

Building Future-Ready Skills: Integrating STEM in Trades with Hands-On Learning Tools



Building Future-Ready Skills: Integrating STEM in Trades with Hands-On Learning Tools

In today's rapidly evolving job market, the integration of STEM (Science, Technology, Engineering, and Math) education with Career and Technical Education (CTE) is critical for preparing students for success in real-world trades. CTE provides students with practical, hands-on experience in various fields, and when paired with STEM learning, it equips students with the skills needed to thrive in 21st Century careers.

At Realityworks, we are committed to creating engaging, hands-on learning tools that bring STEM education to life. Our products are designed to build both technical knowledge and essential career skills through real-world learning experiences. In this guide, we'll explore how Realityworks' products align with the "STEM 7 Pillars," a research-backed framework that supports effective STEM education.

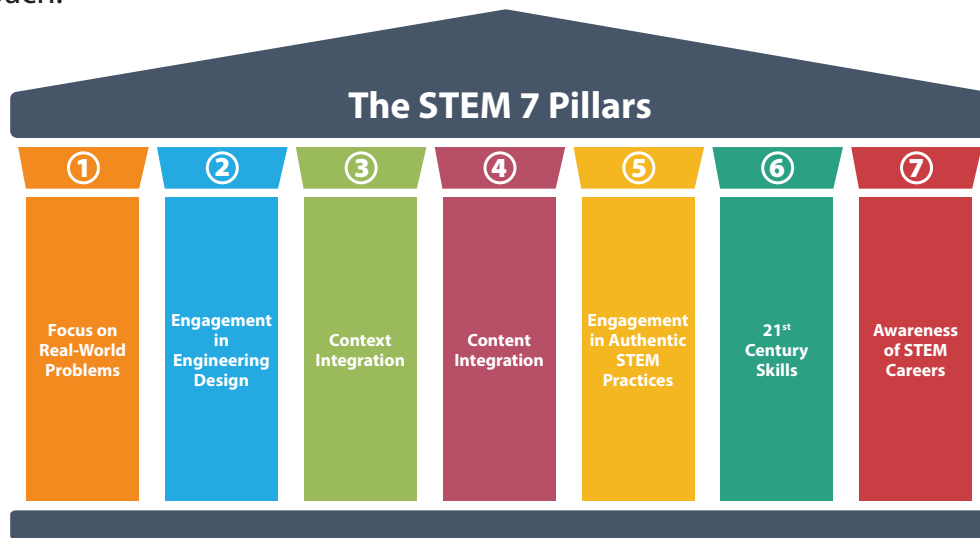


STEM



The STEM 7 Pillars: A Framework for STEM-Powered Learning

Realityworks adheres to a framework known as the “STEM 7 Pillars” when designing tools and resources that promote STEM education. These pillars ensure that students engage with meaningful, real-world problems, develop critical thinking and engineering skills, and are prepared for future careers in STEM fields. Let’s explore each pillar and how Realityworks’ products fit into this powerful approach.



① Focus on Real-World Problems

One of the most effective ways to engage students in STEM is by presenting them with real-world challenges that are relevant to their lives and future careers. Realityworks’ hands-on tools are designed to mimic real-world problems, enabling students to apply their STEM knowledge in practical settings.

Realityworks Products:



The Electrical Wiring Kit allows students to safely design, build, and test circuits, simulating the real-world challenges electricians face.



The RC Tractor Pull Challenge puts students in control of designing and testing tractors, teaching them about the forces and mechanics that impact real agricultural machinery.

② Engagement in Engineering Design

STEM learning should foster creativity and innovation through hands-on engineering design challenges. Students must be able to design, build, test, and refine their solutions, just like professional engineers.

Realityworks Products:



The Trailer Circuits STEM Kit engages students in designing and troubleshooting electrical circuits in trailers, allowing them to practice engineering design in a hands-on, real-world context.

③ Context Integration

Many students struggle to see the relevance of their STEM education, often asking, “Why do I need to learn this?” Context integration is about helping students connect their learning across multiple disciplines to real-world applications.

Realityworks Products:



The Electrical Wiring Kit provides a real-world context for students to apply their physics, math, and engineering knowledge as they install and evaluate in-wall wiring just as an electrician would.

④ Content Integration

STEM education should break down the traditional silos between subjects. By integrating content from math, science, and technology, students gain a more holistic understanding of how these subjects interconnect.

Realityworks Products:



The Trailer Circuits STEM Kit integrates electrical wiring concepts with hands-on practice, allowing students to directly apply what they’ve learned in class to real-world problems.

⑤ Engagement in Authentic STEM Practices

Authentic STEM practices involve students in activities that mirror real-world professional experiences, such as data analysis, experimentation, and reasoning.

Realityworks Products:



The Measurement Math Training Kit integrates math concepts with hands-on practice, allowing students to directly apply what they’ve learned in math class to real-world problems.

⑥ 21st Century Skills

In addition to technical skills, STEM learning must foster 21st-century skills such as communication, teamwork, and collaboration—skills that are critical in today’s workplace.

Realityworks Products:



The RC Tractor Pull Challenge encourages teamwork and problem-solving as students collaborate to design, test, and refine their tractors. These activities build the communication and collaboration skills needed in the workforce.

⑦ Awareness of STEM Careers

Engaging students in STEM learning also means preparing them for the wide range of careers that require STEM skills. Effective STEM education raises awareness of the opportunities available in STEM fields and equips students with the skills they need to pursue those careers.

Realityworks Products:



Tools like the Trailer Circuits STEM Kit and Electrical Wiring Kit expose students to the skills needed in trades and engineering, helping them envision a future career in these fields.

How Realityworks Products Align with the STEM 7 Pillars

Realityworks' commitment to creating STEM-powered learning experiences is evident across our product lines. Here are a few examples of how our tools promote hands-on, real-world learning while addressing the STEM 7 Pillars:



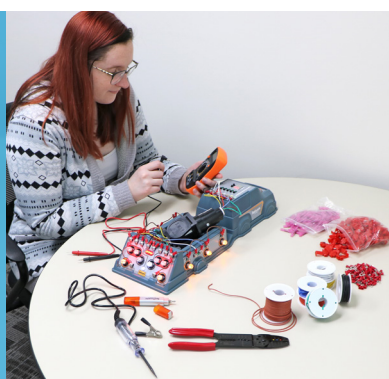
This kit offers students the chance to practice designing and testing circuits in a safe environment. With battery-powered systems, students can experiment and troubleshoot, gaining confidence while reinforcing STEM concepts like electrical safety and troubleshooting.



By integrating math concepts into hands-on measurement tasks, this kit helps students develop precise measurement skills that are critical for many trades and STEM careers.



This engaging project allows students to modify and test RC tractors, applying engineering and physics principles in a competitive, real-world tractor pull. It's an exciting way to build engineering and problem-solving skills.



Students learn how to build and troubleshoot trailer circuits, applying electrical engineering concepts in a hands-on environment. This kit prepares students for real-world tasks in trades, engineering, manufacturing, and robotics.

Free, printable posters

Use these downloadable posters to generate discussions about a variety of STEM career topics in agriculture and trades fields. Posters are included on the following pages and are sized 11"x17"

Get more posters for your classroom by visiting:

www.realityworks.com/resources/realityworks-interactive-posters

AGRICULTURE CAREERS IN STEM

 **STEM** is defined as a cluster of technical jobs in the key industries of science, technology, engineering, and mathematics¹.

67%
U.S. JOBS
Supported by STEM²

\$2.3 TRILLION
Annual federal tax revenue generated by STEM jobs³

KEY SKILLS & COMPETENCIES

Research
Problem Solving
Technology Proficiency
Adaptability



1. U.S. Bureau of Labor Statistics. (2024, August 29). Employment in STEM occupations. U.S. Bureau of Labor Statistics. <https://www.bls.gov/news.release/stem.pdf>
2. Meers Louise. 9 November 2021. The Stem in Agriculture. Careers with STEM. <https://careerswithstem.com/>
3. Tucker Danielle. 12 September 2017. STEM is Agriculture. AG Careers.com. <https://agcareers.com/>
4. Coursera Staff. 5 November 2024. In Demand STEM Careers. Coursera. <https://www.coursera.org/articles/stem-careers>
5. Agriculture Certificate. Southeastern Community College. <https://www.secc.edu/academics/programs/agriculture/>
6. Sustainable Agriculture - One Year Certificate. Lorain County Community College. <https://www.loraincc.edu/academics/programs/sustainable-agriculture/>
7. Gain the Skills Needed to Join the Agroforest Industry. Eastern Kentucky University. <https://www.eku.edu/agroforest/>
8. Bouchrika, I. (2024, October 24). STEM careers: 2024 guide to career paths. <https://www.researchgate.net/publication/386888888>

Realityworks
Live it. Learn it.
855.351.8938
www.realityworks.com
© 2025 Realityworks, Inc. All rights reserved.
STEM Infographic - 361 - 01/2025

TRADE CAREERS IN STEM

 **STEM** is defined as a cluster of technical jobs in the key industries of science, technology, engineering, and mathematics¹.

67%
U.S. JOBS
Supported by STEM²

\$2.3 TRILLION
Annual federal tax revenue generated by STEM jobs³

KEY SKILLS & COMPETENCIES⁷

Practical Experience
Adaptability & Agility
Problem Solving
Collaboration
Technology Proficient
Innovation



Safety Conscious
Communication & Leadership
Creativity
Curiosity
Detail-Oriented
Engineering Design

EDUCATION & TRAINING

- High school math, physics, computer science, and chemistry courses⁵
- Technical school or community college⁶
- On-the-job training through internships, apprenticeships, jobs and more

1. U.S. Bureau of Labor Statistics. (2024, August 29). Employment in STEM occupations. U.S. Bureau of Labor Statistics. <https://www.bls.gov/news.release/stem.pdf>
2. Bouchrika, I. (2024, October 24). STEM careers: 2024 guide to career paths, options & salary. ResearchGate. <https://www.researchgate.net/publication/386888888>
3. Explore The Trades. (n.d.). STEM and the skilled trades. Explore The Trades. <https://www.explorethe trades.com/>
4. Trade Schools. (2024, November 19). 45 great STEM careers: Good-paying jobs at every degree level. Trade Schools. <https://www.tradeschools.com/>
5. CollegeVine. (2024, December 16). Exploring trade jobs after high school. CollegeVine. <https://www.collegevine.com/blog/exploring-trade-jobs-after-high-school/>
6. STEM Fuse. (2021, September 30). Skilled trades are STEM careers. STEM Fuse. <https://www.stemfuse.com/blog/skilled-trades-are-stem-careers/>
7. Skillwork Blog. (2024, February 2). The role of STEM education in shaping the future in skilled trades. Skillwork. <https://www.skillwork.com/blog/the-role-of-stem-education-in-shaping-the-future-in-skilled-trades/>

Realityworks
Live it. Learn it.
855.351.8938
www.realityworks.com
© 2025 Realityworks, Inc. All rights reserved.
Trades STEM Infographic - 361 - 01/2025

★ JOIN US ON     
Connect with us to join ongoing conversations about engaging learners, technology tips and issues facing all areas of education.

Create STEM-powered Classrooms That Inspire With Realityworks

STEM education, when integrated with CTE, prepares students for a future in trades by providing real-world, hands-on learning experiences. Realityworks' products are designed with the "STEM 7 Pillars" in mind, offering educators the tools they need to engage students, build essential skills, and prepare them for 21st-century careers. By using these tools, educators can create dynamic, STEM-powered classrooms that inspire and equip the next generation of skilled workers.



Learn more!

Explore how Realityworks can help you bring STEM and CTE together in your classroom. Contact us today for more information on our products, or visit our website to see how these tools can transform your students' learning experiences.

www.realityworks.com/product-category/trade-skills/stem

Realityworks[®]
Live it. Learn it.™

800 .262 .3806
www.realityworks.com
© 2025 Realityworks, Inc. All rights reserved.
Integrating STEM Guide - KK | 01/2025

★ JOIN US ON       

Connect with us to join ongoing conversations about engaging learners, technology tips, and issues facing all areas of education.