Preparing for Uncertainty

In the midst of an unprecedented crisis, it can be hard to see more than a few days into the future. With COVID-19, schools are rapidly changing the basic way they do their work.

While many STEM programs and schools already use social media, videoconferencing, and other online platforms to provide rich STEM learning experiences, distance learning is new to many of us.

Some of you will be returning to virtual experiences as a temporary measure, with a plan to return to face-to-face experiences once the situation permits. Others may be approaching today’s urgent need for remote learning with an eye toward enhancing face-to-face programming with virtual content and interactions in the future. Whichever plan you are embracing, virtual learning fits into a long-term strategy.

The network’s goal is to connect with school leaders and teachers to plan and design effective approaches for using modified approaches to the STEM School Designation process and application artifacts.

This modification guide serves to provide insight on how those adjustments and shifts can be made in the short-term.

In this document, you will find prompting questions that seek to help STEM Leadership Teams reflect on the shift to virtual/hybrid learning environments and plan for innovation within their strategies and practices as they relate to the STEM Designation application.
Tennessee STEM School Designation Process
2020 - 2021

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<td>July 15 - September 15</td>
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<td>Digital Portfolio Application Development</td>
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STEM School Designation Mentorship Model

Schools applying for designation will be partnered with a current STEM-designated school to provide tailored support while navigating the process. Schools will engage in coaching conversations and additional supporting activities as outlined by the network.

*Mentorship Model Components*
- Coaching conversations
- Goal setting aligned to application timeline
- Site visit planning support
- School tour for applicant schools (*virtual options*)

*This support service is optional for schools.*
A Tennessee Designated STEM school requires a developed STEM strategic plan and a leadership team that collaborates frequently about the program’s design and effectiveness. Teachers are highly collaborative, and community members are included in decision making.

For each attribute, artifact exemplars may be submitted that shift the in-person STEM Action planning, professional learning, and classroom experience to virtual experiences.

**Attribute Prompting Questions**

1.1 - Recognizing that collaboration may shift to virtual environments, in addition to artifacts of a collaboration, reflect briefly on how this shift has had unexpected benefits or takeaways that have contributed to your leadership team’s effectiveness.

1.2 - How might you describe some of the changes in thinking about gathering feedback that has resulted from efforts to offer opportunities for everyone to contribute to your action plan? What are some of the impacts you see this having for ongoing structures in your leadership team working norms?

1.3 - What are some of the guidelines you offer your Leadership Team members in choosing PD? What are some of the things you’ve learned from connecting with other STEM schools/leaders that you have implemented so far?

1.4 - In a world of social distancing, how might you describe how you’ve thought about integrating spaces that promote collaboration with current guidelines? How have you been able to use the online world to enhance opportunities to collaborate for your students, teachers, and community experts and/or to showcase work?

1.5 - With changing guidance from your district or health department that necessitate schedules in person, staggered, hybrid, and totally virtual, what are the priorities/guidelines you have used in how to use instructional time vs time spent learning by students? How have you made decisions about expectations for teachers and students regarding schedules for learning?
The STEM curriculum framework contains appropriate standards and has articulated interconnectedness between science, technology, engineering, mathematics, and other content areas. Project and problem-based learning activities form a substantial part of the curriculum.

For each attribute, artifact exemplars may be submitted that shift the in-person classroom learning experience and extended STEM learning activities to virtual experiences.

Attribute Prompting Questions

2.1 - The primary focus for PBL integration should be how do we help students learn from home? What could learning look like in these times? And how will you continue to create a culture of creativity despite the physical distance between us?

2.2 - How might virtual learning experience(s) explicitly reference the engineering design/design thinking process while capturing student learning through online work products and/or journaling?

2.3 - Are students creating authentic learning products utilizing technology tools and showcasing individual product creations?

2.4 - How might your team rethink experiences for students that have them explore careers and understand local opportunities available to them in new ways?

2.5 - Do the online lessons and virtual collaborative work you are providing continue to support employability skills development?

2.6 - How might your teachers and students reflect on the depth of the academic content through virtual and/or hybrid learning experiences?

2.7 - Are there options in place for students to participate in STEM competitions either on-site/online STEM exhibits and/or in state and national STEM forums?
Professional Development Attributes

A Tennessee Designated STEM School ensures a systemic professional development model that provides continuous learning based on student results, teacher development, and the short- and long-term goals of the school. The PD model, including school-level and personalized plans, creates an environment that allows educators to continue to learn and pursue opportunities that build the capacity to provide better STEM learning opportunities for students.

For each attribute, artifact exemplars may be submitted that shift the in-person educator professional learning experience and activities to virtual experiences.

Attribute Prompting Questions

3.1 - With personalized professional development goals still in place, how might school leadership encourage and model the opportunity to build a community for sharing and engaging in dialogue with other practitioners and continued STEM-focused professional learning?

3.2 - What approach(s) will continue to support teacher collaboration and planning with their colleagues and local partners as they design and prepare materials for students in this new environment?
**Achievement Attributes**

Assessments are incorporated to measure student outcomes and teacher instruction to ensure a strong, innovative, and cohesive STEM program. Assessments should be performance-based to guide student skill acquisition.

**For each attribute, artifact exemplars may be submitted that shift the traditional in-person performance-based assessments to capture student learning progress virtually.**

**Attribute Prompting Questions**

4.1 - How will teachers engage in progress monitoring with students during this time of remote/hybrid instruction? Are students asked to reflect deeply on and share how these learning issues are affecting them, their families, and their communities?

4.2 - How, with distance learning and limited time with students, might you distill the selected curriculum and instruction and data analysis to essential learning and target specific standards and outcomes?
Community and Postsecondary Partnerships Attributes

Community and postsecondary STEM partnerships are established and provide connections between curriculum taught in the classroom and practical applications outside of school. These partnerships have created an environment in which students develop high-level STEM skills and knowledge inside and outside of the classroom and increase their readiness for college and careers.

For each attribute, artifact exemplars may be submitted that shift the traditional partner-supported learning experiences to capture student's STEM industry exposure through virtual tools.

Attribute Prompting Questions

5.1 - How might you continue to include student learning experiences that incorporate innovative problem solving led or supported by professionals within the community?

5.2 - In what ways might work-based learning tasks and experiences be shaped into micro-tasks that are accessible for all students while in this distance learning/hybrid environment?

5.3 - High School Only

High school courses are enhanced by technology-based teaching methodologies and opportunities to obtain certifications (e.g., flipped class model, blended learning, MOOCs).

The review team will follow any guidance provided by the TN Department of Education regarding EPSO and Career and Technical Education implementation.
Resources for Schools

Below is a list of educational resources that your team might find useful as they plan their back to school strategies and designation portfolio. This is not a comprehensive list. We hope the suggestions and resources in this document make the transition into the 2020-2021 academic year less of a challenge for you and your staff. Thank you.

**Middle School Online STEM Career Awareness Curriculum** - Defined Learning

**How to Make PBL a Reality in a Distance Learning Environment** - John Spencer

**Instructional Strategies for Virtual Learning: A Companion Tool to the NIET Teaching Standards Rubric** - NIET

**Tennessee Department of Education’s COVID Toolkits** - TDOE

**Remote PD for Teachers - What does that look like?** - EdSurge

**Community-Based Learning in the Time of COVID 19** - Learning Policy Institute

**Summative Assessment Strategies for Virtual Learning** - Edutopia

**Global Competence Through CTE Course Toolkit** - Association for CTE

**How COVID-19 Is Shaping Tech Use - What That Means When Schools Reopen** - Education Week

**COVID 19 Can't Stop Citizen Science**

**Competency-Based Education** - Getting Smart
Continuing the Conversation

There is no one-size-fits-all approach to this work. An immense challenge is determining what the path to reopening schools will look like in practice.

District reopening plans will also need to differentiate strategies based on school levels and student needs. For example, in instances of remote learning, more printed resources might be needed for elementary-age students, while online instruction might work best for high school students. Strategies might also look different for urban schools than rural schools. Differentiation is an important part of any planning process, particularly given the range of communities in Tennessee that our schools serve.

The network is here to support your efforts. There are many opportunities to continue engagement in safe, meaningful STEM learning. We believe STEM learning experiences are more important now than ever, given the isolation brought about by social distancing and school closures in the spring.

All students need supportive relationships and nurturing learning environments, particularly students facing additional stress. Educating the “whole child” is not a single set of courses, policies, or activities, but rather a mindset that should encompass STEM learning and exploration.

Each school that applies for designation this year will have the opportunity to talk with TSIN leadership during the introductory phone interview. Please reach out to us if you have additional questions.

Thank you,
TSIN Team

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