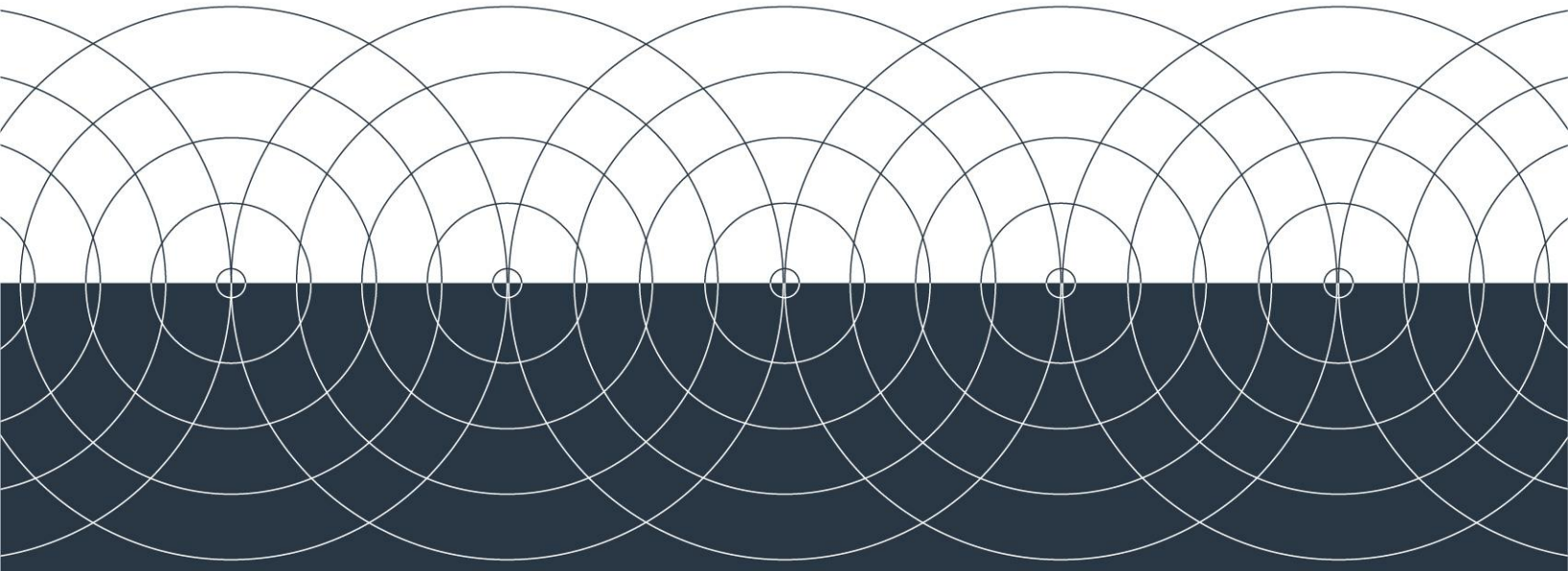
Science, Technology, Engineering, Mathematics (STEM)

IWL CAPABILITIES IN STEM LEARNING



MAY 2025

REIMAGINING THE STEM WORKFORCE

STEM Workforce

Opportunities in the Science, Technology, Engineering, and Mathematics (STEM) industries abound. According to the U.S. Department of Labor, Bureau of Labor Statistics (BLS), occupations in STEM are expected to grow by over 10% between 2023 and 2033, compared with less than 4 percent growth among non-STEM occupations. This is great news for the next generation of workers who will qualify for these jobs, many of which have a median annual wage of nearly $76,000—more than double the $35,080 median wage for all workers. But it's not such great news for women and underserved populations who are underrepresented in STEM education and careers. Over 57% of professional workers in the U.S. are women, and yet women represent only 24% of science professionals. African Americans and Hispanics are also consistently underrepresented in STEM employment. As of 2021, the National Center for Science and Engineer Statistics (.gov) reports that Black workers represent only 9% of the STEM workforce, and Hispanic workers represent only 7%. In addition, 3% of employed scientists and engineers were people with disabilities.

Our Commitment

IWL is committed to growing the number youth – especially youth from historically underrepresented populations – interested in working in STEM. As a member of the STEMM (Science, Technology, Engineering, Math, and Medicine) Opportunity Alliance, we work with a network of hundreds of cross-sector partners to achieve change and support a STEM economy that represents the rich tapestry of America to fuel our future. Our commitment is guided by three core values: start early, make it inspiring, and engage employers in planning and preparation.

Curriculum Development

Our curricula are grounded in research and designed to be used in school, afterschool, and other informal settings. We combine the principles of STEM with Manufacturing and Design (STEM^{2}D) to encompass a wider range of STEM-adjacent careers in high growth industries. The curricula, which target students from pre-K through high school, offer opportunities for parent and adult involvement, recognizing the significance of parent and mentor engagement in supporting youths success. Our Next Engineers hands-on design challenges, STEM^{2}D student activities series, e-Books and videos are designed to empower young people to identify as STEM enthusiasts and future members of the STEM workforce, while avoiding the traps of stereotypes and misconceptions that have resulted in an unbalanced workforce. We provide training, coaching and technical assistance to test and refine these curricula and student activities, and then create easy-to-use implementation guides that allow them to be delivered on a large scale. Our STEM^{2}D student activities are available in 10 of the most common languages spoken across the world.

ABOUT FHI 360

FHI 360 is a global organization that mobilizes research, resources and relationships so people everywhere have access to the opportunities they need to lead full and healthy lives.

ABOUT IWL

FHI 360's Institute for Work and Learning (IWL) advances solutions in learning and workforce systems. We focus on two key drivers of individual well-being – education and employment – to improve lives. IWL seeks to strengthen the capacity of public and private organizations, providing information, resources, and support needed to make decisions, strengthen programs, and improve outcomes for individuals.

Table 1. Key Curricular Products

Product	Description
Careers in Trade eBook	Interactive resource that explores trade-related career paths, certificate options, role insights, and activities connecting academics, including STEM, to trades. Check it out: https://iwl.fhi360.org/resource/careers-in-trade-ebook/.
Career Quiz	This online quiz will help girls explore their interests and passions and how a career in STEM²D can make a difference in the world. Take the quiz: www.ExploreSTEM2D.fhi360.org.
Exploring Nursing Pathways eBook	Interactive nursing career guide designed for middle school, high school, and college students interested in pursuing nursing. Includes engaging insights about the profession, advice on relevant coursework, pathways into nursing, and six at-home STEM activities centered around nursing. Read: https://iwl.fhi360.org/exploring-nursing-pathways-ebook-viewer/.
IGNITE! Activities	Short, introductory hands-on activities use everyday materials to introduce students to the endless opportunities in STEM²D. IGNITE! activities and corresponding video clips and tip sheets can be used at home or as part of out-of-school programming. Go to: www.stem2d.org.
Manufacturing Magic	Short video clips open the door for students, parents, and teachers to look at the many facets of manufacturing. Female workers in the field explain how factories work and share their career development paths in this field, which includes robotics, supply chain management, 3D printing, scientific research, process engineering, computer science, operations support, design/drafting, and more. Dive in: www.stem2d.org.
Next Engineers: Engineering Academy	Over two years, students (ages 15 to 18) learn to think and act like engineers and prepare to advance to post-secondary education. With 160 hours outside of school, the Academy includes a series of immersive design challenges, career coaching, and college-readiness workshops to equip youth with needed skills to build an engineering identity and career. See: www.nextengineers.org.
Next Engineers: Engineering Discovery Activities	These 60–90-minute hands-on activities build awareness for 13–14-year-olds about what engineers do. Volunteers deliver creative activities in the classroom or community to inspire young people and expand their understanding of what engineering is all about. See: www.nextengineers.org.
Sizzling Summer Series	This series provides weekly Ignite! and Classroom-based activities for employee volunteers, youth facilitators, educators, parents, and other interested parties to use over the summer to keep youth inspired by and engaged with STEM²D and limit learning loss. Go to: www.stem2d.org.
STEM²D Student Activities	More than 25 interactive and fun, hands-on activities available in 10 languages for secondary school students, ages 12-18; activities are one to four hours in length and focus on one or more STEM²D subjects. Go to: www.stem2d.org.

Employer Engagement and Employee Training

IWL engages employers who are invested in nurturing the future STEM workforce to inspire and support youth – especially girls and young women, and other underrepresented populations, in exploring STEM careers. We develop and test research-based volunteer guides for STEM professionals, deliver on-site training and technical assistance, support STEM internship opportunities, and champion success stories of women and girls in STEM fields. For example, through our partnership with GE Aerospace and its Next Engineers program, we've equipped employee volunteers with the knowledge and tools needed to successfully provide 22,000 hours of inspiring engineering programming for young people.

Table 2. Employee Resources and Training Activities

	Activities and Products
Employee Resources	**SPARK!** Promotes the valuable involvement of volunteers to inspire STEM²D subjects and 21st-century careers around the world. **Market Insights:** Arms volunteers with critical specific STEM career data and information in 28 countries that can be used in their efforts to inform and broaden understanding among youth about the endless possibilities of in the STEM sector. **Volunteer Playbook**: Provides "8 Quick Steps" or how to get started with planning events, choosing the right activity – based on volunteer expertise and background, the age of the youth, materials required, and the time available, forging connections, sharing successes, and getting the most out of the volunteer experience. **Volunteer Tip Sheets:** Provide tips and strategies on various topics related to encouraging, engaging, and communicating with youth, such as Engaging with Girls, Engaging with Youth, Messaging for Parents, and Youth Brain Development. Tip sheets are available in six different languages.
Training & Professional Development	**Customized Coaching**: 60-minute one-on-one sessions to help volunteers plan STEM events. **e-Modules**: 10-15-minute, topic-specific e-Modules, such as Next Engineers' Positive Youth Development e-Module, help volunteers enhance their knowledge and skills in working with youth. **Onboarding Sessions:** Short e-Modules that provide an overview of volunteer roles and responsibilities, available youth resources, volunteer best practices, and communication, data, and evaluation requirements. **Virtual Workshops**: 30-45-minute, topic-specific sessions for how to plan STEM²D events.

Building Strong Programs through Research and Evaluation

IWL's team of research and evaluation specialists conduct rigorous formative studies of our own STEM programs and curricula to build an evidence base for excellent STEM preparation. We also lend our expertise to external program evaluations and research studies that help to define the best in STEM learning. We produce research and position papers to help galvanize the movement toward early, accessible learning. For example, through our work with Johnson & Johnson's WiSTEM²D (Winning in Science, Technology, Engineering, Mathematics, Manufacturing, and Design) global initiative, more than 2,000 Johnson & Johnson volunteers in 64 countries lead programming that inspired nearly 15 million girls and boys (ages 5-18). Some of these implemented activities are highlighted in *A Commitment to Catalyzing Change: Case Studies of WiSTEM²D Implementation*.

Table 3. Winning in STEM²D Outcomes

	2015-2019	2020-2024	TOTAL
WiSTEM²D Events	**500+**	**2,500+**	**3,000+**
Students Reached	**18.3 million**	**9.5 million**	**27.8 million**
Girls Reached	**9.2 million**	**5.5 million**	**14.7 million**