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WALTON FAMILY
FOUNDATION

Voices of Gen Z

Perspectives on STEM Education and Careers



Overview

Careers in science, technology, engineering and math (STEM) are the jobs of the future. According to the U.S. Bureau of Labor Statistics (BLS), the number of STEM occupations is projected to increase 11% by 2032,¹ supporting economic growth, national security and America's competitiveness on the global stage.

To fill these in-demand STEM roles in fields as diverse as 5G telecommunications and semiconductor manufacturing, American businesses need future workers who are ready, willing and able to pursue them. These future workers are the youth of today — Generation Z, who were born between 1997 and 2011.

Over the past two decades, there has been significant financial investment in STEM education, particularly in K-12 schools, to prepare youth for future STEM careers. This is especially true at the federal level, where millions of dollars annually have been funneled directly to districts as well as to agencies such as the U.S. Department of Education and the National Science Foundation to promote STEM education.²

Gen Z — the primary beneficiary of these investments — is now finally making their way into the workforce. And yet, much remains unknown about the degree to which Gen Z members are interested in STEM careers and whether the U.S. education system has done enough to prepare these youth for STEM roles.

This report fills a gap in the available research by highlighting nationally representative data about Gen Z's views on STEM careers. In partnership with the Walton Family Foundation, Gallup conducted a survey of over 2,000 Gen Z members to measure their interest in and preparation for various careers, including STEM roles. This survey is part of a multiyear study of American youth aged 12 to 26 to understand and track their opinions and experiences on a variety of topics related to education.

Key Findings

- 1 Gen Z youth are generally interested in STEM occupations, although few cite them as their first-choice careers. This raises questions about whether Gen Z will contribute to — rather than improve — the labor shortages that are already affecting key STEM sectors.
- 2 While Gen Z students and adults believe their K-12 schools have generally taught them about STEM careers, many report they have not been exposed to foundational content that underlies many STEM jobs.
- 3 Exposure to STEM content in school is important because it is associated with postsecondary STEM interest: On average, students exposed to a higher number of STEM topics in middle and high school are more likely to want a STEM job, to pursue a STEM major in college and to ultimately obtain a STEM career.

These findings underscore that much work remains to be done to prepare the American youth of today for the jobs that America needs tomorrow.

1 U.S. Bureau of Labor Statistics. (2023). Table 1.11 Employment in STEM occupations, 2022 and projected 2032 [Table]. *Employment in STEM occupations*. <https://www.bls.gov/emp/tables/stem-employment.htm>

2 Lips, D., & Moritz, M. (2023). *STEM and computer science education: Reforming federal K-12 education R&D activities to strengthen American competitiveness*. Lincoln Network & Federation of American Scientists. <https://cdn.sanity.io/files/d8lrla4f/production/264f2a62b29276528f24ec3787a0c16eed71fdbc.pdf>

Interested in STEM — But Not Very Interested

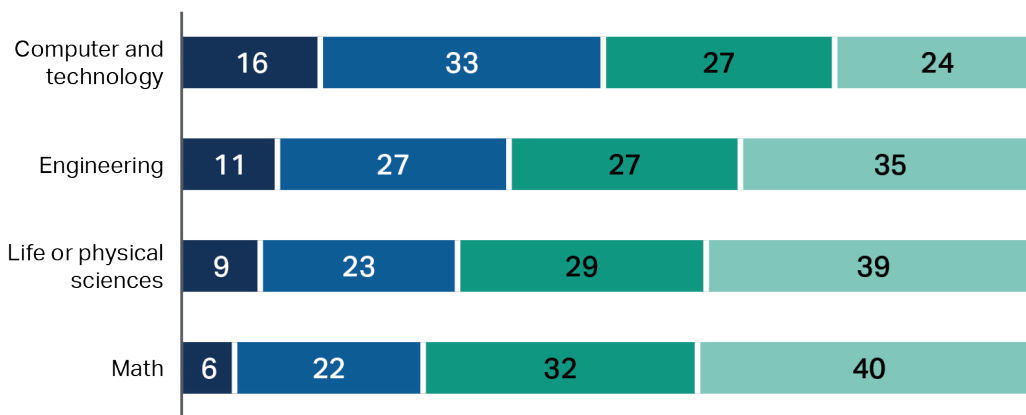
A majority of Gen Z express interest in STEM careers, but fewer say they intend to pursue them.

Careers in STEM fields are of interest to Gen Z. When asked about their interest in occupations related to life and physical science, technology, engineering and math, 75% of Gen Z (including those currently in the workforce) report they are interested in at least one career from these sectors. Nearly half of Gen Z specifically note they are very or somewhat interested in a career related to computing and technology.

Gen Z members are most interested in computer and technology STEM fields.

How interested are you in each of the following types of careers?

■ % Very interested ■ % Somewhat interested ■ % Not very interested ■ % Not at all interested



75% of Gen Z are interested in at least one STEM field, but only 29% hope to pursue a STEM-related occupation in the future.

While Gen Zers are open to working in STEM fields, fewer have a specific STEM occupation in mind that they want to obtain. When asked to select a specific job that they most hope to pursue in the future, 29% of Gen Z members identify a STEM-related occupation.

Given there are expected to be 1.4 million technical STEM jobs unfilled by the end of 2030, there is a need for more skilled workers.³ The large gap between the percentage of Gen Z youth interested in a STEM field and those who intend to pursue a specific STEM job suggests there is opportunity for educators and policymakers to bolster the pipeline of future Gen Z STEM workers.

³ Semiconductor Industry Association & Oxford Economics. (2023). *Chipping away: Assessing and addressing the labor market gap facing the U.S. semiconductor industry*. https://www.semiconductors.org/wp-content/uploads/2023/07/SIA_July2023_ChippingAway_website.pdf

Limited Exposure to Core STEM Concepts

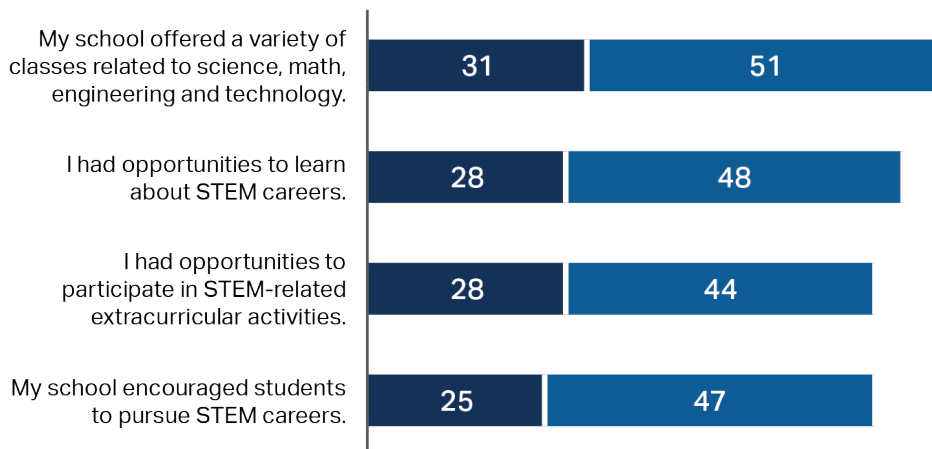
Gen Z members are learning about STEM careers in school but not enough about foundational STEM concepts.

Most Gen Z feel their middle and high schools have supported STEM career development. For example, 82% of Gen Z members say their school offered a variety of STEM classes and 72% note they had opportunities to participate in STEM extracurriculars such as robotics and science clubs. Gen Z youth who are currently in high school are slightly more likely than their peers in middle school to say their school offers a variety of STEM courses (86% vs. 78%) and provides opportunities to learn about STEM careers (77% vs. 69%).

Gen Zers are exploring STEM careers in high school.

Please think back to the last time you completed classes in middle or high school. Please rate your level of agreement or disagreement with the following statements:

■ % Strongly agree ■ % Agree



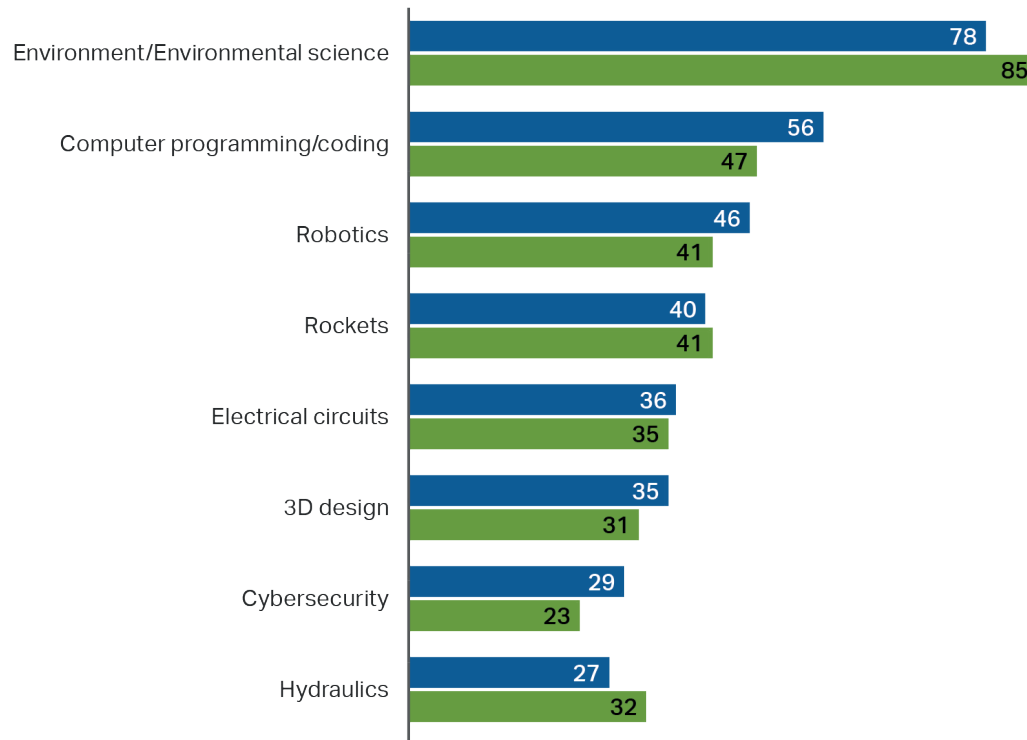
However, far fewer Gen Z members report being exposed to foundational STEM concepts in school. Less than half of current Gen Z middle and high school students say they have learned about engineering- and technology-related topics such as 3D design, cybersecurity and hydraulics — concepts that underlie many STEM jobs. Just 47% of high school students say they have learned about computer programming in their courses. These relatively low percentages likely result because learning about these topics is a discretionary — rather than required — component of the curriculum in many U.S. schools.

Few Gen Z currently in K-12 schools are learning concepts core to STEM-related careers from their coursework.

Have you ever learned about the following topics in your classes at school?

% Yes

■ Middle school students ■ High school students

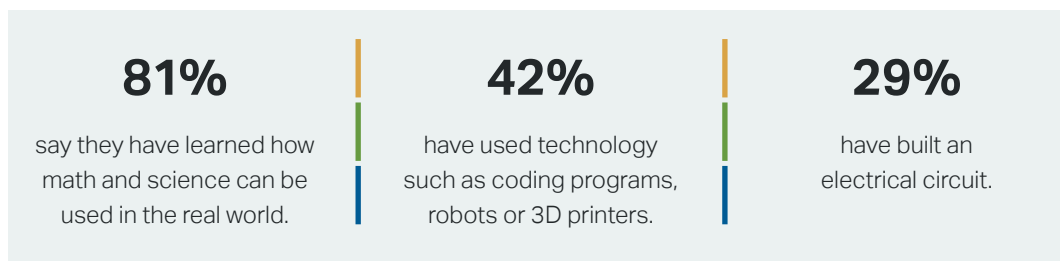


Note: Asked only of Gen Z who are enrolled in middle or high school.

Additionally, while most Gen Z middle and high school students report learning about how math and science principles can be applied to real-world scenarios, less than half have engaged in hands-on STEM learning activities such as building an electrical circuit or using technology like coding programs or robots.

Few students learning about these core concepts in class translates into a small population of students who are qualified to study STEM majors in colleges and ultimately pursue careers in growing technical fields like engineering, artificial intelligence, cybersecurity and manufacturing.

Among Gen Z members in middle and high school:



STEM Exposure in School Matters

Learning about STEM in school is positively associated with pursuing STEM in college and as a career.

STEM exposure in school is associated with students' STEM aspirations, as well as their academic and career trajectories. The more STEM concepts that Gen Zers are exposed to in school, the greater their likelihood of wanting a STEM career, pursuing a STEM major in college and ultimately obtaining a STEM job. This is especially true of topics related to technology, such as robotics, 3D design, cybersecurity and computer programming.

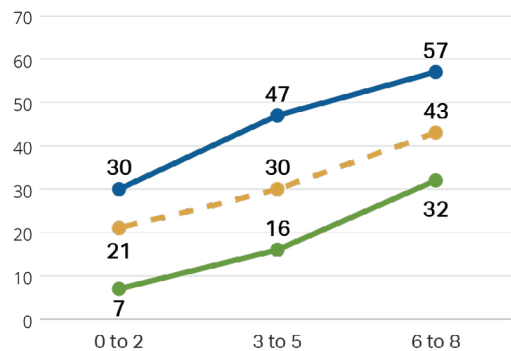
Notably, students exposed to four or five technology-related topics in school are 2.6 times more likely to want a future STEM job, 2.2 times more likely to declare a college STEM major and 5.3 times more likely to be employed in a STEM role than their peers who are exposed to just one technology-related topic or none at all.

The cross-sectional nature of the survey data does not allow us to disentangle underlying mechanisms, and thus we cannot confirm that STEM exposure in middle and high school *causes* students to pursue STEM careers. Nevertheless, these results align with a growing body of literature that underscores the importance of STEM exposure in shaping positive outcomes related to studying STEM fields in college and pursuing STEM careers.^{4,5}

STEM concepts

Number of STEM concepts learned in school

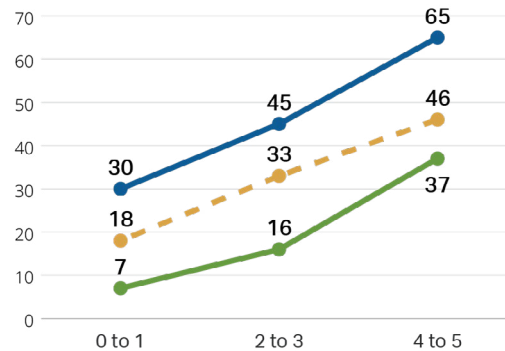
— College STEM major — Employed in STEM
 - - - Wants future job in STEM



Technology concepts

Number of technology concepts learned in school

— College STEM major — Employed in STEM
 - - - Wants future job in STEM



4 Bottia, M. C., Mickelson, R. A., Jamil, C., Moniz, K., & Barry, L. (2021). Factors associated with college STEM participation of racially minoritized students: A synthesis of research. *Review of Educational Research*, 91(4), 614-648. <https://doi.org/10.3102/00346543211012751>

5 Means, B., Wang, H., Wei, X., Iwatani, E., & Peters, V. (2018). Broadening Participation in STEM college majors: Effects of attending a STEM-focused high school. *AERA Open*, 4(4). <https://doi.org/10.1177/2332858418806305>

Methodology

Results are based on a Gallup Panel™ web survey conducted Sept. 11-19, 2023, with a sample of 2,006 12- to 26-year-olds nationally. The Gallup Panel is a probability-based panel of U.S. adults who are randomly selected using address-based sampling methodology. Gallup also recruits using random-digit-dial phone interviews that cover landline and cellphones.

Overall, 1,228 12- to 18-year-old children nationally were reached through adult members of the Gallup Panel who indicated they had at least one child 18 or younger living in their household; the additional 778 18- to 26-year-old respondents are members of the Gallup Panel.

For the total sample of 2,006 Gen Z respondents nationally, the margin of sampling error is ± 3.3 percentage points at the 95% confidence level. For the sample of 1,228 12- to 18-year-old Gen Z youth recruited through a parent or guardian, the margin of sampling error is ± 4.2 percentage points at the 95% confidence level. For the sample of 18- to 26-year-old Gen Z youth nationally who are Gallup Panel members, the margin of sampling error is ± 5.5 percentage points at the 95% confidence level. Margins of error for subgroups are higher.

All reported margins of sampling error include computed design effects for weighting. In addition to sampling error, question wording and practical difficulties in conducting surveys can introduce error or bias into the findings of public opinion polls.

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