STEM Needs Assessment

Intended Audience: Leadership

Purpose of the tool: The STEM Needs Assessment is step 2 completed after reviewing the STEM Framework. It is designed to help a district or campus identify needs and gaps that exists within local STEM programming that potentially could prevent the program from meeting its desired goals. This assessment should be used at the beginning of the planning process and could be repeated at the end of the programming year as a tool to drive refinement. The results of the needs assessment will guide subsequent decisions including design, implementation, and evaluation of STEM programming.

The Texas Education Agency has developed the STEM Framework and four tools to assist a district in developing a local STEM program that is aligned to the high-quality indicators identified by the state.

STEP 1

Look at the STEM Framework
✶ Review definition of STEM, state level objectives, strategies to success, K-12 STEM education models, research-based instructional methods, and high-quality indicators

STEP 2

Complete the STEM Needs Assessment
✶ Identify needs and gaps in STEM programming

STEP 3

Complete the STEM Model Identification Guide
✶ Identify the STEM model best aligned to the district

STEP 4

Complete the STEM Program Planning Guide
✶ Use the STEM Program Identification Guide as a reference when planning the district's future STEM program. The STEM Continuum Sample Experiences can be used to help generate ideas.

STEP 5

Complete the Sustainability Assessment Tool
✶ Identify appropriate sustainability component assets and/or needs

*Adapted from Alief ISD STEM Needs Assessment
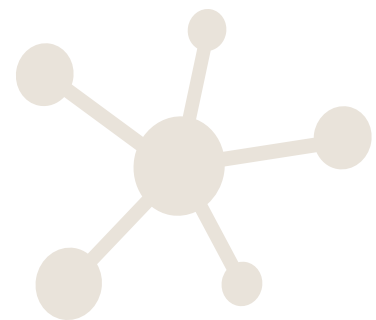
STEM Needs Assessment

1) **Is there an articulated process for staff to provide input and feedback on school and district-level decision making?**

   a)   Yes

   b)   No

2) **Is there a shared vision and purpose for the process of STEM implementation and is it communicated consistently by school and district staff at all levels?**

   a)   Yes

   b)   No

3) **Do staff at all levels, from classroom to administration, participate in and share professional development grounded in STEM educational issues each school year?**

   a)   Yes

   b)   No

4) **In what ways are your students experiencing STEM at your school?**

   a)   Afterschool only

   b)   During the school day, but activities are supplemental to regular curriculum

   c)   Our regular curriculum has STEM activities embedded within

   d)   Our curriculum consists mostly of integrated project/product-based learning

   e)   We do not have STEM programs at our school

5) **Which students participate in STEM activities at your school?**

   a)   Students are selected based on performance to participate

   b)   Students can choose to participate if they are interested

   c)   Student participation is a part of the learning experience for all students

   d)   All students are engaged in collaborative teams to solve authentic problems on a regular basis

   e)   We do not have STEM programs at our school

6) **How do teachers collaborate and plan for STEM activities?**

   a)   Teachers develop their own STEM activities without collaboration

   b)   Select teachers occasionally collaborate on supplemental STEM activities

   c)   Subject/Grade level lead teachers collaborate frequently with one another in interdisciplinary teams and disseminate activities to other subject/grade level teachers

   d)   Teachers work in whole school teams to plan integrated STEM project/product-based learning units or themes throughout the school year

   e)   We do not have STEM programs at our school

7) How do teachers implement STEM activities?

   a)   Teachers deliver extra-curricular STEM activities

   b)   Teachers sometimes use alternative methods of instruction (i.e. design-based challenges, project/product-based learning, informal experiences) within their classes

   c)   Teachers have begun to shift to facilitator in some classes

   d)   Teachers regularly act as facilitators to guide student inquiry

   e)   We do not have any STEM programs at our school

8) How do students collaborate when working on STEM activities?

   a)   Students work individually

   b)   Students work with one another occasionally

   c)   Student work is mostly completed in cooperative teams

   d)   Students work is always completed in cooperative teams

   e)   We do not have any STEM programs at our school

9) Does your school explicitly incorporate the engineering design process or design thinking?

   a)   Yes

   b)   No

10) Are there STEM career awareness learning opportunities for students at least quarterly?

   a)   Yes

   b)   No

11) How do you assess the effectiveness of your STEM related activities?

   a)   We focus on informal student and teacher feedback

   b)   We focus on formal student and teacher feedback

   c)   We focus on quantitative data by itself

   d)   We focus on qualitative and quantitative data from multiple sources

   e)   We do not have any STEM programs at our school

12) Which descriptor most closely matches your current teacher professional development offerings?

   a)   Teachers participate in large group introductory STEM professional development

   b)   Teachers participate in large group STEM professional development that align with the needs/programs of the school

   c)   Teachers participate in personalized learning that is focused on their interests in STEM, is ongoing throughout the year, and has built-in supports

   d)   Teachers participate in personalized learning that is focused on their STEM needs as identified through classroom data and informal reflection, is ongoing throughout the year with built-in supports, and incorporates externships or mentorships with industry partners

   e)   Teachers participate in traditional, district-mandated PD that is not personalized to the needs of the school/program

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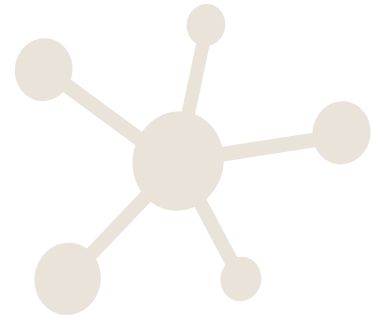
13) What types of assessments are used to monitor student learning and drive instructional practices?

a) State-wide data is used to drive instructional practices and set student learning targets

b) In addition to state-wide data, performance-based and pre/post assessments are used to drive instruction and set student learning goals

c) In addition to state-wide data and pre/post assessments, teachers use observation and monitor student dialogue to assess students processes in problem solving

d) In addition to state-wide, pre/post assessments, and observational data, students consistently participate in self-evaluation and goal setting

e) We do not use data to monitor student learning or drive instructional practices

14) How does your school engage business and industry partners in your STEM related activities?

a) We have a partner that occasionally interacts with school leadership and teachers

b) We have multiple partners that are utilized to extend student learning experiences

c) We have multiple partners that have direct experiences with students, teachers, and leadership

d) We have multiple partners that have direct experiences with students, teachers, and leadership and are a part of the project/product-based learning design process as well as the decision-making process

e) We do not have any partners currently.

15) Are students provided 2 or more age appropriate work-based learning experiences (i.e. field trips, job shadowing, work site tours) within the school year?

a) Yes

b) No

16) What stage of STEM program planning is your school currently at?

a) Initial start-up phase

b) Developed a one to two-year plan for our program

c) Developed a three to four-year plan for our program

d) Developed a five-year plan for our program

e) We do not have a planned program for our school yet
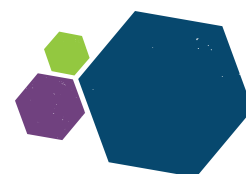
YES/NO Responses	Multiple Choice Responses
"Yes"– Intermediate/Advanced Implementation	"A" – Early Implementation
"No"– Early/Developing Implementation	"B" – Developing Implementation
	"C" – Intermediate Implementation
	"D" – Advanced Implementation
	"E" – No Implementation

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Question	Rubric Attribute Addressed	Readiness Assessment Response	Implementation Level Based on Selected Response
Example 1	STEM Action/Sustainability Plan	Answered: "B"	Developing Level of Implementation
1	STEM Action/Sustainability Plan		
2	Leadership Team		
3	Leadership PD		
4	School Environment School Schedules		
5	Project/Problem Based Learning Enrichment Learning Activities		
6	Project/Problem Based Learning Designing PBLs		
7	School Environment		
8	College and Career Readiness Skills Integrity of Academic Content		
9	EDP and Design Thinking		
10	STEM Career Awareness		
11	STEM Action/Sustainability Plan		
12	Quality STEM Professional Learning		
13	Performance Assessments Accountability (Data)		
14	Partners Support Instruction		
15	Work-Based Learning		
16	STEM Action/Sustainability Plan		