

West Tennessee STEM Hub

Annual Impact Statement 2020-21

VISION

To unite K-12, institutes of higher education and STEM industry partners in an unprecedented approach that transforms STEM education and workforce opportunities throughout West Tennessee.

MISSION

The West TN STEM Hub (the Hub) serves as a resource for West Tennessee to increase students' interest in and preparedness for the STEM workforce. The Hub takes a multi-pronged approach to engaging target audiences through a variety of activities including providing materials for individual exploration, in-classroom and out of classroom learning opportunities, teacher training, and creating conversations between K-12, higher education, and industry around STEM education. Collaborative partnerships between the Hub and STEM community professionals are the cornerstone of this work. The Hub is led by the University of Memphis Herff College of Engineering with partnership from the College of Education and the College of Arts and Sciences.

KEY INITIATIVES.

STEM Student Ambassador Program

The STEM Ambassador program is designed to provide on-site support for teachers, community agencies, or companies that wish to engage K-12 students in meaningful STEM learning activities. The STEM Ambassadors are undergraduate STEM majors who not only make a positive impact with area students through providing tutoring, STEM competition coaching, and other support, but also learn essential professionalism, communication, and leadership skills through a formal training program.

STEM Lending Library

The STEM Lending Library houses materials that bring real world examples and hands-on activities to students in classrooms across West TN. Many schools face significant resource challenges in being able to provide cutting-edge and engaging instruments in the classroom, particularly in the Memphis community; therefore, the STEM Lending Library system provides STEM manipulative kits for loan to West TN teachers.



Online STEM Resources

The STEM Hub's website is a one-stop-shop providing numerous free resources for teachers and students. Teachers have engaging STEM lesson plans at their fingertips, and activities that correspond with the STEM Lending Library materials. Students can explore career opportunities through STEM spotlights highlighting West TN professionals and industries and learn about opportunities to participate in upcoming competitions www.westtnstem.org

STEM Professional Development for K-12 Teachers

STEM teachers are constantly facing the challenge of developing new skill-sets and knowledge to keep pace with the rapid advances in science, technology, and engineering. The STEM Hub is committed to seeking grant funding to provide free training to STEM teachers in current STEM pedagogy, real-world applications of STEM curricular content, and use of advanced technology in the classroom.



STEM Ambassador Program

Research conducted during a 2015-16 STEM Ambassador pilot program documented increased math performance with participants: Students working with STEM Ambassadors achieved math performance goals at rates of **12%** (middle school) and **30%** (elementary) higher than that of their peers. For 2020-21, even with the impact of COVID-19, the Ambassador program impacted over **5500** students and teachers through **6500** contact hours in K-12 school assignments and 'on-call' support! Core corporate sponsors of the STEM Ambassador program include [AutoZone](#), [Buckman](#), [CN](#), [Engineers Club of Memphis](#), [Women's Foundation for a Greater Memphis](#), [GM](#), and [SSR, Inc.](#)!

Participating students report that STEM Ambassadors working with their class:

- 81% Made them more interested in a STEM career
- 97% Made learning math and science more interesting
- 81% Made them more confident in math and science skills
- 97% Made them want to work with a STEM Ambassador again

The STEM Ambassador Program is the single most effective support for STEM teachers. – [SCS K-12 teacher](#)

The students teach you so much about yourself, and they are excited to see you just as much as you are excited to see them. – [STEM Ambassador](#)

I never expected to see the gratitude from teachers and parents that I see, and everyone's gratitude helps make this job fulfilling. – [STEM Ambassador](#)

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KEY INITIATIVES.(CONT'D)

STEM Lending Library

The Lending Library resources continue to grow due to significant investments by [International Paper](#), [TVA](#), [Toyota Motor Manufacturing, TN](#), [TV Robotics](#) and the [Tennessee STEM Innovation Network](#). The Lending Library now includes Lego EV3 Mindstorms, Cubelets, MOSS Robotics, UKits, Spheros, additional KNEX roller coaster, bridge, and car kits, and math-focused sets. In 2020-21, Lending Library kits impacted over 1500 students through virtual activities! 91% of teachers report the STEM Lending Library materials increase interest in math, science, and engineering with their students.

'Building confidence in science and engineering' is identified by teachers as the greatest impact of the STEM Lending Library materials and lessons with their students.

Online STEM Resources

The Hub's STEM Integrated Curricular Modules include resources for middle and high school courses in computer science, engineering, math, literature, history, and much more! We began in 2014 with 143 user enrollments in the STEM modules. We are proud to report that as of 2021, there are more than 1500 user enrollments!

STEM Professional Development for K-12 Teachers

In 2021, over 200 West TN teachers received FREE training from the STEM Hub in STEM pedagogy and use of the STEM Lending Library materials. After attending training workshops:

- 91% of participants are more confident in their ability to introduce active STEM projects in their classroom
- 100% believe the lesson plans and materials available through the Lending Library will increase students' understanding of math and science concepts
- 96% would recommend the workshops to their peers



For more information or to get involved, contact Dr. Stephanie Ivey: ssalyers@memphis.edu

