



Lighting the Path: Exploring Empowerment and Engagement in Girls' After-School STEM Learning

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Declining Rate in STEM

A significant occupational gap persists within the STEM (Science, Technology, Engineering, and Mathematics) fields between employed men and women. This disparity often begins early, as girls typically start to lose interest in STEM-related activities between the ages of 10 and 12.

Since 2019, overall student performance in science has declined, with the percentage of students scoring at the proficient level decreasing from 33% to 29% (Jacobson, 2025). Likewise, the proportion of students who report enjoying science activities has dropped from 52% to 42% (Jacobson, 2025).

Of particular concern, a gender gap in science test scores that had largely closed prior to the pandemic has reemerged, with girls' scores declining more steeply than those of boys (Meltzer, 2025).

About STEMpower

The STEMpower After-School Club, launched two years ago, aims to bridge the gender gap in STEM by introducing fourth- and fifth-grade girls to diverse STEM careers and supports STEM curriculum. What began as a connection between female undergraduate STEM volunteers and elementary students has grown into a mentorship program.

Held twice a month, sessions feature hands-on experiments linked to classroom learning and aligned with Texas Essential Knowledge and Skills (TEKS) standards, while highlighting STEM careers and influential women in those fields. This year, our focus is empowerment and connection, through collaborations with university STEM organizations and community partners in Fort Worth, such as Texas Parks and Wildlife, to expand female STEM representation and mentorship opportunities.

Methodology

The participants in this work-in-progress study are 30 fourth and fifth-grade girls (N = 30) enrolled in the STEMpower After-School Club. The data were collected from a pre-assessment delivered in September 2025 during the students' first after-school session. The assessment included the STEM Careers Survey (Kier et al., 2014). Descriptive statistics (frequency) were utilized to analyze the data.

Results

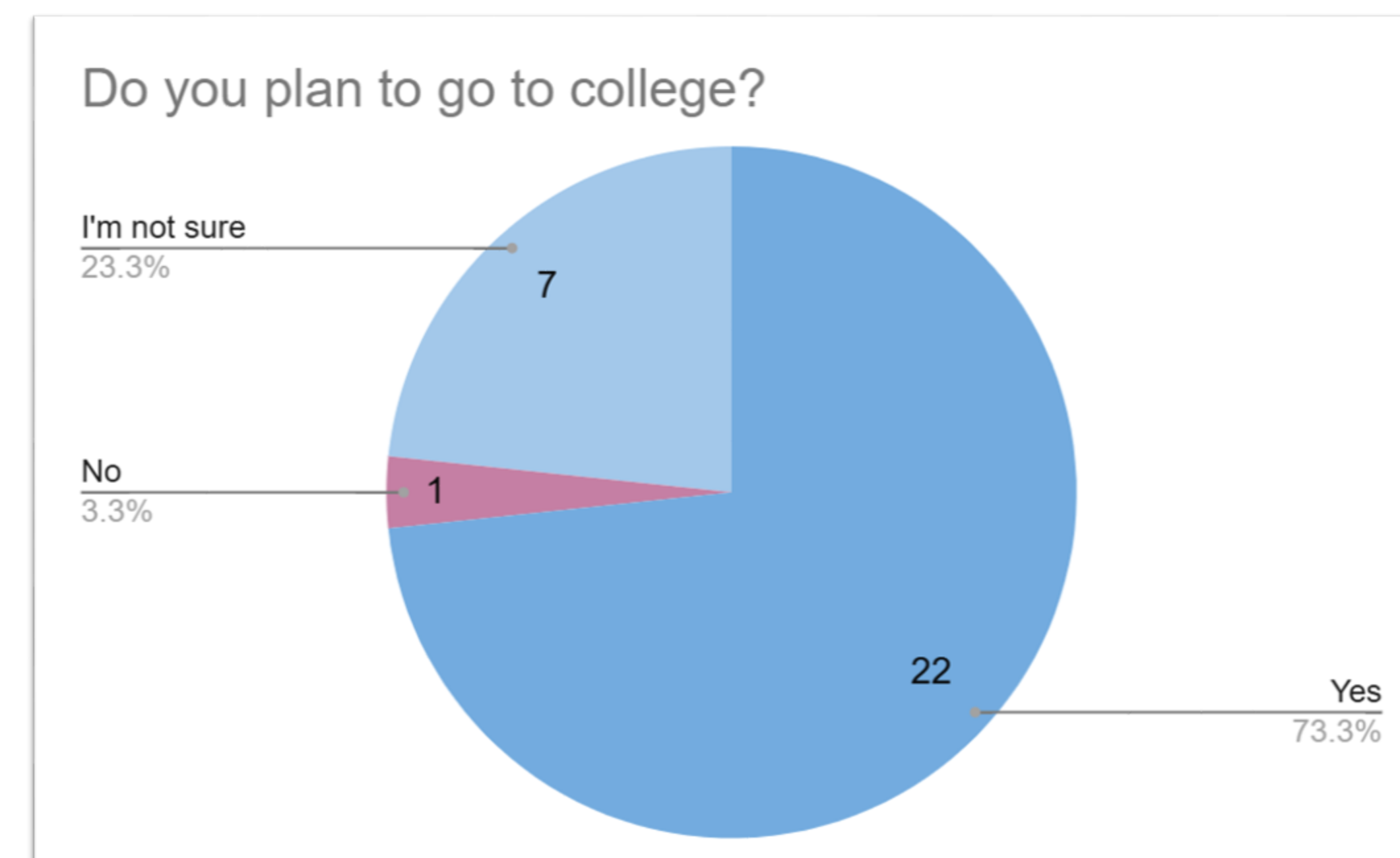


Figure 1. "Do you plan to go to college?" responses from STEM Careers Survey

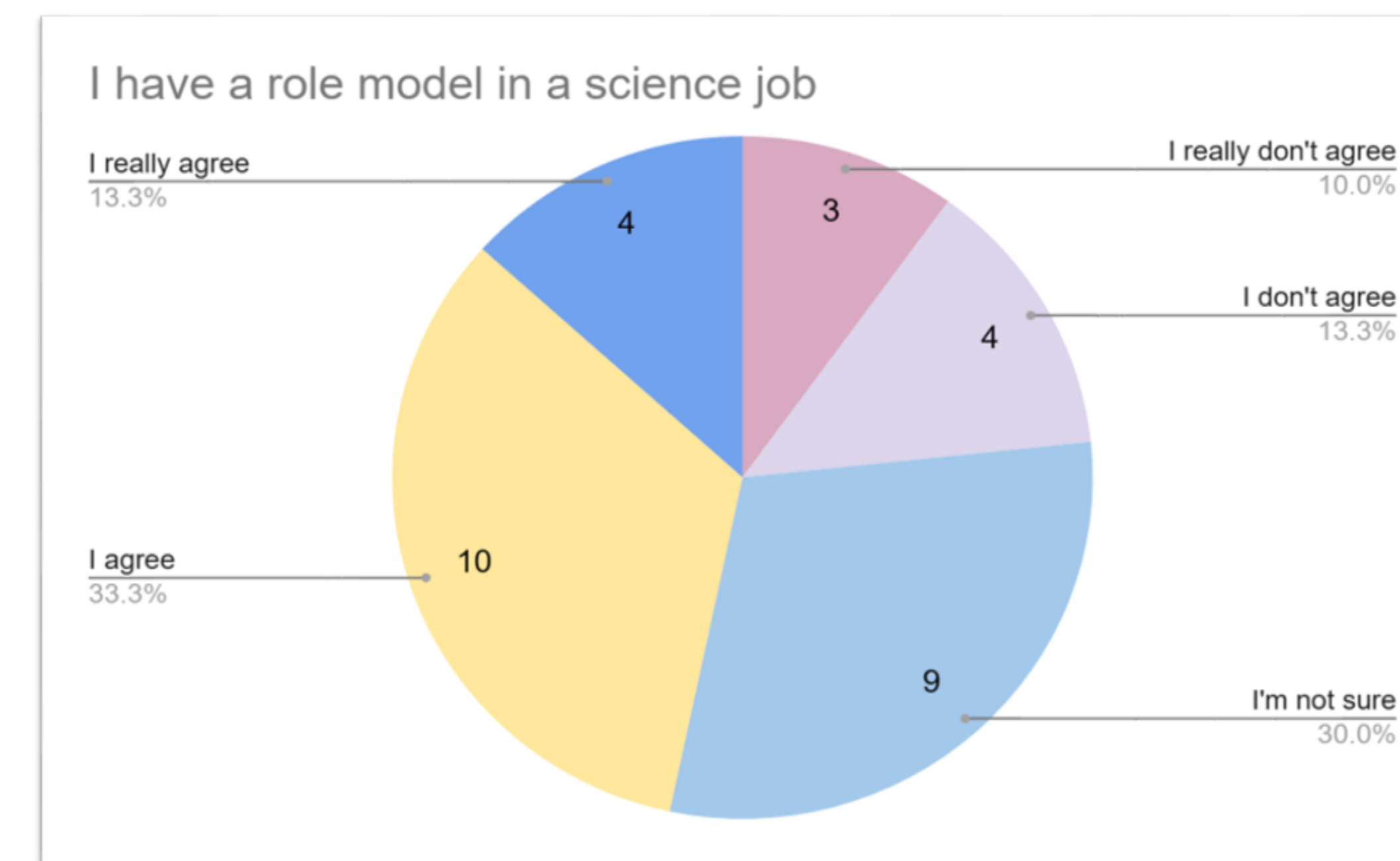


Figure 2. I have a role model in a science job responses from STEM Careers Survey

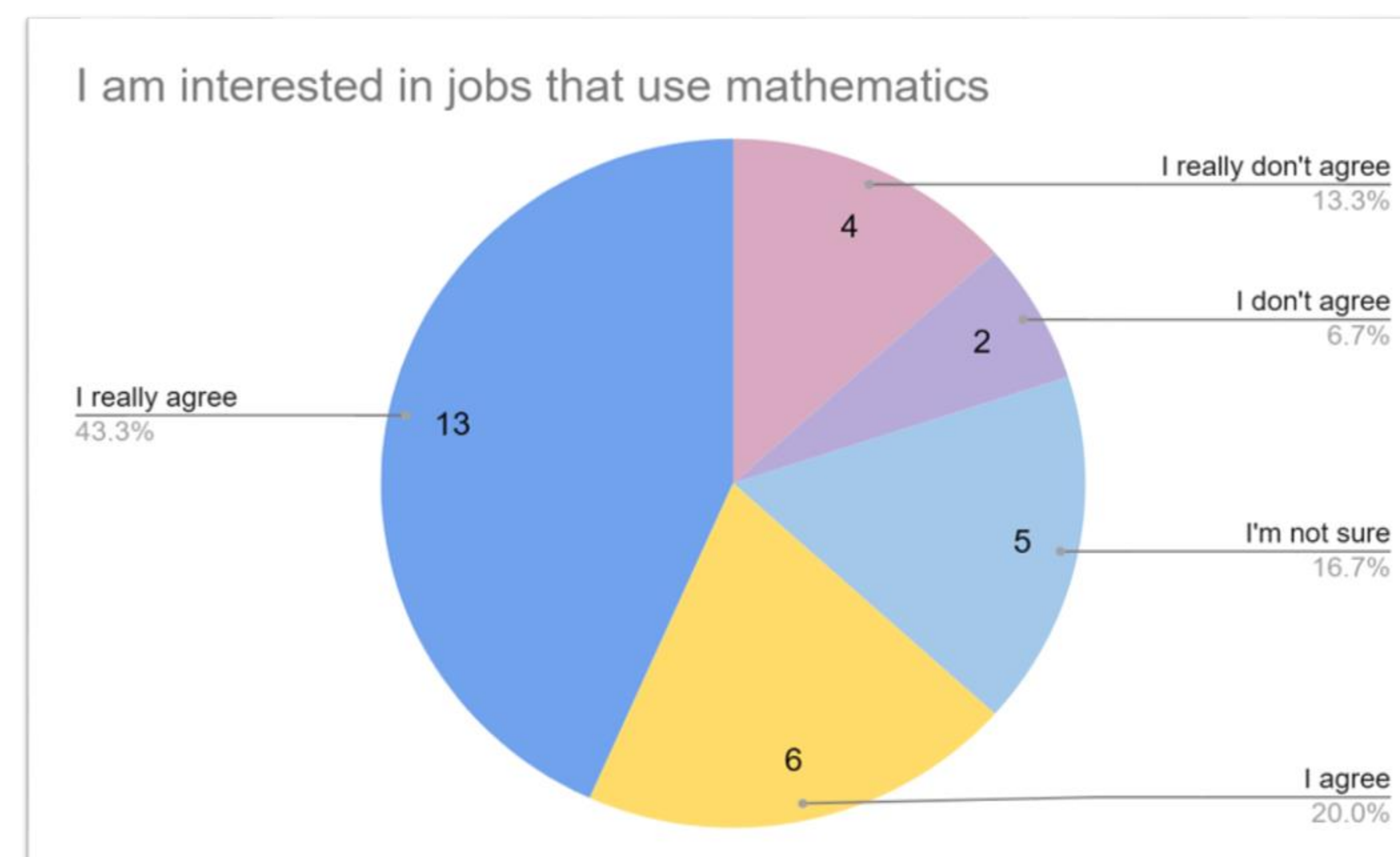


Figure 3. "I am interested in jobs that use mathematics" responses from STEM Careers Survey

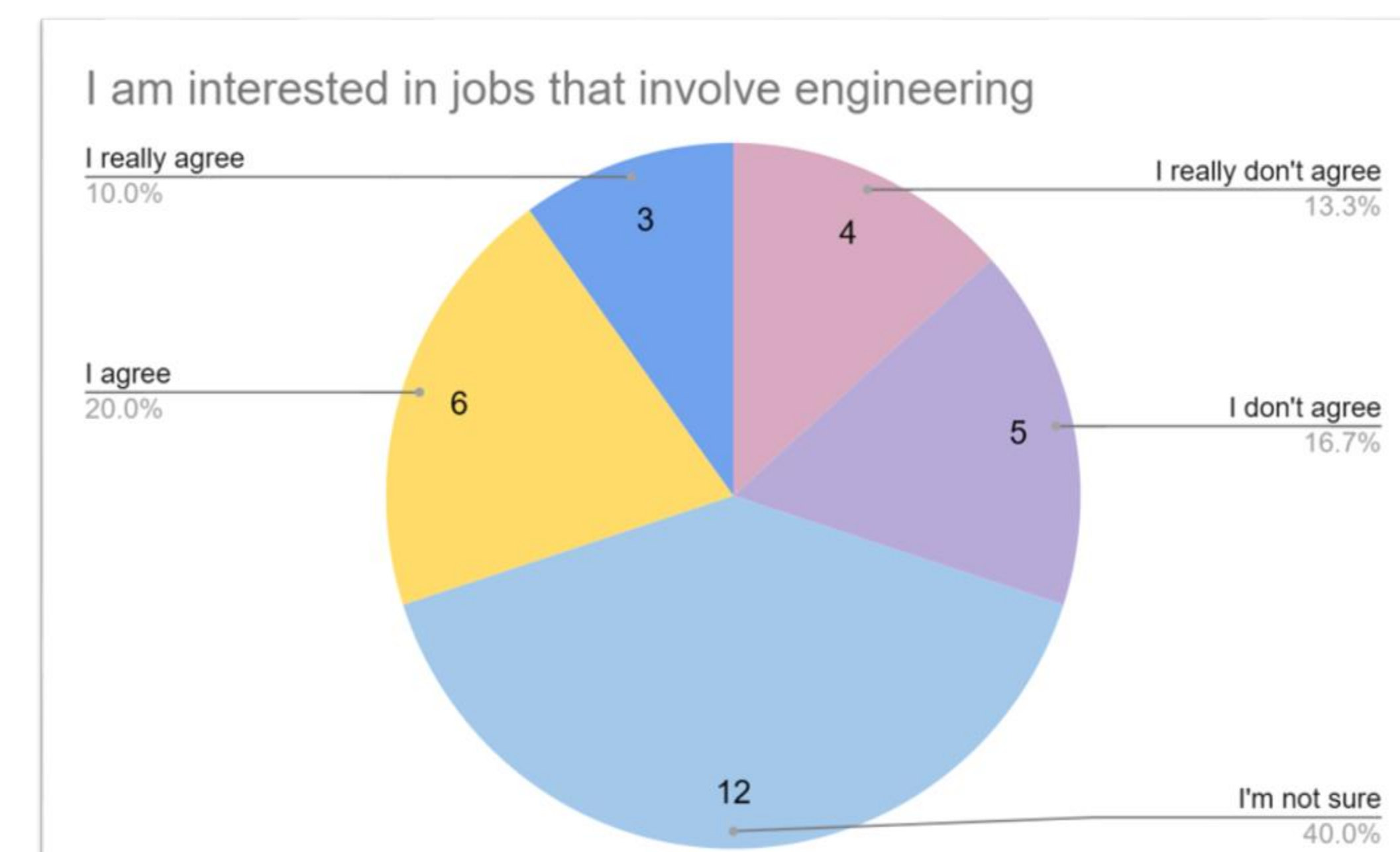


Figure 4. "I am interested in jobs that involve engineering" responses from STEM Careers Survey

Discussion

Preliminary findings from the STEMpower After-School Club indicate that most participants plan to attend college, while a notable portion remain uncertain about pursuing higher education. Although many students reported having a role model in science, approximately 30% were unsure—highlighting a potential gap in mentorship and representation within STEM fields. Interest in mathematics-related careers appeared relatively strong (43.3%), whereas uncertainty toward engineering careers (40%) suggests that greater exposure and hands-on experiences may be needed to spark sustained interest.

These early results underscore the importance of mentorship and early engagement in shaping girls' confidence and career aspirations in STEM. A post-survey will be conducted at the end of the program, in May 2026, to assess how participation in the STEMpower After-School Club may influence students' views and interest in STEM careers over time.



Acknowledgements

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