YOUTH INSIGHT
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2023 Youth in STEM Report

Prepared by YouthInsight for the
Department of Industry, Science and Resources

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Contents

Notes on interpreting the report

Significant differences – Differences between demographic groups cited in the report refer to statistically significant differences based on a 95% confidence interval. Charts in this report show statistically significant differences between subgroups using black or white arrows alongside the percentage results. If a difference is described as indicative, the difference is not statistically significant.

Weighted data and rounding – To ensure the survey results are representative of the population in accordance with the latest ABS Census, weighting has been applied to each wave since 2018 to correct for under or over representation of the population sample. Where the weighted population or proportions do not add up to 100%, this is due to rounding of decimal places up or down to the nearest whole number.

Multiple choice questions (MC) – Multiple choice questions will not add to 100% as respondents could select more than one answer. All multiple-choice questions have been labelled within the question text as MC.

Non-binary respondents – Data was collected from non-binary participants in this study. The total population sample includes these respondents, however, when comparing results between genders we have not shown the results from this population due to low base size.

Gender diverse respondents – This term is used toward the end of the report where we have conducted a deep-dive analysis of this audience. This population includes non-binary participants and other diverse gender respondents, including those that specified their gender as trans, they/them (but did not select non-binary), and unlabelled in their open text gender response. We have not included any respondents who did not disclose their gender in the survey within this population.

Culturally and Linguistically Diverse – People have been classified as Culturally and Linguistically Diverse if they speak a language other than English at home.

Location / area – When we refer to location or metropolitan vs regional areas, we are referring to the home location of the child, not the school or institution they attend.

Socioeconomic status – Low or high socioeconomic status (SES) has been determined by using the Australian Bureau of Statistics Socio-Economic Indexes for Areas (SEIFA) which ranks areas in Australia according to relative socioeconomic advantage and disadvantage into deciles. The indexes are based on information from the five-yearly census. This survey employs the Index of Education and Occupation (IEO). Postcodes supplied by respondents have been mapped to the corresponding IEO decile. This report has grouped deciles one to five and classified this group as lower SES and deciles six to 10 as higher SES.

STEM classifications: Below is a list outlining how STEM has been classified in this research report.

- **STEM definition in the context of this report:** STEM stands for science, technology, engineering, and mathematics. In this survey, science refers to topics such as biology, chemistry, physics, and earth and environmental sciences. It does not include medicine, nursing, psychology, or health sciences.
- Technology refers to topics related to information technology and programming, mechanics, electronics, and all other types of technology. Some technology courses could also be called

engineering. There are many types of engineering, like aerospace and environmental engineering, and many types of mathematics, such as geometry, logic, and statistics.

- **STEM subjects at primary school:** mathematics, science, technologies.
- **STEM subjects at secondary school:**
    - **General STEM subjects:** mathematics, biology, chemistry, earth and environmental science, physics, geography, design and technologies and digital technologies.
    - **Year 9-10 elective STEM subjects:** geography elective, agricultural technology, design and technology, food technology, graphics technology, industrial technology, information and software technology.
    - **Year 11-12 elective STEM subjects:** agriculture, biology, chemical world science, chemistry, computing applications, design and technology, earth and environmental science, earth and space science, electrotechnology (VET), engineering studies, geography, human society and its environment, industrial technology, information and digital technology (VET), information processes and technology, investigating science, living world science, marine studies, mathematics, mathematics advanced, mathematics extension, metal and engineering (VET), physical world science life skills, physics, science extension, software design and development.
- **STEM subjects at higher education:** agriculture, computing and information technology, engineering and technology, environmental studies, mathematics, biology, chemistry, physics, earth and environmental sciences.
- **STEM qualifications:** computing or information technology (IT), data analyst, engineering, mathematics, science.
- **STEM jobs / careers:**
    - **Qualifying jobs / careers:** computing or information technology (IT), data analysis, engineer, mathematician, scientist.
    - **Potential qualifying jobs / careers, depending on specific role:** entrepreneur, machinery operator or driver, professor, lecturer or teacher, public servant (includes Army, Airforce, Navy), technician or trade worker (mechanic, electrician, carpenter).

Executive summary

The purpose of this cross-sectional study is to build understanding of the perceptions and attitudes of young people toward STEM. The study aims to better assist families, educators and policy makers in supporting girls/women throughout their STEM education and toward their future consideration of STEM-related careers.

This report details the results of the fourth wave of the Youth in STEM research study, undertaken by YouthInsight on behalf of the Department of Industry, Science and Resources (DISR). Waves 1, 2 and 3 were conducted in 2018-19, 2019-20 and 2020-21 respectively.

Between July and August 2023, an online survey was conducted among a nationally representative population sample of 2,948 young people aged 12-25 years old, sourced from a range of online panels. This report outlines the detailed findings from the 2023 Youth in STEM study and highlights some of the key comparative findings since Wave 3 (2020-21).

This wave of research supports previously identified themes relating to the impact of background and demographics on STEM perceptions and attitudes. The current survey found that young people whose parents have an education in STEM or work in a STEM-related field are more likely to demonstrate better understanding of STEM and participate in STEM study pathways than those whose parents do not. Further, the study demonstrates clear familial and cultural differences, with the propensity for young people who were born overseas as well as those from Culturally and Linguistically Diverse backgrounds to demonstrate higher involvement in STEM-related study and careers than young people born in Australia or from non-Culturally and Linguistically Diverse backgrounds.

With the impact of the global COVID-19 pandemic, the current study sought to understand impact of the pandemic on high school students' intentions and behaviours. The survey asked Year 11 and 12 students (who would have been in Years 8 to 9 at the time of the national lockdowns and restrictions) about whether there has been any impact on their experiences or life choices. The study provides evidence that, even among younger secondary students who were not studying for critical exams or making many critical life decisions during that time, the pandemic and resultant national lockdowns and restrictions have had a significant long-term impact on students' interests and aspirations, as well as wellbeing.

For the first time in Wave 4, respondents were asked about their perceptions of Generative Artificial Intelligence (AI) and its influence on choices about their future. The data shows that a large proportion of young people feel influenced by this technology, and particularly boys.

While the study is vastly detailed, this report focuses on a set of key metrics used to evaluate young people's understanding, attitudes, and perceptions of STEM, their current involvement with STEM, and their future intentions regarding STEM. A summary of the findings for each of these key metrics, along with a summary table, can be found below.

Summary of results

The results presented in this section summarise key insights and differences between research Waves 3 (2020-21) and 4 (2023-24).

Table 1: Key metrics across Wave 3 and Wave 4.

Key metric	Wave 3	Wave 4
Understanding of the STEM acronym	65%	▲71%
Interest in STEM	85%	87%
Perceived importance of STEM	92%	92%
Confidence in studying STEM	85%	87%
Intention to pursue a career in STEM	31%	33%

Understanding of STEM and STEM-related jobs

- In Wave 4, 71% of young people were able to correctly recall all four subjects involved in the STEM acronym (up from 65% in Wave 3 and representing the third wave where a significant increase was observed). The increase in Wave 4 is driven by a greater proportion of boys/men and those aged 14-17 who understand the term 'STEM' correctly.
- Young people with parents who are educated in STEM are significantly more likely to have a correct understanding of the subjects that make up the STEM acronym (74% compared to 68%), as are young people whose parents are employed in a STEM-related field (77% compared to 70%).
- Culturally and Linguistically Diverse young people and those who were born overseas demonstrate a significantly stronger understanding of the STEM acronym than non-Culturally and Linguistically Diverse students, as well as those born in Australia.
- Participants who are Aboriginal and/or Torres Strait Islander are significantly less likely to demonstrate correct understanding of the STEM acronym than non- Aboriginal and/or Torres Strait Islander young people.
- Compared to Wave 3, young people are more likely to identify some STEM careers, such as engineer, scientist, mathematician, medical/healthcare roles, programming or software development, technology roles and robotics. There was a significant decline in the proportion who said they were unsure of any STEM jobs, from 11% to 7%. This represents a steady decline since Wave 2, when the proportion saying they were unsure was 15%.
- Gender differences are evident with girls/women being significantly more likely to associate the jobs 'engineer' (68%) and 'scientist' (49%) with STEM study compared to boys/men (61% and 44% respectively).
- When asked about gender associations with a range of different jobs and careers, STEM jobs and careers including 'engineer', 'computing or information technology', 'data analyst' and 'scientist', are significantly more likely to be associated with men/boys rather than women/girls, consistent with previous waves.

Attitudes (interest and perception) towards STEM

- There continues to be a high level of interest in STEM subjects among young people, with the proportion of those 'somewhat' or 'very' interested in STEM subjects overall remaining stable at 87% (a slight increase, though not significant, of 2 percentage points since Wave 3).
- Science and technology subjects consistently drive significantly more interest in STEM (63% and 59% respectively) than engineering and mathematics (42% and 47% respectively).
- Young people with parents educated in STEM and young people with parents employed in STEM-related fields are significantly more likely to express an interest in STEM at the overall level (92% and 91% respectively), as are boys/men (91%) when compared to girls/women (82%).
- When it comes to interest in specific subjects, boys/men demonstrate significantly higher levels of interest in all individual STEM subjects except for science. Boys/men are most likely to express interest in technology subjects (73%) whereas interest from girls/women is highest for science at 63%.
- The perceived importance of STEM skills and knowledge overall is high and in line with Wave 3, at 92%. It was found that skills in technology are still regarded as being the most important (82%) of all the STEM subjects for getting a good job in the future, followed by mathematics (74%), science (72%) and engineering (62%). No changes in perceived importance were observed for any one STEM subject this wave, after interest peaked for all STEM subjects in Wave 3.
- Three in five (61%) young people said that technology is shaping the future, while 53% said that technology skills are in high demand. Technology skills (along with skills in mathematics) are also significantly more likely to be regarded as 'essential life skills' (41% and 54% respectively), 'usable in the workplace' (46% and 39%) and 'transferable to other areas' (45% and 47% respectively).
- Some changes in reasons for perceived importance of science and technology were observed. For science, fewer young people thought that science teaches you problem solving (37% to 33%). This wave, fewer young people believe that technology teaches you creativity skills (26% to 23%).
- Engineering is a key point of difference between boys/men and girls/women. Boys/men are significantly more likely than girls/women to regard skills in engineering as being important for getting a good job in the future (69% compared to 55%).
- Consistent with the theme of social influence observed, parents and guardians play a strong role in positioning STEM study, jobs, and careers to young people. Importantly, the perceptions of STEM fostered by discussions with parents are regarded as largely positive. Similarly, conversations with teachers and career advisors are seen to be positive regarding STEM study, jobs, and careers.
- Despite this, around a quarter of young people reported having received negative impressions from parents and teachers about STEM careers, hearing that STEM jobs are scarce, not well-paid, and that they have poor working conditions.

Gender bias in STEM

- When asked about which gender is 'better' at STEM subjects, most young people do not hold a gender bias. Around two thirds of young people say neither girls nor boys are better at

science (69%), mathematics (68%) or technology (63%). Slightly fewer (58%) say neither gender is better at engineering.

- Despite the majority holding no gender bias, we have seen a significant increase in gender bias for all STEM subjects this wave (fewer respondents saying that neither gender is better). After seeing a decline in gender bias in Wave 3, levels of gender bias in Wave 4 have returned to previous levels.
- In Wave 4, boys/men are significantly more likely to regard their own gender as being 'better' at all STEM subjects. Girls/women are more equitable than boys in their perceptions of who is better at STEM but still regard boys as being better at technology and engineering subjects. Girls/women have more positive perceptions of their own skills in relation to science and mathematics than boys/men do of girls' and women's skills.
- This wave, the study investigated these biases further by asking the question: what is causing any gender biases when it comes to jobs? Positively, many young people (one in five) rejected the question and said that they did not agree that jobs are suited to specific genders.
- A top reason given for why some jobs are better suited to girls or women was related to their caring and sensitive nature (19%), or because girls and boys have different skills and capabilities (11%). There were no gender differences in reasons given.
- On the other hand, the top reason for jobs being better suited to boys was related to strength and size, leading to greater tolerance for physical, laborious or 'dirty' work (41% said this), a view more common among boys/men themselves (45%) than girls/women (38%).
- In line with perceptions about which gender is better at STEM subjects, boys/men were less likely than girls/women to reject the notion that there are jobs better suited to either gender.

Current participation in STEM subjects

- Participation in STEM elective subjects has remained stable among Year 9 and 10 students (58%, consistent with Wave 3).
    - Participation remains significantly higher among boys/men (71%) compared to girls/women (44%).
- Consistent with Wave 2, there is strong participation in STEM elective subjects overall among Year 11 and 12 students (95%), led by participation in mathematics (46%), biology (38%), mathematics advanced (35%) and chemistry (34%).
    - Although not a significant increase, we have seen an increase in students studying biology this wave, from 33% to 38%.
    - Girls/women are significantly more likely than boys/men to be currently studying biology (50% vs 27%). There is no longer a gender skew of more girls/women participating in mathematics and chemistry as there was in Wave 3.
    - In comparison, boys/men in Year 11 and 12 are significantly more likely to be studying physics (33% vs 15%), mathematics extension (25% vs 16%), information and digital technology (VET) (8% vs 2%), and engineering studies (10% vs 1%). Positively, there is no longer a male skew for design and technology this wave.
- The survey found that 32% of tertiary respondents are studying STEM. Consistent with the previous wave, significantly more men are studying STEM at a tertiary level compared to women (44% vs 21% overall).

    - This wave we have not seen any significant shifts in tertiary education subjects, although indicatively we have seen a slight increase in students studying computing and information technology, from 8% to 10%.
    - At an individual subject level, men are significantly more likely than women to be studying computing and information technology (15% vs 4%), engineering and technology (12% vs 3%), mathematics (7% vs 2%) and physics (5% vs 1%) at a tertiary level. Although not significant, women are slightly more likely to be studying biology (9% vs 6% of men).
- Socio-cultural influences on participation are evident across all three study levels.

Influences in relation to STEM study

- When it comes to factors that influence STEM study choices, young people report being led by personal interest (55%), their perceptions of their own skills and abilities (51%) and earning potential (34%).
- Interestingly, the proportion of young people driven by potential earnings has increased this wave, from 31% to 34%, while the proportion driven by personal interests has fallen from 58% to 55%.
- The role of personal interest and perceptions of own skills and abilities is of significantly greater influence among girls/women than it is for boys/men (60% vs 49% and 53% vs 47% respectively). Conversely, boys/men are more likely than girls/women to be influenced by what they see on YouTube (9% vs 4%).
- Overall, parents/guardians remain a key 'person' of influence with regards to study choices (49%) along with friends (29%) and teachers/lecturers (25%).
- This wave we introduced the new option of 'social media influencers/content creators', with 8% of both boys/men and girls/women saying they are influenced by these people.

Confidence in studying STEM

- Overall, confidence in studying STEM is high (87%), consistent with Wave 3 (85%). Confidence is highest for technology and science (both 62%), followed by mathematics (59%) and engineering (41%).
- Boys/men are significantly more confident than girls/women in all STEM subjects excluding science.
- Girls/women are *least* confident when it comes to studying engineering (28%), followed by technology (54%) and mathematics (55%).
- Culturally and Linguistically Diverse young people were more likely to feel confident in STEM (89% vs 85% of those who are non-Culturally and Linguistically Diverse.
- Consistent with other measures, a student's confidence in studying STEM is likely to be significantly higher (across all STEM subjects) when a parent has previously studied or works in STEM themselves.
- Confidence in participating in conversations regarding STEM topics outside of school/study has remained stable for the past three waves, currently at 59%. Boys/men remain more confident than girls/women in discussing STEM topics outside of school/study (63% vs 54% in Wave 4), a finding that has been consistent across waves.

STEM study intentions and influences

- When asked about studying STEM subjects in the future, the intentions of Years 6 to 8 students have remained stable (70% in Wave 4 compared to 68% in Wave 3).

    - Although not significant, likely due to a low sample size, there has been a slight uplift in intention to study information and software technology (from 29% to 37%) and industrial technology (from 12% to 20%).
    - Consistent with the previous wave, boys/men in Years 6 to 8 remain significantly more likely to intend to study STEM subjects in future than do girls/women (81% compared to 60%).
- Among those in Year 9 and 10 there has been a slight, although not significant, uplift in the proportion of young people intending to enrol in STEM subjects for Years 11 and 12 (from 90% in Wave 3, to 93% in Wave 4), after a significant decline from Wave 2 to Wave 3.
    - While not significant, we have seen an uplift in intentions for mathematics advanced, biology, chemistry, physics and industrial technology.
    - Girls/women in Years 9 and 10 were found to be significantly more likely than boys/men to express an intention to study biology (54% vs 24%).
- The intention of Year 11 and 12 students to study STEM at the tertiary level has remained stable overall for Wave 4, at 39%, compared to 39% in Wave 3. Intention for each individual STEM subject has remained stable.
    - Intention to study STEM at a tertiary level overall is driven by boys/men rather than girls/women (47% compared to 31%). This pattern is driven by strong skews towards boys/men for engineering and technology (20% compared to 6% for girls/women), and computing and information technology (12% compared to 5%).
- After asking whether they were considering studying STEM in the future, relevant respondents were asked why they were not considering it. Most respondents (43%) said it was because they want to pursue a different career path, 39% said it is because they are interested in something else, while 24% said it is because they are studying something else already.
- There remains opportunity to increase future consideration for STEM through communicating messages about future job and career pathways. Wave 4 data demonstrates that even with basic messaging about job and careers linked to STEM study, it is possible to increase interest in STEM study among both boys/men and girls/women (36% were more interested in STEM education after reading an explanation). However, this represents a significant decline since Wave 3 (42%).

Career intentions and influences

- When asked about future career aspirations, the intention to pursue a career in a STEM-related field has remained stable overall for Wave 4 (33% vs 31% in Wave 3).
- Boys/men remain significantly more likely to intend to pursue a career in STEM overall than do girls/women (43% vs 22%). This is driven by significant gender skews in intention to pursue a career as an engineer, in the field of computing and information technology, as a data analyst or mathematician.
- Those who wanted to become a scientist were asked what type of scientist they would like to become. The majority wanted to be biologists (39%) followed by chemists (18%) and earth or environmental scientists (16%), with girls skewing towards aspiring to be a biologist.
- Key factors influencing the consideration of STEM career choices mirror those that influence intention to study: personal interest (55%), young people's perceptions of their own skills and abilities (51%) and earning potential (39%).
- The influence of personal interests and their own skills and abilities have significantly fallen this wave (from 61% to 55% and from 56% to 51%, respectively). The influence of ambition

to change the world has fallen (from 22% to 18%), along with the influence of TV shows and movies fallen (from 8% to 6%) and books and magazines (3% to 2%).
- When it comes to specific people that influence career choices, parents/guardians are a key people of influence with regards to career choices (45%), with support from friends (24%).
- For the first time this wave, the influence of successful businesspeople (21%) has passed that of teachers and lecturers (20%).
- This wave was the first time we asked about the influence of social media influencers and content creators; one in 10 young people (12%) said these people influenced their career aspirations, while 5% said they were influenced by celebrities.
- This wave we have seen a decline in perceived importance of opportunities for on-the job training (from 84% to 82%), and that the job positively impacts society (from 83 to 80%), and an increase in the perceived importance of a high salary (82% to 86%).

Impact of COVID-19 on life and choices

- To investigate the long-term impact of the COVID-19 pandemic and subsequent lockdowns and restrictions, young people in Years 11 and 12 (who were in Years 8 to 10 during the pandemic) were asked about the influence it had had on them and their life choices. A third of these students said the pandemic did not influence their life or choices (35%), mainly driven by boys/men (39% compared to 31% of girls/women).
- However, two thirds of students felt it did impact them in some way, whether it caused a change to their general interests (27%), aspirations (17%), caused a decline in their grades (19%) or made them feel less confident in their studies (16%).
- In relation to wellbeing, a quarter (24%) said their mental health has gotten worse, driven by girls/women (28% compared to 18% of boys/men).

Impact of AI on future study and careers

- For the first time in Wave 4, respondents were asked about their perceptions of Generative Artificial Intelligence (AI) and its influence on choices about their future. The data shows that a large proportion of young people are influenced by this technology.
- Four in five young people (82%) said they believe that generative AI tools will have a significant impact on work and careers in the future.
- While this belief was held consistently across genders, those who were most likely to believe this were those from higher socioeconomic areas (84%, compared to 79% of those in lower SES areas), those born overseas (89%, vs 81% born in Australia), and Culturally and Linguistically Diverse young people (86%, vs 80% of non-Culturally and Linguistically Diverse young people).
- Three in 10 (29%) young people reported that recent developments in AI had made them reconsider their study or career choices. Eight percent of young people are reconsidering their study choices, 10% are reconsidering their career, while 11% are reconsidering both their study choices and career.
- Gender played a role on influence of AI on life choices, as well as socio-economic factors.

Experiences of gender diverse young people

- As noted throughout, the main body of the report does not show results from gender diverse young people when comparing results across genders, due to the low population base size (n=50). Unfortunately, limitations of survey panels historically collecting gender data in a binary nature means that this audience is often difficult to reach, and many gender

diverse people are missed in research studies. This audience is important to understand, and within this report we conducted a deep-dive analysis to further understand their attitudes and behaviours across key metrics.

- Overall, we found that while understanding, interest and perceived importance of gender diverse young people are in line, if not higher, than all other respondents, unfortunately levels of confidence, current participation and future intention to study STEM are somewhat lower than levels seen among all other respondents. This indicates that gender diverse individuals may require additional support in the areas of STEM. Additionally, gender diverse individuals are more likely to step away from STEM to pursue creative interests and careers, so more could be done to educate young people, specifically gender diverse young people, about how some STEM careers can involve creativity.

In conclusion

The insights presented in this report provide information for policy makers to take a data-driven approach in addressing the gender imbalance in STEM education and related careers. This research extends our knowledge regarding the significant role played by socio-cultural factors upon young people's perceptions of STEM and their decisions made to pursue study and careers in STEM-related fields.

Project background

Background

Building on from the Youth in STEM research, which was first commissioned in 2018 (referred to throughout as Wave 1), the Department of Industry, Science and Resources (DISR) has continued data collection and reporting on attitudes and perceptions of young Australians toward STEM. The objective of the research is to understand more about the perceptions of young Australians (12- to 25-year-olds) toward STEM skills and careers, particularly those of girls (women).

With the previous Youth in STEM research showing that girls' perceptions of, and engagement with, STEM are strongly influenced by parents, teachers and career advisors, DISR decided to expand the Youth in STEM research to provide insights into the attitudes and perceptions of these key influencer groups. DISR have since published the STEM Influencer (Parents) research and the STEM Influencer (Teachers & Career Advisors) research.

From 2019 onwards, the Youth in STEM research has tracked both the 12- to 25-year-old group of young people and the influencer group of parents and educators. Each cross-sectional study is conducted biennially as below, with results released early the following year:

- 2019: People aged 12-25 (completed) – referred to as 'Wave 2' throughout this report
- 2020: Parents (completed)
- 2020: Teachers & Career Advisors (completed)
- 2021: People aged 12-25 – referred to as 'Wave 3' throughout this report (completed)
- 2022: Parents (completed (completed)
- 2022: Teachers & Career Advisors (completed)
- 2023: People aged 12-25 – referred to as 'Wave 4' throughout this report (current report)

The studies focus on any differences and similarities in data outcomes based on gender, as well as investigating the intersection of other demographics which may further influence STEM engagement and participation.

This research report is the fourth wave of the Youth in STEM research. Key differences between the insights from this report and the previous waves of the Youth in STEM research have been noted.

Objectives

The principal objective of the study is to track changes in awareness and perceptions of STEM subjects and STEM-related careers held by young Australians compared to the previous waves. The underlying theme of the research is to uncover key gender differences.

More specifically, the study aims to:

- Understand student awareness of STEM and STEM-related careers;
- Evaluate perceived importance of STEM subjects to students;
- Determine student interest in STEM careers;
- Assess young Australians' engagement with STEM outside of education;
- Determine student interest in considering further STEM education;
- Identify barriers and enablers to STEM careers; and
- Understand the factors that influence career choices.

Methodology

YouthInsight conducted a cross-sectional study using a 20-minute online survey among a representative population sample of young people in Australia. Young people completed the survey via computer, tablet or mobile phone. Most survey questions remain consistent wave-on-wave, however, any new questions have been noted throughout the report.

Between July and August 2023, an online survey was conducted among a nationally representative population sample of 2,948 young people aged 12-25 years old (95% CL; ~ ±1.8% CI). This means that if we were to re-run the survey 20 times with a matched sample population, 19 times out of 20 (a 95% confidence level) we would expect a result within 1.8 percentage points of the result that we found.

Interviewing young people and children

YouthInsight adheres to The Research Society Code of Professional Behaviour Guideline on interviewing children and young people. The guideline states:

Researchers must take special care when researching children and young people. The consent of a parent or responsible adult must first be obtained before collecting information from:

a) Children, defined as under 14 years; and
b) Young people, defined as 14-17 years, when sensitive information is being collected.

YouthInsight approach

Due diligence was carried out to ensure the consent of the parent and/or guardian was obtained prior to surveying children under 14 years.

To achieve population sample quotas YouthInsight blends its internal online sample provider data with accredited external panel providers. For the 2023 and 2021 surveys, YouthInsight utilised other online sample providers to help meet quotas for the 12–17-year-old group as well as the 18-25 group. In the 2018-19 survey, external sample was only required for the 18-25 group.

To reach young people under the age of 18 who are not signed up to a panel, an external provider can contact the parent and/or guardian initially to then invite their child to complete the survey. Quality control measures were in place in this instance to ensure that it was a child taking part in the survey and not an adult, for example:

- Ensuring that age matched year of birth (if not, respondents were screened out);
- Thorough quality checking of responses upon completion, for example looking for straight liners, speeders, poor quality open-end responses and nonsensical response patterns.

Population sampling

The total unweighted population sample for the third wave of the Youth in STEM survey in Wave 4 was 2,948 respondents. YouthInsight collaborated with three online panel partners to obtain a nationally representative sample of Australian young people.

Quotas were placed on state and territory, gender and age group. To ensure survey results were representative of the population, weighting was applied based on age, gender, state, Culturally and Linguistically Diverse status and lower SES to correct for under or over representation of the population sample for these variables.

To determine socioeconomic status, the survey used Socio-Economic Indexes for Areas (SEIFA) developed by the Australian Bureau of Statistics (ABS). SEIFA ranks areas in Australia into ten equally sized groups according to relative socioeconomic advantage and disadvantage. These are known as socioeconomic deciles. The indexes are based on information from the five-yearly Census of Population and Housing. The data captured in the survey has been mapped to the Index of Education and Occupation (IEO).

Below are the summary tables of the unweighted population sample and weighted population with applied weighting factors.

Table 2: Total unweighted population sample and weighted population.

GENDER, AGE AND STUDIES	UNWEIGHTED SAMPLE n	UNWEIGHTED SAMPLE %	WEIGHTED POPULATION n	WEIGHTED POPULATION %
Total	**2,970**	**100%**	**2,948**	**100%**
Gender				
Boys/men	1,443	49%	1,435	49%
Girls/women	1,454	49%	1,442	49%
Non-binary	52	2%	52	2%
Other	8	0%	8	0%
Prefer not to say	13	0%	13	0%

GENDER, AGE AND STUDIES	UNWEIGHTED SAMPLE n	UNWEIGHTED SAMPLE %	WEIGHTED POPULATION n	WEIGHTED POPULATION %
Age group				
12-13	163	5%	166	6%
14-17	837	28%	841	28%
18-21	906	31%	895	30%
22-25	1,064	36%	1,068	36%
Study status				
Enrolled in studies	2,341	79%	2,329	78%
Not enrolled in studies	629	21%	641	22%
Study level				
Primary school – Year 6 or below	30	1%	31	1%
High School – Year 7	68	3%	70	3%
High School – Year 8	74	3%	73	3%
High School – Year 9	105	4%	106	5%
High School – Year 10	216	9%	217	9%
High School – Year 11	315	13%	315	14%
High School – Year 12	319	14%	319	13%
University – Undergrad Year 1	312	13%	308	10%
University – Undergrad Year 2	231	10%	225	8%
University – Undergrad Year 3	194	8%	195	6%
University – Undergrad Year 4+	138	6%	136	7%
University – postgrad	160	7%	156	4%
TAFE/ Private College – Y1	101	4%	102	1%
TAFE/ Private College – Y2	28	1%	28	1%
TAFE/ Private College – Y3	12	1%	12	0%
TAFE/ Private College – Y4	8	0%	8	1%
Highest level of education among those no longer studying				
Year 10	36	6%	35	6%

GENDER, AGE AND STUDIES	UNWEIGHTED SAMPLE n	UNWEIGHTED SAMPLE %	WEIGHTED POPULATION n	WEIGHTED POPULATION %
Year 11	169	27%	174	28%
Year 12	28	5%	29	5%
VET Certificate	70	11%	74	12%
VET Diploma	24	4%	25	4%
Bachelor's degree	214	35%	212	34%
Graduate diploma or certificate	33	5%	36	6%
Postgraduate degree	30	5%	30	5%
Other	12	2%	12	2%
Type of school, among those in high school				
Public	597	53%	599	53%
Catholic	177	16%	180	16%
Private	243	22%	242	21%
Selective	92	8%	92	8%
Boarding	6	1%	5	0%
Other	12	1%	13	1%
Single sex or co-ed school				
Single sex	235	21%	228	20%
Co-ed	892	79%	903	80%
Student type				
International student	230	10%	214	9%
Domestic student	2,111	90%	2,115	91%

*Where weighted sample or proportions do not add up to 100%, this is due to rounding of decimal places up or down to the nearest whole number.

LOCATION, SES AND EMPLOYMENT STATUS	UNWEIGHTED SAMPLE n	UNWEIGHTED SAMPLE %	WEIGHTED POPULATION n	WEIGHTED POPULATION%
State				
NSW	965	32%	950	32%
VIC	702	24%	772	26%
QLD	601	20%	594	20%
WA	277	9%	327	11%
SA	286	10%	208	7%

LOCATION, SES AND EMPLOYMENT STATUS	UNWEIGHTED SAMPLE n	UNWEIGHTED SAMPLE %	WEIGHTED POPULATION n	WEIGHTED POPULATION%
ACT	66	2%	59	2%
TAS	41	1%	30	1%
NT	32	1%	30	1%
Location				
Capital city/major metropolitan area	2,260	77%	2,168	73%
Regional or remote/rural	688	23%	802	27%
Socioeconomic status (SES)*				
Lower SES (Decile 1 - 5)	35%	1,017	898	30%
Higher SES (Decile 6 - 10)	65%	1,925	2,065	70%
Employment status among those aged 15+				
Working full-time	533	20%	540	20%
Working part-time	618	23%	611	23%
Working casually	760	28%	759	28%
Working in holidays only	51	2%	54	2%
Stay at home parent	36	1%	38	1%
Not employed and looking for work	370	14%	364	14%
Not employed and not looking for work	274	10%	268	10%
Other	35	1%	40	1%

*Socioeconomic status (SES) - not all postcodes are available in the SEIFA index list.

BACKGROUND AND PARENT BACKGROUND	UNWEIGHTED SAMPLE n	UNWEIGHTED SAMPLE %	WEIGHTED POPULATION n	WEIGHTED POPULATION %
Country of birth				
Australia	2,435	82%	2,435	82%
Other	535	18%	535	18%
Aboriginal and / or Torres Strait Islander				
Aboriginal and / or Torres Strait Islander	122	4%	122	4%

BACKGROUND AND PARENT BACKGROUND	UNWEIGHTED SAMPLE n	UNWEIGHTED SAMPLE %	WEIGHTED POPULATION n	WEIGHTED POPULATION %
Non-Aboriginal and / or Torres Strait Islander	2,824	95%	2,824	95%
Unspecified	24	1%	24	1%
Culturally and Linguistically Diverse status (based on language spoken other than English at home)				
Non-Culturally and Linguistically Diverse	1,847	62%	2,008	68%
Culturally and Linguistically Diverse	1,123	38%	962	32%
Parent's highest level of education				
Primary School	30	1%	29	1%
High School (Year 10)	260	9%	265	9%
High School (Year 12)	620	21%	622	21%
VET Certificate	111	4%	117	4%
VET Diploma	67	2%	67	2%
Bachelor's degree	761	26%	755	25%
Graduate diploma or certificate	432	15%	439	15%
Masters	394	13%	387	13%
Doctorate	94	3%	90	3%
Other	11	0%	11	0%
Not sure/prefer not to say	190	6%	188	6%
Parent education				
STEM degree or certificate	1,595	54%	1,582	53%
Non-STEM degree or certificate	1,375	46%	1,388	47%
Parent employment				
Do not work in STEM career	2,425	82%	2,397	82%
Work in STEM career	545	18%	551	18%

WAVE	UNWEIGHTED SAMPLE n	UNWEIGHTED SAMPLE %	WEIGHTED POPULATION n	WEIGHTED POPULATION%
Wave				
Wave 1 (2018)	2,092	100%	1,905	100%
Wave 2 (2019)	3,021	100%	2,929	100%
Wave 3 (2021)	3,154	100%	3,154	100%
Wave 4 (2023)	2,970	100%	2,948	100%

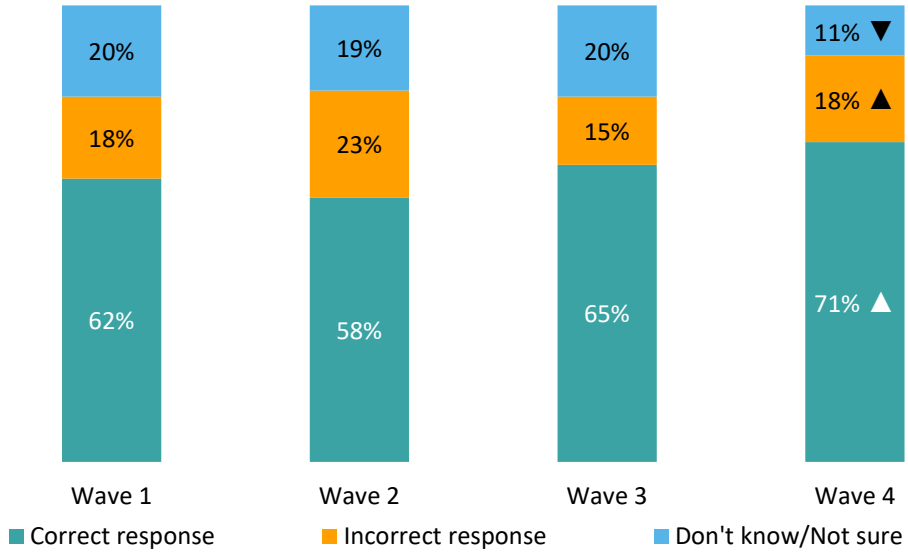
Current perspectives and behaviours

Understanding of STEM and STEM-related jobs

To get an indication of young people's understanding of STEM, respondents were asked what they believe the acronym 'STEM' stands for. Understanding of the term 'STEM' has increased significantly[1] for Wave 4 with 71% of young people overall able to correctly recall all four subjects involved, compared to 65% in Wave 4. This reflects a steady increase since Wave 2. The proportion who gave an incorrect response (but attempted to answer) has increased this wave, from 15% to 18%, while the proportion unsure has declined, from 20% to 11%.

Figure 1: Understanding of the acronym 'STEM'.

Q. Please write below what you believe the term 'STEM' stands for.



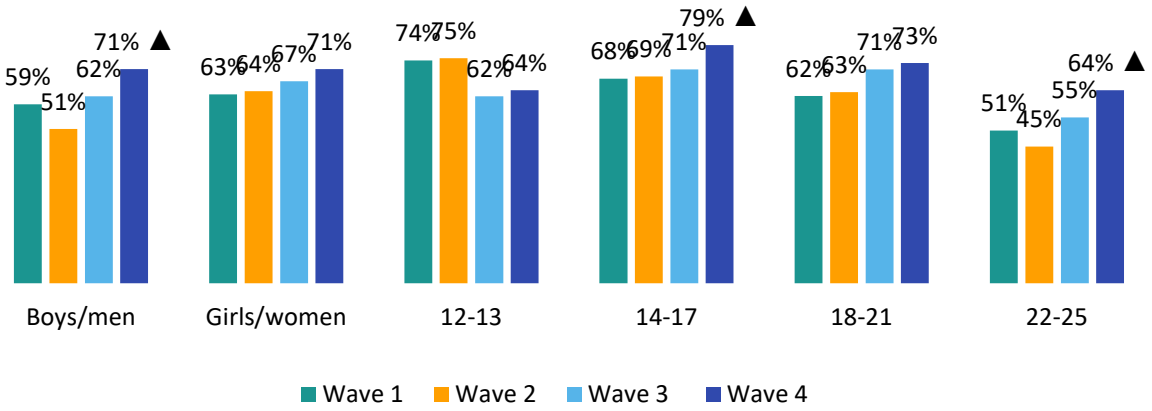
Base: Total – Wave 1 – 1,434, Wave 2 – 3,021, Wave 3 – 3,154, Wave 4 – 2,948.

[1] **Significant differences** – Differences between demographic groups cited in the report refer to statistically significant differences based on a 95% confidence interval (*P*=.05); ~ ±1.8% CI. Charts in this report show statistically significant differences between subgroups using black or white arrows alongside the percentage results. If a difference is described as indicative, the difference is not statistically significant.

This overall increase in understanding is driven by a significant increase in the proportion of boys/men (from 62% to 71%) and those aged 14-17 (from 71% to 79%) who understand the term 'STEM' correctly compared to Wave 3. While understanding has increased among girls/women by an additional four percentage points, from 67% to 71%, this change is not significant.

Figure 2: Understanding of the acronym 'STEM' by gender and age (% Correct response).

Q. Please write below what you believe the term 'STEM' stands for.



Base: Wave 1 – 2,092, boys/men – 978, girls/women – 1,069, 12-13 – 77, 14-17 – 650, 18-21 – 771, 22-25 – 594. Wave 2 – 2,537, boys/men – 1,088, girls/women – 1,432, 12-13 – 44, 14-17 – 783, 18-21 – 875, 22-25 – 835. Wave 3 – boys/men – 1,559, girls/women – 1,538. 12-13 – 180, 14-17 – 938, 18-21 – 921, 22-25 – 1,115. Wave 4 – boys/men – 1,435, girls/women – 1,442. 12-13 – 161, 14-17 – 827, 18-21 – 901, 22-25 – 1,059. Non-binary/other not shown due to low base size.

Consistent with previous waves, errors in understanding commonly relate to attributing incorrect subjects to the 'e' and the 'm' in STEM. Below are some of common responses mistakenly offered in the place of 'engineering' or 'mathematics':

- Science, Technology, **English**, Mathematics
- Science, Technology, **Economics**, Mathematics
- Science, Technology, **Education**, Mathematics
- Science, Technology, **Enterprise**, Mathematics
- Science, Technology, **Environment**, Mathematics
- Science, Technology, **Electronics**, Mathematics
- Science, Technology, Engineering, **Medicine**
- Science, Technology, Engineering, **Marketing**
- Science, Technology, Engineering, **Management**
- Science, Technology, Engineering, **Mechanics**

Below are other significant differences in the ability of key demographic groups to correctly identify the subjects included in STEM.

Table 3: Proportion correctly identifying all four STEM subjects: significant differences by audience.

Audience	WEIGHTED %
Location	
Metropolitan	74%
Regional / remote	62%
Socioeconomic status	
Lower SES (Decile 1 - 5)	66%
Higher SES (Decile 6 - 10)	73%
Culturally and Linguistically Diverse status	
Non-Culturally and Linguistically Diverse	68%
Culturally and Linguistically Diverse	75%
Aboriginal and/or Torres Strait Islander	
Non-Aboriginal or Torres Strait Islander	71%
Aboriginal and/or Torres Strait Islander	60%
Country of birth	
Born in Australia	70%
Born overseas	75%

As noted in the above table, young people who identify as Culturally and Linguistically Diverse (Culturally and Linguistically Diverse) and those who were born overseas demonstrate a significantly stronger understanding of STEM than non-Culturally and Linguistically Diverse students, and those born in Australia. Of note, it was found that those who identify as Aboriginal and/or Torres Strait Islander are significantly less likely to demonstrate a correct understanding of STEM than non-Aboriginal and/or Torres Strait Islander students.

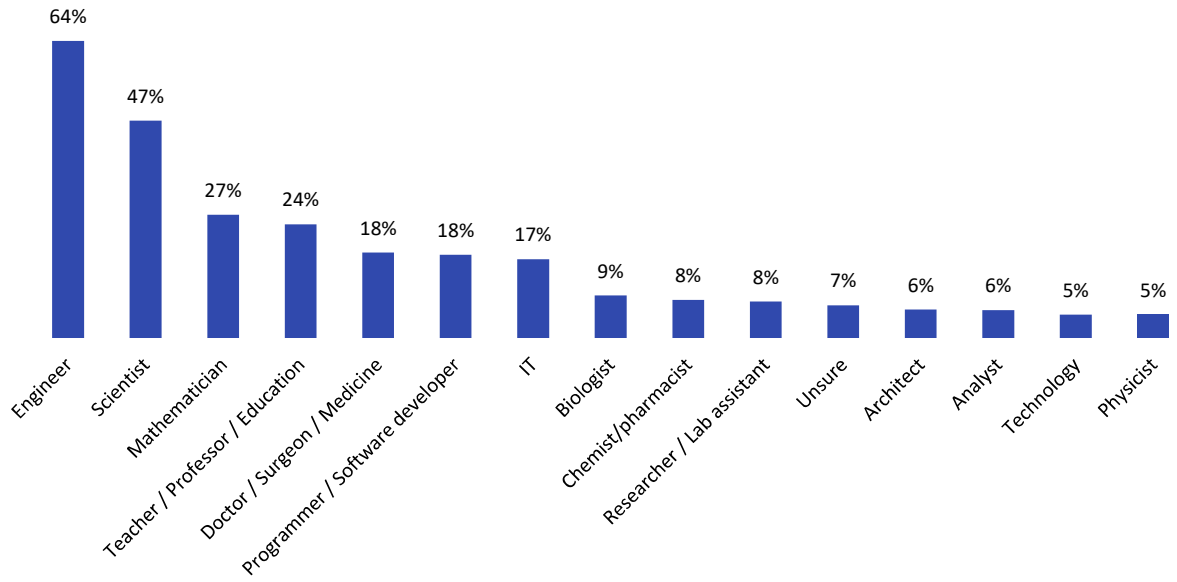
The role of parents continues to have a strong influence on young people's understanding of STEM. Young people with parents who are educated in STEM are significantly more likely to have a correct understanding of the subjects related to STEM (74% compared to 68%), as are young people whose parents are employed in a STEM-related field (77% compared to 70%).

Understanding of Jobs in STEM

In Wave 4, young people were again asked about the types of jobs they associate with studying STEM subjects. Despite the evident misunderstanding of the 'e' and 'm' within the STEM acronym, engineer, scientist, and mathematician remain the top-of-mind careers commonly related to STEM study.

Figure 3: Top 15 jobs associated with STEM study pathways.

Q. What type of jobs do you think you would be able to get if you have a STEM degree or certificate?



Base: Wave 4 only, total – 2,948.

Compared to Wave 3, young people are more likely to identify some STEM careers such as engineer, scientist, mathematician, medical/healthcare roles, programming or software development, technology roles and robotics. There has been a significant decline in the proportion who said they were unsure of any STEM jobs, from 11% to 7%. This represents a steady decline since Wave 2, when the proportion saying they were unsure was 15%.

Girls/women are significantly more likely to associate the jobs 'engineer' (68%) and 'scientist' (49%) with STEM study compared to boys/men (61% and 44% respectively).

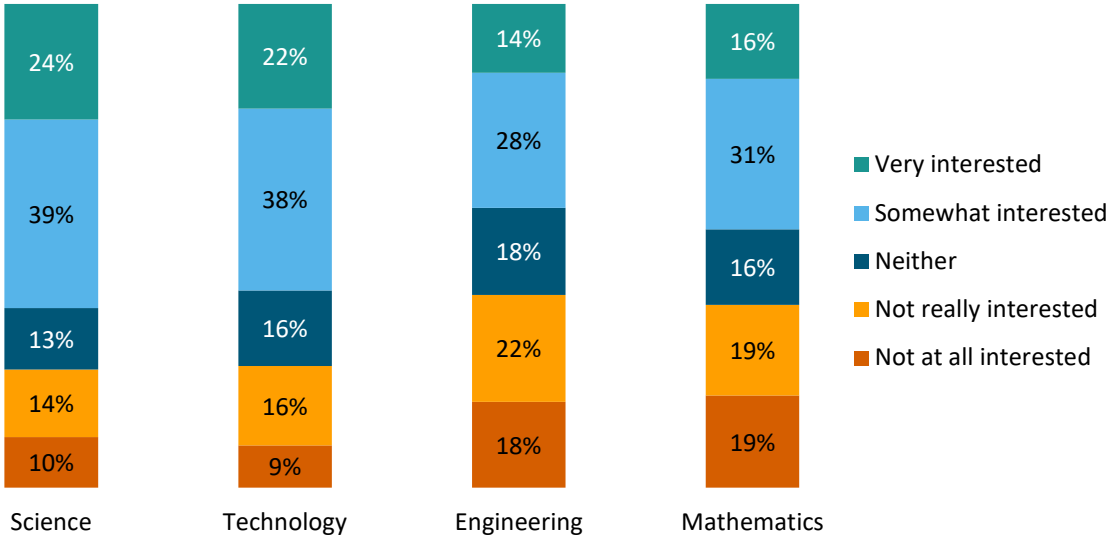
Attitudes towards STEM

Interest

The data shows that there continues to be a high level of interest in STEM subjects, with the proportion of those 'somewhat' or 'very' interested in STEM subjects being 87%. This represents a slight increase since Wave 3 (85%). Science and technology subjects continue to drive significantly more interest among young people (63% and 59% respectively) than engineering and mathematics (42% and 47% respectively). Though we observed a significant decline in interest in technology since Wave 3 (from 64% to 59%), interest in this subject is still high.

Figure 4: Level of interest in STEM subjects.

Q. How interested are you in each of the below subjects?



Base: Wave 4 only, total – 2,948. Weighted percentages may not add up to 100% due to rounding of decimal places to the nearest whole number.

Table 4: Level of interest in STEM subjects (Net: somewhat/very interested), by wave.

Q. How interested are you in each of the below subjects?

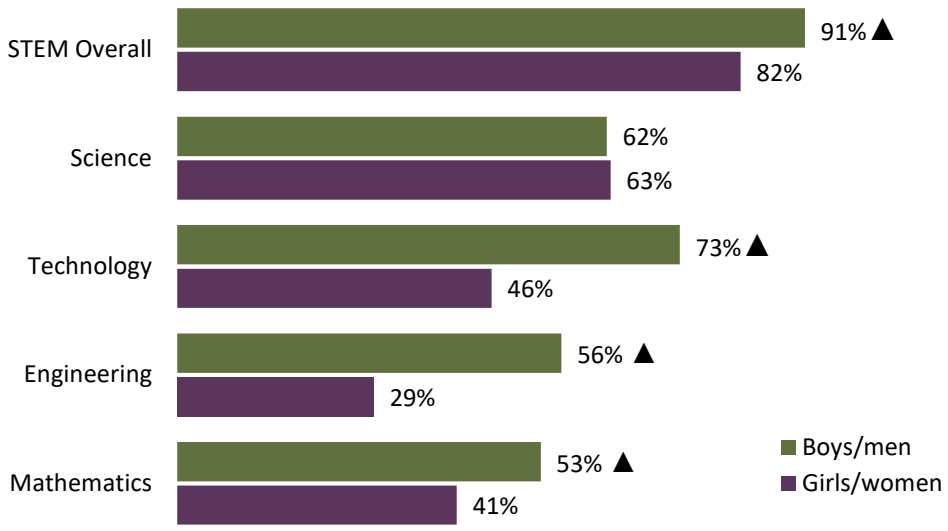
Subject	Net: somewhat/very interested			
	Wave 1	Wave 2	Wave 3	Wave 4
STEM overall	86%	84%	85%	87%
Science	64%	62%	63%	63%
Technology	65%	65%	64%	▼59%
Engineering	42%	44%	43%	42%
Mathematics	50%	46%	48%	47%

Base: Total – Wave 1 – 1,434, Wave 2 – 3,021, Wave 3 – 3,154, Wave 4 – 2,948.

Boys/men are significantly more interested in STEM subjects overall than girls/women (91% vs 82% overall). Boys/men also demonstrate significantly higher levels of interest in all individual STEM subjects except for science where interest from girls/women (63%) is on par with that of boys/men (62%). Boys/men are most likely to express interest in technology subjects (73%) whereas interest from girls/women is highest for science at 63%. These findings have been consistent over time.

Figure 5: Level of interest in STEM subjects by gender (Net: somewhat/very interested).

Q. How interested are you in each of the below subjects?



Base: Wave 4 only, total – boys/men – 1,435, girls/women – 1,442. Non-binary/other not shown due to low base size.

Below are other significant differences among key demographic groups in relation to interest in STEM overall.

Table 5: Proportion interested in STEM overall.

Audience	WEIGHTED %
Culturally and Linguistically Diverse status	
Non-Culturally and Linguistically Diverse	85%
Culturally and Linguistically Diverse	89%
Country of birth	
Born in Australia	86%
Born overseas	90%

The survey found that young people born overseas are more likely to be interested in STEM (90% vs 86%), driven by higher interest in science and mathematics. Culturally and Linguistically Diverse students were also more likely to be interested in STEM (89% vs 85%), driven by a greater interest in all four STEM subjects.

While not statistically significant, the research also found that Aboriginal and / or Torres Strait Islander young people have a higher interest in STEM (92%) than non Aboriginal and/or Torres Strait

Islander people (86%). The higher interest in STEM among Aboriginal and/or Torres Strait Islander young people is driven by a significantly higher interest in engineering (54% vs 42% of other young people).

Interest was significantly higher for STEM overall among current 12–13 year olds than older young people (96%, compared to 86% of 14-17s, 85% of 18-21s and 87% of 22-25s). When looking at the specific subjects they were interested in, 12-13 year olds have the highest interest scores for all four STEM subjects.

Again, young people with parents educated in STEM and young people with parents employed in STEM-related fields are significantly more likely to express an interest in STEM at the overall level. This is driven by significantly higher interest levels across all STEM subjects (when compared to those without parents educated or employed in STEM). This is consistent with previous waves.

Table 6: Level of interest in STEM subjects (Net: somewhat/very interested), by parent education/employment in STEM.

Q. How interested are you in each of the below subjects?

Subject	Parents Educated in STEM		Parents Employed in STEM	
	Yes	No	Yes	No
STEM overall	▲91%	82%	▲92%	86%
Science	▲68%	58%	▲73%	62%
Technology	▲62%	56%	▲68%	58%
Engineering	▲48%	36%	▲50%	41%
Mathematics	▲52%	40%	▲56%	45%

Base: Wave 4 – Parents educated in STEM - 1,584, Parents not educated in STEM - 1,364; Parents employed in STEM – 339, Parents not employed in STEM-related work – 2,609.

Perceived importance

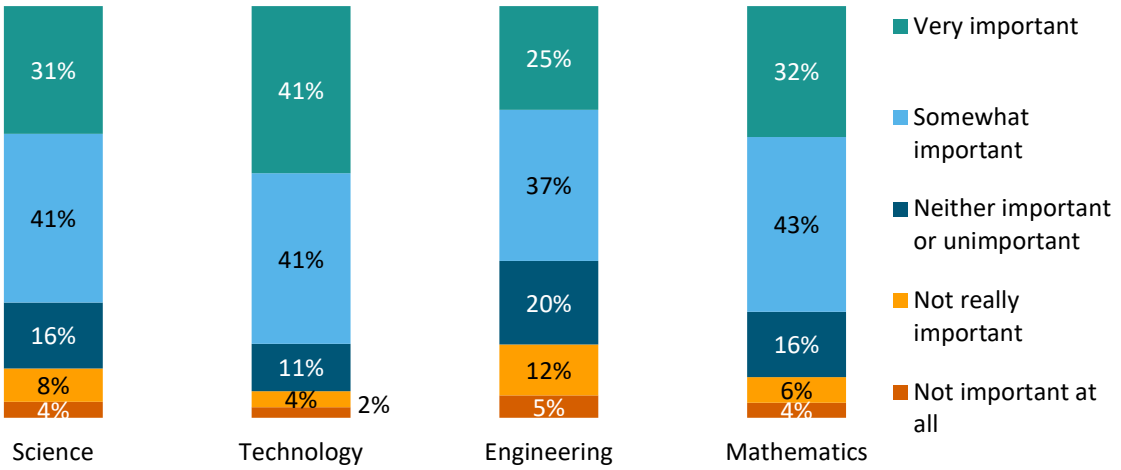
Young people perceive the importance of STEM knowledge and skills for getting a job in the future as high, especially technology knowledge and skills. The perceived importance of STEM skills and knowledge overall is high, at 92%. This is in line with Wave 3 (also 92%).

It was found that skills in technology are still regarded by young people as being the most important (82%) of all the STEM subjects for getting a good job in the future, followed by mathematics (74%), science (72%) and engineering (62%).

Engineering is a key point of difference between boys/men and girls/women. Boys/men are significantly more likely than girls/women to regard skills in engineering as being important for getting a good job in the future (69% compared to 55%).

While there were no significant changes in perceived importance of science, technology or engineering this wave, we have seen a significant decline in perceived importance of mathematics, from 78% to 74%. **Figure 6: Perceived importance of STEM skills.**

Q. How important do you believe it is to have knowledge and skills related to each of the subjects that make up STEM?



Base: Wave 4 only, total – 2,948. Weighted percentages may not add up to 100% due to rounding of decimal places to the nearest whole number.

Table 7: Perceived importance of STEM skills (Net: somewhat/very important), by wave.

Q. How important do you believe it is to have knowledge and skills related to each of the subjects that make up STEM?

Subject	Net: somewhat/very important			
	Wave 1	Wave 2	Wave 3	Wave 4
STEM overall	92%	87%	92%	92%
Science	73%	69%	74%	72%
Technology	85%	79%	84%	82%

Subject	Net: somewhat/very important			
	Wave 1	Wave 2	Wave 3	Wave 4
Engineering	60%	58%	63%	62%
Mathematics	79%	72%	78%	▼74%

Base: Total. Wave 1 – 2,092, Wave 2 – 3,021, Wave 3 – 3,154, Wave 4 – 2,948. Weighted percentages may not add up to 100% due to rounding of decimal places to the nearest whole number.

The respondents were asked why they thought STEM skills in these areas were important. Three in five (61%) young people said that technology is shaping the future, while 54% said that technology skills are in high demand. Technology skills (along with skills in mathematics) are also significantly more likely to be regarded as 'essential life skills' (41% and 54% respectively), 'usable in the workplace' (46% and 39%) and 'transferable to other areas' (45% and 47%).

The survey found that most of these perceptions are significantly higher for girls/women than boys/men.

Table 8: Reasons given for why it is important for knowledge and skills in technology and mathematics to get a good job, by gender.

Q. Why is it important to have knowledge and skills in (subject) to get a good job?

Statements	Technology		Mathematics	
	Girls/Women	Boys/Men	Girls/Women	Boys/Men
Technology is shaping the future/constantly evolving	▲66%	56%	-	-
These skills are in high demand	▲58%	50%	31%	31%
It is an essential life skill	▲44%	38%	▲60%	49%
Skills are transferable to other areas	▲49%	40%	▲51%	43%
You have to use these skills in the workplace	▲51%	39%	▲45%	33%

Base: Wave 4 only, those who think it is important. Technology, Girls/women – 1,217, Boys/men – 1,155; Maths, Girls/women – 1,066, Boys/men – 1,071.

Skills in engineering are the least likely to be considered as essential life skills (19%). Despite this, those that regard engineering as important believe that engineering skills are in high demand (43%); and that studying the subject equips you with good problem-solving skills (42%), logical thinking skills (38%) and critical thinking skills (37%).

Some changes in reasons for perceived importance of science and technology were observed. For science, fewer young people thought that science teaches you problem solving (37% to 33%). This wave, fewer young people believe that technology teaches you creativity skills (26% to 23%).

Table 9: Reasons given for why it is important for knowledge and skills in STEM subjects to get a good job.

Q. Why is it important to have knowledge and skills in (subject) to get a good job?

Statements	Subject			
	Science	Technology	Engineering	Mathematics
It is an essential life skill	23%	41%	19%	54%
Gives you a wide range of careers options	43%	44%	38%	35%
These skills are in high demand	36%	54%	43%	31%
This subject teaches problem solving skills	33%	32%	42%	54%
This subject teaches you logical thinking	41%	30%	38%	52%
Skills are transferable to other areas	39%	45%	36%	47%

Base: Wave 4 only, those who think it is important. Science – 2,127, Technology – 2,427, Engineering – 1,831, Mathematics – 2,194.

Drivers of perceptions of low importance of STEM subjects in getting a good job

Those who said that skills in STEM subjects were unimportant for getting in a good job in the future were asked an open-ended question about why they thought this. The key themes have been consistent across waves. Below are the key themes for each STEM subject.

Among those who regard skills in science as being unimportant for getting a good job in the future, key reasons provided include:

Lack of understanding about the breadth of 'science'

- *"Because I am a creative person so being a scientist or having scientific interests to not apply to me."*
- *"'I have no interest in any fields that relate to science so i don't believe it is necessary."*
- *"Unless you're going for a job in a specific science like medicine or pharmacy, etc., you don't use science very much."*
- *"Because not many jobs use science unless it's directly linked to a certain field of science, like a biologist or a chemist."*

Lack of perceived need

- *"I think so many jobs don't require all this technical knowledge, some jobs obviously require a lot of knowledge, but there are so many jobs that don't."*
- *"Most jobs don't need [science skills]."*
- *"Some industries you don't need that knowledge as you won't use it."*

Lack of awareness of complementary skills and overlap in disciplines

- *"Because the jobs I want to be involved don't really involve science."*
- *"Nothing I'm interested in has any relevance to science in any real way."*
- *"I am looking for a career in software development or similar, and science is not related."*

Perceptions of poor job prospects

- *"There are many good jobs that do not require scientific skills."*
- *"Other good jobs are available e.g. lawyer."*
- *"There are other options besides STEM that allows you to have a good job."*
- *"There's plenty of good jobs in other fields. You only need a basic understanding."*

For those who regard skills in engineering as being unimportant for getting a good job in the future, key reasons provided include:

Engineering regarded as niche and a specific skill set

- *“Not all jobs require engineering and it's not the only high paying job. It's a very specific subject.”*
- *“Engineering is a specific job that unless you want to be an engineer you don't need those skills and knowledge for most jobs.”*
- *“Very specific skill base. Necessary life skills that may be involved with engineering can be taught elsewhere.”*
- *“A cashier might need at least some skills in tech and maths, and an understanding of science in day to day life, but not engineering.”*
- *“It's a niche skill - you don't need engineering skills to be something that isn't an engineer.”*

Lack of understanding of what engineering actually is

- *“I don't know how it's applied.”*
- *“I don’t think engineering is that important I don’t understand what it is.”*
- *“I don't know what jobs come from engineering.”*

Many other jobs that do not require skill set

- *“There are many other good and fulfilling jobs that do not require any engineering knowledge.”*
- *“There is a large number of jobs that require no knowledge of engineering.”*
- *“Because you could have a job that has no relevance to engineering that is still a good job and well paid.”*

For those who regard skills in technology as being unimportant for getting a good job in the future, key reasons provided include:

Ability to learn on the job

- *“Many technologies are 'plug and play' so don't require deeper understanding and can be trained on the job.”*
- *“Because you can easily learn technology.”*
- *“You can always learn new skills.”*

Many jobs available that don’t require use of technology

- *“Because there are so many available jobs you don't need skills.”*
- *“Many good jobs don't use technology and work offline/on paper.”*
- *“Not all jobs use technology.”*

Not relevant to chosen/preferred career

- *“Because I don't need it in my job.”*
- *“You don’t need to use it in aged care.”*

- *"Whilst general understanding is necessary, unless I am to be a specialist in this area, it is not relevant to my chosen career."*

Many jobs available that don't require deep knowledge of technology

- *"Technology is important, although you don't need to know about it in depth."*
- *"As long as you know the basics you will be fine."*
- *"Basic knowledge and skills are enough."*

For those who regard skills in maths as being unimportant for getting a good job in the future, key reasons provided include:

Not relevant to chosen/preferred career

- *"I'm managing so well with just a basic knowledge of maths — it certainly isn't relevant."*
- *"I don't think its relevant to all fields."*
- *"For me wanting a career in law it's not important to me."*

Many jobs available that don't require deep knowledge of maths

- *"You should know the basics but don't need to know much beyond that for a lot of jobs."*
- *"While a basic understanding is required, high level maths is not."*
- *"All the math we need to know in general life is taught in school."*

Maths regarded as niche and a specific skill set

- *"Because it is based on your interests and job but is very specific."*
- *"Too specific, it's not required."*
- *"Maths is primarily a specialised field."*

Ability to leverage technology to support math skills if needed

- *"Most math relevant to most jobs nowadays can be done on a computer."*
- *"I struggled with maths all through school but it doesn't really matter because my job requires basic maths and I use a calculator for that."*
- *"Because calculators can do it for you."*

Dislike of maths in general/not good at it

- *"I hate maths."*
- *"Maths is difficult."*
- *"I do think it is important, but I am personally not good on this subject."*
- *"Maths is a stressful subject."*

Perceptions about STEM fields

Perceptions of science and technology fields have remained stable in Wave 4, with the majority having positive perceptions about science and technology. Despite this, we have seen a significant decline in the proportion of young people saying they will need to know about science and technology to get a good job in the future (from 53% to 50%).

Although not significant, we have also seen slight declines in agreement with statements 'my friends are interested in science and technology', 'I like to watch shows about science and technology', 'learning about science and technology is exciting' and 'STEM skills are important when considering employment opportunities'. It will be important to continue tracking these perceptions to see if this decline continues.

Table 10: Proportion who agree with these statements about science and technology (Net: agree/strongly agree), by wave.

Q. Below is a list of statements people have made about science and technology. Please indicate, how much you agree with each of these statements.

Statements	Net: agree/strongly agree			
	Wave 1	Wave 2	Wave 3	Wave 4
My parents think it's important to learn about science and technology	55%	54%	56%	55%
I talk about science and technology at home with my family	43%	42%	43%	43%
My friends are interested in science and technology	56%	52%	53%	52%
I like to watch shows about science and technology	53%	53%	51%	49%
Scientists make a positive difference in the world	79%	73%	77%	77%
I would like to be a scientist one day	26%	30%	30%	29%
Learning about science and technology is exciting	64%	60%	60%	58%
I will need to know about science and technology to get a good job in the future	55%	53%	53%	▼50%
STEM skills are important when considering employment opportunities	Not asked	Not asked	66%	63%

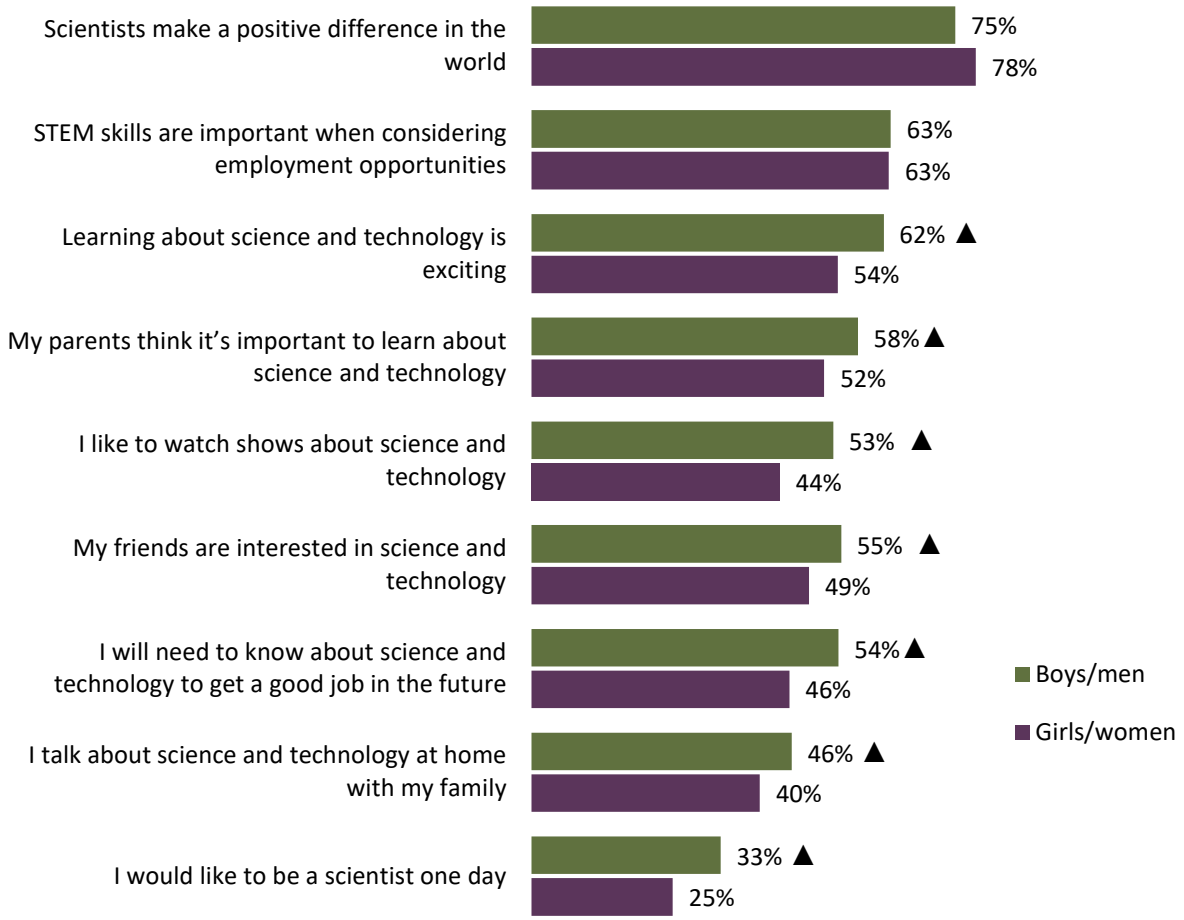
Base: Total. Wave 1 – 2,092, Wave 2 – 3,021, Wave 3 – 3,154, Wave 4 – 2,948.

Boys/men generally demonstrate significantly higher engagement with science and technology, being more likely than girls/women to agree that learning about science and technology is exciting (62% vs 54%); to watch shows about science and technology (53% vs 44%); have friends who are also interested in science and technology (55% vs 49%); or discuss science and technology with their family (46% vs 40%). These gender differences are consistent with findings in Wave 3.

Girls/women are slightly more likely to acknowledge the contribution of scientists to the world than boys/men (78% vs 75%), while boys/men are significantly more likely to agree that they would like to be a scientist one day in the future (33% vs 25% of girls/women).

Figure 7: Proportion who agree with these statements about science and technology (Net: agree/strongly agree), by gender.

Q. Below is a list of statements people have made about science and technology. Please indicate, how much you agree with each of these statements.



Base: Wave 4 only, boys/men – 1,435, girls/women – 1,442. Non-binary/other not shown due to low base size.

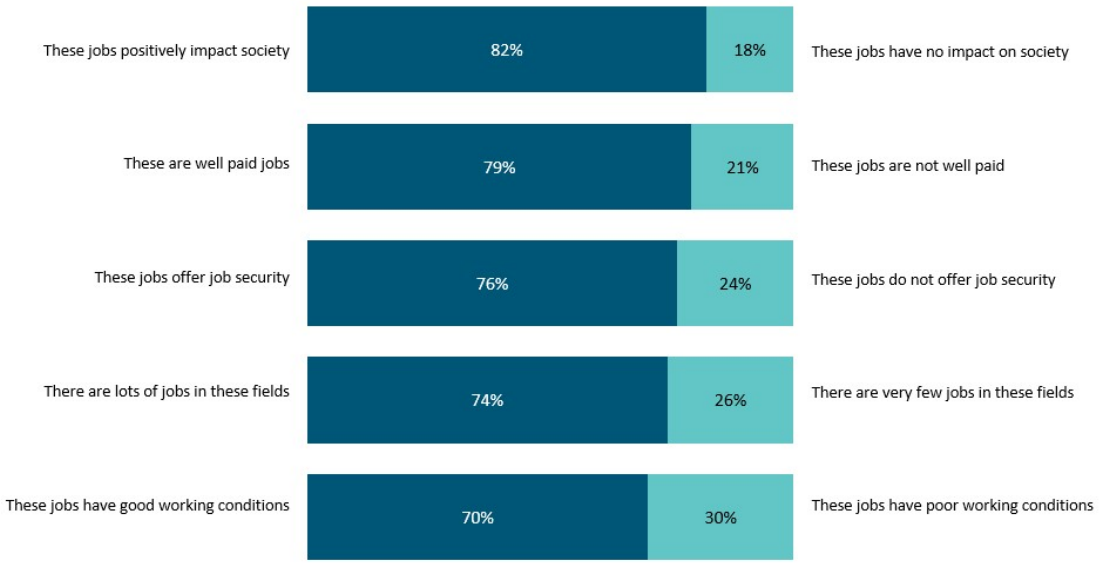
As seen consistently throughout this report, parents and guardians play a strong role in positioning STEM study, jobs and careers to young people. The perceptions of STEM fostered by discussions with parents and guardians are largely positive.

Positively, eight in 10 young people who have conversations with their parents or guardians about STEM say they have been given the impression that the jobs positively impact society and that STEM jobs are well paid.

On the other hand, a quarter of these young people say they get the impression from their parents or guardians that there is job scarcity in these fields, while 30% believe that these jobs have poor working conditions.

Figure 8: Perceptions of STEM jobs as a result of conversations with parents/guardians.

Q. Thinking about conversations you have with your parents or guardians, which of the following opinions/views have you heard from them about careers that need science, technology, engineering and maths skills?



Base: Wave 4 only, those who have talked to their parents / guardians about STEM careers – 1,524. Weighted percentages may not add up to 100% due to rounding of decimal places to the nearest whole number.

Similarly, conversations with teachers and career advisors are mostly positive regarding STEM study, jobs and careers.

Eight in 10 students who have conversations with teachers and career advisors about STEM careers have the impression that they positively impact society. Around the same proportion have the impression that there are lots of jobs in these fields and that STEM jobs offer security.

Despite this, around a quarter of students have heard from teachers / career advisors that these jobs are not paid well or have poor working conditions.

Figure 9: Perceptions of STEM jobs as a result of conversations with teachers/career advisors.

Q. Thinking about your teachers or career advisors, which of the following opinions/views have you heard about careers that need science, technology, engineering and maths skills?

Base: Wave 4 only, those who have talked to their teachers or career advisors about STEM careers – 1,479. Weighted percentages may not add up to 100% due to rounding of decimal places to the nearest whole number.

Gender bias in STEM

When asked about which gender is 'better' at STEM subjects, most young people do not hold a gender bias. Around two thirds of young people say neither girls nor boys are better at science (69%), mathematics (68%) or technology (63%). Slightly fewer (58%) say neither gender is better at engineering.

Despite the majority holding no gender bias, we have seen a significant increase in gender bias for all STEM subjects this wave (fewer respondents saying that neither gender is better).

Two thirds (69%) of young people said neither girls nor boys are better at science, while 15% said boys are better and 16% said girls are better. The proportion with no gender bias for science has fallen this wave, from 74% to 69%, while the proportion saying girls are better or boys are better has increased (from 14% to 16% and from 12% to 15% respectively).

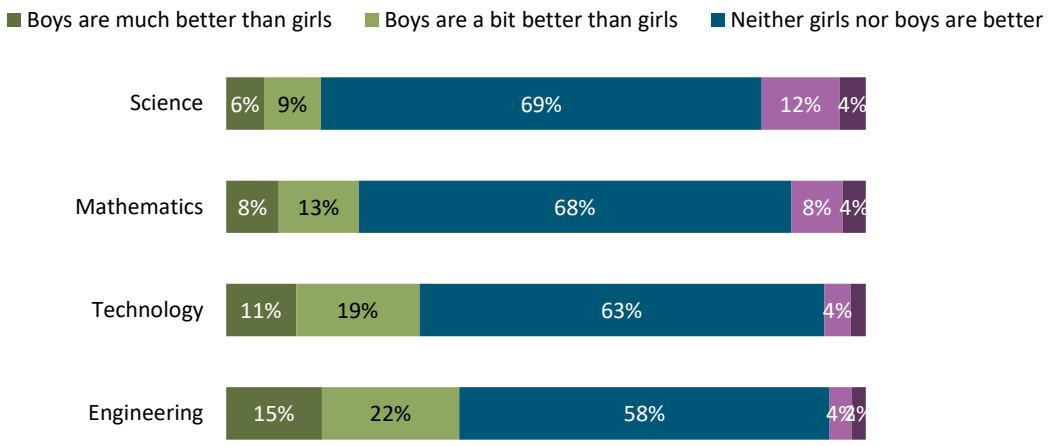
For mathematics, around two thirds (68%) said neither girls nor boys are better, however this is a significant decline (from 72% in Wave 3). This is driven by more young people saying boys are better than girls (from 16% to 21%).

There has also been a decrease in the proportion saying that neither gender is better at technology (from 68% to 63%) driven by more young people saying boys are better than girls (from 24% to 30%).

The proportion saying that neither girls nor boys are better at engineering has also fallen, from 64% to 58%, driven by more young people saying boys are better than girls (from 29% to 36%).

Figure 10: Perceptions of gender differences in skills in STEM subjects.

Q. Who is better at the following subjects?



Base: Wave 4 only, total – 2,948. Weighted percentages may not add up to 100% due to rounding of decimal places to the nearest whole number.

Table 11: Proportion who selected that either girls or boys are better at STEM subjects, by wave.

Q. Who is better at the following subjects?

Statements	% Selected		
	Wave 2	Wave 3	Wave 4
Girls are better at science	12%	14%	▲16%
Girls are better at mathematics	9%	12%	11%
Girls are better at technology	6%	7%	6%
Girls are better at engineering	4%	7%	6%
Boys are better at science	13%	12%	▲15%
Boys are better at mathematics	17%	16%	▲21%
Boys are better at technology	24%	24%	▲31%
Boys are better at engineering	30%	29%	▲36%

Base: Total. Wave 2 – 3,021, Wave 3 – 3,154, Wave 4 – 2,948.

Consistently across the four STEM subjects, boys/men were more likely to say that boys are better than girls, while girls/women were more generally likely to say that neither girls nor boys were better.

Table 12: Proportion who selected that either girls or boys are better at STEM subjects, by gender.

Q. Who is better at the following subjects? Gender differences.

Statements	% Selected	
	Boys/men	Girls/women
Girls are better at science	14%	15%
Girls are better at mathematics	10%	12%
Girls are better at technology	5%	▲8%
Girls are better at engineering	4%	▲7%
Boys are better at science	▲19%	7%
Boys are better at mathematics	▲29%	14%

Statements	% Selected	
	Boys/men	Girls/women
Boys are better at technology	▲40%	22%
Boys are better at engineering	▲44%	30%

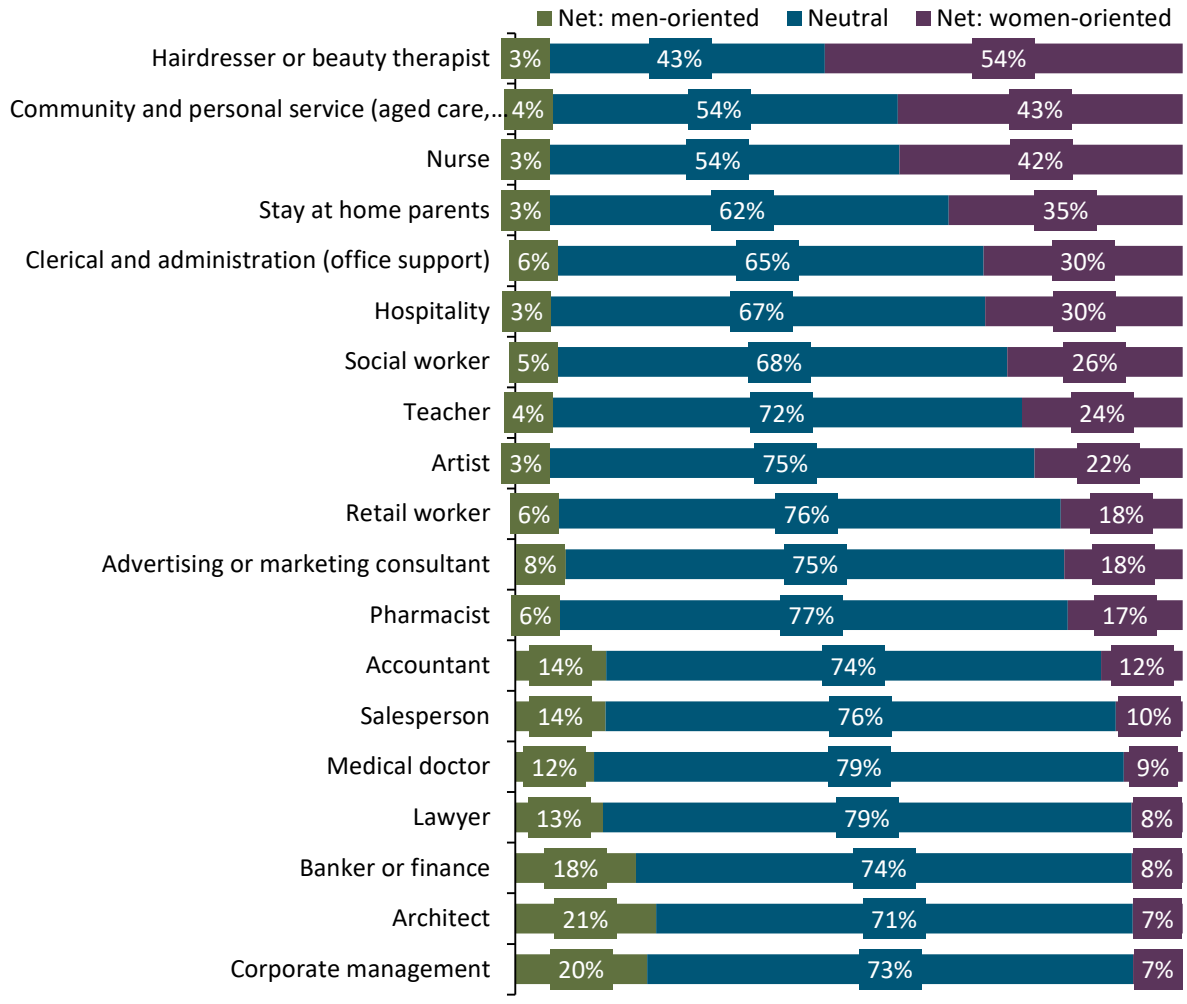
Base: Wave 4 only, boys/men – 1,435, girls/women – 1,442. Non-binary/other not shown due to low base size.

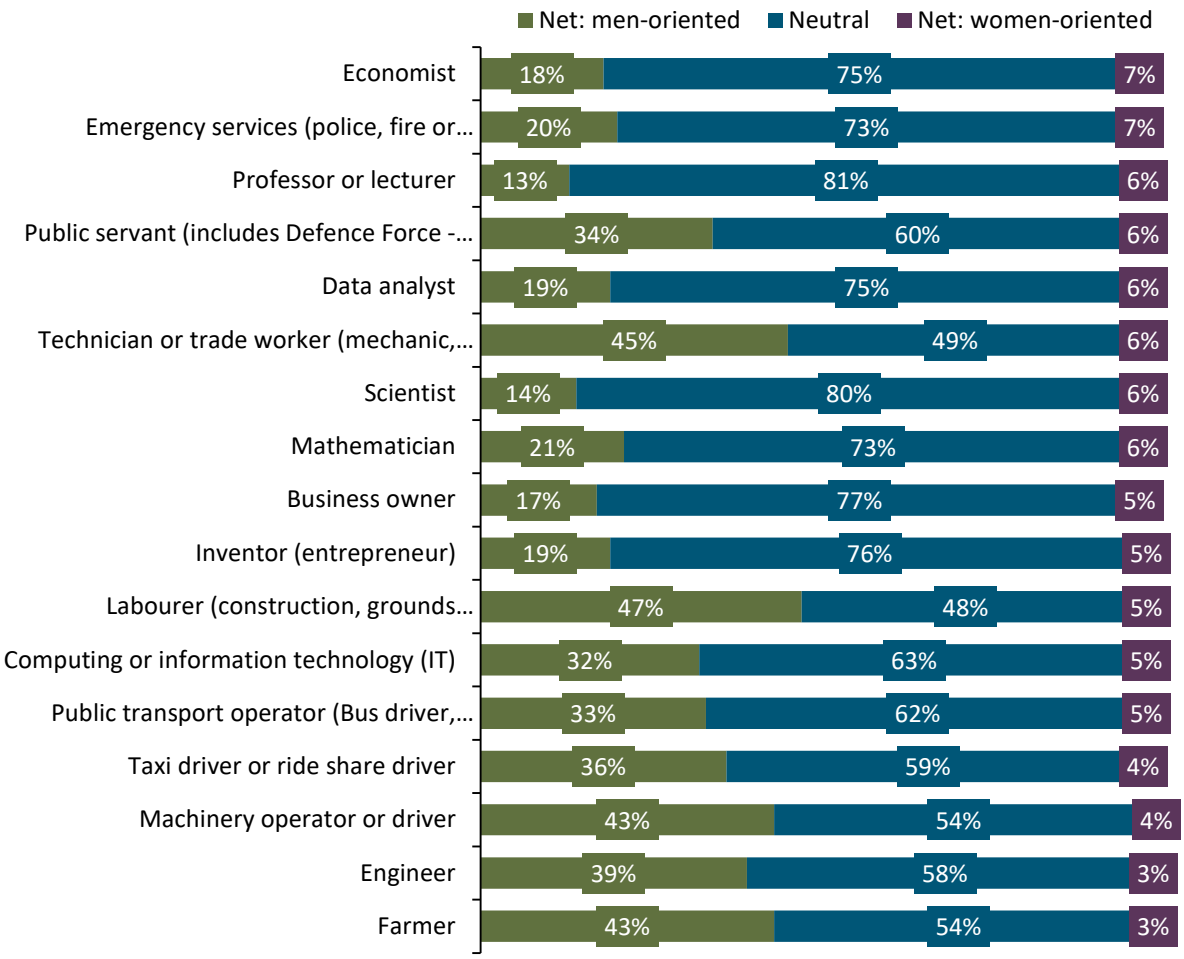
Consistent with this bias, when asked about gender associations with a range of different jobs and careers, STEM jobs and careers including 'engineer', 'computing or information technology', 'data analyst' and 'scientist', are significantly more likely to be associated with men than women.

Despite this, most young people believe that most STEM jobs can be done by either boys or girls, which is extremely positive.

Figure 11: Perceptions of gender orientation of certain job roles.

Q. Thinking about what you know do you think these jobs are more for boys, more for girls or for both?





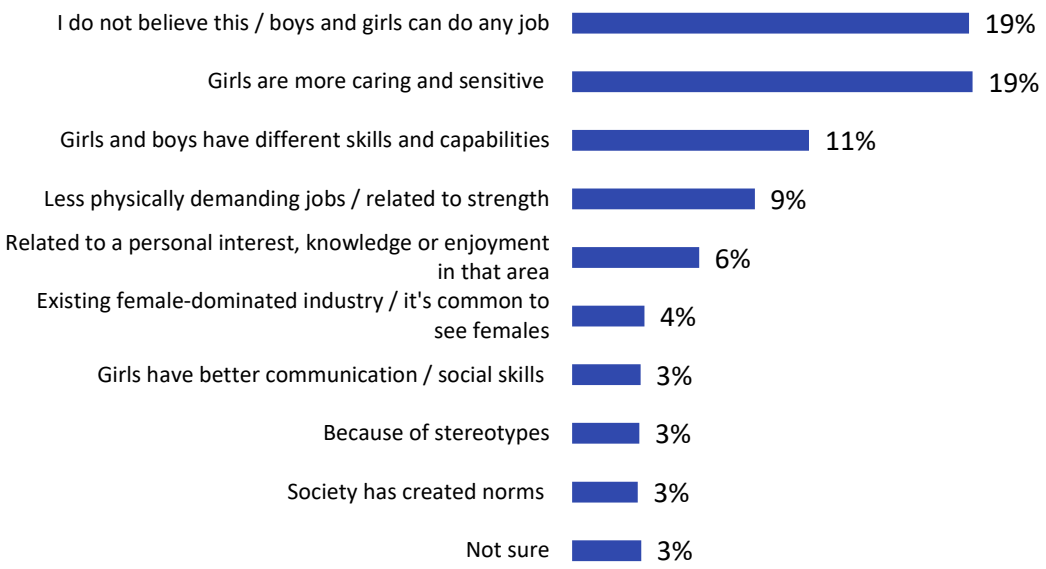
Base: Wave 4 only, total – 2,948. Don't know excluded. Weighted percentages may not add up to 100% due to rounding of decimal places to the nearest whole number.

This wave, the research investigated these biases further by asking the question: what is causing any gender biases when it comes to jobs? Positively, many young people (one in five) rejected the question and said that they did not agree that jobs are suited to specific genders.

A top reason given for why some jobs are better suited to girls or women was related to their caring and sensitive nature (19%), or because girls and boys have different skills and capabilities (11%). There were no gender differences in reasons given.

Figure 12: Reasons why some jobs are 'better suited' to girls/women.

Q. Please tell us why you think certain jobs may be better suited to girls?

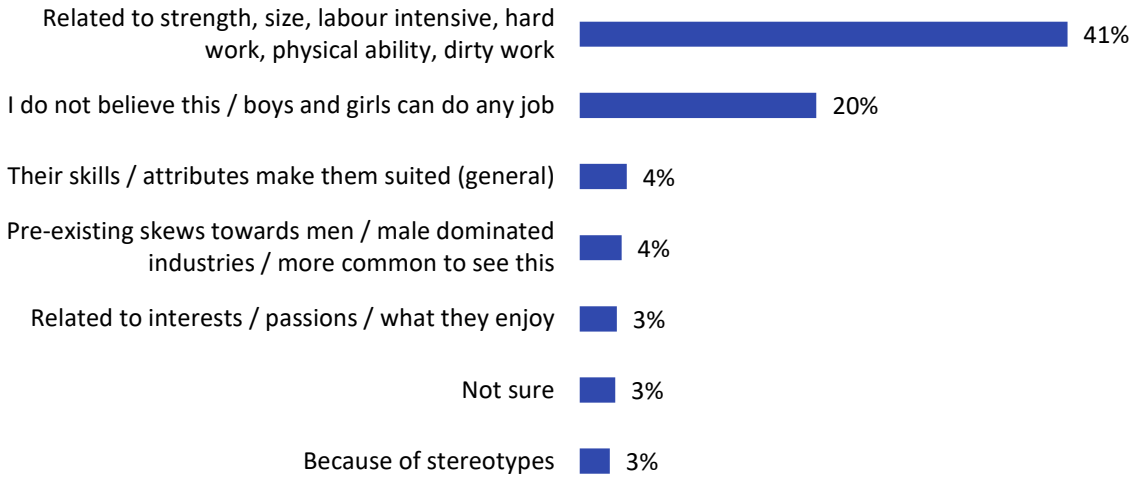


Base: Wave 4 only, total – 2,948. Showing answers scoring above 1% only.

On the other hand, the top reason for jobs being better suited to boys was related to strength and size, leading to greater tolerance for physical, laborious or 'dirty' work (41% said this), a view more common among boys/men themselves (45%) than girls/women (38%).

Figure 13: Reasons why some jobs are 'better suited' to boys/men.

Q. Please tell us why you think certain jobs may be better suited to boys?



Base: Wave 4 only, total – 2,948. Showing answers scoring above 1% only.

Boys/men were less likely than girls/women to reject the notion that there are jobs better suited to either gender.

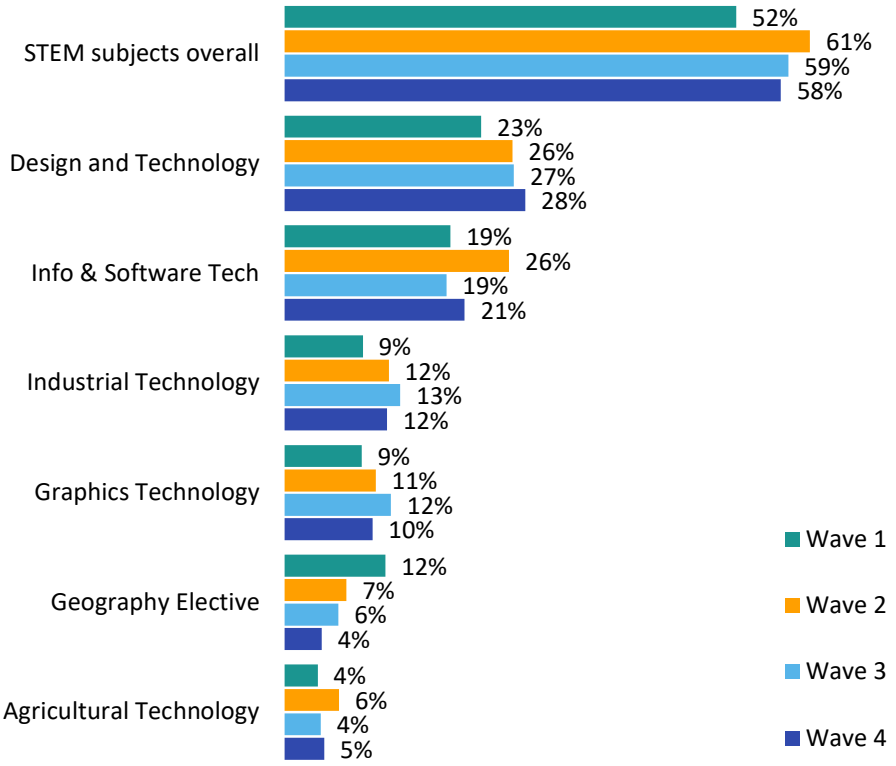
Current participation in STEM subjects

Year 9 and 10

The survey collected data on the proportion of young people currently studying STEM subjects. Participation in STEM elective subjects has remained stable overall for Wave 4 among Year 9 and 10 students (58% compared to 59% in Wave 3).

Figure 14: Elective subjects undertaken by Year 9 and 10 students. Showing STEM subjects only.

Q. Which of the following elective subjects best describes the subjects you have chosen to do in years 9 and 10?



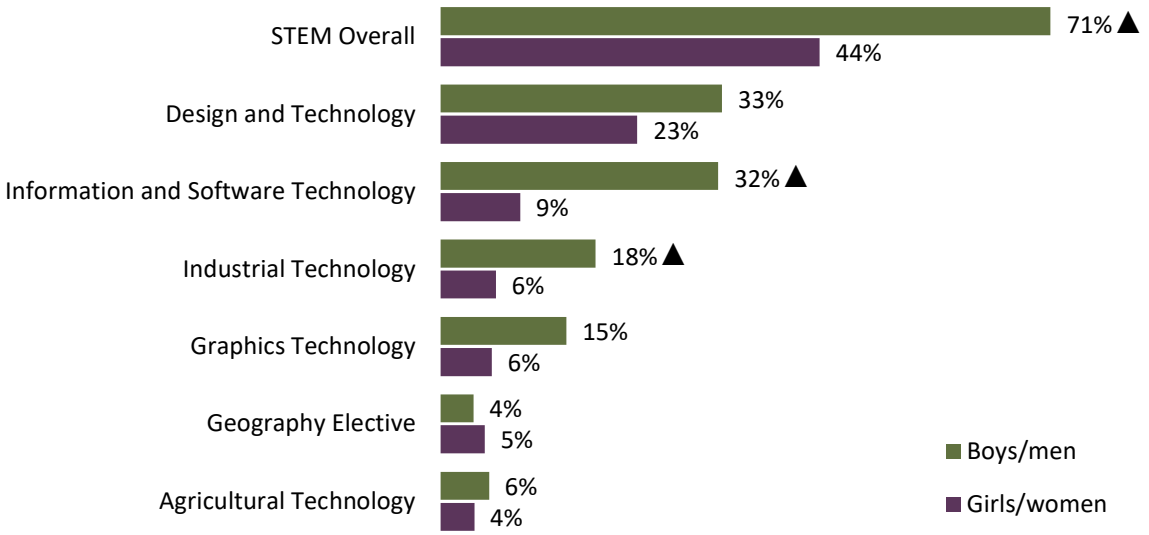
Base: Year 9 and 10s – Wave 1 – 209, Wave 2 – 358, Wave 3 – 320, Wave 4 – 319. (MC).

Current participation in STEM elective subjects in Year 9 and 10 overall remains significantly higher among boys/men (71%) compared to girls/women (44%). This remains consistent with the previous wave.

This gender divide is evident across several key elective subjects, significantly so for information and software technology (32% vs 9%) and industrial technology (18% vs 6%).

Figure 15: Elective subjects undertaken by Year 9 and 10 students by gender. Showing STEM subjects only.

Q. Which of the following elective subjects best describes the subjects you have chosen to do in years 9 and 10?



Base: Wave 4 only. Year 9 and 10s, boys/men – 155, girls/women - 154. Non-binary/other not shown due to low base size. (MC).

Those with parents/guardians with STEM employment were more likely than those who do not to have chosen Graphics Technology (20% vs 8%). However, when looking at students studying STEM overall in Years 9 and 10, there was no significant difference between these audiences.

One further difference was that Agricultural Technology is more likely to be studied by students who are non-Culturally and Linguistically Diverse (7%) compared to Culturally and Linguistically Diverse (2%).

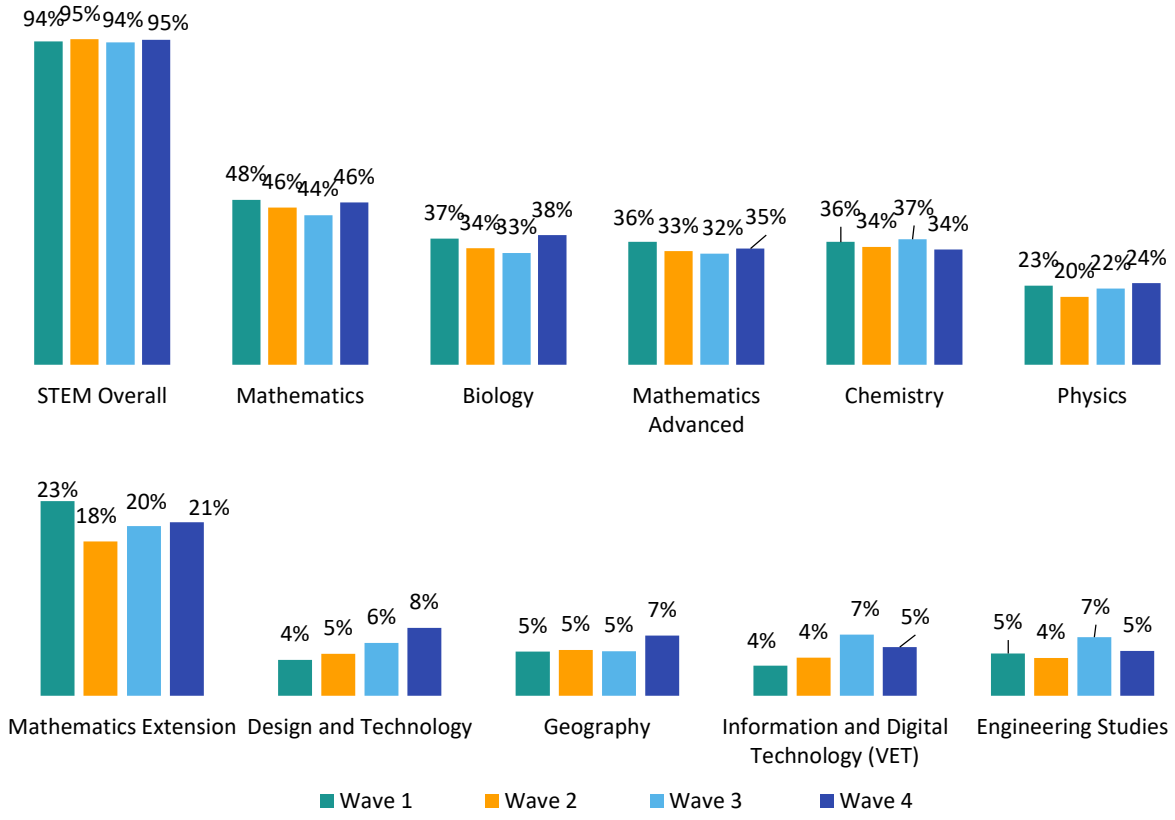
Year 11 and 12

Consistent with Wave 2, there is strong participation in STEM elective subjects overall among Year 11 and 12 students (95%), led by participation in mathematics (46%), biology (38%), mathematics advanced (35%) and chemistry (34%).

Participation in STEM subjects among Year 11 and 12 students has not changed since last wave, however, indicatively we can see a slight increase in participation in biology (from 33% to 38%). We have also observed a gradual increase since Wave 1 in the participation in design in technology (from 4% in Wave 1 to 8% in Wave 4).

Figure 16: Elective subjects undertaken by Year 11 and 12 students. Showing STEM overall and top 10 STEM subjects.

Q. Which of the following elective subjects best describes the subjects you have chosen to do in years 11 and 12?



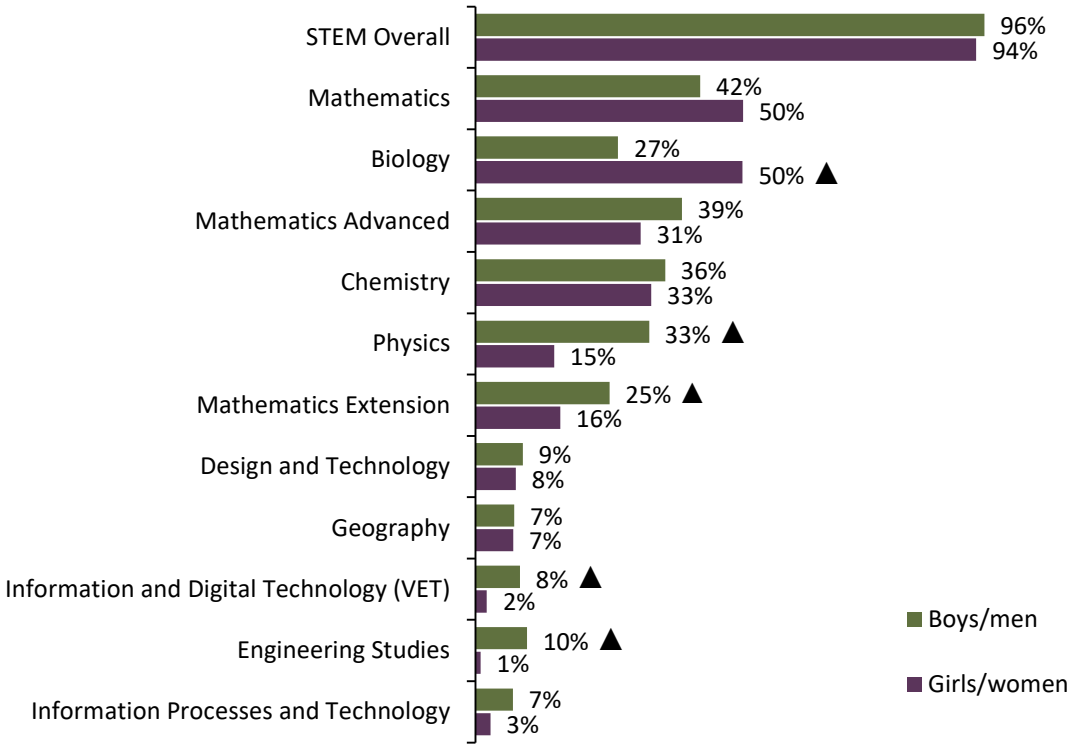
Base: Year 11 and 12s – Wave 1 – 380, Wave 2 – 653, Wave 3 – 680, Wave 4 – 627. (MC).

While participation is consistent at an overall STEM level across gender, significant skews are evident by individual subjects. Girls/women are significantly more likely than boys/men to be currently studying biology (50% vs 27%). There is no longer a gender skew of more girls/women participating in mathematics and chemistry as there was in Wave 3.

In comparison, boys/men in Year 11 and 12 are significantly more likely to be studying physics (33% vs 15%), mathematics extension (25% vs 16%), information and digital technology (VET) (8% vs 2%), and engineering studies (10% vs 1%). Positively, there is no longer a male skew for design and technology this wave.

Figure 17: Elective subjects undertaken by Year 11 and 12 students, by gender. Showing STEM overall and top 10 STEM subjects.

Q. Which of the following elective subjects best describes the subjects you have chosen to do in years 11 and 12?



Base: Wave 4 only. Year 11 and 12s, boys/men – 307, girls/women - 306. Non-binary/other not shown due to low base size. (MC).

It was found that Culturally and Linguistically Diverse students were more likely to be studying STEM overall at Year 11 and 12 than non-Culturally and Linguistically Diverse students (97% vs 93%).

Some key differences are also evident for individual subjects:

- Those who live in metro areas were more likely than regional students to be studying mathematics advanced. However, regional students were more likely to study mathematics and science extension.
- Those with a higher socioeconomic status were more likely than those with a lower socioeconomic status to be studying mathematics advanced, chemistry and earth and environmental science.

- Those who were born overseas were more likely than those born in Australia to be studying mathematics advanced, chemistry and physics.
- Those with a Culturally and Linguistically Diverse background were more likely than non-Culturally and Linguistically Diverse students to be studying mathematics advanced, chemistry, physics and mathematics extension. On the other hand, non-Culturally and Linguistically Diverse students were more likely to study mathematics.
- Non-Aboriginal and/or Torres Strait Islander students were more likely than their counterparts to be studying mathematics advanced and chemistry. However, those identifying as Aboriginal and/or Torres Strait Islander were more likely to be studying industrial technology and agriculture (however, this is based on a low sample of 29 students).

Once again, the influence of parent/guardian education in STEM is evident: students with parents or guardians who have a STEM education were more likely to be studying a STEM subject at Year 11 or 12 (97% vs 92% of those whose parents or guardians do not have a STEM education).

Students with a parent or guardian with a STEM education were more likely to be studying mathematics advanced, chemistry, physics, mathematics extension, engineering studies and information processes and technology. On the other hand, those with parents/guardians without a STEM education were more likely to be studying mathematics or biology.

Those with parents or guardians in STEM employment were also more likely to be studying any STEM subject at Year 11 or 12 (99% vs 94% of those without parents working in STEM). At an individual subject level, those with parents working in STEM were more likely to be studying physics, software design and development and computing applications at Year 11 or 12.

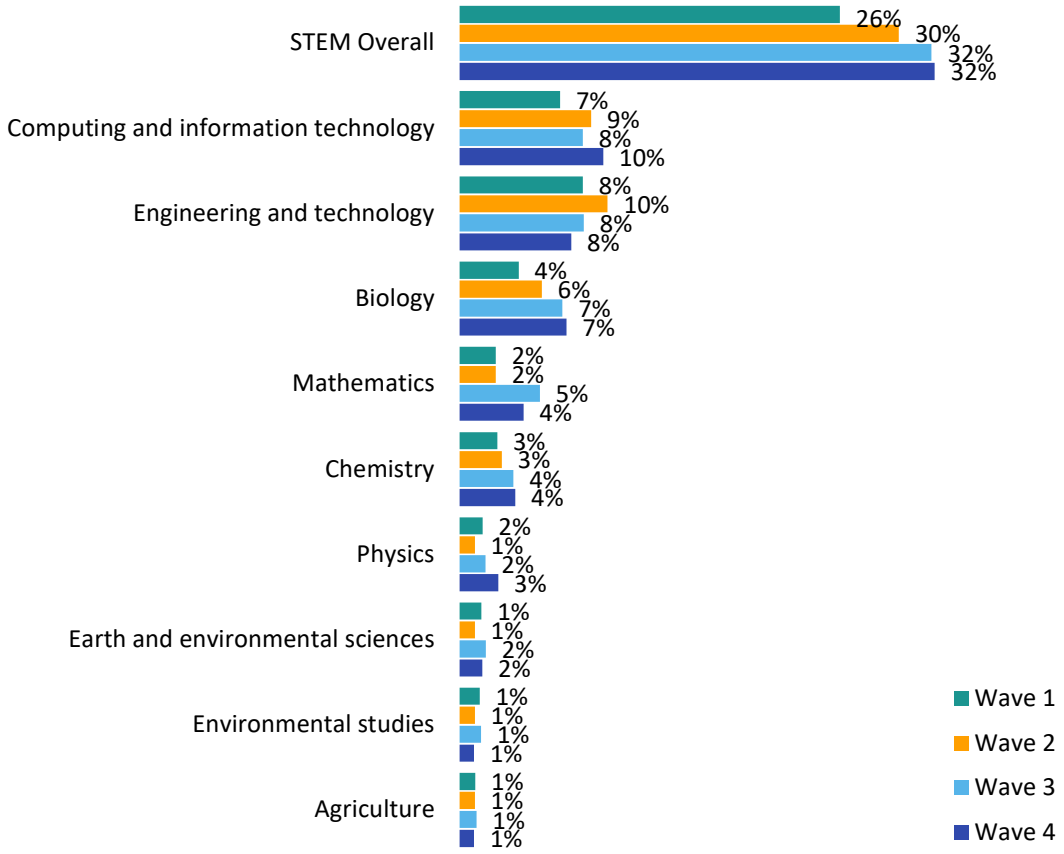
Higher education

Overall, the proportion of young people studying STEM-related courses at a tertiary level has remained stable for Wave 4 at 32%, the same as Wave 3. Tertiary courses in computing and information technology, engineering and technology, and biology remain the most popular STEM areas of study at a tertiary level overall.

This wave we have not seen any significant shifts in tertiary education subjects, although indicatively we have seen a slight increase in students studying computing and information technology, from 8% to 10%.

Figure 18: Subject(s) studying at higher education. Showing STEM subjects only.

Q. Which of the below courses best describes the course you are currently studying in your higher education course?



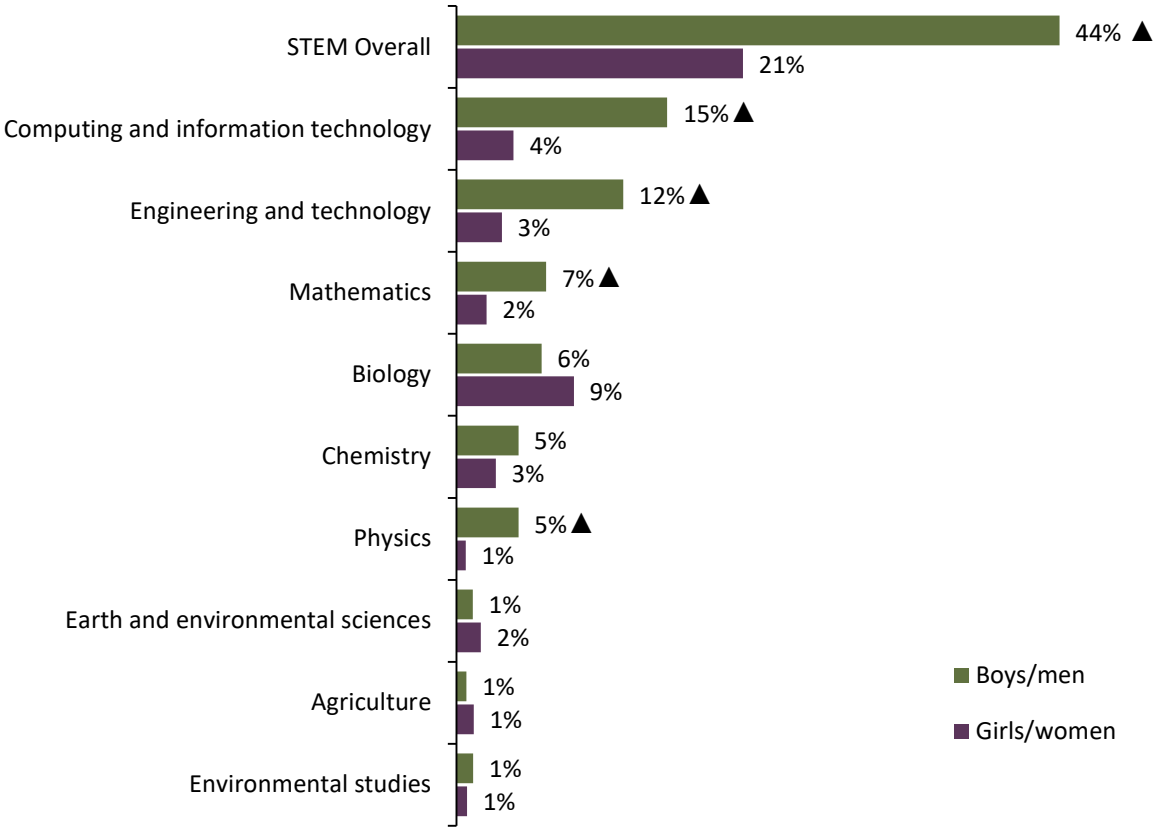
Base: Those in higher education – Wave 1 – 933, Wave 2 – 1,140, Wave 3 – 1,260, Wave 4 – 1,177. (MC).

Consistent with previous waves, significantly more men are studying STEM at a tertiary level compared to women (44% vs 21% overall).

It was found that at an individual subject level, men are significantly more likely than women to be studying computing and information technology (15% vs 4%), engineering and technology (12% vs 3%), mathematics (7% vs 2%) and physics (5% vs 1%) at a tertiary level. Although not significant, women are slightly more likely to be studying biology (9% vs 6% of men).

Figure 19: Subject(s) studying at higher education, by gender. Showing STEM subjects only.

Q. Which of the below courses best describes the course you are currently studying in your higher education course?



Base: Wave 4 only, those in Higher Education, boys/men – 570, girls/women - 580. Non-binary/other not shown due to low base size. (MC).

Aside from gender, a key factor in determining study of STEM at a tertiary level is parent/guardian engagement in STEM. Tertiary students with parents who are educated in STEM are significantly more likely to be studying STEM overall (38% vs 25%), as are tertiary students with parents/guardians who are employed in a STEM-related field (52% vs 30%).

Below are other significant differences among key demographic groups.

Table 13: Significant differences between subgroups in studying STEM overall at a tertiary level.

Audience	WEIGHTED %
Location	
Metropolitan	35%
Regional / remote	23%
Culturally and Linguistically Diverse status	
Non-Culturally and Linguistically Diverse	27%
Culturally and Linguistically Diverse	40%
Country of birth	
Born in Australia	30%
Born overseas	44%

Some key differences are also evident for individual subjects. Students who were born overseas are more likely than those born in Australia to be studying computing and information technology (18% vs 8%).

Culturally and Linguistically Diverse students are more likely to be studying computing and information technology than non-Culturally and Linguistically Diverse students (14% vs 7%), along with biology (10% vs 6%) and chemistry (5% vs 3%). On the other hand, non-Culturally and Linguistically Diverse students are more likely to study earth and environmental studies (2% vs 1%).

As well as an impact on likelihood to study STEM overall, having a parent or guardian with a STEM education or job increases likelihood to study many individual STEM subjects at a tertiary level, except biology, earth and environmental sciences, environmental studies and agriculture.

Influences in relation to STEM study

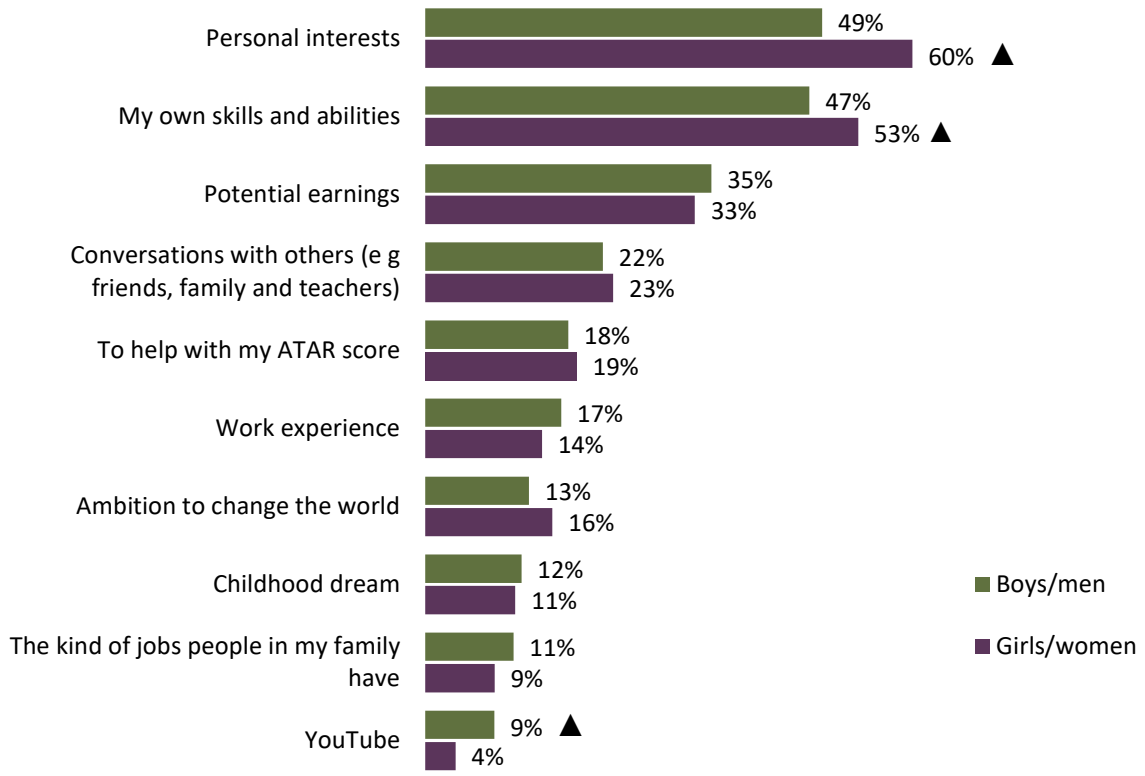
Key factors influencing the consideration of STEM study continue to be led by personal interest (55%), young people's perceptions of their own skills and abilities (51%) and earning potential (34%). Interestingly, the proportion of young people driven by potential earnings has increased this wave, from 31% to 34%, while the proportion driven by personal interests has fallen from 58% to 55%.

The role of personal interest and perceptions of own skills and abilities is of significantly greater influence among girls/women than it is for boys/men (60% vs 49% and 53% vs 47% respectively). This is of key importance in the context of women's/girls' relatively weaker perceptions of their own skills in engineering and technology subjects discussed above. This wave we have seen the gender gap close when it comes to the influence of ambition to change the world and the drive to improve their ATAR score.

Conversely, boys/men are more likely than girls/women to be influenced by what they see on YouTube (9% vs 4%). Again, we have seen the gender gap close regarding the influence of work experience, the chosen careers of family members, and activities outside of school/study - these gender differences are no longer significant.

Figure 20: Top ten factors most influencing decision of which subject to study, by gender.

Q. Which factors most influence your decision of the subjects you choose to study? (MC).



Base: Wave 4 only, boys/men – 1,435, girls/women – 1,442. Non-binary/other not shown due to low base size.

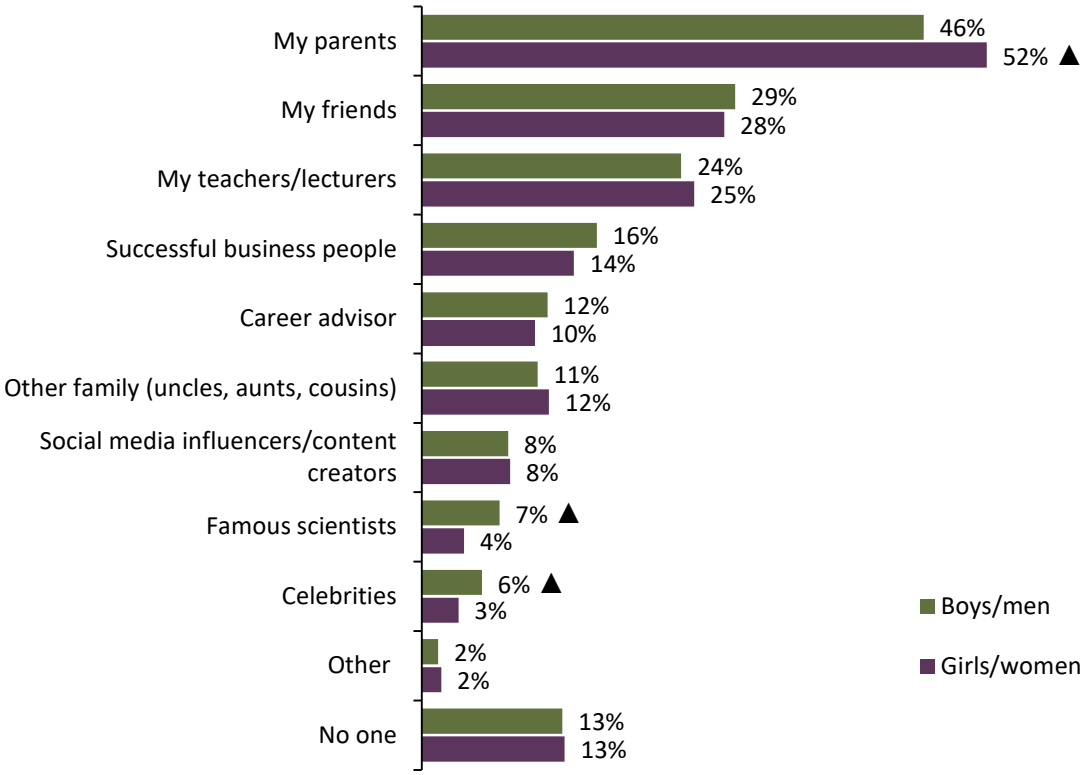
Overall, parents/guardians remain a key 'person' of influence with regards to study choices (49%) along with friends (29%) and teachers/lecturers (25%).

It was found that girls/women are more likely than boys/men to be influenced by their parents (52% vs 46%). On the other hand, boys/men are more likely than girls/women to be influenced by famous scientists (7% vs 4%) and celebrities (6% vs 3%).

This wave we introduced the new option of 'social media influencers/content creators', with 8% of both boys/men and girls/women saying they are influenced by these people.

Figure 21: People most influencing the decision of which subject to study, by gender.

Q. And which of the below people most influence your decision of the subjects you choose to study? (MC).



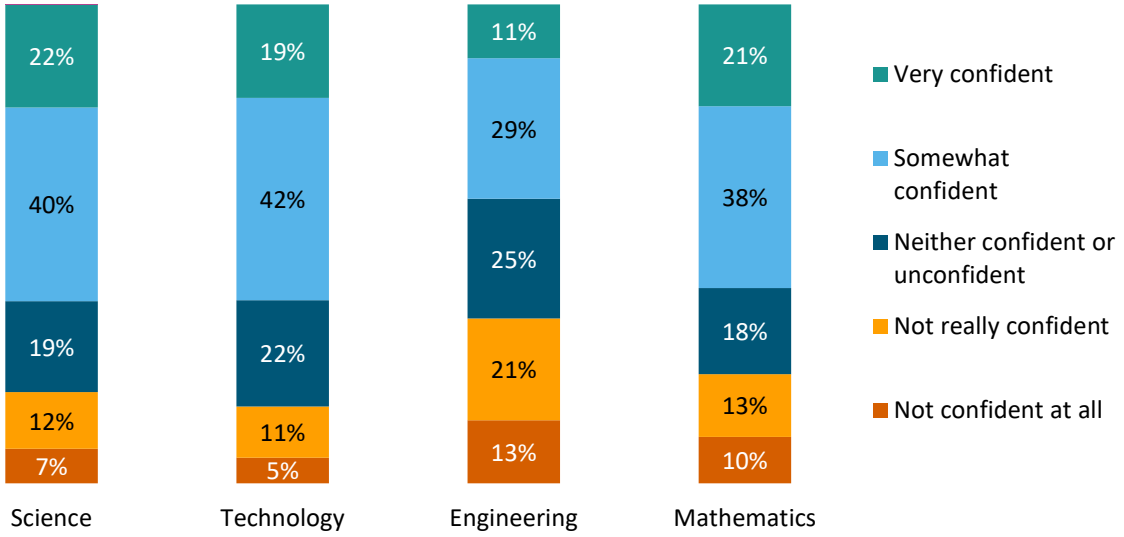
Base: Wave 4 only, boys/men – 1,435, girls/women – 1,442. Non-binary/other not shown due to low base size.

Confidence in studying STEM

Young people were asked about their level of confidence in studying a range of STEM subjects. Overall, confidence in studying STEM is high (87%) and consistent with Wave 3 (85%). Confidence is highest for technology and science (both 62%), followed by mathematics (59%) and engineering (41%).

Figure 22: Confidence levels in studying STEM, by STEM subject.

Q. How confident do you feel about studying each of the subjects that make up STEM?



Base: Wave 4 only, total – 2,948. Weighted percentages may not add up to 100% due to rounding of decimal places to the nearest whole number.

Table 14: Confidence in studying STEM (Net: somewhat/very confident) by wave.

Q. How confident do you feel about studying each of the subjects that make up STEM?

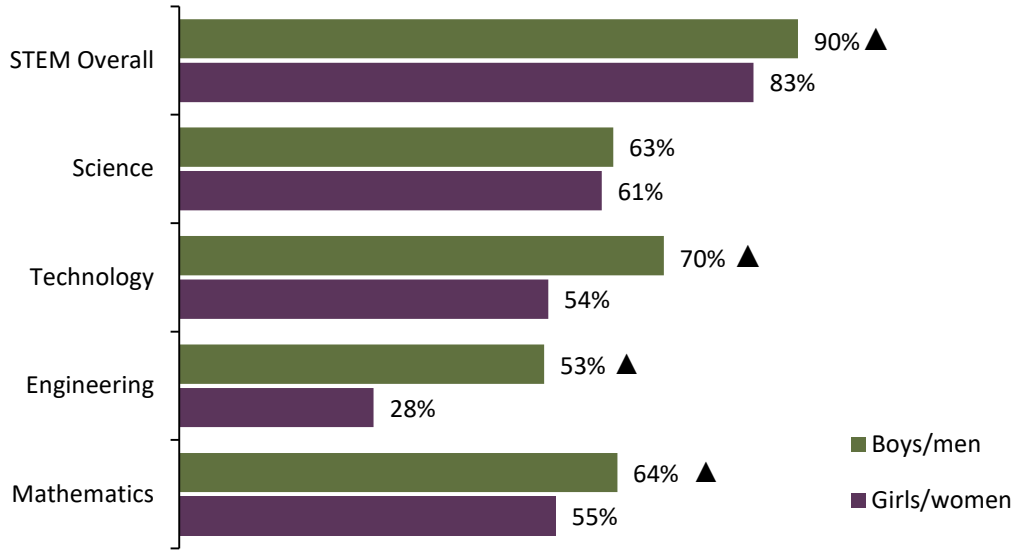
Subject	Net: somewhat/very confident			
	Wave 1	Wave 2	Wave 3	Wave 4
STEM Overall	85%	80%	85%	87%
Science	62%	58%	61%	62%
Technology	64%	61%	64%	62%
Engineering	37%	38%	41%	41%
Mathematics	63%	57%	60%	59%

Base: Total, Wave 1 – 2,092, Wave 2 – 3,021, Wave 3 – 3,154, Wave 4 – 2,948.

The data shows that boys/men are significantly more confident than girls/women in all STEM subjects, excluding science, where confidence among boys/men is on par with that of girls/women (63% and 61% respectively). Girls/women are *least* confident when it comes to studying engineering (28%), followed by technology (54%) and mathematics (55%).

Figure 23: Net confidence in studying STEM (net: somewhat/very confident), by STEM subject, by gender

Q. How confident do you feel about studying each of the subjects that make up STEM?



Base: Wave 4 only, boys/men – 1,435, girls/women – 1,442. Non-binary/other not shown due to low base size.

Culturally and Linguistically Diverse young people were more likely to feel confident in STEM (89% vs 85% of those who are non-Culturally and Linguistically Diverse.

Table 15: Significant differences between subgroups in confidence in studying subjects that make up STEM (net: somewhat/very confident).

Audience	WEIGHTED %
Culturally and Linguistically Diverse status	
Non-Culturally and Linguistically Diverse	85%
Culturally and Linguistically Diverse	89%

Several key differences are evident in the degree of confidence felt by students in studying the individual subjects that comprise STEM:

- Students from lower socioeconomic status areas are more likely than their counterparts to feel confident in engineering (42% vs 38%).
- Students born overseas feel more confident studying science, engineering and maths than those born in Australia (71% vs 60%, 46% vs 39% and 64% vs 58% respectively).

- Similarly, Culturally and Linguistically Diverse students were more likely to be confident in science, engineering and maths than non-Culturally and Linguistically Diverse students (68% vs 58%, 44% vs 38% and 63% vs 57% respectively).
- Students who identify as Aboriginal and/or Torres Strait Islander were also more likely to say they feel confident with engineering (57% vs 40%) than non-Aboriginal and/or Torres Strait Islander young people.

Consistent with other measures, a student's confidence in studying STEM is likely to be significantly higher (across all STEM subjects) when a parent has previously studied or works in STEM themselves. Details of these differences are noted below:

Table 16: Confidence in studying STEM (net: somewhat/very confident) subjects by parent background.

Q. How confident do you feel that you can study and get good results in each of the following subjects?

Subject	Confidence in studying STEM (net: somewhat/very confident)			
	Parent study in STEM		Parent employment in STEM	
	Yes	No	Yes	No
STEM overall	▲90%	83%	▲93%	86%
Science	▲68%	56%	▲71%	61%
Technology	▲65%	58%	▲69%	61%
Engineering	▲46%	35%	▲47%	40%
Mathematics	▲63%	54%	▲67%	58%

Base: Wave 4 only. Parents who studied STEM – 1,584, parents who did not study STEM – 1,364, parents who work in STEM – 339, parents who do not work in STEM – 2,609.

Drivers of gender differences in confidence in STEM

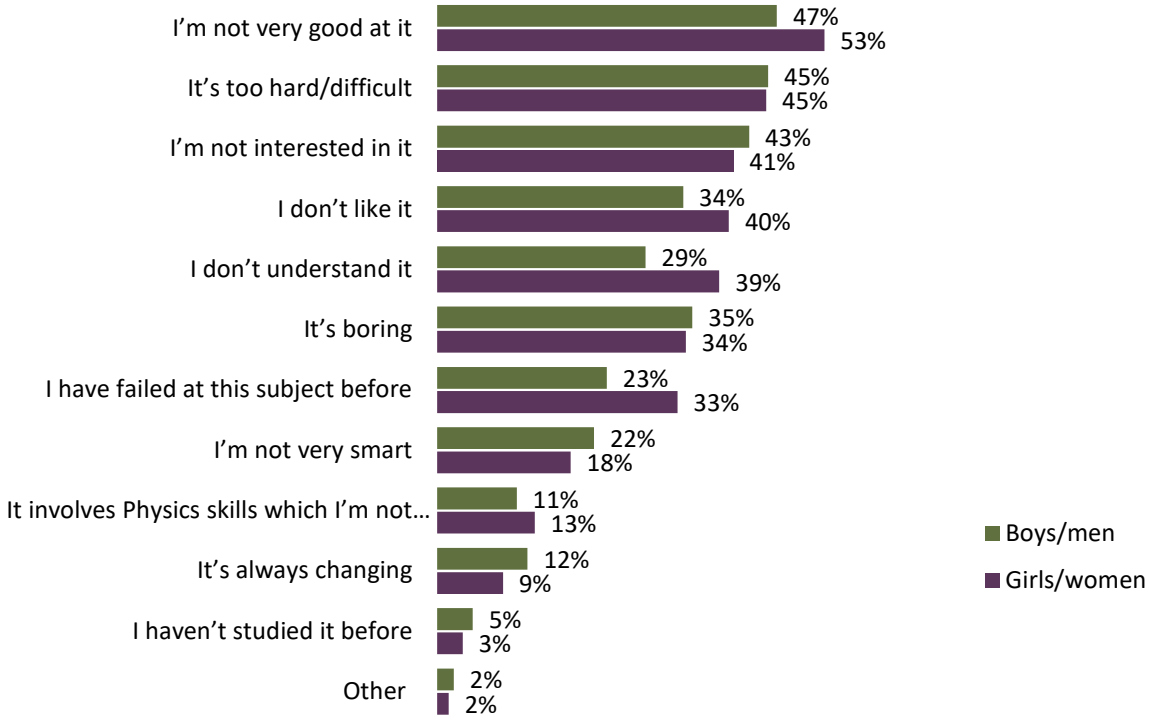
It was found that the reasons girls/women lack confidence in engineering are primarily related to a lack of familiarity, having not studied the subject before (50%) and reportedly having 'no interest' in the subject (44%).

Considering technology, reasons for low confidence among girls/women are mostly related to not being interested in it (46%), not understanding it (33%) or not having studied it before (32%).

While girls/women doubt their abilities in science, the most common reason among boys/men for low confidence in studying science is lack of interest. The data also suggests that the reasons driving low confidence in mathematics are also more internalised and reflect the perceptions of girls/women regarding their own ability. Girls/women are slightly more likely than boys/men to attribute their low confidence in mathematics to 'not understanding it' (39% vs 29%). They are also slightly more likely to say they are 'not very good at it', they 'don't like it' and that they have 'failed this subject before'.

Figure 24: Reasons for not feeling confident in getting good results in mathematics, by gender.

Q. Why do you not feel confident about getting good results in mathematics?



Base: Wave 4 only, those who do not feel confident about getting good results in mathematics, boys/men – 241, girls/women – 402. Non-binary/other not shown due to low base size.

Confidence in participating in conversations regarding STEM topics outside of school/study has remained stable for the past three waves, currently at 59%.

Table 17: Confidence levels in understanding of science and technology outside of school/study.

Q. And what about outside of school/study, how confident is your understanding of science and technology when people are talking about it or when you watch or read about it on TV or online?

Confidence	Wave 1	Wave 2	Wave 3	Wave 4
Net: Confident	66%	58%	59%	59%
Net: Not confident	9%	13%	13%	14%

Base: Total. Wave 1 – 2,092, Wave 2 – 3,021, Wave 3 – 3,154, Wave 4 – 2,948.

Boys/men remain more confident than girls/women in discussing STEM topics outside of school/study (63% vs 54% in Wave 4), a finding that has been consistent across waves.

Other students who are more likely to be confident in discussing STEM topics outside of school/study are those who are Culturally and Linguistically Diverse (63% vs 56% of non-Culturally and Linguistically Diverse students).

Again, there is a role of parent/guardian background, with confidence higher among those with parents/guardians with STEM education (64% vs 53% of those who do not), and those with parents/guardians in STEM employment (70% vs 57%).

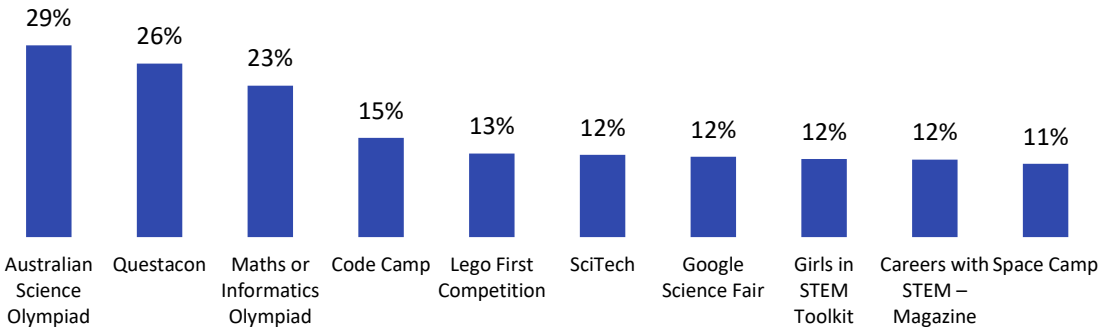
Participation in STEM activities and events

The research sought to understand students' awareness of and participation in STEM activities and events over the last 12 months. Awareness of activities and events related to STEM remained stable at 85%, compared to 88% last wave (a slight decrease).

The top 10 events that students are aware of are noted below.

Figure 25: Awareness of STEM events, activities and resources among those who had participated in a STEM activity or event. Showing top 10 events aware of only.

Q. And which of the below events, activities or resources have you heard of?



Base: Those who had participated in a STEM activity/event – Wave 4 – 1,332.

This wave we observed a significant decline in awareness of Lego First Competition (from 17% to 13%), SciTech (from 16% to 12%) and Google Science Fair (18% to 12%).

Participation in STEM-related activities outside of school/study has increased this wave from 39% to 45%, made up of 29% who say they have participated in a few activities, and 16% who say they have participated in one. Those aged 14-17 are the most likely to have participated in an activity (51%).

Participation is also highest among those with a higher socio-economic status (46%), those in metro areas (47%), those born overseas (53%), those with a Culturally and Linguistically Diverse background (50%), those who identify as Aboriginal and/or Torres Strait Islanders (60%), those with a parent or guardian with STEM education (52%) or who works in STEM (56%).

Future intentions for STEM

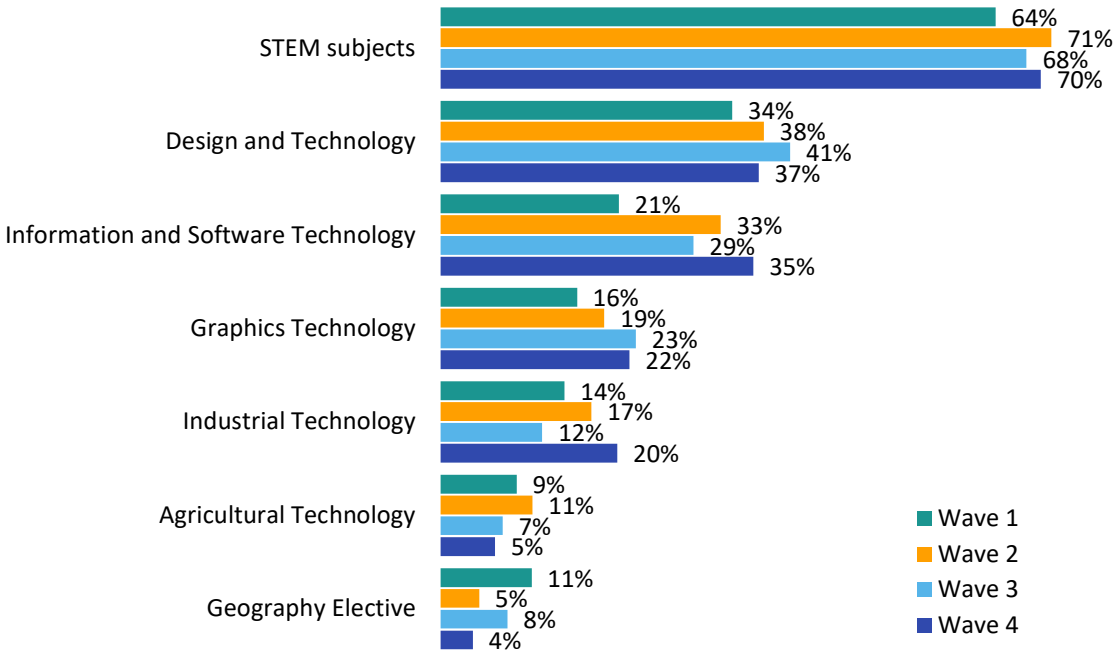
Intention to study STEM subjects in the future

Intentions for STEM electives at Year 9 and 10

When asked about studying STEM subjects in the future, the intentions of Years 6 to 8 students have remained stable (70% in Wave 4 compared to 68% in Wave 3). Although not significant, likely due to a low sample size, there has been a slight uplift in intention to study information and software technology (from 29% to 35%) and industrial technology (from 12% to 20%).

Figure 26: Future STEM elective study intentions among students in Years 6 to 8, by wave.

Q. Which of the following subjects would you be interested in studying once you get the choice to select your subjects?



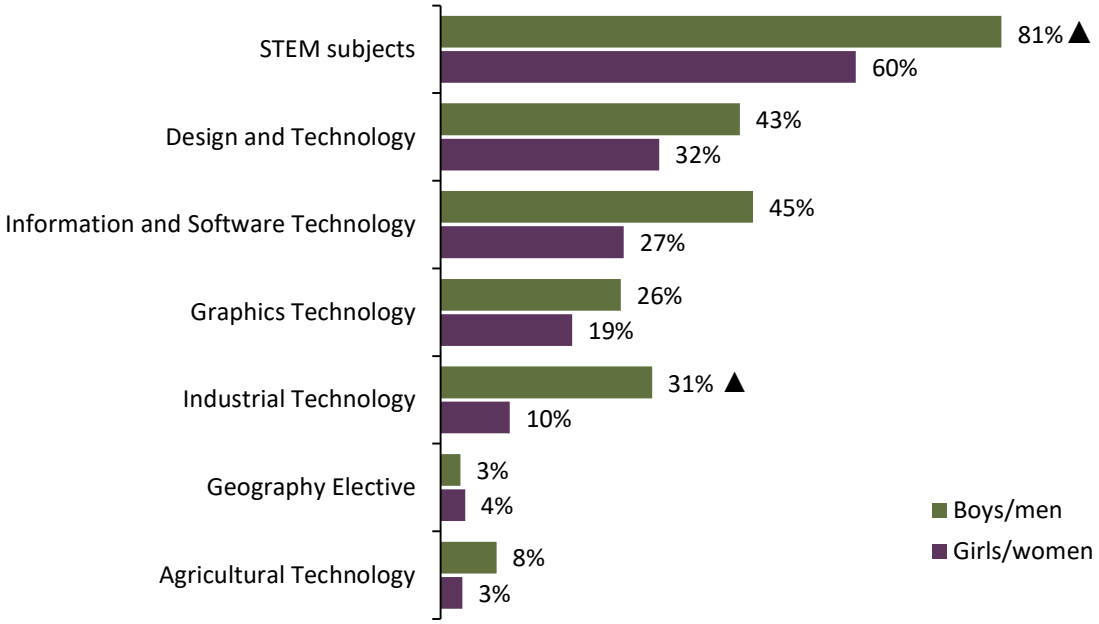
Base: Year 6-8s – Wave 1 – 67, Wave 2 – 289, Wave 3 – 221, Wave 4 – 168. (MC).

Consistent with the previous wave, boys/men in Years 6 to 8 remain significantly more likely to intend to study STEM subjects in future than do girls/women (81% compared to 60%).

The data also shows that boys/men are significantly more likely than girls/women to express an intention to study industrial technology (31% vs 10%).

Figure 27: Future STEM elective study intentions among students in Years 6 to 8, by gender.

Q. Which of the following subjects would you be interested in studying once you get the choice to select your subjects?



Base: Wave 4 only. Year 6-8s, boys/men – 75, girls/women - 88. Non-binary/other not shown due to low base size. (MC).

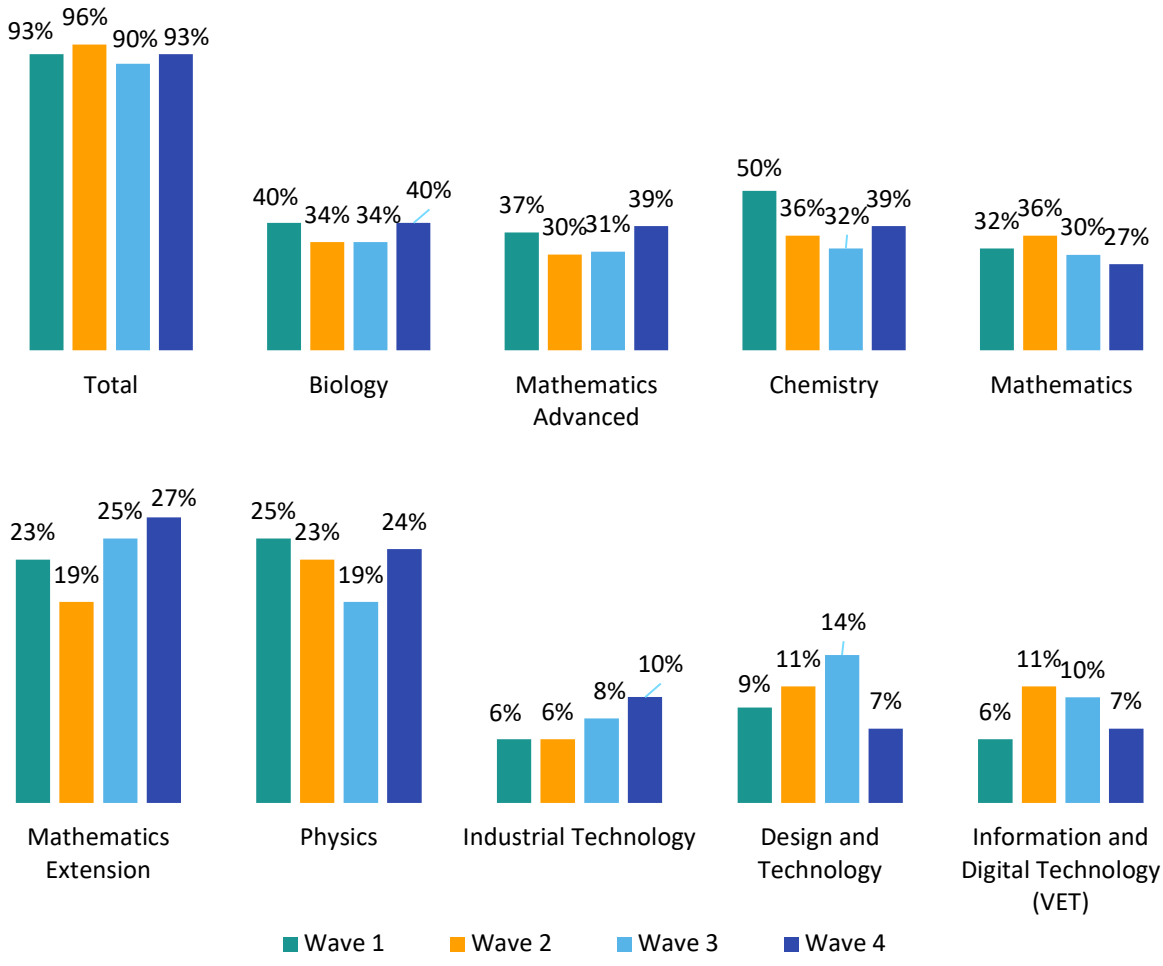
Intentions for STEM electives at Year 11 and 12

Among those in Year 9 and 10 there has been a slight, although not significant, uplift in the proportion of young people intending to enrol in STEM subjects for Years 11 and 12 (from 90% in Wave 3, to 93% in Wave 4), after a significant decline from Wave 2 to Wave 3.

While not significant, we have seen an uplift in intentions for mathematics advanced, biology, chemistry, physics and industrial technology.

Figure 28: Future STEM elective study intentions for Years 11 and 12 (among Year 9 and 10s). Showing total (STEM overall) top 10 only, by wave.

Q. Please select from the below list which elective subjects you are considering choosing for years 11 and 12.



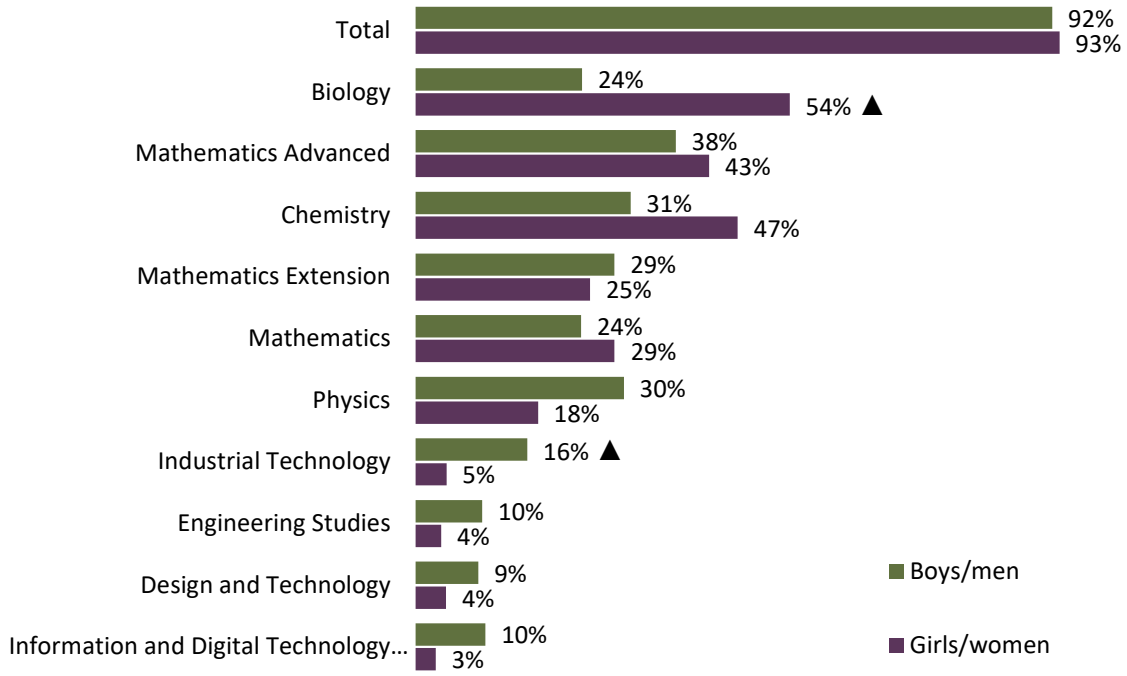
Base: Year 9 and 10s – Wave 1 – 209, Wave 2 – 358, Wave 3 – 320, Wave 4 – 319. (MC).

Gender skews in STEM study intentions among Year 9 and 10 students are also evident. Girls/women in Years 9 and 10 were found to be significantly more likely than boys/men to express an intention to study biology (54% vs 24%). Girls were slightly more likely to intend to study chemistry than boys, but this difference is not significant.

In comparison, it was found that Year 9 and 10 boys are more likely than girls to express intention to study industrial technology (16% vs 5%). Other differences were not significant, but boys were slightly more likely to intend to study physics, engineering studies, design and technology and information and digital technology. These gender skews have remained consistent over time.

Figure 29: Future STEM elective study intentions for Years 11 and 12, among Year 9 and 10s, by gender.

Q. Please select from the below list which elective subjects you are considering choosing for years 11 and 12.



Base: Wave 4 only. Year 9 and 10s, boys/men – 155, girls/women - 154. Non-binary/other not shown due to low base size. (MC).

There were no significant differences in intention to study STEM overall by subgroup.

However, several differences are evident at an individual subject level. Students born overseas are more likely to intend to study mathematics advanced in Year 11 and 12 compared to students born in Australia (54% vs 36%), as well as mathematics extension (39% vs 24%).

Culturally and Linguistically Diverse students were more likely to intend to study mathematics advanced (47% vs 33%), chemistry (47% vs 32%), mathematics extension (36% vs 20%) and physics (34% vs 17%).

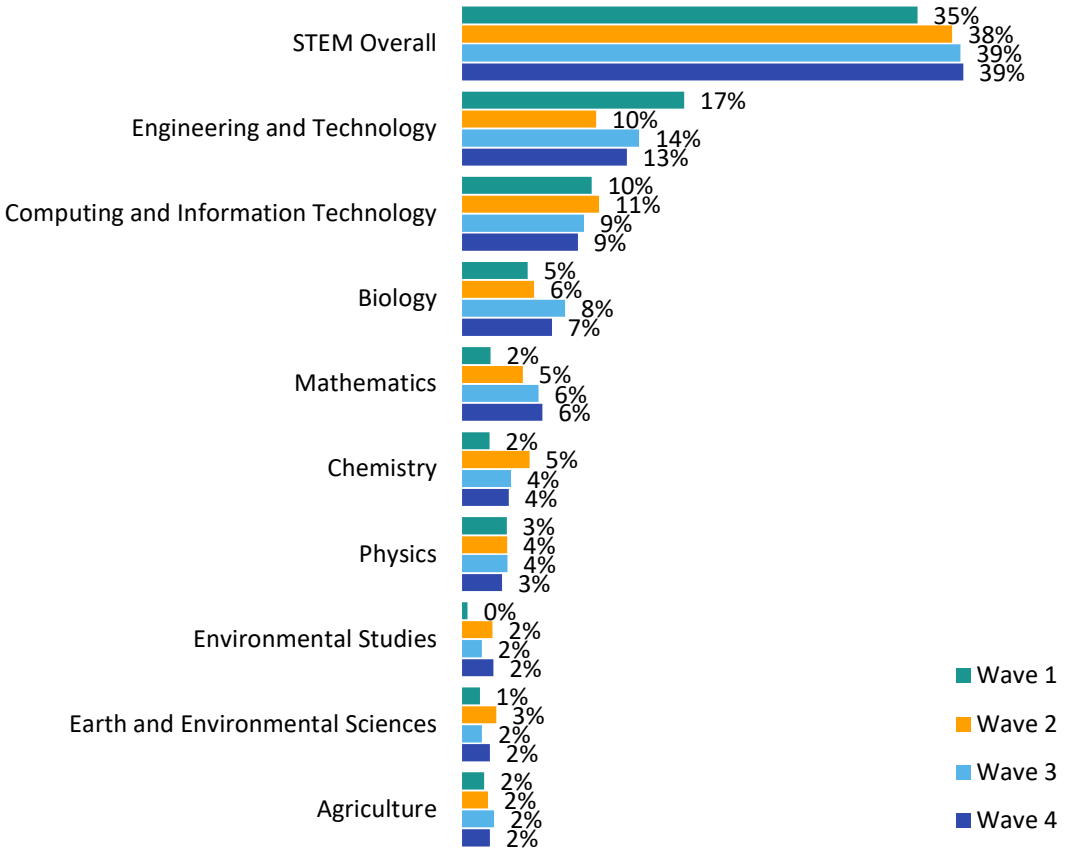
Students whose parents have studied STEM are also significantly more likely to intend to study chemistry than those whose parents have not (44% vs 31%).

Intentions for STEM at higher education

The intention of Year 11 and 12 students to study STEM at the tertiary level has remained stable overall for Wave 4, at 39%, compared to 39% in Wave 3. Intention for each individual STEM subject has remained stable.

Figure 30: Future study intentions for STEM at higher education, among those in Year 11 and 12, by wave.

Q. Please select from the below list which course(s) you are considering after high school.

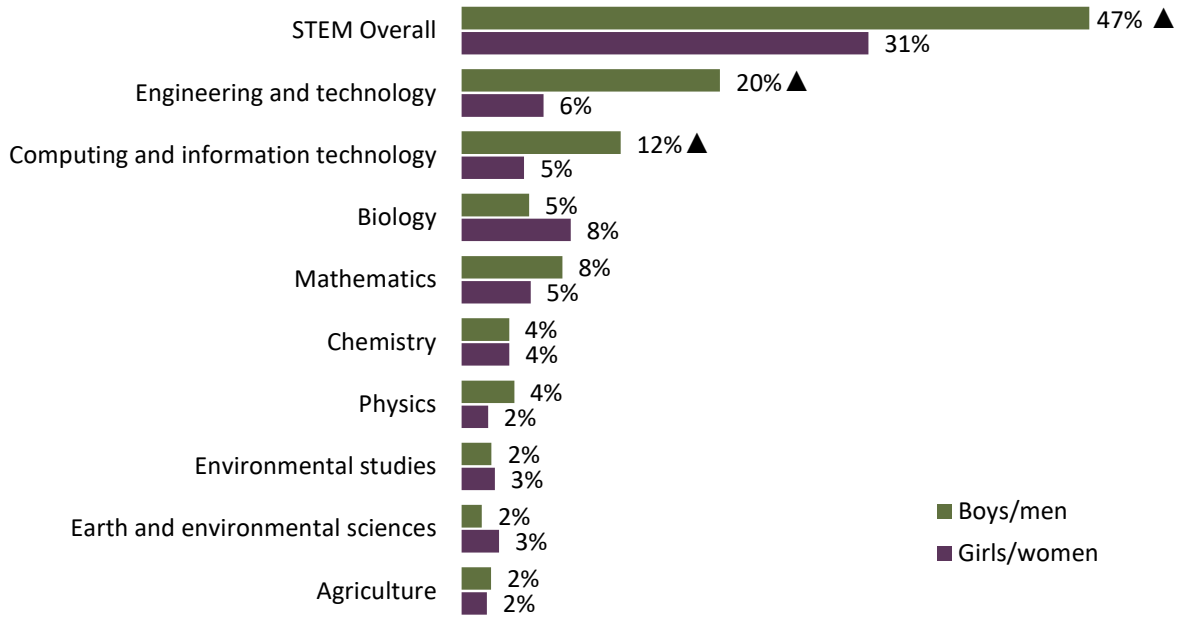


Base: Those in Years 11 and 12 – Wave 1 – 380, Wave 2 – 653, Wave 3 – 680, Wave 4 – 627. (MC).

Clear gender skews are evident in intention to study STEM at a tertiary level among Year 11 and 12 students. Intention to study STEM at a tertiary level overall is driven by boys/men rather than girls/women (47% compared to 31%). This pattern is driven by strong skews towards boys/men for engineering and technology (20% compared to 6% for girls/women), and computing and information technology (12% compared to 5%).

Figure 31: Future study intentions for STEM at higher education, among those in Year 11 and 12, by gender.

Q. Please select from the below list which course(s) you are considering after high school.



Base: Wave 4 only, those in Years 11 and 12, boys/men – 307, girls/women - 306. Non-binary/other not shown due to low base size. (MC).

There is only one significant difference noted in the intention to study STEM overall at a tertiary level among key demographic subgroups.

Table 18: Significant difference between subgroups in intention to study STEM subjects at higher education, among those in Year 11 and 12.

Audience	WEIGHTED %
Culturally and Linguistically Diverse status	
Culturally and Linguistically Diverse	43%
Non-Culturally and Linguistically Diverse	35%

At an individual subject level, engineering and technology is more likely to be an intended study choice for Culturally and Linguistically Diverse students (16% vs 10% of non-Culturally and Linguistically Diverse students) and students from a higher socioeconomic status than a lower socioeconomic status (15% vs 9%).

Computing and information technology is more likely to be considered by metro students (10%, vs 3% of students in regional/rural areas).

There is also higher intention for STEM subjects at tertiary level among those whose parents are employed in a STEM career (51% vs 37% of those without a parent who works in STEM), driven by a greater preference to study computing and information technology (16% vs 7%) and biology (12% vs 6%).

While there is no significant difference in intention to study STEM overall between those with parents educated in STEM and those without, intention to study engineering and technology is higher among those who have a parent who have a STEM education (16% vs 8%).

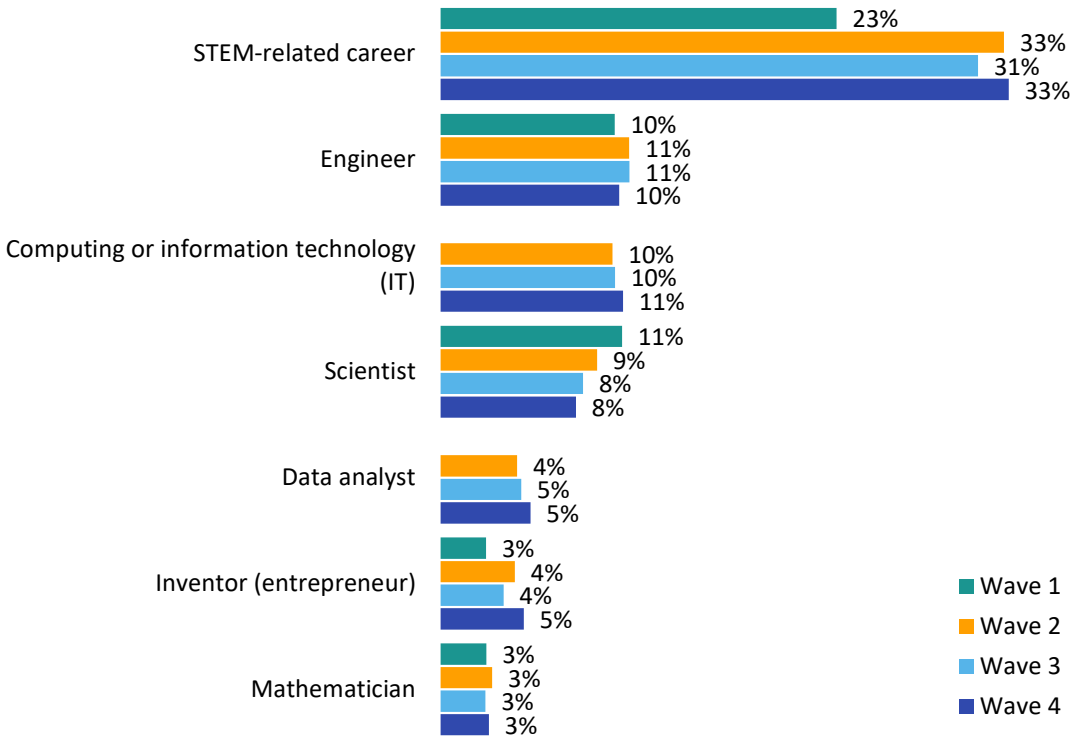
Career intentions

Respondents were asked about their certainty for their future career, and two thirds (66%) reported feeling fairly or very certain about what they want to do in the future. This has been consistent since tracking started.

When asked about future career aspirations, the intention to pursue a career in a STEM-related field has remained stable overall for Wave 4 (33% vs 31% in Wave 3).

Figure 32: STEM career intentions, by wave.

Q. What type of career would you like to have in the future?

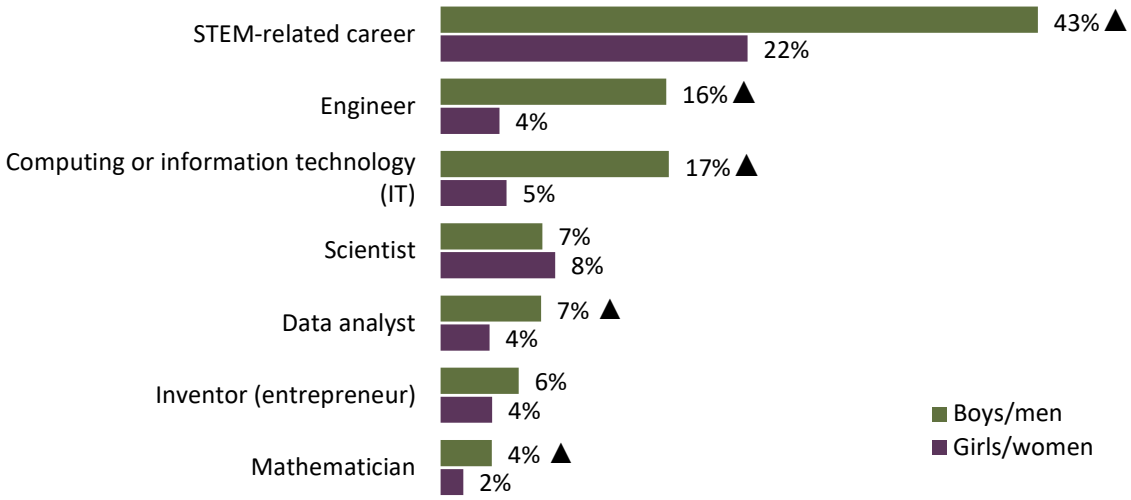


Base: Total – Wave 1 – 1,434, Wave 2 – 3,021, Wave 3 – 3,154, Wave 4 – 2,948.

Boys/men remain significantly more likely to intend to pursue a career in STEM overall than do girls/women (43% vs 22%). This is driven by significant gender skews in intention to pursue a career as an engineer, in the field of computing and information technology, as a data analyst or mathematician – detailed in the chart below.

Figure 33: STEM career intentions, by gender.

Q. What type of career would you like to have in the future?



Base: Wave 4 only, boys/men – 1,435, girls/women – 1,442. Non-binary/other not shown due to low base size.

Below are other significant differences in STEM career intention (overall) among key demographic groups.

Table 19: Significant differences between subgroups – future STEM career intention.

Audience	WEIGHTED %
Socioeconomic status	
Lower SES (Decile 1 - 5)	27%
Higher SES (Decile 6 - 10)	36%
Location	
Metropolitan	35%
Regional / remote	28%
Culturally and Linguistically Diverse	
Non-Culturally and Linguistically Diverse	29%
Culturally and Linguistically Diverse	39%
Country of birth	
Born overseas	40%
Born in Australia	31%

Young people with parents who had a STEM education were more likely than those who did not to intend to have a career in STEM (37% vs 28%). The same was true among those with at least one parent who worked in STEM (49% vs 31% of those whose parents do not work in STEM).

Those who wanted to become a scientist were asked what type of scientist they would like to become. The majority wanted to be biologists (39%) followed by chemists (18%) and earth or environmental scientists (16%). There was a slight gender skew, with boys/men being more likely to want to become a physicist (23% vs 4% of girls/women). Although not significant, girls/women were more likely to want to become a biologist (47% vs 30% of boys/men).

Factors influencing career intentions

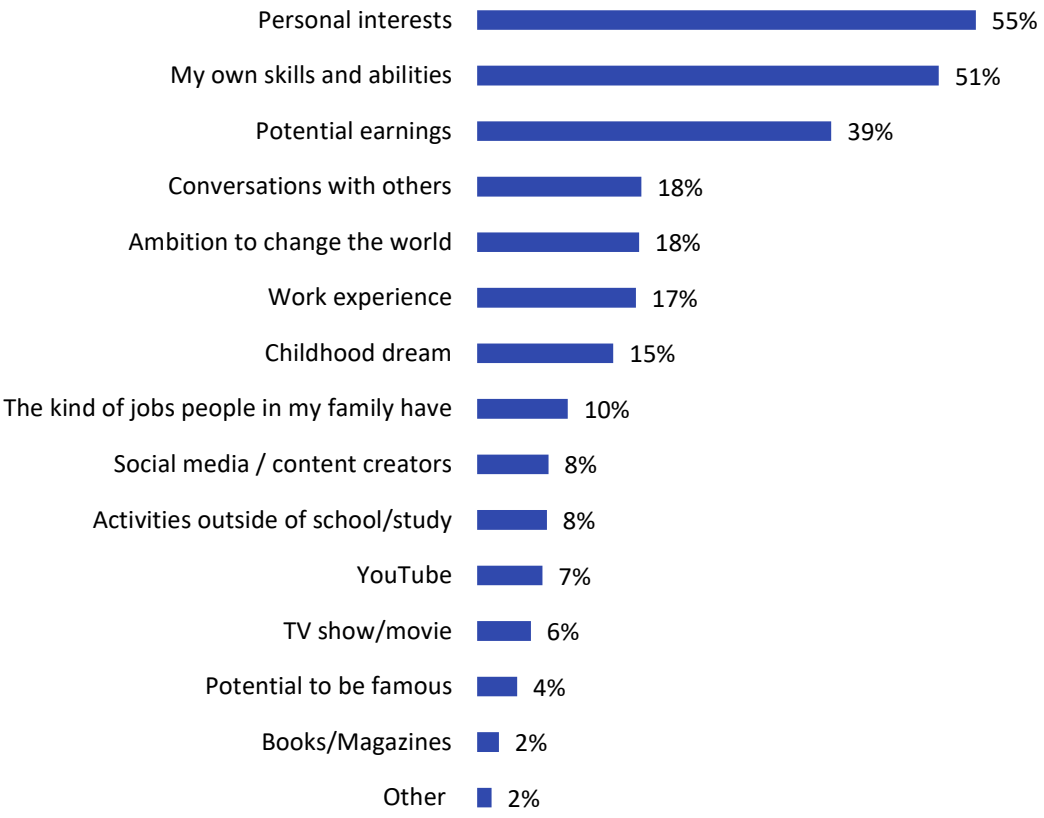
Factors of influence

Key factors influencing the consideration of STEM career choices mirror those that influence intention to study: personal interest (55%), young people's perceptions of their own skills and abilities (51%) and earning potential (39%).

This wave a new answer code was added to gauge influence of social media or content creators. One in 10 young people (8%) said these people influenced their career intentions, consistent across demographic groups.

Figure 34: Factors influencing career intentions.

Q. Which factors influence the career you aspire to?



Base: Wave 4 only, total – 2,948. (MC).

The influence of personal interests and their own skills and abilities have significantly fallen this wave (from 61% to 55% and from 56% to 51%, respectively). The influence of ambition to change the world has fallen (from 22% to 18%), along with the influence of TV shows and movies fallen (from 8% to 6%) and books and magazines (3% to 2%).

Table 20: Significant changes in factors influencing career choice by wave.

Q. Which factors influence the career you aspire to?

Factors influencing career choice	Wave 1	Wave 2	Wave 3	Wave 4
Personal interests	Not asked	59%	61%	▼55%
My own skills and abilities	Not asked	53%	56%	▼51%
Ambition to change the world	Not asked	23%	22%	▼18%
TV show or movie	Not asked	7%	8%	▼6%

Base: Total. Wave 2 – 3,021, Wave 3 – 3,154, Wave 4 – 2,948.

Gender differences were observed in factors influencing career aspirations. Girls/women are more influenced than boys/men by personal interests (59% vs 51%) and potential earnings (41% vs 39%). On the other hand, boys/men are more likely to be influenced than girls/women by YouTube (10% vs 4%).

It was found that young people from lower socioeconomic backgrounds are more likely than those from higher socioeconomic backgrounds to be influenced by childhood dreams (18% vs 14%), whereas those from higher socioeconomic backgrounds are more likely to be influenced by potential earnings (41% vs 35%). The same pattern is found among those from metro vs. regional/rural areas, i.e. young people in metropolitan areas are young people more likely to be influenced by potential earnings and less likely to be influenced by a childhood dream.

Those born overseas were more likely to be influenced by an ambition to change the world (21% vs 17% of those who were born in Australia).

Culturally and Linguistically Diverse young people are also more likely to be influenced by their potential earnings when compared to non-Culturally and Linguistically Diverse young people (44% vs 37%), while non-Culturally and Linguistically Diverse young people are more likely to be influenced by their own skills and abilities (53% vs 48%).

Students with parents who have a STEM education are more likely to be influenced by the kinds of jobs their family have (12% vs 8%) and potential earnings (41% vs 37%) than students whose parents do not have a STEM education. There were no differences between those with a parent working in STEM versus those without.

People of influence

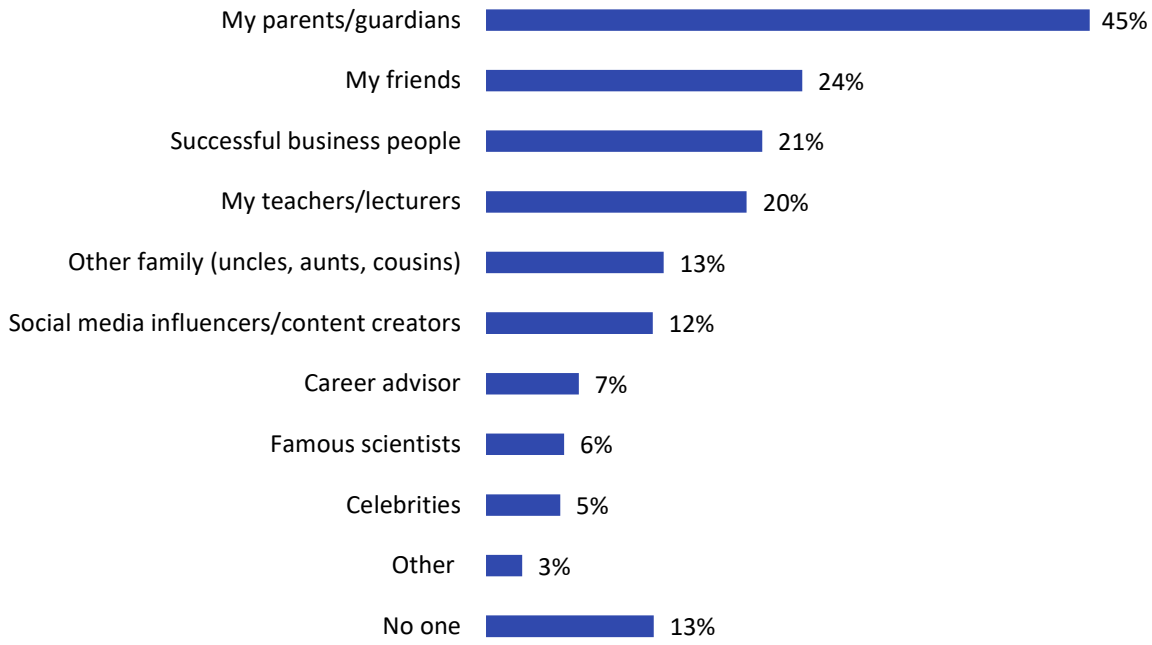
Consistent with learnings about the influence of parent/guardian education and career on student study preferences and behaviour, when it comes to specific people that influence career choices, parents/guardians are a key people of influence with regards to career choices (45%), with support from friends (24%).

For the first time this wave, the influence of successful businesspeople (21%) has passed that of teachers and lecturers (20%).

This wave was the first time we asked about the influence of social media influencers and content creators; one in 10 young people (12%) said these people influenced their career aspirations, while 5% said they were influenced by celebrities.

Figure 35: People influencing career intentions.

Q. Which of the below people influence the career you aspire to?



Base: Wave 4 only, total – 2,948. (MC).

Again, gender differences are evident. Boys/men are more likely than girls/women to be influenced by their friends (27% vs 22%).

Those with a higher socioeconomic status are more likely than those with a lower status to be influenced by successful businesspeople (23% vs 18%).

The role of parents' or guardians' education in STEM again comes to the fore with students whose parents have studied STEM more likely to be influenced by famous scientists than those whose parents do not have a STEM education (7% vs 4%).

Those students whose parents have *not* studied STEM are more likely to feel that they are not influenced by anyone when it comes to careers compared to those with STEM educated parents or guardians (17% vs 9%).

Those with parents or guardians employed in STEM-related work are more likely to be influenced by famous scientists than those whose parents or guardians do not work in STEM (10% vs 5%).

Importance of factors when choosing a career

When asked about importance of several factors when considering choosing a future job or career, the top 10 factors overall have remained relatively consistent between Wave 3 and Wave 4.

This wave we have seen a decline in perceived importance of opportunities for on-the job training (from 84% to 82%), and that the job positively impacts society (from 83% to 80%), and an increase in the perceived importance of a high salary (82% to 86%).

Table 21: Importance of factors considered when choosing a career (net: somewhat/very important), by wave.

Q. How important are each of the following factors when choosing a career?

Statements	Wave 1	Wave 2	Wave 3	Wave 4
Has good working conditions	92%	87%	92%	91%
Job security	89%	86%	89%	90%
Is a fun environment to work in	87%	84%	88%	87%
Subject matter is interesting	89%	84%	87%	87%
High salary	82%	76%	82%	▲86%
Has lots of opportunities for on-the-job training and learning new skills	86%	80%	84%	▼82%
Provides structure and consistency	Not asked	78%	81%	81%
Positively impacts society	Not asked	80%	83%	▼80%
Offers a lot of variety within the role	Not asked	78%	81%	80%
Is in an industry that is sustainable	84%	80%	81%	79%

Base: Those aged 14+ – Wave 1 – 2,015, Wave 2 – 2,752, Wave 3 – 2,974, Wave 4 – 2,787.

All of the top 10 factors in Wave 4, excluding 'high salary' are significantly more important to girls/women than they are to boys/men.

Table 22: Importance of factors considered when choosing a career (net: somewhat/very important), by gender.

Q. How important are each of the following factors when choosing a career?

Top 10 statements (Wave 4)	Boys/men	Girls/women
Has good working conditions	87%	▲95%
Job security	87%	▲93%
Is a fun environment to work in	83%	▲90%
Subject matter is interesting	83%	▲90%
High salary	85%	88%
Has lots of opportunities for on-the-job training and learning new skills	76%	▲87%
Provides structure and consistency	77%	▲86%
Positively impacts society	76%	▲84%
Offers a lot of variety within the role	74%	▲86%
Is in an industry that is sustainable	76%	▲81%

Base: Those aged 14+, boys/men – 1,357, girls/women – 1,363. Non-binary/other not shown due to low base size.

When looking at other subgroup differences, those born overseas were more likely to place greater importance on many of these factors when choosing a career than those born in Australia. Similarly, Culturally and Linguistically Diverse students are more motivated than non-Culturally and Linguistically Diverse students by jobs in an industry that is growing (82% vs 77%).

Impact of COVID-19 on life and choices

To investigate the long-term impact of the COVID-19 pandemic and subsequent lockdowns and restrictions, young people in Years 11 and 12 (who were in Years 8 to 10 during the pandemic) were asked about the influence it had had on them and their life choices. A third of these students said the pandemic did not influence their life or choices (35%), mainly driven by boys/men (39% compared to 31% of girls/women) although this difference was not statistically significant.

The main impact of the pandemic was reported to be a change in general interests (27%), while 17% said they now have different aspirations for the future. Girls/women were slightly more likely to experience a change in aspirations (22% vs 13% of boys/men).

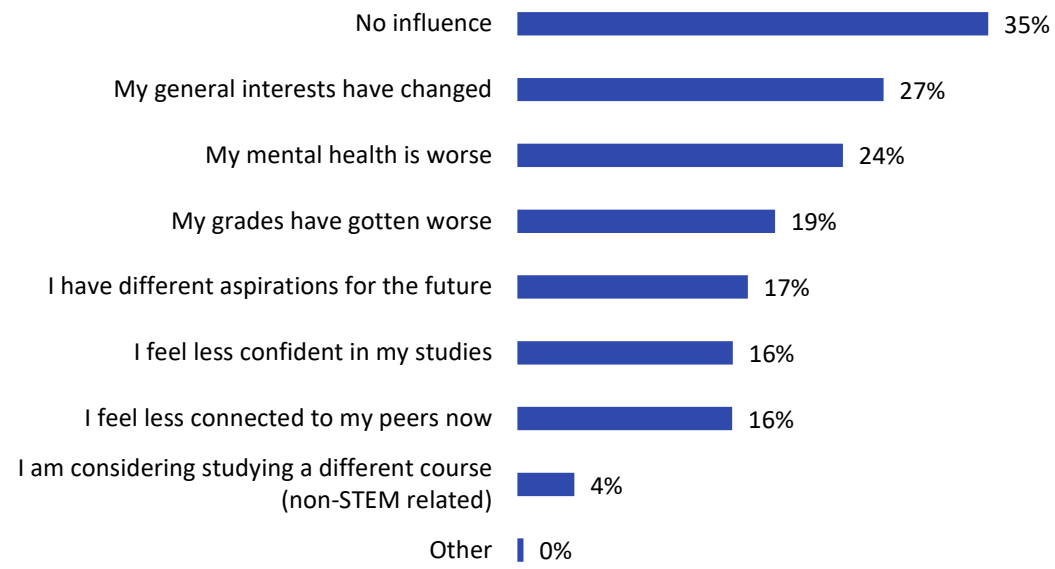
In relation to studying, two in five (19%) said that their grades had gotten worse, and around the same (16%) feel less confident in their studies.

In relation to wellbeing, a quarter (24%) said their mental health has gotten worse, driven by girls/women (28% compared to 18% of boys/men). Here, it is important to note that globally, the onset of mental disorders peaks at 14.5 years, while a 2023 Australian prevalence study[2] (January 2000–October 2022) reported that 25% of young people aged 10 to 24 live with a mental health condition (anxiety and depression) – a trend pre-dating the COVID-19 pandemic.

Additionally, 16% feel less connected to their peers, also slightly higher among girls/women (17% vs 14%).

Figure 36: Influence of COVID-19 on life and choices of Year 11 and 12s.

Q. Thinking about life before COVID-19 compared to now, how, if at all, has COVID-19 influenced you and your choices for the future?

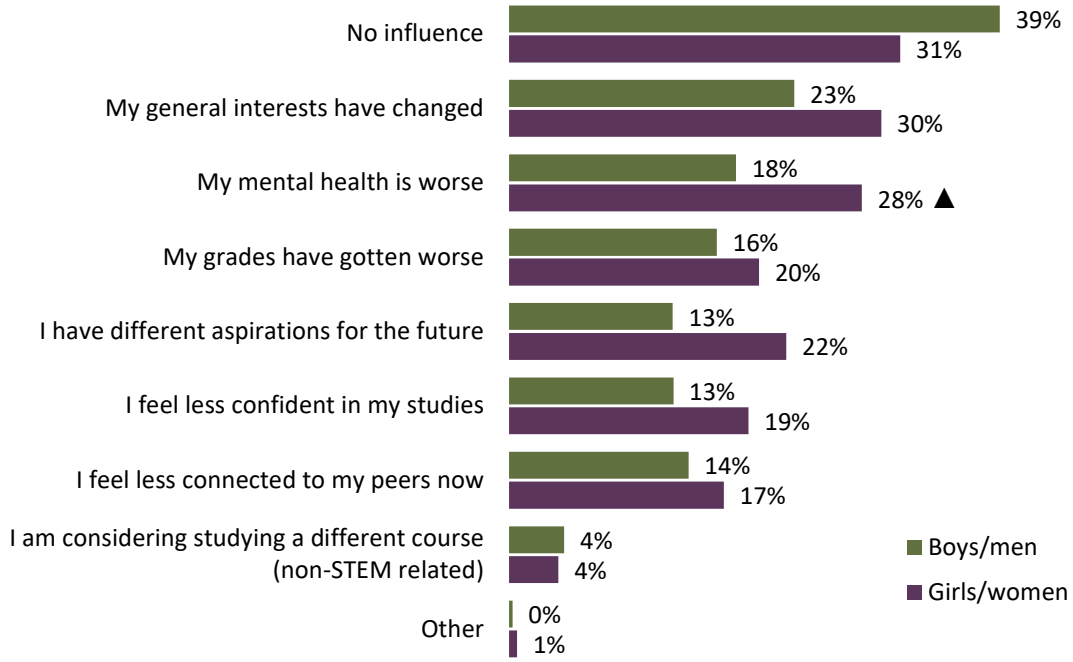


Base: Those in Years 11 and 12, Wave 4 only – 627.

[2] Kasturi S, Oguoma VM, Grant JB, Niyonsenga T, Mohanty I. Prevalence Rates of Depression and Anxiety among Young Rural and Urban Australians: A Systematic Review and Meta-Analysis. *International Journal of Environmental Research and Public Health*. 2023; 20(1):800. https://doi.org/10.3390/ijerph20010800

Figure 37: Influence of COVID-19 on life and choices of Year 11 and 12s, by gender.

Q. Thinking about life before COVID-19 compared to now, how, if at all, has COVID-19 influenced you and your choices for the future?



Base: Wave 4 only, those in Year 11 and 12, boys/men – 316, girls/women – 301. Non-binary/other not shown due to low base size.

Impact of AI on future study and careers

For the first time in Wave 4, respondents were asked about their perceptions of artificial intelligence (AI) and the influence on choices about their future, and it is clear to see that a large proportion of young people feel influenced by this technology.

Firstly, the survey asked whether they believe that generative AI tools (for instance, ChatGPT) would have a significant impact on work and careers in the future. Eight in ten young people (82%) said they did believe this.

While this belief was held consistently across genders, those who were most likely to believe this were those from higher socioeconomic areas (84%, compared to 79% of those in lower SES areas), those born overseas (89%, vs 81% born in Australia), and Culturally and Linguistically Diverse young people (86%, vs 80% of non-Culturally and Linguistically Diverse young people).

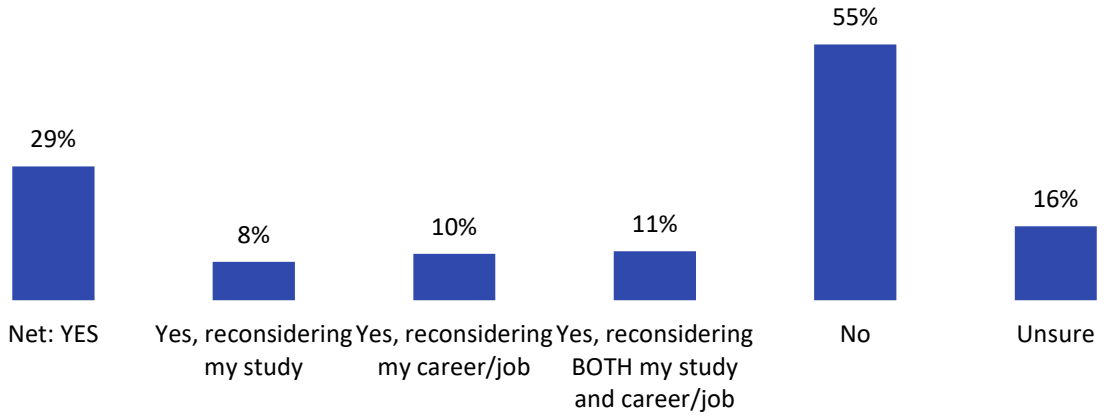
While perceived impact was consistent across those aged 14-25, those aged 12-13 were the least sure about the impact of AI tools, with 21% feeling unsure.

As seen in Figure 38, the survey also asked about whether recent developments in AI have made them reconsider their study or career choices, and 3 in 10 (29%) said yes. Eight percent of young people are reconsidering their study choices, 10% are reconsidering their career, while 11% are reconsidering both their study choices and career.

Most respondents (55%) said that AI had no impact on their consideration of study or career prospects, while 16% were unsure.

Figure 38: Influence of AI on reconsideration of study or career choices.

Q. Have Generative AI tools or AI overall made you reconsider your current or future study or career prospects?



Base: Wave 4 only, total – 2,948.

Boys/men were significantly more likely to say that AI had made them reconsider their prospects across both study and career (35%, vs 23% of women/girls). They were more likely to say they were reconsidering their study choices (10%, vs 7% of women/girls), and reconsidering their career (13%, vs 7%).

There were also other subgroup differences when it came to the influence of AI on study and career choices, as seen in the table below.

Table 23: Influence of AI on reconsideration of study or career choices (net: yes)

Audience	WEIGHTED %
Location	
Metropolitan	31%
Regional / remote	25%
Culturally and Linguistically Diverse status	
Non-Culturally and Linguistically Diverse	26%
Culturally and Linguistically Diverse	35%
Country of birth	
Born overseas	35%
Born in Australia	28%
Aboriginal and/or Torres Strait Islander status	
Aboriginal and/or Torres Strait Islander	43%
Non-Aboriginal and/or Torres Strait Islander	28%

Parent/guardian background in STEM also plays a role here: young people who had at least one parent or guardian with a STEM education were more likely than those who did not to say that AI has made them reconsider their options (34% vs 23%). The same was true for those who had at least one parent or guardian who worked in STEM (37% vs 28% of those without a parent or guardian who works in STEM).

In April 2023, YouthInsight's research[3] (using the same questioning as the current survey) reported that 17% of young people (aged 14 to 26) have reconsidered their current or future study or career pathway as result of Generative AI. While the sample population is not exactly matched, this indicates that there has been a further increase in impact of Generative AI on young people since earlier this year. YouthInsight's previous research found that those reconsidering their study and career pathways reported this was due to potential job displacement, while others are considering pivoting into technology.

[3] Denejkina, A. (2023). Young People's Perception and Use of Generative AI, YouthInsight, Student Edge, ISBN: 978-0-646-88006-8

The STEM journey: perspectives and behaviours

Focusing on the relationship between awareness (understanding), current behaviours and future intentions regarding STEM is a useful way to start to think about some of the challenges in progressing student engagement with STEM in schools. Funnels give the ability to trace the proportions of a given population from understanding to current behaviour and future intention. By looking at the conversion rates between these measures (e.g., considering those currently studying STEM as a proportion of those aware of STEM) it is possible to identify where blockages exist and where we can focus to build momentum for STEM among young people.

At an overall level, despite a significant increase in understanding of the term STEM this wave, there is still room to improve awareness and understanding of STEM as a concept.

Fewer students are currently studying STEM than understand the STEM concept, suggesting that 'conversion to study' is relatively weak – the proposition for studying STEM needs support/promotion to drive uptake of STEM study options.

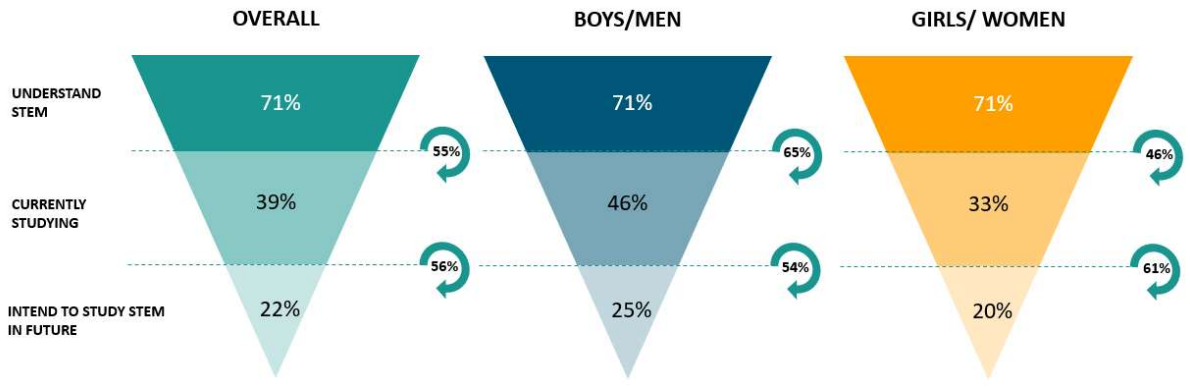
Intention to study STEM in the future is also relatively weak. Fewer students intend to study STEM in the future than are studying STEM currently. While this may reflect some natural attrition as tertiary students complete their education it may also suggest some challenges in the experience of studying STEM or weakness in the understanding of the role of STEM in jobs and careers more broadly (as examples).

A similar pattern plays out across genders, however the conversions are weaker for girls/women, confirming that there is a significant job to be done to grow participation in STEM among girls/women.

This story is consistent with previous waves: the only metric where there has been an increase since wave 3 is the proportion that understand STEM (an increase among boys/men).

Figure 39: Participation funnels by gender.

Q. Please write below what you believe the term 'STEM' stands for. / Which of the following elective subjects best describes the subjects you have chosen to do (at Years 9 and 10 / at Years 11 and 12 / in your higher education course). / Please select from the below list which elective subjects you are considering choosing (at Years 9 and 10 / at Years 11 and 12 / in your higher education course).



Base: Wave 4 only, boys/men – 1,435, girls/women – 1,442. Non-binary/other not shown due to low base size.

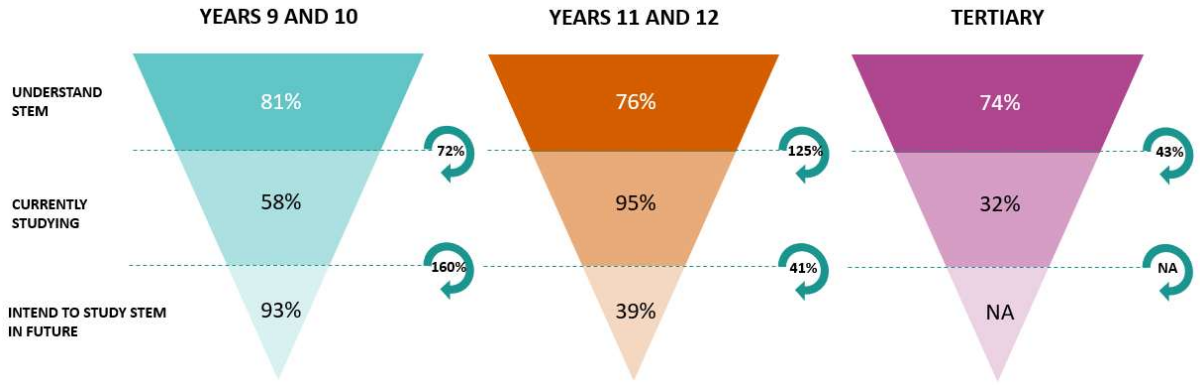
Looking across year levels we can see strong forward momentum for STEM in Years 9 and 10. Of note is the strong conversion on intention to study with almost all students in Years 9 and 10 expecting to have to study some STEM subjects in their final years of Secondary School – regardless of whether they have studied them previously or not.

We see another increase in the understanding of the subjects involved in STEM among Year 11 and 12 students, yet some students still end up studying STEM subjects without fully understanding the concept. In addition, slightly more students in Year 11 and 12 end up studying STEM electives than had intended in Years 9 and 10. Of note is the drop off in intention to study STEM post Year 11 and 12 schooling. While nearly all students study subjects related to STEM in years 11 and 12, only 39% indicate an intention to continue studying STEM in the future (consistent with Wave 3). This indicates a strong need to understand not only the motivations to study STEM in year 11 and 12 (among Year 9 and 10 students) and what changes for Year 11 and 12 students as they contemplate study and careers post-secondary school, but also to understand the experience in studying STEM at the Year 11 and 12 level within secondary schools as well as supporting messaging.

At a tertiary level, understanding of STEM eases, and participation in STEM subjects is seen to decrease.

Figure 40: Participation funnels by year level.

Q. Please write below what you believe the term 'STEM' stands for. / Which of the following elective subjects best describes the subjects you have chosen to do (at Years 9 and 10 / at Years 11 and 12 / in your higher education course). / Please select from the below list which elective subjects you are considering choosing (at Years 9 and 10 / at Years 11 and 12 / in your higher education course).



Base: Wave 4 only, Year 9 and 10s – 319, Year 11 and 12s – 627, tertiary students – 1,177. (MC).

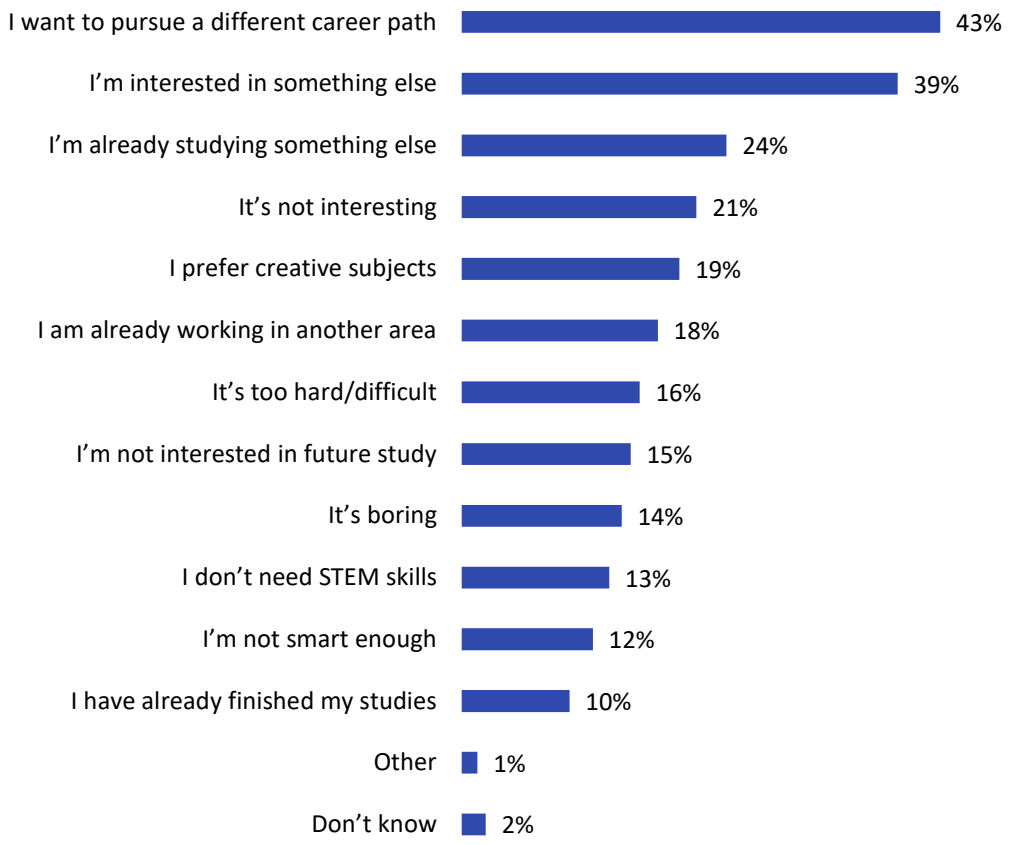
Reasons students step away from STEM

If respondents indicated they were not considering studying STEM in the future, they were asked for their reasons. Most respondents (43%) said it was because they want to pursue a different career path, 39% said it is because they are interested in something else, while 24% said it is because they are studying something else already.

One in five (21%) said it is because they do not find STEM interesting, 16% said it is too hard or difficult, 14% said it is boring, and 12% said they are not smart enough to study STEM.

Figure 41: Reasons for not considering studying STEM in the future

Q. Why are you NOT considering studying subjects related to STEM in the future?



Base: Wave 4 only, those not considering studying STEM in the future – 1,020. (MC).

There were no gender differences in reasons for not considering STEM.

Those in metro areas were more likely than those in regional or rural areas to say that they prefer creative subjects (21% vs 14%).

Impact of STEM messaging on future intentions

Towards the end of the survey, respondents were given the following explanation about STEM careers:

> *"There is a huge variety of industries you can work in with a STEM degree. Just a few examples include information technology; mining; construction of cars; aeroplane and rocket design; medical instrument design; wind turbine and solar panel design and construction; environmental contaminant testing; fisheries; curating natural history exhibitions; 3D printing; sustainable fashion; and mathematical modelling of the impact of humans on the planet."*

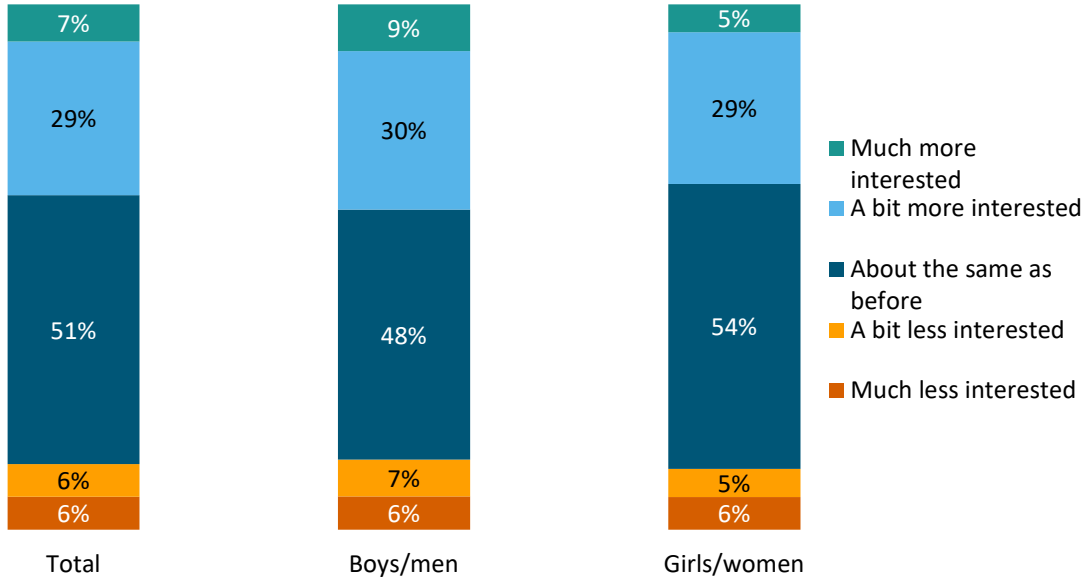
They were then asked, upon reading the explanation, how their interest in getting a STEM degree has changed, with 36% saying that they were more interested upon reading the description. However, this represents a significant decline since Wave 3 (42%).

This lower figure may in part be explained by the greater awareness / understanding of what STEM stands for in Wave 4 (a higher baseline of knowledge).

With a third saying that this increases their interest, there remains opportunity to increase future consideration for STEM through communicating messages about future job and career pathways. Wave 4 data demonstrates that even with basic messaging about job and careers linked to STEM study, it is possible to increase interest in STEM study among both boys/men and girls/women.

Figure 42: Change in interest in STEM degree once they have read about STEM careers.

Q. Now you have read the explanation, has your interest in getting a STEM degree changed?



Base: Wave 4 only, those aged 15+ – 2,721, boys/men – 1,340, girls/women – 1,319. Non-binary/other not shown due to low base size. Weighted percentages may not add up to 100% due to rounding of decimal places to the nearest whole number.

Table 24: Change in interest in STEM degree once they have read about STEM careers (Net: a bit more interested, much more interested), by wave.

Q. Now you have read the explanation, has your interest in getting a STEM degree changed?

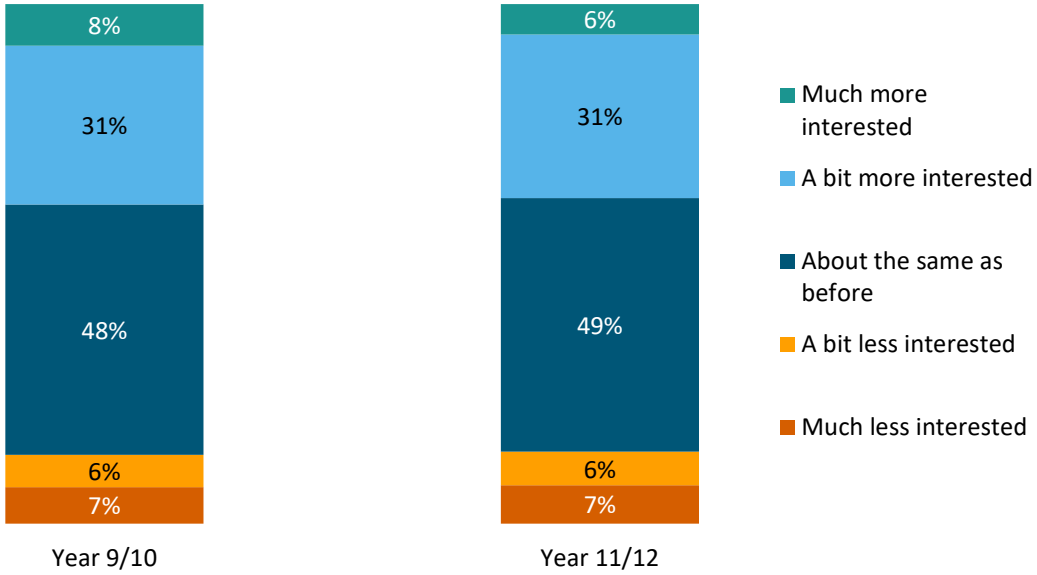
Interest	Wave 1	Wave 2	Wave 3	Wave 4
Net: A bit/much more interested in getting a STEM degree	Not asked	42%	42%	▼36%

Base: Wave 4 only, those aged 15+ – 2,721

The same pattern is seen for both Year 9 and 10 students as well as Year 11 and 12 students.

Figure 43: Change in interest in STEM degree once they have read about STEM careers, by Year Level.

Q. Now you have read the explanation, has your interest in getting a STEM degree changed?



Base: Wave 4 only, those aged 15+, Year 9/10 – 264, Year 11/12 – 626.percentages may not add up to 100% due to rounding of decimal places to the nearest whole number.

Boys/men were slightly more likely to say that they were more interested in STEM careers after reading the explanation than girls/women (39% vs 34%), driven by a significantly higher proportion of boys/men who say it made them much more interested (9% vs 5%). Girls were more likely to say their interest had not changed (54% vs 48%).

The experiences of gender diverse young people

As noted previously, the main body of the report does not show results from gender diverse young people when comparing results across genders, due to the low base size (n=60). Unfortunately, limitations of survey panels historically collecting gender data in a binary nature means that this audience is often difficult to reach, and many gender diverse people are missed in research studies.

Within this report, we conducted a deep-dive analysis to further understand their attitudes and behaviours across key metrics. We have compared the results from this audience with those who are not gender-diverse, who we have labelled as 'all other respondents' (i.e., identify as boys/men, girls/women and those who did not disclose their gender) and have focused on the key metrics and any other interesting differences.

In future waves of the research, and as survey panels improve their ability to capture the diverse nature of gender, DISR hopes to survey a robust sample of gender diverse young people.

Overall, we found that understanding, interest and perceived importance of gender diverse young people are in line with, if not higher than, all other respondents. However, levels of confidence, current participation and future intention to study STEM are somewhat lower than levels seen among all other respondents. This indicates that gender diverse individuals may require additional support in the areas of STEM. Additionally, gender diverse individuals are more likely to step away from STEM to pursue creative interests and careers, so more could be done to educate young people, specifically gender diverse young people, about how some STEM careers can involve creativity.

Audience profile

Table 25: Total unweighted sample and weighted population of gender-diverse young people. Note: Respondents who did not disclose their gender were categorised as 'all other respondents'. Gender diverse respondents were not weighted and therefore the unweighted and weighted figures match.

	UNWEIGHTED SAMPLE n	UNWEIGHTED SAMPLE %	WEIGHTED POPULATION n	WEIGHTED POPULATION %
Total	**60**	**100%**	**60**	**100%**
Age group				
12-13	2	3%	2	3%
14-17	20	33%	20	33%
18-21	17	28%	17	28%
22-25	21	35%	21	35%
Study status				

	UNWEIGHTED SAMPLE n	UNWEIGHTED SAMPLE %	WEIGHTED POPULATION n	WEIGHTED POPULATION %
Enrolled in studies	45	75%	45	75%
Not enrolled in studies	15	25%	15	25%
Study level				
High School – 7-8	2	4%	2	4%
High School – 9-10	7	16%	7	16%
High School – 11-12	13	29%	13	29%
Tertiary	23	51%	23	51%
Student type				
International student	3	7%	3	7%
Domestic student	42	93%	42	93%
State				
NSW	24	40%	24	40%
VIC	18	30%	18	30%
QLD	11	18%	11	18%
WA	1	2%	1	2%
SA	4	7%	4	7%
ACT	1	2%	1	2%
TAS	-	-	-	-
NT	1	2%	1	2%
Location				
Capital city/major metropolitan area	48	81%	48	81%
Regional or remote/rural	11	19%	11	19%
Socioeconomic status (SES)*				
Lower SES (Decile 1 - 5)	19	32%	19	32%
Higher SES (Decile 6 - 10)	40	68%	40	68%
Country of birth				
Australia	51	85%	51	85%
Other	9	15%	9	15%
Aboriginal and/or Torres Strait Islander status				
Aboriginal and / or Torres Strait Islander	7	12%	7	12%

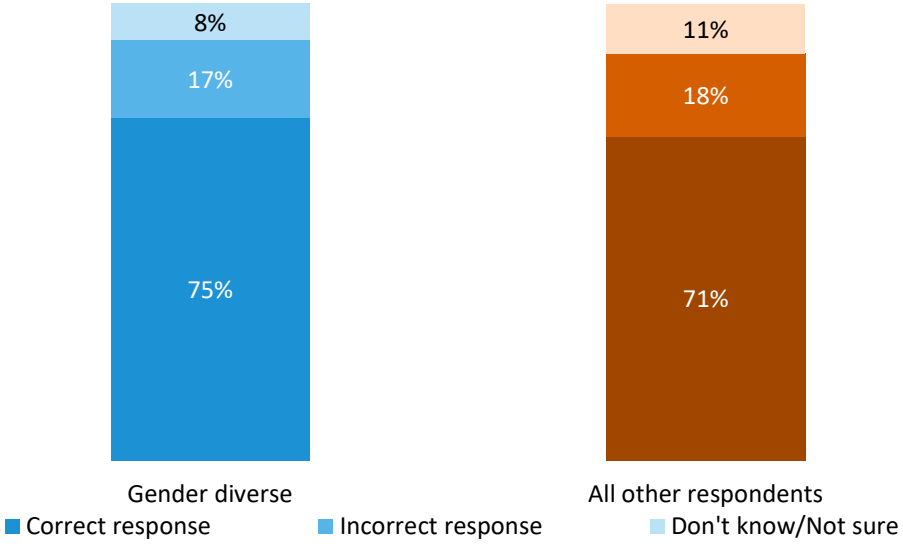
	UNWEIGHTED SAMPLE n	UNWEIGHTED SAMPLE %	WEIGHTED POPULATION n	WEIGHTED POPULATION %
Non-Aboriginal and / or Torres Strait Islander	53	88%	53	88%
Unspecified	-	-	-	-
Culturally and Linguistically Diverse status				
Non-Culturally and Linguistically Diverse	38	63%	38	63%
Culturally and Linguistically Diverse	22	37%	22	37%
Parent/guardian education				
STEM degree or certificate	36	60%	36	60%
Non-STEM degree or certificate	24	40%	24	40%
Parent/guardian employment				
Do not work in STEM career	53	88%	53	88%
Work in STEM career	7	12%	7	12%
Parent education				
STEM degree or certificate	36	60%	29	59%
Non-STEM degree or certificate	24	40%	20	41%
Parent employment				
Do not work in STEM career	53	88%	45	10%
Work in STEM career	7	12%	5	90%

Understanding of STEM and related jobs

Three quarters (75%) of gender diverse respondents could correctly define STEM. While not significant, gender-diverse respondents were slightly more likely to be able to correctly define 'STEM', compared to all other respondents (71%).

Figure 44: Understanding of the acronym 'STEM'.

Q. Please write below what you believe the term 'STEM' stands for.



Base: Wave 4 only, Gender diverse – 60, All other respondents – 2,910.

When it came to naming specific jobs you could get with an education in STEM, gender diverse respondents were slightly more likely to name the scientist, accountant, engineer, medical professions, IT and researcher or lab assistant.

The survey also asked respondents to view a list of jobs and report whether they thought they were more for boys, more for girls, or for either. Consistently, gender diverse respondents were significantly more likely than all other respondents to say these jobs can be done by either gender. This applied to both STEM and non-STEM jobs.

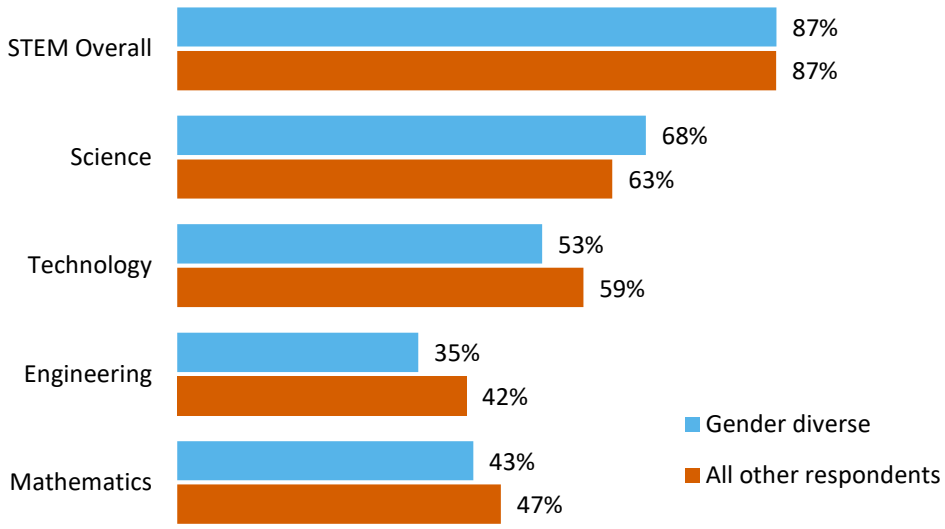
Interest in STEM

The data shows that there is a high level of interest in STEM subjects across most young people, with no significant differences between gender diverse young people and all other respondents.

While the differences are not statistically significant, the data does show slightly higher interest in science among gender diverse young people, compared to all other respondents. Conversely, other respondents have a slightly higher interest in technology, engineering, and mathematics.

Figure 45: Perceived interest in STEM (net: somewhat/very interested), by STEM subject, by gender diversity

Q. How interested are you in each of the below subjects? (Net: Somewhat / very interested)



Base: Wave 4 only, Gender diverse – 60, All other respondents – 2,910.

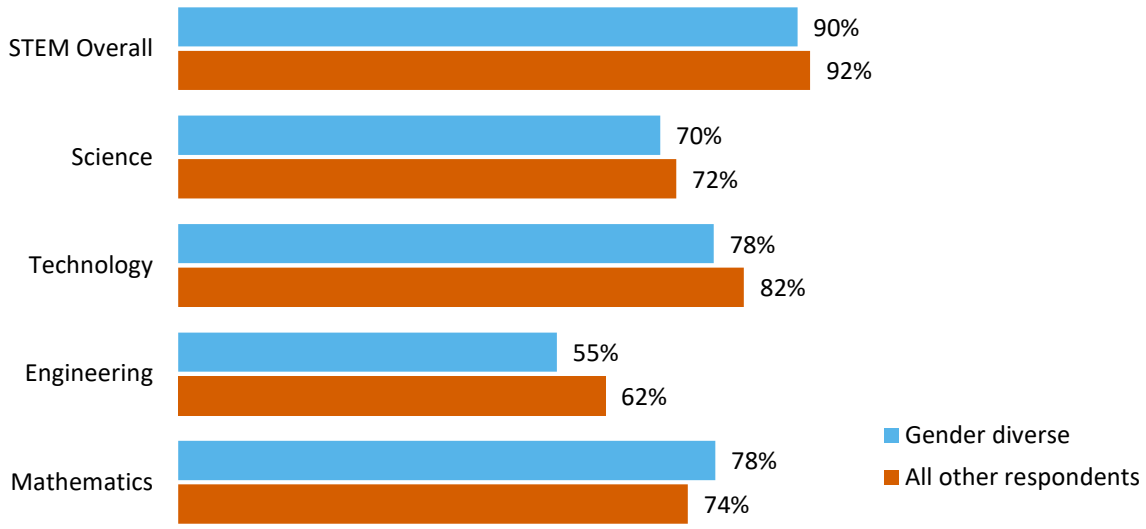
Perceived importance of STEM skills

Young people perceive the importance of STEM knowledge and skills for getting a job in the future as high. Nine in 10 (90%) gender diverse respondents said that STEM skills and knowledge are important, in line with the thoughts of all other respondents (92%).

Although not significant, gender diverse respondents were slightly more likely to think mathematics is important, and slightly less likely to think science, technology and engineering are important, compared to all other respondents.

Figure 46: Perceived importance of STEM skills (net: somewhat/very important), by STEM subject, by gender diversity

Q. How important do you believe it is to have knowledge and skills related to each of the subjects that make up STEM? (Net: Somewhat / very important)



Base: Wave 4 only, Gender diverse – 60, All other respondents – 2,910.

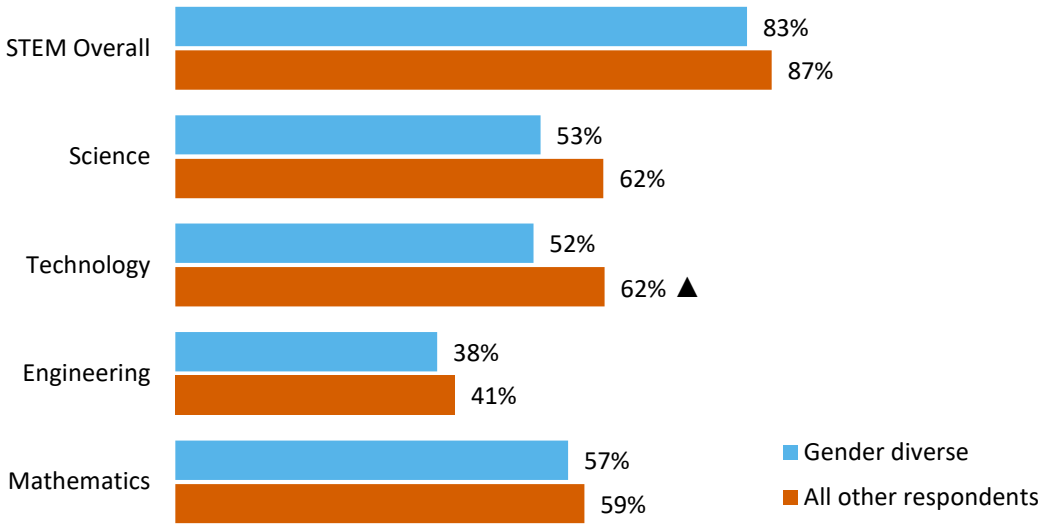
Confidence in studying STEM

Young people were asked about their level of confidence in studying a range of STEM subjects. Overall, confidence in studying STEM is high for gender diverse individuals (81%). Confidence is highest for mathematics (57%), followed by science (53%), technology (52%) and engineering (38%).

The data shows that there is a significant difference in confidence levels between gender diverse respondents and all other respondents when it comes to confidence in studying technology. Indicatively, we can also see that gender diverse individuals are generally less confident in STEM overall, science, engineering, and mathematics. It is important to be aware that despite positive views in terms of interest and perceived importance, this audience seems to struggle with their confidence levels and may require greater support.

Figure 47: Net confidence in studying STEM (net: somewhat/very confident), by STEM subject, by gender diversity

Q. How confident do you feel that you can study and get good results in each of the following subjects? (Net: Somewhat / very confident)



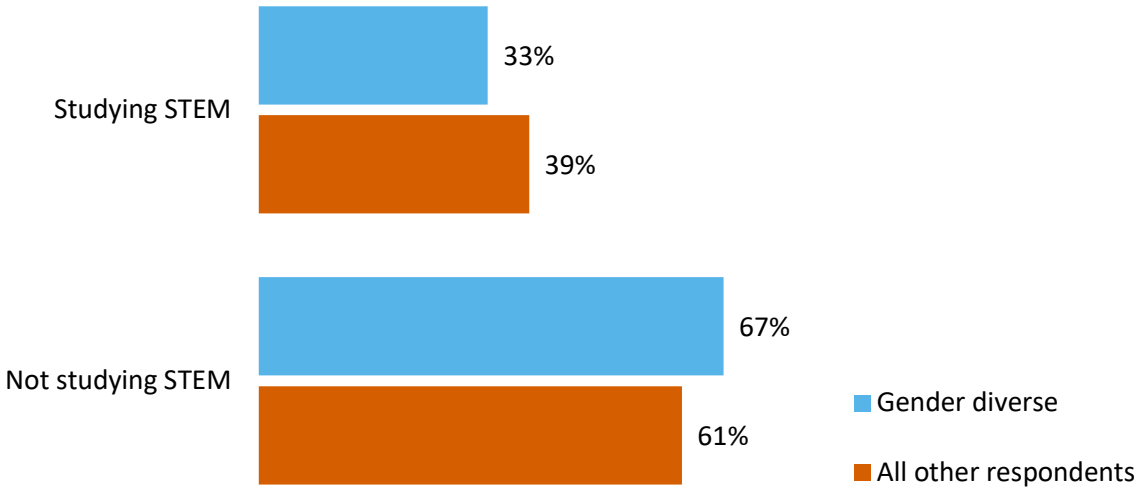
Base: Wave 4 only, Gender diverse – 60, All other respondents – 2,910.

Current STEM participation

The survey asked participants to select whether they were studying a STEM subject (depending on year level). The netted totals are below. We can see that the proportion of gender diverse students studying STEM is slightly lower than all other respondents (33% vs 39%) which could be related to the finding of lower confidence as noted above.

Figure 48: Proportion studying STEM at any level (net: totals across year levels)

Q. What subjects are you currently studying?



Base: Wave 4 only, Gender diverse – 60, All other respondents – 2,910.

Despite this finding, the survey found that gender diverse respondents were slightly more likely to have taken part in a STEM-related extra-curricular activity in the past 12 months (47% compared to 45%), and 37% said they had participated in a few activities, compared to 29% of all other respondents.

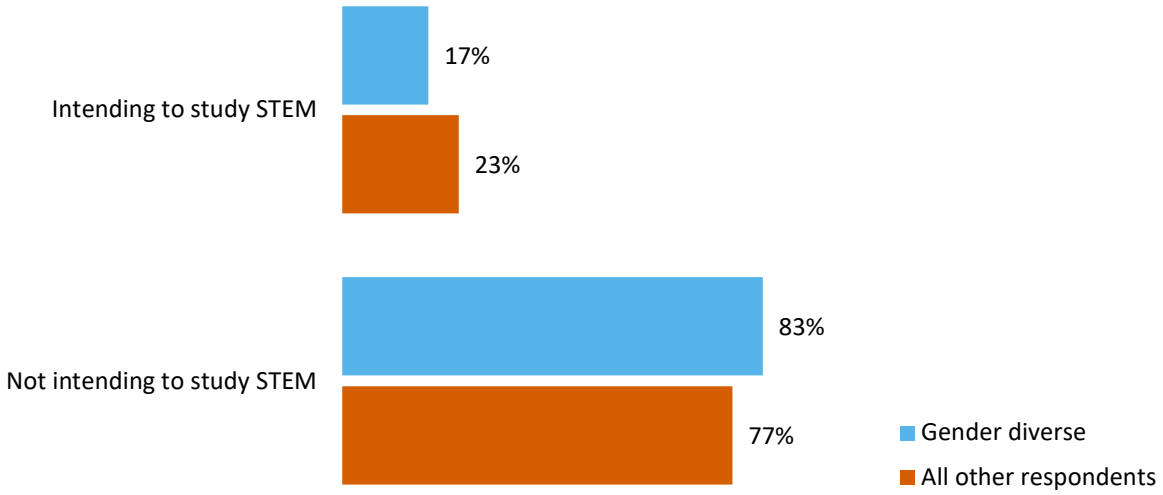
This finding could indicate that while gender diverse young people have just as much of an interest in STEM, their lower confidence may play a role in them being less likely to choose to study these subjects.

Future STEM study intentions

The survey asked about intention to study a STEM subject in the future. The data shows that (while not significant), gender diverse young people are slightly less likely to intend to study STEM in the future (17% compared to 23% of all other respondents).

Figure 49: Proportion intending to study STEM at any level (net: totals across year levels)

Q. Please select from the below list which subjects you are considering choosing for [relevant year level].



Base: Wave 4 only, Gender diverse – 60, All other respondents – 2,910.

When asked about which factors influence their study choices, it was found that gender diverse young people were significantly more likely to be influenced by TV shows and movies (12% vs 5%), slightly more likely to be influenced by personal interests, their own skills and abilities, their ambition to change the world and their childhood dream.

On the other hand, they were slightly less likely than other respondents to be influenced to study certain subjects by their potential earnings, the impact on their ATAR score, or the kind of jobs their family members have. In summary, this suggests that gender diverse young people are slightly more likely to want to follow their passions and dreams but are considerate of their ability to do so.

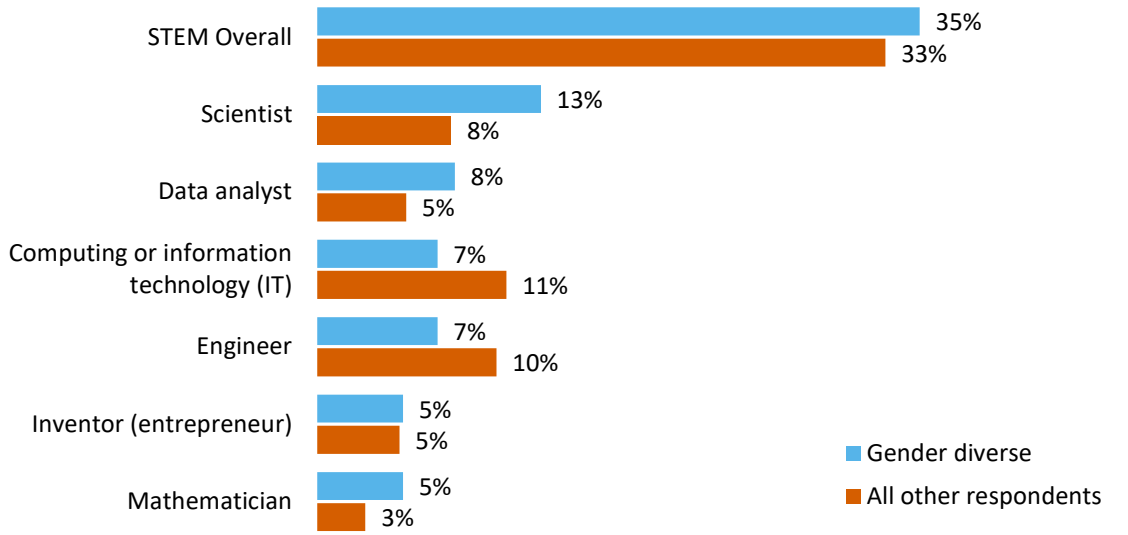
Future STEM career intentions

Respondents were also asked about their intention to work in STEM in the future, either for a job or a career. A third (35%) of gender diverse young people said they would like to have a career in STEM, which was similar for all other respondents (33%).

However, when looking at intention for specific STEM careers, there were some indicative differences. Gender diverse young people were slightly less likely to consider being an engineer or have a job in IT, but they were more likely to intend to be a scientist or data analyst.

Figure 50: Proportion intending to have a career or job in STEM

Q. What type of career would you like to have in the future?



Base: Wave 4 only, Gender diverse – 60, All other respondents – 2,910.

Looking at non-STEM career intentions, gender diverse young people were significantly more likely than all other respondents to want to be an artist (27% vs. 6%), a social worker (13% vs. 5%) or a professor or lecturer (10% vs. 3%). They were significantly less likely to want to work in finance or banking (0% compared to 7% of all other respondents).

When asked why they do not intend to study STEM in the future, gender diverse young people were more likely to say that they prefer creative subjects (59% vs 19%). There may be opportunity to show young people, and specifically gender diverse young people, how STEM jobs can also incorporate creativity.

When asked which factors influence the career they aspire to, gender diverse young people were significantly less likely to be influenced by potential earnings (25% vs 40%) and slightly more likely to be influenced by their own skills and abilities (55% vs 51%), conversations with others (24% vs 18%) and their childhood dreams (22% vs 18%).

Appendix: Questionnaire

Note on accessibility: The following questionnaire is presented in the format we use online and includes programming instructions in square brackets. It also contains tables listing questionnaire items. Tables don't have header rows or alt text, and some have blank cells. Questionnaire items appear in the left column with response options in the right column/s. If you have difficulty navigating the information in this questionnaire, please contact YouthInsight at support@youthinsight.com.au

[PROGRAMMING INSTRUCTIONS PROVIDED IN RED]

[SC = Single choice question | MC = Multi choice question | OE = Open ended response required]

SECTION 1: DEMOGRAPHICS

Thank you for your participation in this important research. To begin, we first need to ask a few questions to get to know you better.

1. How old are you?

[ASK ALL. DROP DOWN from 12 to 25. SCREEN OUT <12 AND >25]

[ASK IF AGED 12 TO 13]

As you are under 14 years of age, we will need to get parental consent for you to complete this survey. We will need one of your parents or a legal guardian to complete this next question before you can progress to the survey.

Dear Parents and Legal Guardians,

This questionnaire is about young people's attitudes and behaviour towards science, technology, engineering, maths (STEM)-related subjects and activities. The research is being conducted by Student Edge on behalf of the Department of Industry, Science and Resources.

All answers provided in this research are anonymous and confidential and will only be used for the purposes of this research.

For any queries, please contact Student Edge – support@youthinsight.com.au

To provide consent for your child to take part on this study you will need to answer a few questions below

- Name?
- Are you over 18 years of age?
- What is your relationship to the child?
- Email Address
- Do you consent for your child to take part on this study?
- Do you give Student Edge permission to contact you to verify that the information you have provided is correct and true?

[IF NOT FULLY COMPLETED OR CONSENT IS NOT GIVEN – TERMINATE]

2. And which of the following do you identify as?
[ASK ALL. SC.]

		[AIM FOR]
Man/Boy	1	49%
Woman/Girl	2	49%
Non-binary	3	2%
I identify my gender as: (please specify)	4	
Prefer not to say	5	

3. Where do you live?
ASK ALL. SC.

		[AIM FOR]
Sydney – City / Suburbs	1	32%
NSW – Regional	2	
Melbourne – City / Suburbs	3	26%
VIC – Regional	4	
Brisbane – City / Suburbs	5	20%
QLD – Regional	6	
Perth – City / Suburbs	7	11%
WA – Regional	8	
Adelaide – City Suburbs	9	7%
SA – Regional	10	
ACT	11	2%
Hobart – City/Suburbs	12	2%
TAS – Regional	13	
Darwin – City/Suburbs	14	1%
NT – Regional	15	

4. Please enter your postcode
[ASK ALL. OE. RESPONDENTS TO BE ASSIGNED TO METRO OR REGIONAL AND LOW OR HIGH SES BASED ON POSTCODE.]

5. Are you of Aboriginal and/or Torres Strait Islander origin?
[ASK ALL. SC.]

Yes	1
No	2
Prefer not to specify	3

6. Are you currently studying?
[ASK ALL. SC.]

Yes	1
No	2

Q6a. As you are under 15 years of age, please provide a reason below of why you are not currently enrolled in any studies?

[ASK IF NOT CURRENTLY ENROLLED IN ANY STUDIES AND AGED UNDER 15]

_____
_____
_____

Q6b. What's the highest level of education you have attained?

[ASK IF NOT CURRENTLY ENROLLED IN ANY STUDIES AND AGED 15+]

Year 10	1
Year 12	2
VET Certificate	3
VET Diploma	4
Bachelor's degree	5
Graduate diploma or certificate	6
Postgraduate degree	7
Other (please specify)	98

7. Which of the below best describes the level you're currently studying at?
   Please select the year you started in 2019
   [ASK IF Q6= CODE 1. SC.]

Primary school – Year 6 or below	1
High School – Year 7	2
High School – Year 8	3
High School – Year 9	4
High School – Year 10	5
High School – Year 11	6
High School – Year 12	7
University – Undergrad Year 1	8

University – Undergrad Year 2	9
University – Undergrad Year 3	10
University – Undergrad Year 4+	11
University – postgrad	12
TAFE/ VET/ Private College – Y1	13
TAFE/ VET/ Private College – Y2	14
TAFE/ VET/ Private College – Y3	15
TAFE/ VET/ Private College – Y4	16
Other (specify)	98

8. And what type of school do you attend?
[ASK IF Q7 = CODES 1-7. SC.]

Public School	1
Catholic School	2
Private School	3
Selective School	4
Boarding School	5
Other (Please Specify)	6

9. And is your school a single sex or co-ed school?
[ASK IF Q7 = CODES 1-7. SC.]

Single sex school	1
Co-ed school (mixed genders)	2

10. Are you an international student or a domestic student?
[ASK IF Q6= CODE 1. SC.]

International student	1
Domestic student	2

11. In what country were you born?
[ASK ALL. SC.]

Australia	1
Other (specify)	2

12. How long have you been living in Australia?
[ASK IF Q11 = CODE 2. SC]

Less than 1 year	1
1 – 2 years	2
2 - 3 years	3
3 – 4 years	4
4 – 5 years	5
5+ years	6

13. Do you speak a language other than English at home?
[ASK ALL. SC.]

No, English only	1
Yes	2

14. Which other languages do you speak at home (other than English)?
[ASK IF Q13 = YES. MC.]

Arabic	1
Bengali	2
Cantonese	3
Dutch	4
Filipino	5
First Nations Language (please specify)	6
French	7
German	8
Greek	9
Hausa	10
Hindi	11
Italian	12
Japanese	13
Javanese	14
Korean	15
Malay	16

Mandarin	17
Portuguese	18
Punjabi	19
Russian	20
Spanish	21
Tagalog	22
Telugu	23
Turkish	24
Urdu	25
Vietnamese	26
Other (specify)	98

15. Which of the following best describes your current employment situation?
[ASK ONLY PEOPLE AGED 15 AND OVER. SC.]

Working full-time	1
Working part-time	2
Working casually	3
Working in holidays only	4
Stay at home parent	5
Not employed and looking for work	6
Not employed and not looking for work	7
Other	98

16. To the best of your knowledge, what's the highest level of education either of your immediate parents(s) or guardian(s) have attained?
[ASK ALL. SC]

Primary School	1
High school (Year 10)	2
High School (year 12)	3
VET Certificate	4
VET Diploma	5
Bachelor's degree	6

Graduate diploma or certificate	7
Masters	8
Doctorate	9
Other (please specify)	98
Not sure/prefer not to say	99

17. To the best of your knowledge, have your parent(s) or guardian(s) completed a degree or certificate in any of the following areas?
[ASK ALL. MC]

Accounting	1
Architecture	2
Computing	3
Engineering	4
Law	5
Marketing	6
Mathematics	7
Medicine	8
Nursing	9
Science	10
I don't know	98
None of the above	99

18. And to the best of your knowledge what type of job do your parent(s) or legal guardian(s) work in? *If your parents are retired, please tell us what they did before they retired. Select up to 2 choices. If they have more than one job, please select what you believe to be their main job.*
[ASK ALL. MC.]

		STEM RELATED
Accountant	1	
Advertising or marketing consultant	2	
Architect	3	
Artist	4	
Banker or finance	5	

Business owner	6	
Clerical and administration (office support)	7	
Community and personal service (aged care, childcare)	8	
Computing or information technology (IT)	9	STEM
Corporate management	10	
Data analyst	11	STEM
Economist	12	
Emergency services (police, fire or ambulance)	13	
Engineer	14	STEM
Farmer	15	
Hairdresser or beauty therapist	16	
Hospitality	17	
Inventor (entrepreneur)	18	STEM
Labourer (construction, grounds maintenance, factory worker)	19	
Lawyer	20	
Machinery operator or driver	21	
Mathematician	22	STEM
Medical doctor	23	
Nurse	24	
Pharmacist	25	
Professor or lecturer	26	
Public servant (includes Defence Force - Army, Airforce, Navy)	27	
Public transport operator (Bus driver, train conductor)	28	
Retail worker	29	
Salesperson	30	
Scientist	31	STEM
Social worker	32	
Stay at home parents	33	
Taxi driver or ride share driver	34	
Teacher	35	

Technician or trade worker (mechanic, electrician, carpenter)	36	
Software / game developer	37	STEM
Unemployed	38	
Don't know	98	
Other (Specify)	99	

SECTION 2: CURRENT & FUTURE STUDY INTENTIONS

Great, thanks. Now in this next section we would like to ask you some questions **about your current & future study intentions.**

Q19a. What are you intending to do after school?
[ASK IF NOT IN TERTIARY EDUCATION]

Go to university	1
Do a TAFE or other vocational course	2
Get a job/ continue working in a job	3
Do an apprenticeship	4
Take a gap year	5
Other (please specify)	97
Not sure yet	99

19. Which of the following **elective** subjects best describes the subjects you have chosen to do in years 9 and 10?
Please select a maximum of 6 subjects and minimum of 3
Please note that different states and schools offer different choices of electives, so please select the elective subjects that best describe the ones you are considering from the list below.
[ASK YEAR 9 TO 10 STUDENTS MC. RANDOMISE]

		STEM RELATED
Arts – Music	1	
Arts - Visual Arts	2	
Arts – Dance	3	
Arts – Drama	4	
Arts - Photography Digital media	5	
Languages	6	

Commerce	7	
Humanities and Social Sciences	8	
Human Society and Its Environment (HSIE) - Aboriginal Studies	9	
Human Society and Its Environment (HSIE) – Commerce	10	
Human Society and Its Environment (HSIE) - Geography Elective	11	STEM
Human Society and Its Environment (HSIE) - History Elective	12	
Human Society and Its Environment (HSIE) - Work Education	13	
PDHPE - Child Studies	14	
PDHPE - Physical Activity	15	
PDHPE - Sports Studies	16	
VET in Years 9 and 10	17	
Agricultural Technology	18	STEM
Design and Technology	19	STEM
Food Technology	20	
Graphics Technology	21	STEM
Industrial Technology	22	STEM
Information and Software Technology	23	STEM
Textiles Technology	24	
Other (specify)	98	

20. Which of the following **elective** subjects best describes the subjects you studied in years 9 and 10?
    Please select a maximum of 6 subjects and minimum of 3
    Please note that different states and schools offer different choices of electives, so please select the elective subjects that best describe the ones you studied. below.
    [ASK YEAR 11 TO 12 STUDENTS MC. RANDOMISE]

		STEM RELATED
Arts – Music	1	
Arts - Visual Arts	2	
Arts – Dance	3	
Arts – Drama	4	
Arts - Photography Digital media	5	

Languages	6	
Commerce	7	
Humanities and Social Sciences	8	
Human Society and Its Environment (HSIE) - Aboriginal Studies	9	
Human Society and Its Environment (HSIE) – Commerce	10	
Human Society and Its Environment (HSIE) - Geography Elective	11	STEM
Human Society and Its Environment (HSIE) - History Elective	12	
Human Society and Its Environment (HSIE) - Work Education	13	
PDHPE - Child Studies	14	
PDHPE - Physical Activity	15	
PDHPE - Sports Studies	16	
VET in Years 9 and 10	17	
Agricultural Technology	18	STEM
Design and Technology	19	STEM
Food Technology	20	
Graphics Technology	21	STEM
Industrial Technology	22	STEM
Information and Software Technology	23	STEM
Textiles Technology	24	
Other (specify)	98	

21. Which of the following **elective** subjects best describes the subjects you have chosen to do in years 11 and 12?
    Please select a maximum of 12 subjects and minimum of 4
    Please note that different states and schools offer different choices of electives, so please select the elective subjects that best describe the ones you are considering from the list below.
    [ASK YEAR 11 TO 12 STUDENTS MC.]

Subjects	STEM RELATED	Subjects	STEM RELATED
Aboriginal studies		Human Society and Its Environment	
Agriculture	STEM	Industrial Technology	STEM
Ancient History		Information and Digital Technology (VET)	STEM

Automotive (VET)		Information Processes and Technology	STEM
Biology	STEM	Investigating Science	STEM
Business and Economics		Languages	
Business Services (VET)		Legal Studies	
Business Studies		Living World Science	STEM
Ceramics		Marine Studies	STEM
Chemical World Science	STEM	Mathematics	STEM
Chemistry	STEM	Mathematics Advanced	STEM
Citizenship and Legal Studies		Mathematics Extension	STEM
Community and Family Studies		Metal and Engineering (VET)	
Computing Applications	STEM	Modern History	
Construction (VET)		Music	
Creative Arts		Personal Development, Health and Physical Education	
Dance		Photography, Video and Digital Imaging	
Design and Technology	STEM	Physical World Science Life Skills	
Drama		Physics	STEM
Earth and Environmental Science	STEM	Primary Industries (VET)	
Earth and Space Science	STEM	Retail Services (VET)	
Economics		Science Extension	STEM
Electrotechnology (VET)	STEM	Society and Culture	
Engineering Studies	STEM	Software Design and Development	STEM
English Advanced/Extension/Other		Sport, Lifestyle and Recreation Studies	
Entertainment Industry (VET)		Studies of Religion	
Exploring Early Childhood		Technology Life Skills	
Financial Services (VET)		Textiles and Design	
Food Technology		Tourism, Travel and Events (VET)	
Geography	STEM	Visual Arts	
History Extension		Visual Design	

Hospitality (VET)		Work and the Community Life Skills	
Human Services (VET)		Work Studies	
		Other (please specify)	

22. Which of the following **elective** subjects best describes the subjects you did when you were in years 11 and 12?
Please select a maximum of 12 subjects and minimum of 4
Please note that different states and schools offer different choices of electives, so please select the elective subjects that best describe the ones studied.
[ASK HIGHER EDUCATION MC.]

Subjects	STEM RELATED	Subjects	STEM RELATED
Aboriginal studies		Human Society and Its Environment	
Agriculture	STEM	Industrial Technology	STEM
Ancient History		Information and Digital Technology (VET)	STEM
Automotive (VET)		Information Processes and Technology	STEM
Biology	STEM	Investigating Science	STEM
Business and Economics		Languages	
Business Services (VET)		Legal Studies	
Business Studies		Living World Science	STEM
Ceramics		Marine Studies	STEM
Chemical World Science	STEM	Mathematics	STEM
Chemistry	STEM	Mathematics Advanced	STEM
Citizenship and Legal Studies		Mathematics Extension	STEM
Community and Family Studies		Metal and Engineering (VET)	
Computing Applications	STEM	Modern History	
Construction (VET)		Music	
Creative Arts		Personal Development, Health and Physical Education	
Dance		Photography, Video and Digital Imaging	
Design and Technology	STEM	Physical World Science Life Skills	

Drama		Physics	STEM
Earth and Environmental Science	STEM	Primary Industries (VET)	
Earth and Space Science	STEM	Retail Services (VET)	
Economics		Science Extension	STEM
Electrotechnology (VET)	STEM	Society and Culture	
Engineering Studies	STEM	Software Design and Development	STEM
English Advanced/Extension/Other		Sport, Lifestyle and Recreation Studies	
Entertainment Industry (VET)		Studies of Religion	
Exploring Early Childhood		Technology Life Skills	
Financial Services (VET)		Textiles and Design	
Food Technology		Tourism, Travel and Events (VET)	
Geography	STEM	Visual Arts	
History Extension		Visual Design	
Hospitality (VET)		Work and the Community Life Skills	
Human Services (VET)		Work Studies	
		Other (please specify)	

23. Which of the below courses best describes the course you are currently studying in your higher education course?
Please select a maximum of 2 subjects and minimum of 1.
Please note that different higher education providers offer different choices of courses, so please select the subjects that best describe the ones you are considering from the list below.
ASK IF Q7 = CODES 8-16. MC.

		STEM RELATED
Accounting	1	
Agriculture	2	STEM
Architecture	3	
Built environment	4	
Business and management	5	
Communications	6	
Computing and information technology	7	STEM
Creative arts	8	

Dentistry	9	
Economics	10	
Education and training	11	
Engineering and technology	12	STEM
Environmental studies	13	STEM
Health services and support (eg. Nutrition, occupational therapy)	14	
Humanities and social sciences	15	
International relations		
Languages	16	
Law	17	
Mathematics	18	STEM
Medicine	19	
Nursing	20	
Para-legal studies	21	
Pharmacy	22	
Psychology	23	
Rehabilitation (eg. physiotherapy, chiropractic)	24	
Biology	25	STEM
Chemistry	26	STEM
Physics	27	STEM
Earth and environmental sciences	28	STEM
Social work	29	
Sport and leisure	30	
Surveying	31	
Tourism and hospitality	32	
Veterinary science	33	
Other (specify)	98	

24. Thinking about high school, which of the following subjects would you be interested in studying once you get the choice to select your subjects. Please select from the below list which elective subjects you would be interested in for years 9 and 10.

[ASK STUDENTS IN YEARS 6, 7 AND 8. Q7 = CODE 1-3]
Please note that different states and schools offer different choices of electives, so please select the elective subjects that best describe the ones you are considering from the list below.
Please select up to 5 subjects.

25. Please select from the below list which elective subjects you are considering choosing for years 11 and 12.
[ASK STUDENTS IN YEARS 9 AND 10. Q7 = CODE 4-5]
Please note that different states and schools offer different choices of electives, so please select the elective subjects that best describe the ones you are considering from the list below.
Please select up to 7 subjects.

26. Please select from the below list which course(s) you are considering after high school.
[ASK STUDENTS IN YEARS 11 AND 12. Q7 = CODE 6-7. INCLUDE CODE FOR NOT CONTINUING WITH STUDY]
Please note that different tertiary education providers offer different choices of courses, so please select the subjects that best describe the ones you are considering from the list below.
Please select up to 2 courses. *

Includes option for 'Not Continuing Study'

SECTION 3: CAREER ASPIRATIONS

Great, thanks. Now in this next section we would like to ask you some questions **about your career aspirations.**

27. Thinking about what type of career you want after you finish school, which of the following best describes you?
If you have finished your studies and are already working, please answer this based on your level or certainty of whether your current career is the career you want to pursue or if you are still uncertain.

[ASK ALL. SC.]

Very certain: I definitely know what I want to do.	1
Fairly certain: I'm pretty sure I know what I want to do.	2
Hardly certain: I have an idea of what I might do but nothing is decided / I'm likely to change my mind.	3
Not at all certain: I have no idea what I want to do.	4

28. And what type of career would you like to have in the future?
Select up to 3 choices.
[ASK ALL.MC. RANDOMISE ORDER.]

		STEM RELATED
Accountant	1	

Advertising or marketing consultant	2	
Architect	3	
Artist	4	
Banker or finance	5	
Business owner	6	
Clerical and administration (office support)	7	
Community and personal service (aged care, childcare)	8	
Computing or information technology (IT)	9	STEM
Corporate management	10	
Data analyst	11	STEM
Economist	12	
Emergency services (police, fire or ambulance)	13	
Engineer	14	STEM
Farmer	15	
Hairdresser or beauty therapist	16	
Hospitality	17	
Inventor (entrepreneur)	18	STEM
Labourer (construction, grounds maintenance, factory worker)	19	
Lawyer	20	
Machinery operator or driver	21	
Mathematician	22	STEM
Medical doctor	23	
Nurse	24	
Pharmacist	25	
Professor or lecturer	26	
Public servant (includes Defence Force - Army, Airforce, Navy)	27	
Public transport operator (Bus driver, train conductor)	28	
Retail worker	29	
Salesperson	30	
Scientist	31	STEM

Social worker	32	
Stay at home parents	33	
Taxi driver or ride share driver	34	
Teacher	35	
Technician or trade worker (mechanic, electrician, carpenter)	36	
Don't know	98	
Other (Specify)	99	

29. You mentioned that you are interested in becoming a scientist in the future. From the list below what kind of scientist would you like to be?
[ASK IF SELECTED SCIENTIST ABOVE]

Biologist	1
Chemist	2
Physicist	3
Earth or environmental scientist	4
Other (Specify)	5

30. From the below list, which **factors** influence the **career** you aspire to? Please select up to 3 factors which influence you the most.
[ASK ALL. MC.]

TV show/movie	1
Activities outside of school/study	2
Books/Magazines	3
YouTube	4
My own skills and abilities	5
Work experience	6
Childhood dream	7
Personal interests	8
The kind of jobs people in my family have	9
Potential earnings	10
Potential to be famous	11
Ambition to change the world	12

Social media / content creators	13
Conversations with others (e.g. friends, family and teachers)	14
Other (Please specify)	98
None of the above	99

31. [REMOVED FOR 2023]

32. And which of the below **people** influence the **career** you aspire to? Please select up to 2 groups of people who influence you the most.
[ASK ALL. MC.]

My teachers/lecturers	1
My parents	2
Career advisor	3
Celebrities	4
My friends	5
Successful business people	6
Famous scientists	7
Other family (uncles, aunts, cousins)	8
Social media influencers/content creators	9
No one	10
Other (please specify)	98

33. [REMOVED FOR 2023]

34. How important are each of the following factors when choosing a career?
[ASK ALL AGED 14+. SC PER ITEM. RANDOMISE ORDER.]

	Not important at all	Not very important	Neither	Somewhat important	Very Important
Job security	1	2	3	4	5
Is in an industry that is growing	1	2	3	4	5
Lots of roles available	1	2	3	4	5
Offers a lot of variety within the role	1	2	3	4	5

Is in an industry that is constantly evolving	1	2	3	4	5
Uses lots of technology	1	2	3	4	5
Has lots of opportunities for on-the-job training and learning new skills	1	2	3	4	5
High salary	1	2	3	4	5
Allows you to be creative	1	2	3	4	5
Subject matter is interesting	1	2	3	4	5
Positively impacts society	1	2	3	4	5
Helping people	1	2	3	4	5
Is in an industry that is sustainable	1	2	3	4	5
Provides structure and consistency	1	2	3	4	5
Has good working conditions	1	2	3	4	5
Is in an industry that has existed for a long time	1	2	3	4	5
Is a fun environment to work in	1	2	3	4	5
Provides an opportunity to travel / move overseas	1	2	3	4	5
Solving a major world problem	1	2	3	4	5

SECTION 4: UNDERSTANDING AND PERCEPTIONS OF STEM

Great, thanks. Now in this next section we would like to ask you some questions **about your understanding and perceptions of STEM.**

35. Please write below what you believe the terms 'STEM' stands for.
    [ASK ALL. OE]

_____
_____
_____

36. What type of jobs do you think you would be able to get if you have a STEM degree or certificate?
    [ASK ALL. OE]

1. _____
2. _____
3. _____

4. _____
5. _____

EXPLANATION ONLY*: STEM* *stands for* ***science, technology, engineering*** *and* ***mathematics.***

In this survey, science means things like biology, chemistry, physics, and earth and environmental sciences. It doesn't include medicine, nursing, psychology or health sciences.

Technology means things like information technology and programming, mechanics, electronics, and all other types of technology. Some technology courses could also be called engineering.

There are many types of engineering, like aerospace and environmental engineering, and many types of mathematics, such as geometry, logic and statistics.

37. Thinking about conversations you have with your **parents or guardians**, which of the following opinions/views have you heard from them about careers that need science, technology, engineering and maths skills?
Choose any which may apply from the below list. If NONE of these apply to you, please select the option 'I haven't heard them talk about this' and move onto the next question.
[ASK ALL. SC PER ROW.]

These jobs offer job security		These jobs do not offer job security
These are well paid jobs		These jobs are not well paid
There are lots of jobs in these fields		There are very few jobs in these fields
These jobs positively impact society		These jobs have no impact on society
These jobs have good working conditions		These jobs have poor working conditions

I haven't heard them talk about this [EXCLUSIVE]

38. Thinking about your **teachers or careers advisors**, which of the following opinions/views have you heard about careers that need science, technology, engineering and math skills?

Choose any which may apply from the below list. If NONE of these apply to you, please select the option 'They don't talk to me about this' and move onto the next question.

[ASK ALL. SC PER ROW.]

These jobs offer job security		These jobs do not offer job security
These are well paid jobs		These jobs are not well paid

There are lots of jobs in these fields		There are very few jobs in these fields
These jobs positively impact society		These jobs have no impact on society
These jobs have good working conditions		These jobs have poor working conditions

I haven't heard them talk about this [EXCLUSIVE]

39. How interested are you in each of the below subjects?
[ASK ALL. SC]

	Not at all interested	Not really interested	Neither	Somewhat interested	Very interested
Science	1	2	3	4	5
Technology	1	2	3	4	5
Engineering	1	2	3	4	5
Maths	1	2	3	4	5

40. Thinking about **getting a good job in the future**, how important do you believe it is to have knowledge and skills related to each of the subjects that make up STEM: science, technology, engineering and mathematics?
[ASK ALL. SC]

	Not important at all	Not really important	Neither important or unimportant	Somewhat important	Very important
Science	1	2	3	4	5
Technology	1	2	3	4	5
Engineering	1	2	3	4	5
Maths	1	2	3	4	5

41. You mentioned that it **was not important** to have knowledge and skills in [insert subject] to get a good job. Why do you think that?
[ASK THOSE WHO SAID 'NOT IMPORTANT AT ALL' OR 'NOT REALLY IMPORTANT' TO EACH SUBJECT. MC]

42. You mentioned that it **was important** to have knowledge and skills in [insert subject] to get a good job. Why do you think that?

[ASK THOSE WHO SAID 'SOMEWHAT IMPORTANT' OR 'VERY IMPORTANT' TO EACH SUBJECT. MC]

This subject helps us understand how the world works	1
Skills are transferrable to other areas	2
It prepares you for good jobs	3
This subject teaches you critical thinking skills	4
[Show for tech] Technology is shaping the future/constantly evolving	5
You have to use these skills in the workplace	6
This subject teaches problem solving skills	7
This subject teaches analysis skills	8
Gives you a wide range of careers options	9
This subject teaches you creativity skills	10
This subject teaches you how to be innovative	11
This subject teaches you logical thinking	12
It is an essential life skill	13
These skills are needed for well-paying jobs	14
These skills are in high demand	15
Other (please specify)	98

43. How **confident** do you feel that you can study and get good results in each of the following subjects?
[ASK ALL. SC]

	Not confident at all	Not really confident	Neither confident or not confident	Somewhat confident	Very confident
Science	1	2	3	4	5
Technology	1	2	3	4	5
Engineering	1	2	3	4	5
Maths	1	2	3	4	5

44. Why do you think you don't feel confident with the [insert subject]?
[ASK THOSE WHO SAID 'NOT CONFIDENT AT ALL' OR 'NOT REALLY CONFIDENT TO EACH SUBJECT'. MC]

I'm not very good at it	1
I'm not interested in it	2
I don't like it	3
It's too hard/difficult	4
I don't understand it	5
I'm not very smart	6
I have failed at this subject before	7
It's boring	8
I haven't studied it before	9
It's always changing	10
It requires Maths skills which I'm not good at [SHOW FOR SCIENCE, TECH, ENG]	11
It involves Physics skills which I'm not good at	12
Other (please specify)	98

45. And what about outside of school/study, how confident do you feel you understand science and technology when people are talking about it or when you watch or read about on TV or online (e.g. a new discovery on the news, documentary on TV etc.)
[ASK ALL. SC]

Not confident at all	1
Not really confident	2
Neither confident or unconfident	3
Somewhat confident	4
Very confident	5

46. Are you considering studying any STEM-related subjects in the future? `
If you are already studying at a tertiary level, please answer based any further studies such as a postgraduate degree, PHD, branching into different areas of STEM or any other education qualification.
STEM stands for Science, Technology, Engineering and Maths, but it also includes subjects such as biology, chemistry, physics, computing, programming, coding, mechanical and electrical trades and other related subjects.
[ASK ALL. SC]

Yes	1

No	2
Not sure	3

47. Why are you considering studying subjects related to STEM in the future?
[ASK IF YES ABOVE. MC]

I'm interested in a specific STEM career (specify)	1
I have a general interest in STEM	2
It is important for future job opportunities	3
Because I'm good at it	4
Because I enjoy it	5
It will give me important skills for the future	6
I already work in/study STEM	7
It's fun	8
Other (please specify)	98
Don't know	99

48. Why are NOT you considering studying subjects related to STEM in the future?
[ASK IF NO ABOVE. MC]

It's not interesting	1
It's too hard/difficult	2
I prefer creative subjects	3
I'm interested in something else	4
I'm already studying something else	5
It's boring	6
I'm not smart enough	7
I don't need STEM skills	8
I want to pursue a different career path	9
I already finished my studies	10
I am already working in another area	11
I'm not interested in future study	12
Other (please specify)	98

Don’t know	99

49. [REMOVED FOR 2023]

49a. [NEW FOR 2023] Thinking about life before COVID-19 compared to now, how, if at all, has COVID-19 influenced you and your choices for the future?

[ASK YEAR 11 & 12. MC]

I am considering studying at different university	1
I am considering studying a different course (STEM related)	2
I am now considering a different career option	3
I am considering moving to another state	4
My general interests have changed	5
I feel less connected to my peers now	6
I have different aspirations for the future	7
My grades have gotten worse	8
I am considering studying a different course (non-STEM related)	9
I feel less confident in my studies	10
My mental health is worse	11
Other (please specify)	98
No influence	99

50. [REMOVED FOR 2023]

50a. [NEW FOR 2023] How, How, if at all, has COVID-19 influenced your decision to study or work in the following STEM areas in the future?

[ASK YEAR 11 & 12. SC PER SUBJECT]

It has made me…	Science	Technology	Engineering	Maths
Much more likely to consider	1	1	1	1
Slightly more likely to consider	2	2	2	2
Has not impacted my decision	3	3	3	3
Slightly less likely to consider	4	4	4	4
Much less likely to consider	5	5	5	5

51. Below are some statements people have made about reasons which prevent them from studying subjects related to STEM? Thinking about yourself, how much do agree or disagree with these statements.
[ASK IF NOT CONSIDERING FURTHER STUDY IN STEM. SC PER ITEM.]

	Strongly disagree	Disagree	Neither	Agree	Strongly agree
I'm not really interested in these subjects	1	2	3	4	5
Don't think I'm smart enough	1	2	3	4	5
None of my friends are doing these subjects	1	2	3	4	5
They are too hard for me	1	2	3	4	5
I'm not very good at science	1	2	3	4	5
I'm not very good at math	1	2	3	4	5
The teachers/lecturers of these subjects are not very good	1	2	3	4	5
It's not related to the career I want	1	2	3	4	5

52. In your opinion, who is better at the following subjects:
[ASK ALL. SC PER ITEM]

	Boys are much better than girls	Boys are a bit better than girls	Neither girls or boys are better	Girls are a bit better than boys	Girls are much better than boys
Maths	1	2	3	4	5
Science	1	2	3	4	5
Technology	1	2	3	4	5
Engineering	1	2	3	4	5

53. Below is a list of careers, based on your understanding do you think these jobs are more for boys, more for girls or for both?
[ASK ALL. SC. THIS QUESTION IS SPLIT INTO TWO PAGES FOR RESPONDENT EXPERIENCE.]

	More for boys	More for girls	For either	Not sure
Accountant	1	1	1	1
Advertising or marketing consultant	2	2	2	2
Architect	3	3	3	3

Artist	4	4	4	4
Banker or finance	5	5	5	5
Business owner	6	6	6	6
Clerical and administration (office support)	7	7	7	7
Community and personal service (aged care, childcare)	8	8	8	8
Computing or information technology (IT)	9	9	9	9
Corporate management	10	10	10	10
Data analyst	11	11	11	11
Economist	12	12	12	12
Emergency services (police, fire or ambulance)	13	13	13	13
Engineer	14	14	14	14
Farmer	15	15	15	15
Hairdresser or beauty therapist	16	16	16	16
Hospitality	17	17	17	17
Inventor (entrepreneur)	18	18	18	18
Labourer (construction, grounds maintenance, factory worker)	19	19	19	19
Lawyer	20	20	20	20
Machinery operator or driver	21	21	21	21
Mathematician	22	22	22	22
Medical doctor	23	23	23	23
Nurse	24	24	24	24
Pharmacist	25	25	25	25
Professor or lecturer	26	26	26	26
Public servant (includes Defence Force - Army, Airforce, Navy)	27	27	27	27
Public transport operator (Bus driver, train conductor)	28	28	28	28
Retail worker	29	29	29	29

Salesperson	30	30	30	30
Scientist	31	31	31	31
Social worker	32	32	32	32
Stay at home parents	33	33	33	33
Taxi driver or ride share driver	34	34	34	34
Teacher	35	35	35	35
Technician or trade worker (mechanic, electrician, carpenter)	36	36	36	36

53a. [NEW FOR 2023] Please tell us why you think certain jobs may be better suited to girls? What is it about these jobs that make them better for girls?

[ASK ALL. OE]

53b. [NEW FOR 2023] Please tell us why you think certain jobs may be better suited to boys? What is it about these jobs that make them better for boys?

[ASK ALL. OE]

54. Below is a list of statements people have made about **science** and **technology**. Please indicate, how much you agree with each of these statements.
[ASK ALL. SC PER ITEM]

	Strongly disagree	Disagree	Neither	Agree	Strongly agree
My parents think it's important to learn about science and technology	1	2	3	4	5
I talk about science and technology at home with my family	1	2	3	4	5
My friends are interested in science and technology	1	2	3	4	5
I like to watch shows about science and technology	1	2	3	4	5
Scientists make a positive difference in the world	1	2	3	4	5
I would like to be a scientist one day	1	2	3	4	5
Learning about science and technology is exciting	1	2	3	4	5
I will need to know about science and technology to get a good job in the future	1	2	3	4	5
STEM skills are important when considering employment opportunities	1	2	3	4	5

SECTION 5: ENABLERS, BARRIERS AND INFLUENCERS

55. From the below list, which **factors** influence your decision of the **subjects you choose** to study? Please select up to 3 factors which influence you the most.
[ASK ALL. MC.]

TV show/movie	1
Activities outside of school /study	2
Books/Magazines	3
YouTube	4
My own skills and abilities	5
Work experience	6
Childhood dream	7
Personal interests	8
The kind of jobs people in my family have	9
Potential earnings	10
Potential to be famous	11
Ambition to change the world	12
To help with my ATAR score	13
Other (Please specify)	14
None of the above	98

56. [REMOVED FOR 2023]

57. And which of the below **people** influence your decision of the **subjects you choose** to study? Please select up to 2 group of people which influence you the most.
[ASK ALL. MC.]

My teachers/lecturers	1
My parents	2
Career advisor	3
Celebrities	4
My friends	5
Successful business people	6

Famous scientists	7
Other family (uncles, aunts, cousins)	8
Other (please specify)	98

58. [REMOVED FOR 2023]

SECTION 6: STEM EXTRA CURRICULAR ACTIVITIES

Great, thanks. Now in this **last** section we would like to ask you some questions **about your extracurricular activities.**

59. [REMOVED FOR 2023]

60. Have you participated in any activities related to science, technology, engineering or maths outside of school/study in the past 12 months?
This could be anything from a fair or a visit to the museum, an expo, a competition, reading a magazine or website related to STEM or any other event related to STEM.
[ASK ALL. SC]

Yes, I've participated in a few	1
Yes, I've participated in one	2
No, haven't participated in any	3

61. And which of the below events, activities or resources have you heard of?
[ASK IF CODE 1 OR 2 SELECTED IN Q60. SHOW A-Z]

Girls in STEM Toolkit	1
STAR Portal	2
Maths or Informatics Olympiad	3
Australian Science Olympiad	4
4x4 in schools	5
Space camp	6
FIRST Robotics	7
ConocoPhilips Science Experience	8
BHP Billiton Science and Engineering Awards	9
National Indigenous Science Program	10
Bebras Challenge	11
Young ICT Explorers	12

Curious Minds	13
digIT program	14
National Science Week	15
F1 in Schools	17
National Youth Science Forum	18
Questacon	19
Questacon Smart Skills	21
Questacon Science Circus	22
Careers with STEM – Magazine	23
Days of STEM	24
Google Science Fair	25
Lego First Competition	27
AMSI Choose Maths	28
NXplorers [WA RESPONDENTS ONLY]	31
Governor's School STEM Awards	32
RoboCup Junior	33
RMIT EnGenius [VIC RESPONDENTS ONLY]	35
SciTech	36
Future You	37
Other (specify)	98
None of these	99

62. And which of the below events or activities have you participated in within the last 12 months? This also includes magazines or websites you might have read.
[INSERT RESPONSES FROM ABOVE – EVENTS OR ACTIVITIES AWARE OF. ONLY ASK IF NONE OF THESE NOT SELECTED]

63. How would you describe your experience of these activities/events/resources?
[ASK IF PARTICIPATED IN ABOVE SCIENCE EVENTS. INSERT EACH OPTION IF SELECTED ABOVE. SC]

INSERT EVENTS MENTIONED ABOVE	I hated it	I didn't really like it	Didn't like or dislike	It was ok	I really enjoyed it
National Science Week	1	2	3	4	5

F1 in Schools	1	2	3	4	5
Other events and activities participated in in the past 12 months	1	2	3	4	5

64. [REMOVED FOR 2023]

65. [REMOVED FOR 2023]

STEM CAREERS EXPLANATION: *There are a huge variety of industries you can work in with a STEM degree. Just a few examples include: information technology; mining; construction of cars; aeroplane and rocket design; medical instrument design; wind turbine and solar panel design and construction; environmental contaminant testing; fisheries; curating natural history exhibitions; 3D printing; sustainable fashion; and mathematical modelling of the impact of humans on the planet.*

66. Based on this information, has your interest in getting a STEM degree changed?
    [ASK ALL 15+]

Much more interested	1
A bit more interested	2
About the same as before	3
A bit less interested	4
Much less interested	5

Here is some more information about AI. Artificial intelligence, or "AI," is the ability for a computer to think and learn. With AI, computers can perform tasks that are typically done by people, including processing language, problem-solving, and learning. Artificial intelligence is a tool, much like other types of new technologies.

Generative AI is a type of artificial intelligence system capable of generating text, images, or other media in response to prompts, for example ChatGPT.

67. [NEW FOR 2023] Do you believe that Generative AI tools will have a significant impact on work and careers in the future?
    [ASK ALL. SC]

Yes	1
No	2
Unsure	3

68. [NEW FOR 2023] Have Generative AI tools or AI overall made you reconsider your current or future study or career prospects?
    [ASK ALL. SC]

No	1
Unsure	2
Yes, reconsidering my study	3
Yes, reconsidering my career/job	4
Yes, reconsidering BOTH my study and career/job	5