles, mock trials, student forums, debates
- Stakeholder input into selection of STEM instructional materials student goals and reflections (literacy in STEM, 21st century skills, technology, etc.)
- Integrative instruction and instructional materials

In Benchmark 5, all program requirements are scored individually. There are no separate metrics. Assess the level of implementation for the program requirements below according to the standards to the right.		Developing Investigate, Research, and Create	Implementing Formalize, Revise, and Publish	Mature Data-driven evaluation of effectiveness of program requirements	Role Model Continually assesses to document successes and challenges with action plans implemented to correct deficiencies in performance
5.5.A.	Promotes technologically proficient and scientifically literate students with highly developed academic vocabulary and STEM technical vocabulary.	<i>Role Model</i>			
5.5.B.	Graduates 21st century literate students proficient in: English, reading, speaking, writing, numeracy, arts, health, sciences, and world languages; government, civics, history, and geography; environmental science; global awareness; information, communications, and media technology; and financial, economic, business, and entrepreneurship.	<i>Role Model</i>			
5.5.C.	Selects appropriate STEM curriculum and culturally relevant instructional materials that foster widespread use of literacy strategies within the STEM curriculum.	<i>Role Model</i>			
5.5.D.	Provides opportunities for students to demonstrate the relevancy of the content through reading, writing, speaking, and presenting.	<i>Implementing</i>			

5.5. Literacy

- Review the program requirements for Benchmark 5.5 Literacy on the previous page.

Describe how the Academy will progress along the continuum. This should include plans for:

- Technologically and scientifically literate students
- 21st Century skills-literate students
- STEM curriculum and culturally relevant instructional materials
- Academy literacy plan

Technologically and Scientifically Literate Students

To nurture and develop scientifically literate students, our STEM teachers make sure that each class period has the following components incorporated into the lesson:

- * Identify science topics of interest. Our teachers weave real-world science topics into the curriculum.
- * Engaging their students in reading the research. After selecting a topic, the teacher build their students' base of knowledge. The teacher generate connections among science concepts, societal issues, and the vocabulary students will meet in textbooks.
- * Teach students to read like scientists. One way that our teachers do this is by think-aloud while reading so students can learn what proficient science reading looks and sounds like.
- * Guide students to evaluate data. Students are taught the need to understand where data were collected, how it was collected, and what it represents.
- * Our teachers recognize show that technology is recognized and embraced as an integral part of science.

21st Century Skills-Literate Students

Our school understands that 21st Century skills-literate students are what students need to develop in order to succeed in the information-based economy. Our students are given opportunities and thus, they are able to think deeply about issues, solve problems creatively, work in teams, communicate clearly in many media, learn ever-changing technologies, and deal with a flood of information. We want our students to realize that the rapid changes in our world require students to be flexible, to take initiative and lead when necessary, and to produce something new and useful.

STEM Curriculum and Culturally Relevant Instructional Materials

PLTW's approach to standards alignment is focused on student outcomes and flexibility. PLTW programs are designed to empower students to thrive in an evolving world. As a part of this process, they take standards alignment into account when developing and updating the curriculum.

The activity-, project-, and problem-based (APB) instructional design centers on hands-on, real-world activities, projects, and problems that help our students understand how the knowledge and skills they develop in the classroom may be applied in everyday life. The APB approach scaffolds student learning through structured activities and projects that empower students to become independent in the classroom and help them build skill sets to apply to an open-ended design problem.

This approach provides students with unique opportunities to work collaboratively, identify problems, apply what they know, persevere through challenges, find unique solutions, and lead their own learning.

Academy Literacy Plan

At Southwest High School, we have developed a plan of action to produce STEM literate students. We are in Phase 1.

- * Metric-only STEM instruction. The primary purpose of the metric system is to facilitate easy mathematical and scientific calculations. By simplifying the calculations and nomenclature and by eliminating the need to convert between two different measurement systems, we would free the student's brain for higher-order thinking.
- * In all STEM classes, we have eliminated multiple-choice questions.

Benchmark 5: Curriculum, Instruction, and Assessment

Example Artifacts: 5.6

- Data informs instruction, plan for gaps and extension
- Curriculum aligned with standards, STEM, industry, and higher education
- Formative, diagnostic, and summative assessments, lesson redesign
- Student artifact reflection is used to inform diagnostic tools and processes
- Pre/post tests, cumulative folders, parent conferences, parent portal, student learning logs
- Pre-assessments/ post-assessments, course offerings for interventions, grades, end of course exams, student presentations, narrative assessments, oral assessments, product based assessment
- IGP's, progress reports, student information sheets, home visits, parent conferences, PEIMS info, call logs, counseling schedule/visits
- Student designed projects, project rubrics, peer reviews, panel reviews, adult/expert reviews
- Project lists knowledge and skills, 21st century skills and levels of skill mastery; course syllabus provides list of performance-based assessments; PD for teachers on developing PBLs

In Benchmark 5, all program requirements are scored individually. There are no separate metrics. Assess the level of implementation for the program requirements below according to the standards to the right.		Developing Investigate, Research, and Create	Implementing Formalize, Revise, and Publish	Mature Data-driven evaluation of effectiveness of program requirements	Role Model Continually assesses to document successes and challenges with action plans implemented to correct deficiencies in performance
5.6.A.	Uses diagnostic, ongoing, and vertically and horizontally aligned formative and summative assessments for all students to drive instructional decisions.	<i>Mature</i>			
5.6.B.	Uses state and national standards, college and career readiness standards, industry standards, and STEM program requirements to develop common benchmark assessments.	<i>Role Model</i>			
5.6.C.	Employs student readiness assessments or diagnostics to identify and address gaps in learning.	<i>Implementing</i>			
5.6.D.	Tracks and reports student progress using student information systems.	<i>Role Model</i>			
5.6.E.	Uses performance-based assessments that allow students to demonstrate their understandings of STEM concepts.	<i>Role Model</i>			

5.6 Assessments

- Review the program requirements for Benchmark 5.6 Assessments on the previous page.

Describe how the Academy will progress along the continuum. This should include plans for:

- diagnostic, ongoing and vertically and horizontally aligned formative and summative assessments;
- state, college and career readiness, and industry standards alongside STEM program requirements;
- student readiness assessment to address gaps;
- student information systems to track progress; and
- performance based assessments that demonstrate student understanding of STEM concepts

Diagnostic, Ongoing and Vertically and Horizontally Aligned Formative, and Summative Assessments

PLTW has a balanced approach to assessment for all of their programs, integrating both formative and summative assessments. Through this balanced approach, assessment is an ongoing activity that provides students with a variety of opportunities to demonstrate their knowledge and skills, which allows teachers to monitor student progress and modify instruction accordingly. Our PLTW students show what they've learned by completing classroom activities, projects, and problems; maintaining logs, notebooks, and portfolios that undergo assessment; and evaluating work through a range of tools, such as performance rubrics and reflective questioning, to deepen and expand their knowledge and skills.

State, College and Career Readiness, and Industry Standards - STEM Requirements

College opportunities: Colleges and universities across the U.S. recognize and reward PLTW students for their great work. These postsecondary institutions recognize PLTW students with scholarships, admissions preference, course credit, and more. PLTW students are better prepared for postsecondary studies and more likely to consider careers in critical STEM fields than their non-PLTW peers. More than 100 college and university partners actively recruit PLTW students, providing them with opportunities such as admissions preference, scholarships, and course credit.

STEM Premier: PLTW students receive complimentary access to this online social platform, which empowers them to build out their personal STEM profile, showcase their knowledge and skills, and seek out opportunities.

AP + PLTW: AP + PLTW gives students the opportunity to earn a credential that showcases their readiness for college and career, and demonstrates their STEM skills and interests to colleges and employers. The program will also provide students with special access to career-oriented opportunities like internships and scholarships.

Student Readiness Assessment to Address Gaps

All 9th - 12th grade students are given the STAR Renaissance diagnostic assessment three times a year to determine gaps and growth in Mathematics and Reading. If gaps are found, the student will be assigned intervention until that gap has been mastered. Students and teachers use their longitudinal data to make informed data decisions.

Student Information Systems to Track Progress

Our teachers have several ways in which they track their students progress with DMAC.

- > Data disaggregation (STAAR, TELPAS, etc.)
- > Generate, administer and report on TEKS-based local assessments
- > Student Achievement/Progress Monitoring
- > Appraisals (T-TESS, T-PESS)

* District database - Throughout the school year, teachers are able to monitor their student's progress in each of their classes. Teachers can review the following information for all courses the student is enrolled in:

- > 6-week grades
- > District's Curriculum Based Assessments
- > State's assessment scores (STAAR)

Performance Based Assessments that Demonstrate Student Understanding of STEM Concepts

Our students take the EoC Assessments which are given at the end of PLTW high school courses. EoCs serve as an indicator of a student's overall achievement in the course. All capstone courses use portfolio-based opportunities for assessments.

Benchmark 6: Strategic Alliances

Program Requirements

6.2.A.	Identifies and secures key business, industry, and community partners to support STEM Academy efforts (mentorships, service learning projects, etc.).			
6.2.C.	Identifies and secures key business and industry partners to provide STEM-related job shadowing, internships, and externships for students and teachers.			
6.3.A	Develops a Memorandum of Understanding (MOU) for dual credit.			
6.3.C	Develops partnerships to support a college going culture and to provide STEM graduates access to college support services (college trips, college entrance aid, GEAR UP and P-20 initiatives).			
6.1.B	Provides opportunities to educate students/parents on STEM Academy expectations such as parental engagement, college connections, scholarship opportunities, mentorships, etc.			
	Developing	Implementing	Mature	Role Model
6.2.A 6.2.C	Initiates a few partnerships with business, community, and industry.	Initial contact made and some support is provided by community business partners. Business and industry relationships are limited to onsite mentoring activities and some minor financial support.	Partnership with business and industry is formalized via established agreements. Outcomes and expectations are concrete and regularly reviewed. Partnership is evident by two-way communication of goals and vision as to what the STEM program provides.	Each major academic area is sponsored by corporate or community partners. Industry representation is a key component of the STEM strategic planning process. Integration of Academy students in business and community activities is visible.
6.3.A 6.3.C	Initial contact made and some support is provided by higher education organizations. Some courses are available to enhance STEM curriculum integration.	Develops Higher Ed connections to facilitate MOUs, crosswalk plans, teacher mentors, and externships.	Partnerships and MOUs with higher education communities are an integral component of Academy delivery model.	College credit is given to STEM students upon completion of academic work sanctioned by accredited colleges. Admission rates for STEM students to IHE exceed the normalized rates for all students within the sponsor school system.
6.1.B	Minimal strategic communications with parents and families.	Regularly scheduled distribution of communications is planned and presented to key stakeholder groups. <i>And meets criteria from Developing.</i>	Strategic communications are timely and are developed ad hoc as conditions warrant. Key messages are presented by leadership emphasizing the importance of the communication to the intended audiences, via community town halls, PTO meetings, advisory board meetings, and school board presentations. <i>And meets criteria from Developing and Implementing.</i>	Real time communications are evident via communications technologies such as websites, newsletter articles, and media presentations using the community's public service forums, (public television and radio). Leadership is easily accessible and continuously engages partnerships with stakeholders in community and student families. <i>And meets criteria from Developing, Implementing, and Mature.</i>

Benchmark 6: Strategic Alliances

- Review the program requirements for Benchmark 6 above.

Describe how these strategic alliances 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.

* Parent Conferences - Parents are required to have a conference with their child's STEM teacher each semester. Parents and STEM teachers may request additional conferences.

* Newsletters are sent out to our parents.

* Parent College Night - Each Fall semester, parents receive an overview of the college search and application process. Our school Counselor, Dean of Instruction, College Readiness Coordinator and local college representatives are on hand to discuss college admissions and application procedures and conclude with a college fair in the cafeteria where students and parents can speak with college representatives from across the state. All students and their parents are encouraged to attend.

* University of Texas at Tyler (UT-Tyler) - UT-Tyler provides training and support for our PLTW teachers. Teachers attend anywhere from one to two weeks of training each summer.

* Houston Community College (HCC) - Students are able to receive Dual Credit through HCC.

* CenterPoint - Employees visit high school campus monthly to mentor students and share career advice.

* Career Day - Career Day gives our students the opportunity to meet with community representatives from a variety of professional careers. Students may also visit open information tables for information on universities and scholarships.

* Chevron - As a community partnership, Chevron has been generous to our district. They provide STEM field trips through our science classes, STEM conferences, materials, STEM human resources, industry speakers, and training for our STEM teachers.

* Star Network - As a community partnership, Star Network provide students with opportunities to tour worksites; provide support for various district and campus initiatives.

* Controls & Processors/National Manufacturing & Fabricators Association - Middle & High School campuses participate in yearly Manufacturing Day. Students visit manufacturing plants to learn more about career opportunities.

* Mexican American Bar Association - Provide monthly personal development sessions.

* Student Guidance Group - They empower our students in the 9th and 12th grades through preparation for the workforce and future careers after high school.

Benchmark 7: Assurances

The following document must be attached in order for the T-STEM Designation application to be submitted.

Official signature: Official signature of a district or charter official authorized by the local board to bind the applicant organization in a legally binding contractual agreement. By signing the designation application, the district assures the minimum requirements for T-STEM Designation will be implemented in the designation year.

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Dual Credit MOU: The district or CMO provides assurance that a Memorandum of Understanding (MOU) with an Institution of Higher Education that defines the dual credit agreement is current (for the 2017-2018 school year). The MOU must be signed by all parties and ensure that sufficient detail are included and is on file at the T-STEM Academy. The executed IHE MOU for dual credit must be available for review by TEA upon request.

☒ Assurance Provided

If the T-STEM Academy is only providing AP coursework, list the AP courses that will be taught in the 2017-2018 school year.

Professional Development Plan: The T-STEM Academy applying for designation, provides assurance that a Professional Development Plan detailing the types, frequency, the provider of STEM professional development to be provided during the 2017-2018 school year, and is on file at the T-STEM Academy. The professional development plan must be available for review by TEA upon request.

☒ Assurance Provided

Business Agreement: The T-STEM Academy applying for designation, provides assurance that a minimum of one business agreement is current (for the 2017-2018 school year), signed by all parties, provides sufficient detail regarding the role of each party, (which allows students to participate in internship programs, capstone projects, or conduct field work) and is on file at the T-STEM Academy. The business agreement must be available for review by TEA upon request.

☒ Assurance Provided

2017-2018 Master Schedule: The T-STEM Academy applying for designation, provides assurance that the proposed master schedule, demonstrating a commitment to STEM education, rigorous coursework including Dual Credit, AP, or IB courses, and a vertically and horizontally aligned curriculum is on file at the T-STEM Academy. The 2017-2018 master schedule must be available for review by TEA upon request.

☒ Assurance Provided