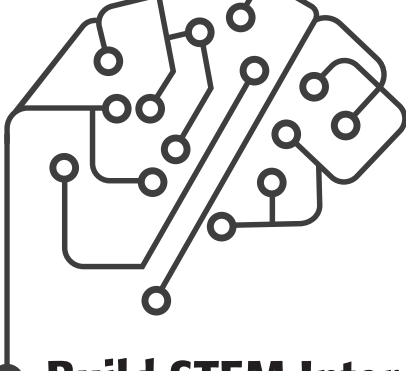


Ignite Interest in STEM

Inspire and empower students to explore and pursue a career in STEM with IEEE



IEEE TryEngineering empowers teachers to inspire the next generation of engineering and technical innovators. The site provides teachers, students, and volunteers with pre-university resources designed to engage the next generation of STEM professionals.

Build STEM Interest Early



Beginning STEM education at an early age nurtures curiosity and lifelong thinking skills. A child's early years are critical for brain development. **By age 5, the brain grows to about 90% of adult size.**

SOURCE: <https://www.firstthingsfirst.org/early-childhood-matters/brain-development/> | <https://soeonline.american.edu/blog/stem-in-early-childhood-education>

Family engagement in math and literacy education of **children ages 3 to 8** has a consistently positive effect on children's learning in those areas, especially when the engagement takes place outside of school.

SOURCE: <https://codewizardshq.com/stem-statistics/> | https://joanganzcooneycenter.org/wp-content/uploads/2017/01/jgcc_stemstartearly_final.pdf

Role models help students visualize themselves in STEM careers. In the UK, **63% of 10 to 18 year olds** are considering a career in medicine, and **52% of children** are considering a career in engineering after witnessing healthcare workers and engineers' prompt and agile response during the COVID-19 pandemic.

SOURCE: <https://www.smartbrief.com/original/2021/10/1/stem%E2%80%99s-post-covid-moment>

The Power of STEM

All United Nations Member States adopted the 2030 Agenda for Sustainable Development that includes 17 Sustainable Development Goals (SDGs). These SDGs are a universal framework that aims to end poverty and other deprivations, improve health and education, reduce inequality, spur economic growth, tackle climate change, and preserve our ecosystems.

SOURCE: <https://sdgs.un.org/goals>

We Need a STEM Workforce to Make these Goals a Reality



TELECOMMUNICATION

Telecommunications breakthroughs are the direct result of workers in STEM. STEM professionals design, install, calibrate, and maintain communication infrastructure. Telecommunications is a powerful technology because it facilitates interaction and information, delivers long-distance or remote education, fosters operational efficiency in businesses, and more.



HEALTH

STEM and its strides in medical science will also be vital to mitigate public health challenges in the future. The convergence of biological knowledge, engineering advances in designing and producing biological products, and the computing technologies used for data analysis and interpretation enabled the rapid development of mRNA technology in COVID-19 vaccine development efforts.



SPACE

Space contributes positively to a range of policy areas, including climate and weather monitoring, access to health care and education, water management, efficiency in transportation and agriculture, peacekeeping, security, and humanitarian assistance. Developments in space-based technologies, such as spacecraft, satellites, space stations, and orbital launch vehicles, have made space exploration safer and more efficient.



ENERGY

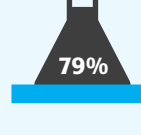
Renewable energy is one of the most explosive sectors globally. Workers with STEM skills and educational backgrounds help achieve critical goals such as replacing traditional energy sources with new technologies to reach net-zero emission, concurrently improving energy efficiency and driving economic recovery.

The Necessity for a STEM Workforce



Due to technology-driven growth and the necessity to replace the senior STEM workforce as they return, the **STEM labor market is projected to expand by 12.1% by 2025 in Europe.**

SOURCE: https://www.teknologisk.dk/_/media/64894_Does%20the%20EU%20need%20more%20STEM%20graduates.pdf

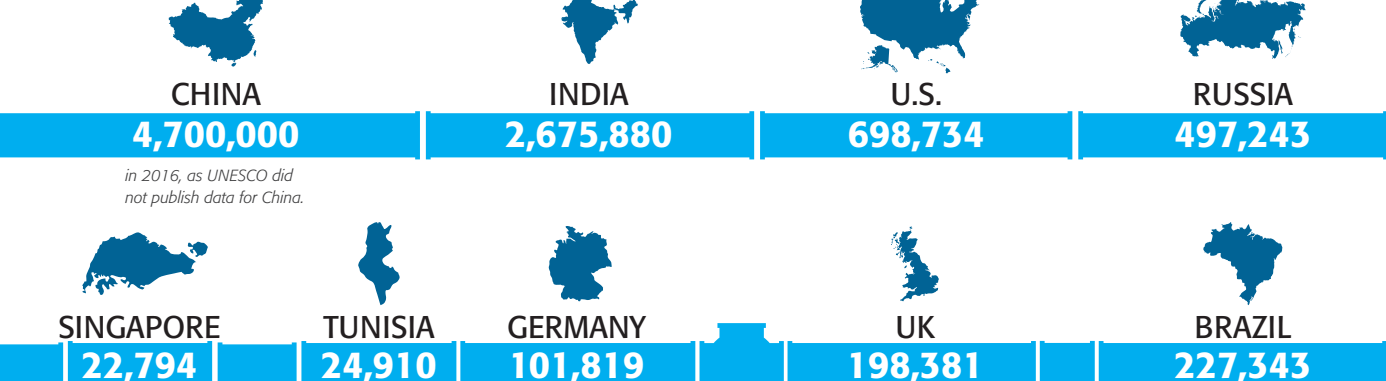


In the United States, **employment in STEM occupations has grown 79%—increasing from 9.7 million to 17.3 million since 1990.**

SOURCE: Via a 2018 article from Pew Research Center

Filling the STEM Workforce Pipeline

In 2018, the highest number of STEM graduates were from these countries:



The Deloitte-SEMI Workforce Development Survey found that:

88% of executives agree that technological shifts in the industry will **require new skills and talent.**

SOURCE: <https://www.semi.org/en/workforce-development/diversity-programs/deloitte-study>

77% believe that there is a **critical talent shortage in the semiconductor industry.**

1/2

of current semiconductor employees will retire in the next 10-15 years. (which contributes to the talent shortage)

SOURCE: <https://bluesignal.com/2020/07/30/talent-gap-s-in-electrical-engineering-awful-or-opportunity/>

89%

of United States manufacturers report that they cannot fill all job openings.

Source: <https://www.industryweek.com/talent/article/2022/07/27/89-of-small-manufacturers-cant-fill-job-openings#:~:text=In%20a%202021%20survey%20of%20manufacturers%20generated,%25%20can%20find%20employees.&text=Misperceptions%20of%20manufacturing%20jobs%3B,Retirement%20of%20baby%20boomers.>

60%

of all college students in the United States who start a STEM major in college, drop out, as they **lack the preparation and nurturing for the rigor of college STEM programs,** according to The Student Research Foundation.

SOURCE: <https://www.studentresearchfoundation.org/blog/college-students-drop-out-of-stem/>



Africa has still not recovered from the budget cuts made in the 1980s, which led to the reduction in Technical Vocational Education and Training (TVET) education, which is recommended for bridging the demand and supply of skills in Africa and Asia.

SOURCE: https://assets.publishing.service.gov.uk/media/5c6c6ec740f0b647abb525a7f418_Benefits_of_STEM_Education.pdf

The World Needs More Diversity in STEM

The world needs diverse viewpoints and experiences in order to design solutions that meet each community's unique needs. These solutions come when underrepresented communities are encouraged in STEM education and careers.

On average 30% of the world's researchers are women.

SOURCE: <https://www.weforum.org/agenda/2020/02/stem-gender-inequality-researchers-bias/>

In certain parts of the world, the percentage of women in research is even lower:



Under-funded education, early marriage, poverty, gender norms, and other socio-cultural factors limit women's participation in STEM fields, specifically in Asia.

SOURCE: <https://asiainfofoundation.org/2019/11/20/its-time-for-large-scale-investment-in-girls-education-across-asia/>

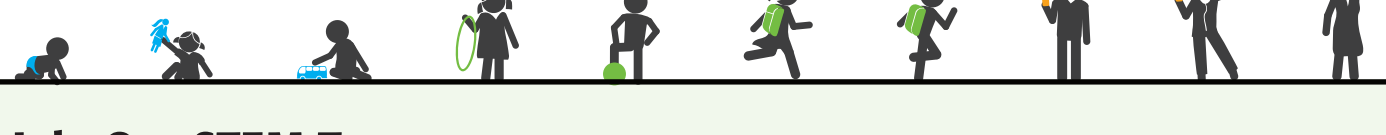
Minorities are deeply underrepresented in STEM fields—just 2.2% of Latinos, 2.7% of African Americans, and 3.3% of Native Americans and Alaska Natives have earned a university degree in STEM fields. In the **United States, minority groups represent only 10 percent** of the STEM workforce.

Source: National Science Foundation, <https://www.pewresearch.org/fact-tank/2021/04/14/6-facts-about-americas-stem-workforce-and-those-training-for-it/>

Researchers found that Black and Latino students leave STEM majors at higher rates compared to white STEM students and speculate that this is due to coming from low-income families and having less access to academic resources that prepare them for the rigors of college STEM courses.

SOURCE: https://www.washingtonpost.com/local/education/the-science-divide-why-do-latino-and-black-students-leave-stem-majors-at-higher-rates/2019/05/03/e386d318-4b32-11e9-93d0-64dbc38ba41_story.html

Ensuring basic equality of access to educational experiences is a foundational step for students to gain interest in STEM fields. STEM is a great equalizer, and the opportunity should be offered to everyone.



Join Our STEM Team

Help us raise the next generation of engineering and technical innovators

Teachers, parents, counselors, and mentors are integral to the learning environment and the growth and nurturing of STEM-interested students during their formative years.



TEACHERS

Explore free resources that can support you as you integrate engineering into your classroom.

- Download free [engineering lesson plans](#)
- Engage your students with [TryEngineering Tuesday](#) student guides to explore engineering and technology careers and concepts
- Discover new methods, strategies and events across the globe with [STEM articles](#)



STUDENTS

Discover and be inspired by the wonders of engineering and technology.

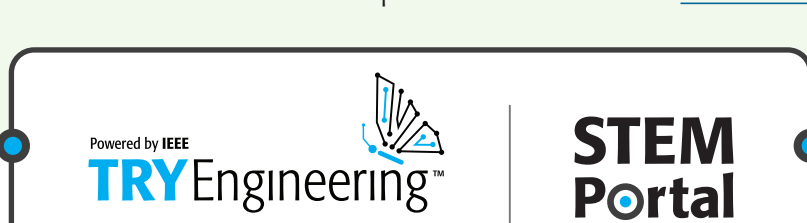
- Play online [STEM games](#)
- Learn about [engineering and technology careers](#) and how engineers make a difference
- Search for [accredited engineering programs](#) at universities and colleges
- Find [resources](#) to get involved with competitions and summer camps



VOLUNTEER

Find inspiration and resources to develop or enhance your own outreach programs.

- [Share your STEM programs](#) with IEEE's global community of volunteers
- Access [volunteer resources](#) to support your STEM Outreach
- Showcase your success by [reporting your event results](#)
- Conduct student and teacher workshops with the [Engineering Lesson Plan Toolkit](#)



Get Involved

Join the [IEEE Pre-University Community](#)

For more information contact TryEngineering@ieee.org

