



Australian Government

Department of Industry, Science, Energy and Resources



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Background

In 2018/19 the Department of industry science energy and resources launched Australia's first National Youth in STEM study, where over 2,000 people aged 12 to 25 were asked about their understanding and perceptions of STEM education and related careers. The research helped establish benchmarks of how STEM is positioned in the minds of young people and was instrumental in quantifying the gender gap which currently exists in the disposition to study and work in STEM related fields.

This year the department commissioned the second survey of the Youth in STEM Research, to measure changes in young people's understanding and perception about STEM since the 2018/2019 survey. In this survey, the department increased the sample size from 2,000 to 3,000 respondents to allow for more in-depth analysis of subsegment groups. All respondents were aged between 12 and 25 years and the sample was nationally representative based on state, age and gender, which was consistent with the initial 2018/19 survey.

The increased sample size provided valuable insight into key minority groups such as people of culturally and linguistically diverse backgrounds (CALD), people from lower socio-economic status (SES), people living in regional/rural areas and people identifying as Aboriginal and Torres Strait Islander. It should be noted that the group surveyed provide an indication of broader attitudes and perceptions, rather than an absolute dataset of all young Australians.

A key focus of the research is to quantify and track the development in awareness and perceptions among genders and key minority groups in relation to STEM education and careers. With the demand for a STEM skilled workforce on the rise¹, its critical that we increase the pool of talent with the right skills to support the Australian economy. A key step to do so will be to close existing gaps amongst these identified subsegments of the population.



Research 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 2018/19 survey, with a particular focus on the difference between boys and men and girls and women.

More specifically, the study looks at:

- evaluating the perceived importance of STEM subjects to students
- determining student interest in considering further STEM education
- determining student interest in STEM careers
- assessing young Australians' engagement with STEM outside of education
- understanding student awareness of STEM-related careers
- identifying barriers and enablers to STEM careers
- understanding the factors that influence career choices.



Sample design and weighting

To ensure survey results are representative of the population of interest, rim weighting is used to correct for under or over representation of sub-groups within the survey respondents.

Gender, age, location, country of birth and SES decile were the factors rim weighting was used for.

Age and gender: An equal balance of boys and girls was sought within each age group. Data was also collected among participants who did not identify with binary genders, however due to limited sample size, reporting on this group was not viable

State: The sample was also weighted to align with the population distribution by state and territory, in line with Australian Bureau of Statistics records.

Key minority groups: The sample was weighted based on ABS population of CALD background and low SES background.

Gender	Age	Actual sample	Actual sample %	Weighted sample	Weighted sample %
Boys/men	12 - 13	205	7%	144	5%
Boys/men	14 - 17	436	14%	420	14%
Boys/men	18 - 21	324	11%	462	15%
Boys/men	22 - 25	497	16%	505	17%
Girls/women	12 - 13	64	2%	144	5%
Girls/women	14 - 17	594	20%	399	13%
Girls/women	18 - 21	547	18%	440	15%
Girls/women	22 - 25	337	11%	490	16%
Non-binary	12- 13	2	0%	2	0%
Non-binary	14 - 17	5	0%	5	0%
Non-binary	18 - 21	9	0%	9	0%
Non-binary	22 - 25	3	0%	3	0%

State or territory	Actual sample	Actual sample %	Weighted sample	Weighted sample %
NSW	965	32%	950	31%
VIC	812	27%	768	25%
QLD	551	18%	623	21%
WA	358	12%	321	11%
SA	229	8%	210	7%
ACT	52	2%	54	2%
TAS	41	1%	62	2%

Key minority groups	Actual sample	Actual sample %	Weighted sample	Weighted sample %
Regional/rural areas	622	21%	877	29%
Born overseas	550	18%	665	22%
Low SES (1-4 Deciles)	884	29%	1209	40%

A note on interviewing young people and children

AMSRS Guideline

YouthInsight adheres to the Australian Market & Social Research Society's (AMSRS) 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

As such, 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 sample quotas YouthInsight blends online sample provider data with accredited external providers. The same providers have been used year on year with addition of one additional supplier this year to meet the requirements of the higher sample size.

In light of the increased sample size, YouthInsight utilised external 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.

For external sample providers to reach under 18 respondents they are required to contact the parent and/or guardian initially to then invite their children to complete the survey.

Impact on open ended questions

The introduction of the aforementioned sampling approach for 12-17 age group when using external sample providers has had a material impact on the results of open ended questions, preventing direct year on year comparisons.

As such, to allow for year-on-year comparison, all open ended questions will be reported by those have completed the survey by themselves (i.e. self completion) and will exclude co-completed surveys.

This is only applicable for open ended questions.

Education and career

Summary of findings

- Sixty-one per cent of Year 9 and 10 students surveyed currently undertake at least one STEM elective subject (excluding standard *maths* and *science*). 'Design and technology' is the most popular, followed by 'information and software technology' amongst Year 9 and 10 STEM electives.
- In Year 11 and 12, four of the top six subjects are STEM subjects. These include *maths*, *physics*, *chemistry* and *biology*.
- Overall, 30 per cent of students are enrolled in STEM-related courses in higher education. Of the 10 most popular higher education courses, three are STEM-related: 'engineering and technology', 'computing and information technology' and 'biology'.
- Enrolment in STEM-related higher education courses amongst men in 2019/20 is at 42 per cent, an increase from 35 per cent in the 2018/19 survey.
- Encouragingly, almost half of all young people (45 per cent) are considering studying STEM-related subjects in the future.
- Girls/Women had a lower consideration to study STEM in the future (41 per cent) compared to males (49 per cent) however the gender gap in consideration has narrowed compared to the 2018/19 survey (52 per cent for boys/men and 40 per cent for girls/women).
- One third of all students are considering STEM-related roles in the future. 'Engineering', 'Computing and information technology' and 'Scientist' were the popular STEM careers which were all featured in top 10 career preferences.
- When young people are considering a career the most important factors 'good working conditions', 'job security' and 'interesting work'. 'Positively impacting society' was another important factor which resonates strongly with girls and women.



Awareness and attitudes

Summary of findings

- General awareness of the term 'STEM' remains stable among young Australians aged 12-21, with 66 per cent correctly identifying all four subjects.
- A slight drop in awareness is evident among the oldest age group with 45 per cent of people aged 22-25 correctly recognising all STEM subjects compared to 51 per cent in the 2018/19 survey.
- Among the respondents who did not correctly identify all four areas, 'engineering' continues to be the subject which is most commonly mistaken as 'english', 'economics' or 'education'. Maths was also frequently mistaken as 'medicine'. Out of the four STEM areas, science was the most correctly attributed.
- When asked what types of jobs associate with a STEM qualification, one in two students (53 per cent) mentioned some form of engineering profession. Other popular career associations included 'scientists', 'educators', 'mathematicians' and 'IT'.
- Despite a lower engagement with *engineering*, the association with this subject was driven more by girls and women (60 per cent) than boys and men (46 per cent).
- Three out of four people believe scientists make a positive difference in the world and 60 per cent say that learning about science and technology is exciting.
- The top reason preventing students from studying STEM subjects is the lack of relevance to the careers they want, followed by the lack of interest in the subjects themselves.



STEM interest and importance

Summary of findings

- Seventy-nine per cent of young Australians believe knowledge and skills related to technology are important in getting a good job in the future. Technology was ranked as the most important skill, followed by maths, science and engineering.
- General interest is high for technology, with two thirds (64 per cent) of young Australians saying they are 'very' or 'somewhat' interested. Engineering has the lowest general interest of all STEM subjects with only 44 per cent of respondents stating they have any interest in the subject.
- There is a significant difference in interest levels between genders for engineering (57 per cent of boys/men vs 30 per cent of girls/women) and technology (76 per cent of males vs 52 per cent females).
- Almost two thirds (62 per cent) of young Australians say they were 'very' or 'somewhat' interested in science, which ranked it as the second most interesting STEM subject.



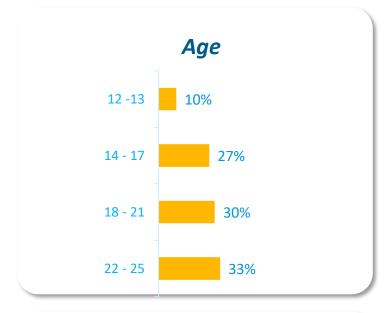
Key minority group differences Summary of findings

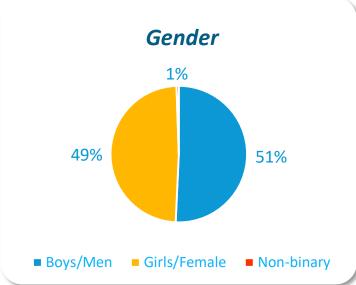
- Variances in STEM awareness were observed among different demographic groups with lower SES, regional/remote and ATSI groups all registering lower levels of correct responses.
- People born overseas recorded higher awareness levels compared to people born in Australia (64 per cent and 56 per cent respectively), reflecting similar results captured in the 2018/2019 survey.
- Similar to the results on STEM awareness, consideration to study STEM related subjects in the future is higher among high SES and among people born overseas.
- People from an ATSI background stated higher levels of interest and confidence in studying engineering, 56 per cent and 57 per cent respectively for general interest and confidence, compared to the average young Australian population of 44 per cent and 38 per cent.
- People of culturally and linguistically diverse backgrounds have very strong interest in all STEM subjects, were more confident in getting good grades in STEM subjects and rated STEM of higher importance. Forty two per cent of people of CALD background were considering STEM-related roles in the future, significantly higher than 30 per cent of those born in Australia.
- Overall, there wasn't a big difference in general interest towards STEM subjects or STEM-related careers between those living in metro areas vs regional/rural areas or those living in lower SES deciles vs mid to high SES deciles. There was a lower participation rate in science events for those living in regional/rural areas and in lower SES deciles.

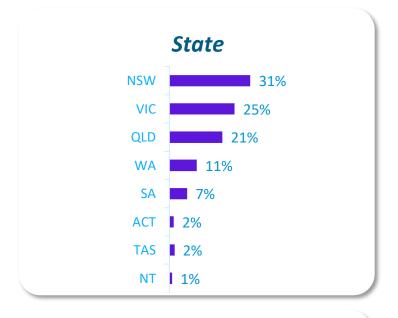


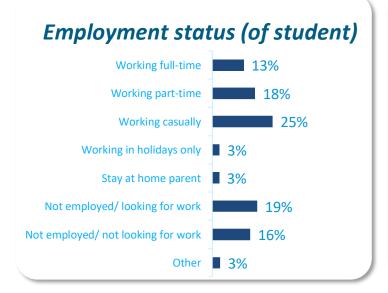


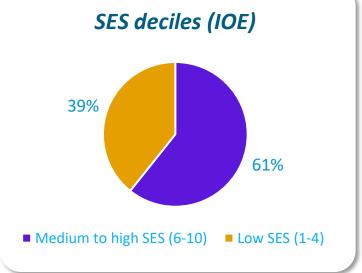
Demographic overview

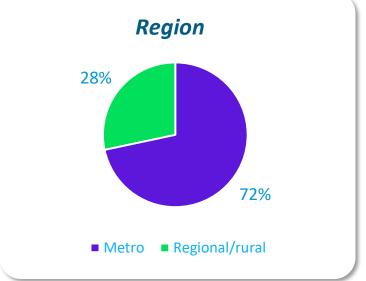




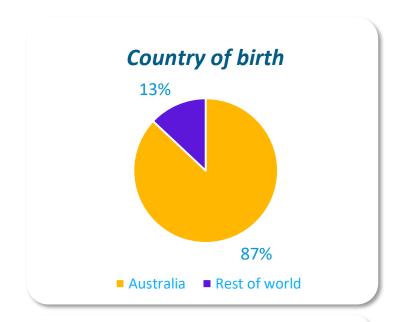








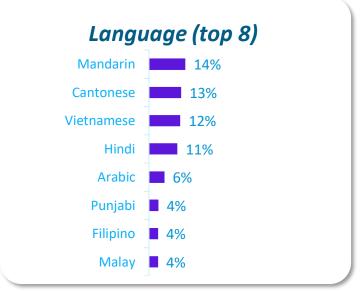
Background

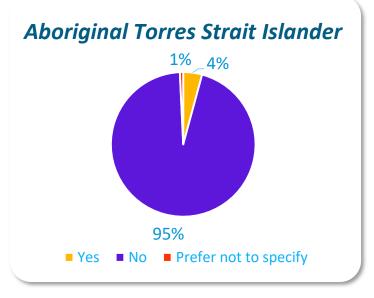




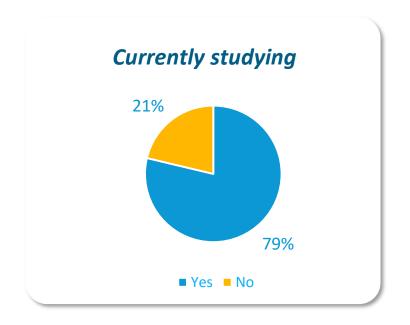


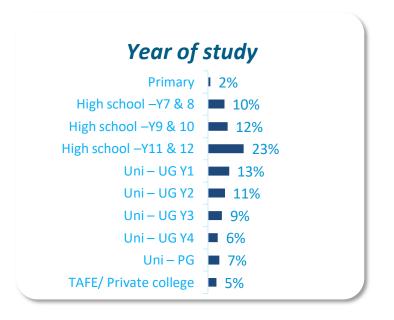


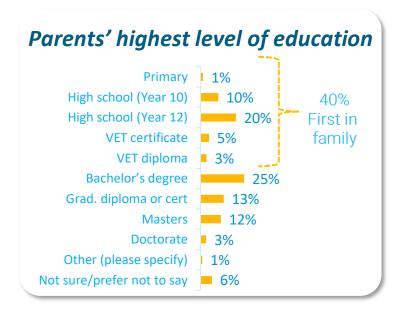


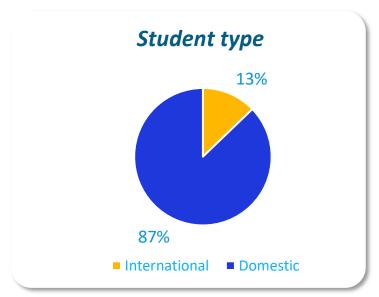


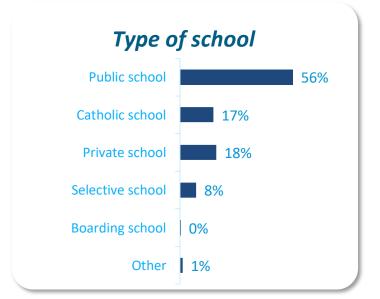
Education overview

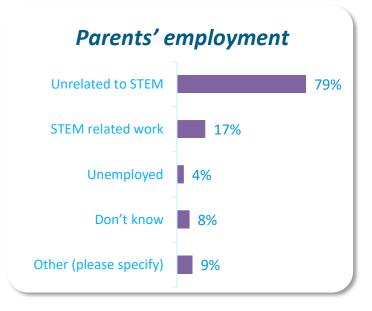












STEM subjects and careers

The below list includes all the elective subjects/courses and careers classified to be related to STEM in this report.

Years 9 and 10

Geography Elective, Agricultural Technology, Design and Technology, Graphics Technology, Industrial Technology, Information and Software Technology

Years 11 and 12

Mathematics, Biology, Chemistry, Mathematics Advanced, Mathematics Extension, Physics, Information and Digital Technology (VET), Electrotechnology (VET), Industrial Technology, Agriculture, Engineering Studies, Information Processes and Technology, Geography, Design and Technology, Investigating Science, Software Design and Development, Science Extension, Computing Applications, Living World Science, Earth and Environmental Science, Marine Studies, Chemical World Science, Earth and Space Science

Higher education

Agriculture, Computing and Information Technology, Engineering and Technology, Environmental Studies, Mathematics, Biology Chemistry, Physics, Earth and Environmental Sciences

STEM career

Computing or Information Technology (IT), Data analyst, Engineer, Inventor (entrepreneur), Mathematician, Scientist

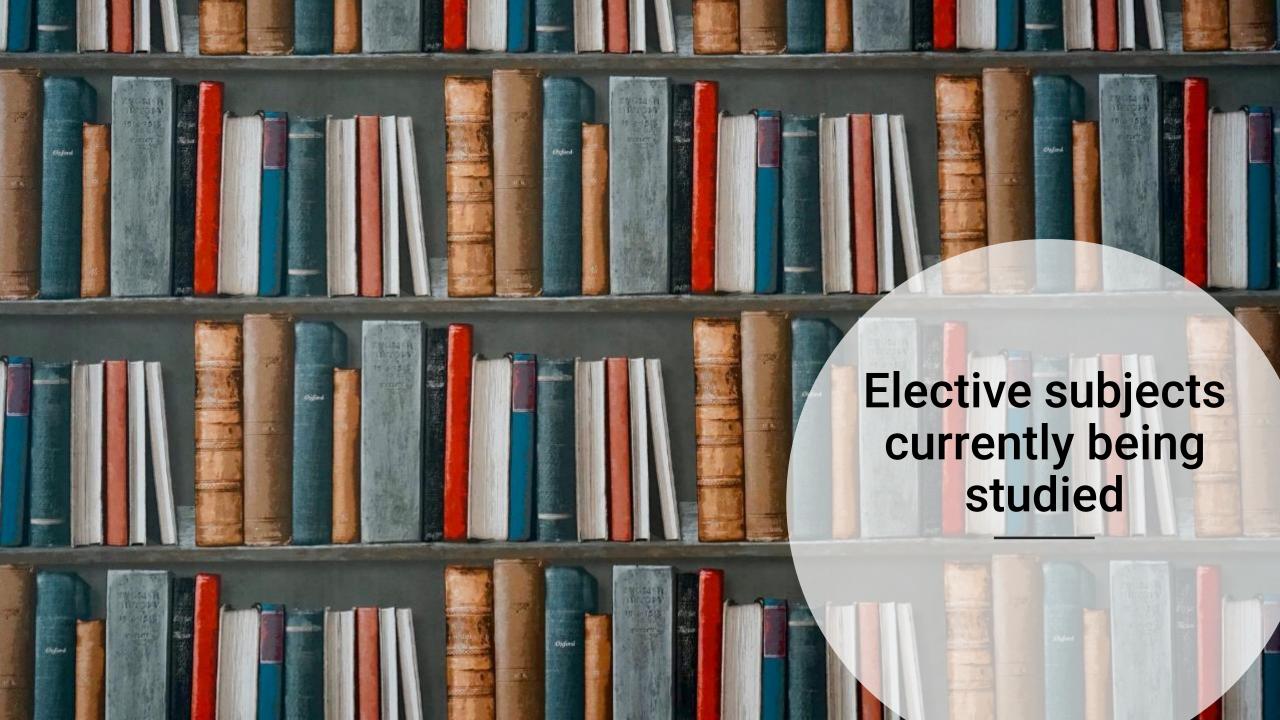
Significance testing

Throughout this report significant differences between respondent groups have been highlighted using the following symbols. These symbols highlight differences that are significant at a confidence level of 95% and a confidence interval of ±3%

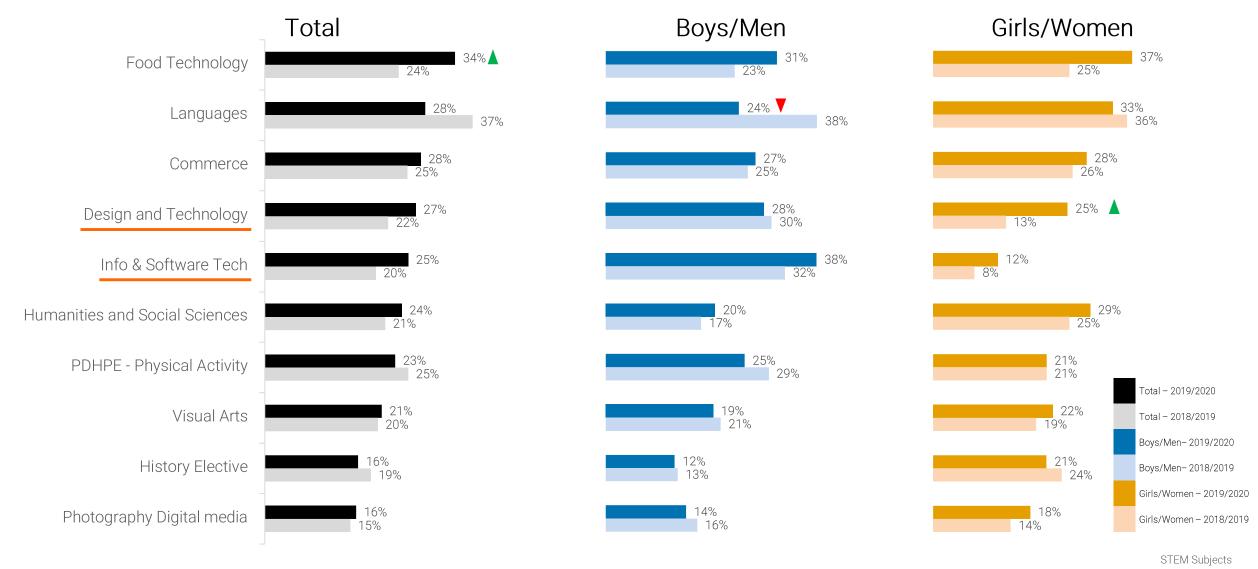


▲ ▼: Significantly higher or lower compared to the 2018/19 STEM study





Year 9 and 10 current elective subject selections – Top 10



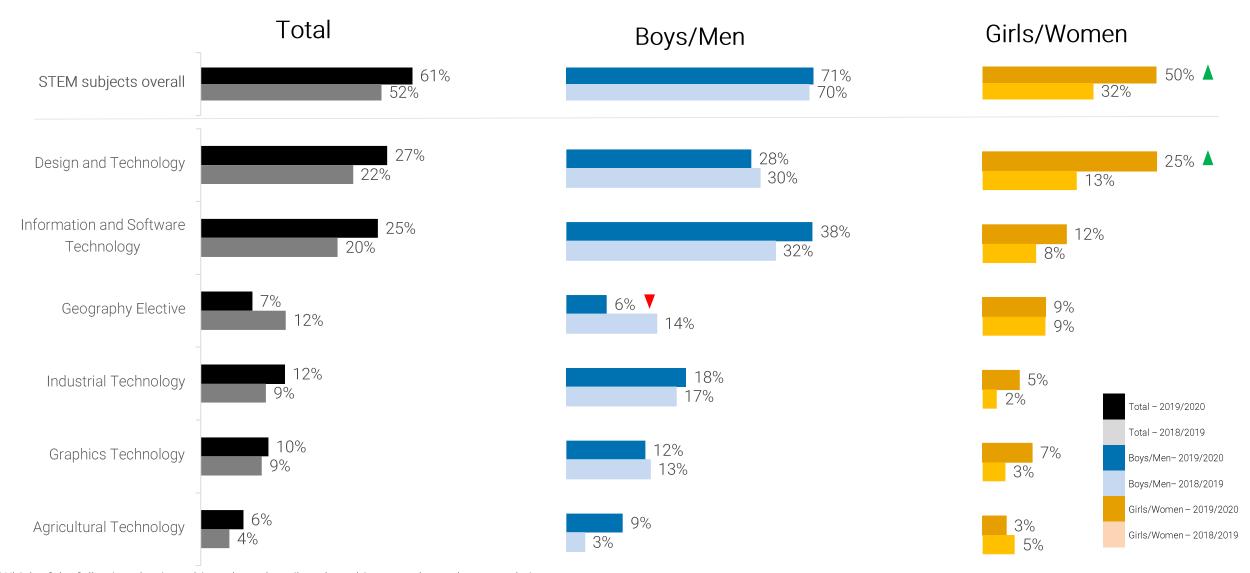
Q. Which of the following elective subjects best describes the subjects you have chosen to do in Years 9 and 10? Please select a maximum of 6 subjects and minimum of 3. Base: 2019/20: Total – 352, Boys/Men - 152, Girls/Women - 200 2018/19: Total – 194, Boys/Men - 104, Girls/Women - 87

Standard Maths and Science subjects are mandatory at this stage of school, hence they were not included in this question

▲ ▼ Significantly higher/lower than counterpart.

Based on 95% confidence interval.

Year 9 and 10 current elective subject selections – STEM subjects only



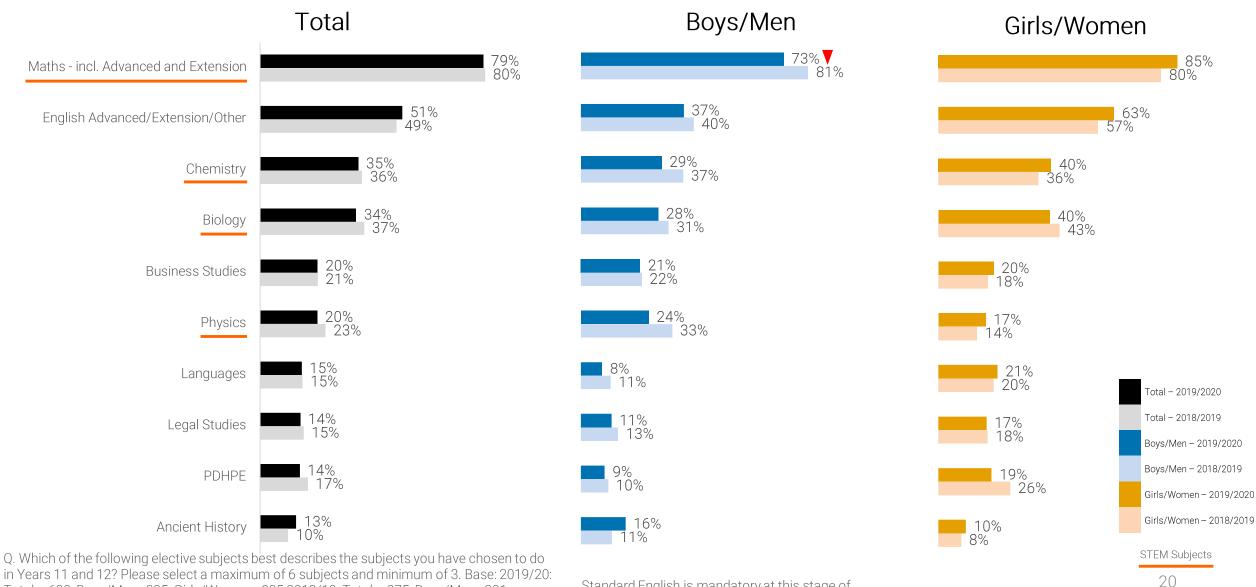
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Standard Maths and Science subjects are mandatory at this stage of school, hence they were not included in this question

■ Significantly higher/lower than counterpart.

Based on 95% confidence interval.

Year 11 and 12 current elective subject selections – Top 10



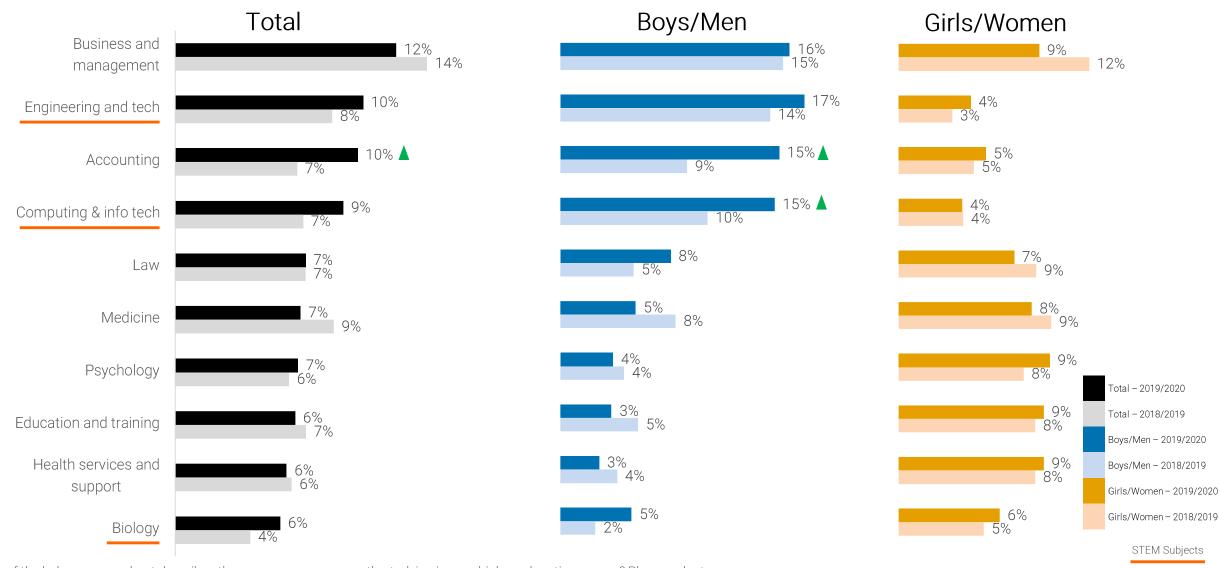
Total - 630, Boys/Men - 235, Girls/Women - 395 2018/19: Total - 375, Boys/Men - 201,

Girls/Women - 162

Standard English is mandatory at this stage of school, hence it is not included in this question

▲ ▼ Significantly higher/lower than counterpart. Based on 95% confidence interval.

Higher education current subject selections – Top 10

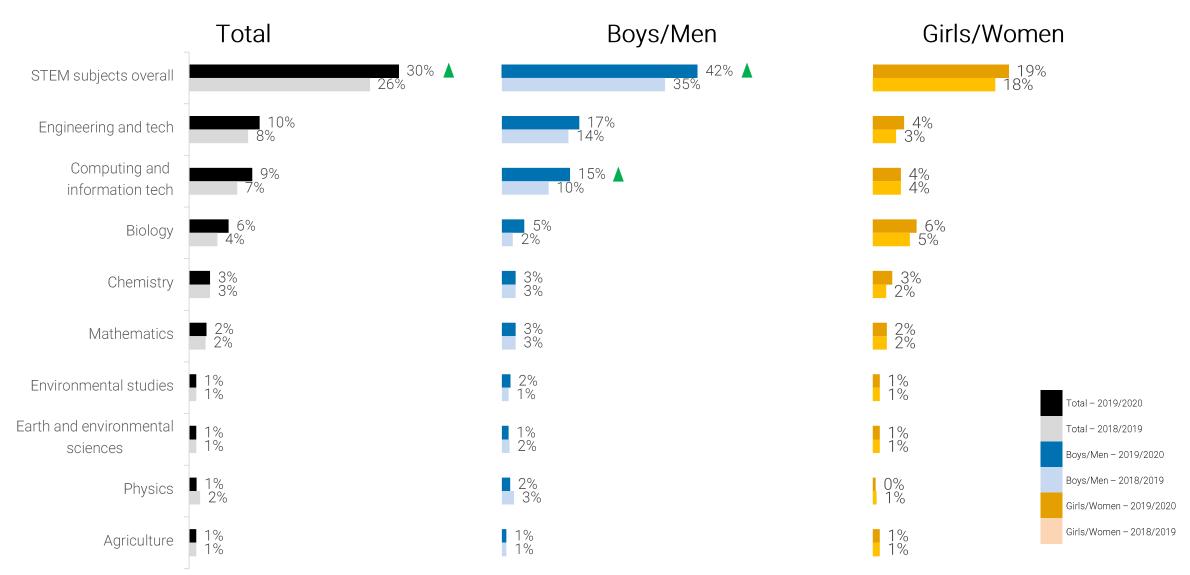


Q. Which of the below courses best describes the course you are currently studying in your higher education course? Please select a maximum of 2 subjects and minimum of 1

Base: 2019/20: Total - 1130, Boys/Men - 486, Girls/Women - 633 2018/19: Total - 929, Boys/Men -397, Girls/Women - 508

▲ ▼ Significantly higher/lower than counterpart. Based on 95% confidence interval.

Higher education current subject selections – STEM subjects only

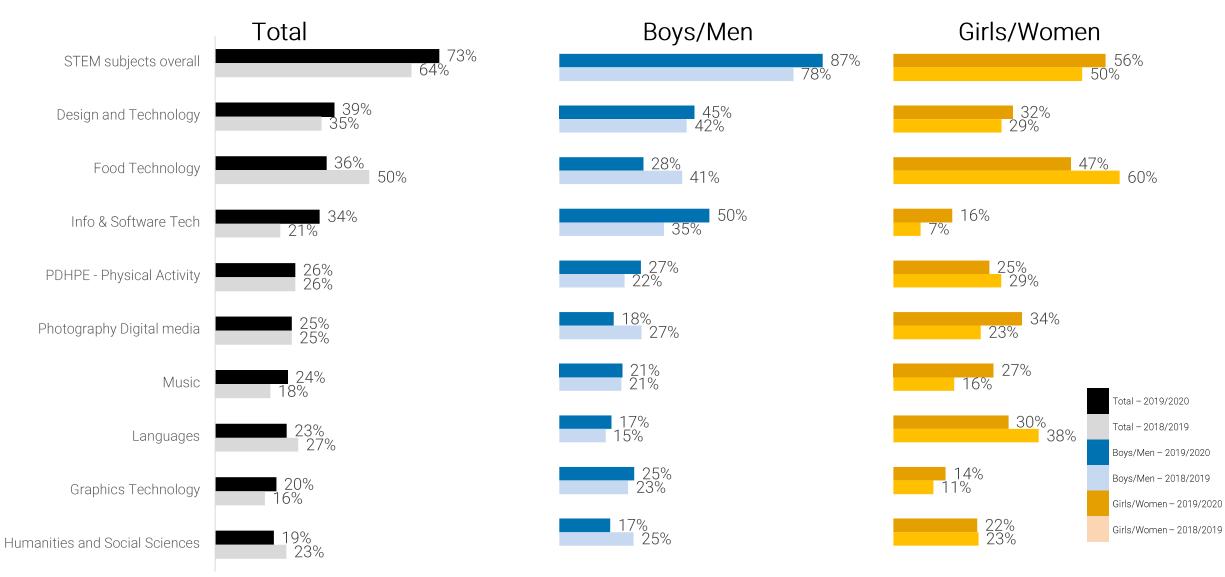


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Base: 2019/20: Total – 1130, Boys/Men - 486, Girls/Women – 633 2018/19: Total – 929, Boys/Men - 397, Girls/Women - 508



Elective subject considerations for Years 9 and 10 - Top 10

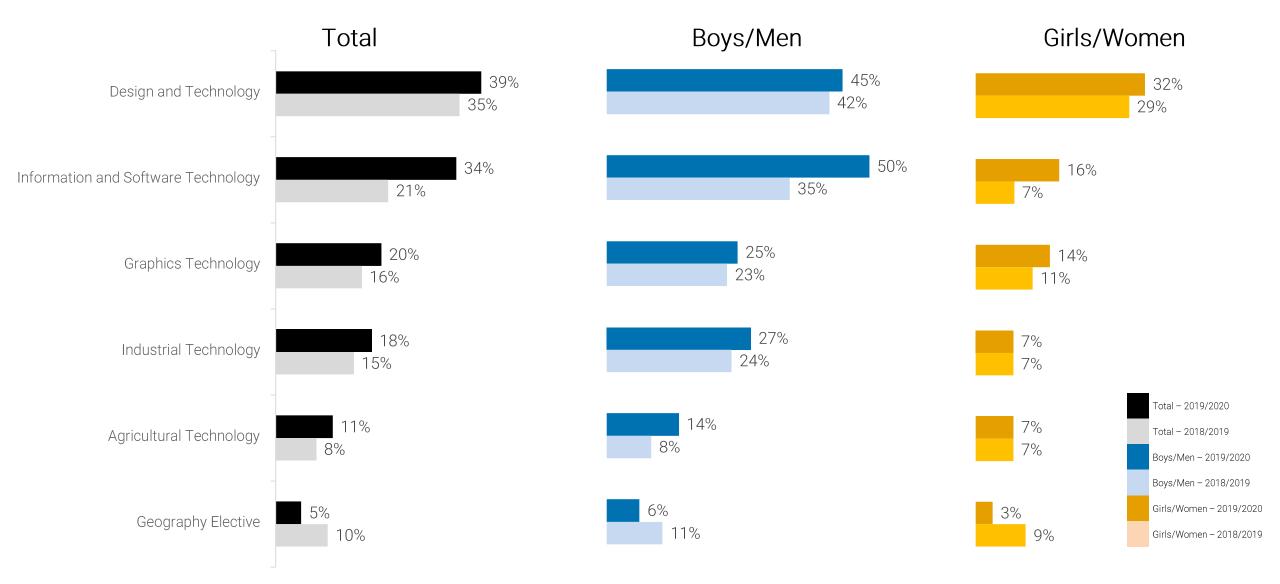


Q. Thinking about high school, which of the following subjects would you be interested in studying once you get the choice to select your subjects. Please select from the below list which elective subjects you would be interested in for Years 9 and 10. Please select up to 5 subjects. Base: 2019/20: Total – 274, Boys/Men - 197, Girls/Women – 74 2018/19: Total – 65, Boys/Men - 24, Girls/Women - 40

Note: Total STEM excludes Textile design

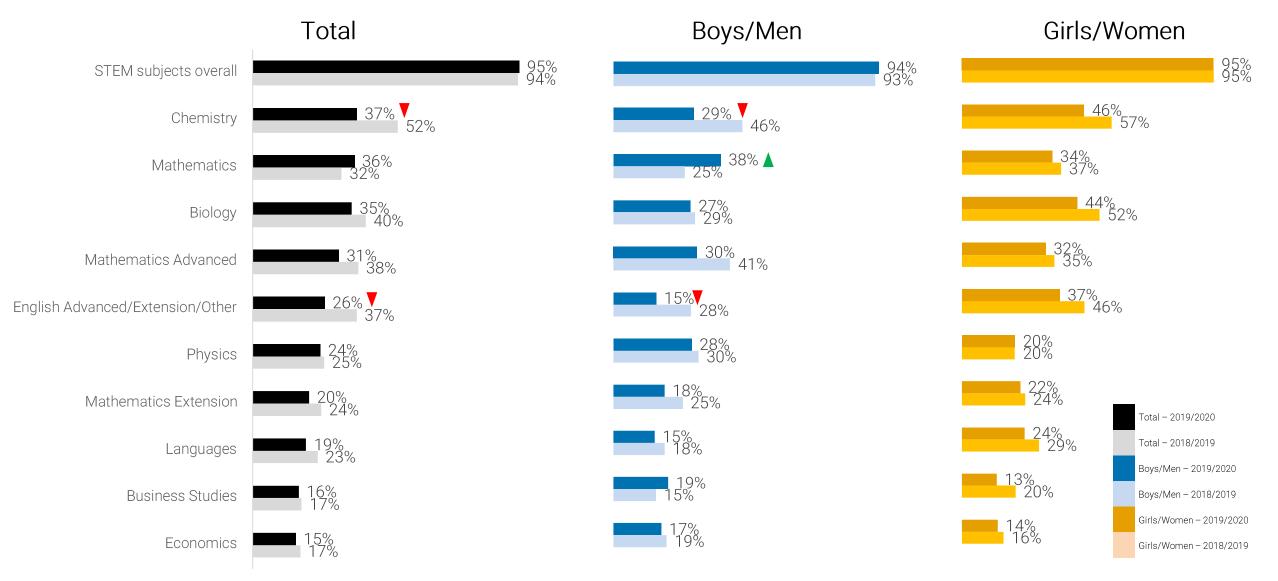
Caution: Small sample size. Sig testing not applicable

Elective subject considerations for Years 9 and 10 - STEM subjects only

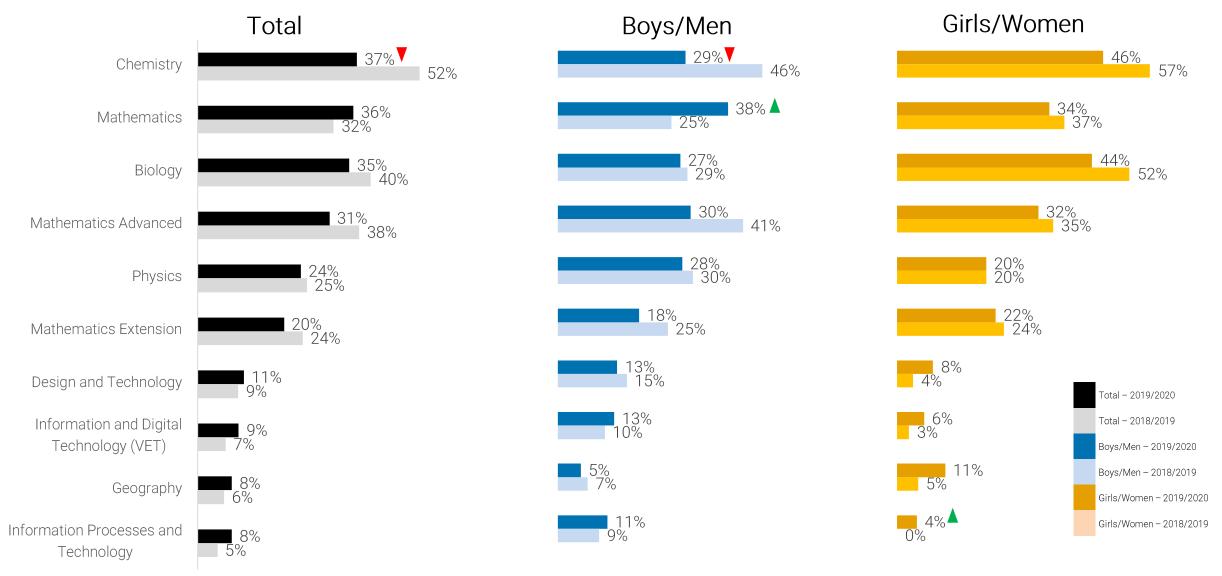


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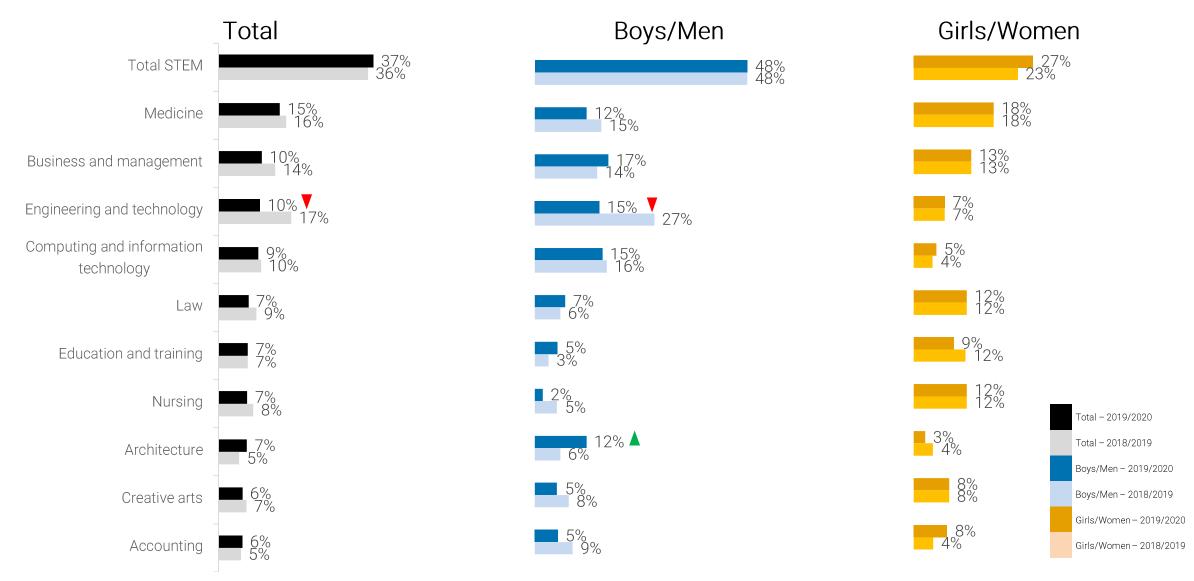
Elective subject considerations for Years 11 and 12 - Top 10



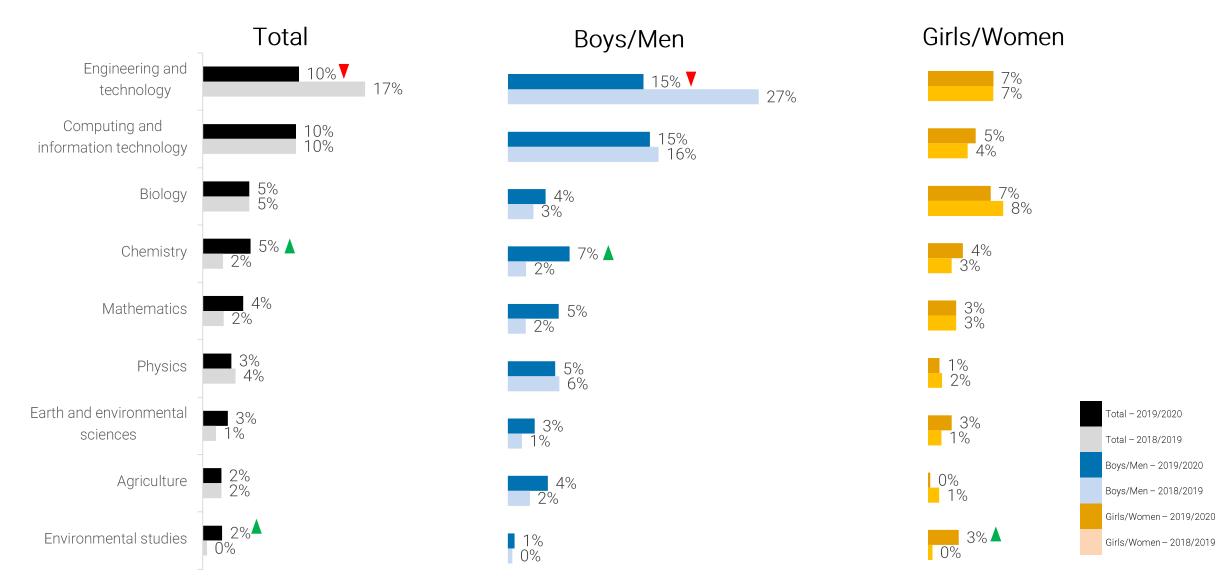
Elective subject considerations for Years 11 and 12 – STEM subjects only (top 10)



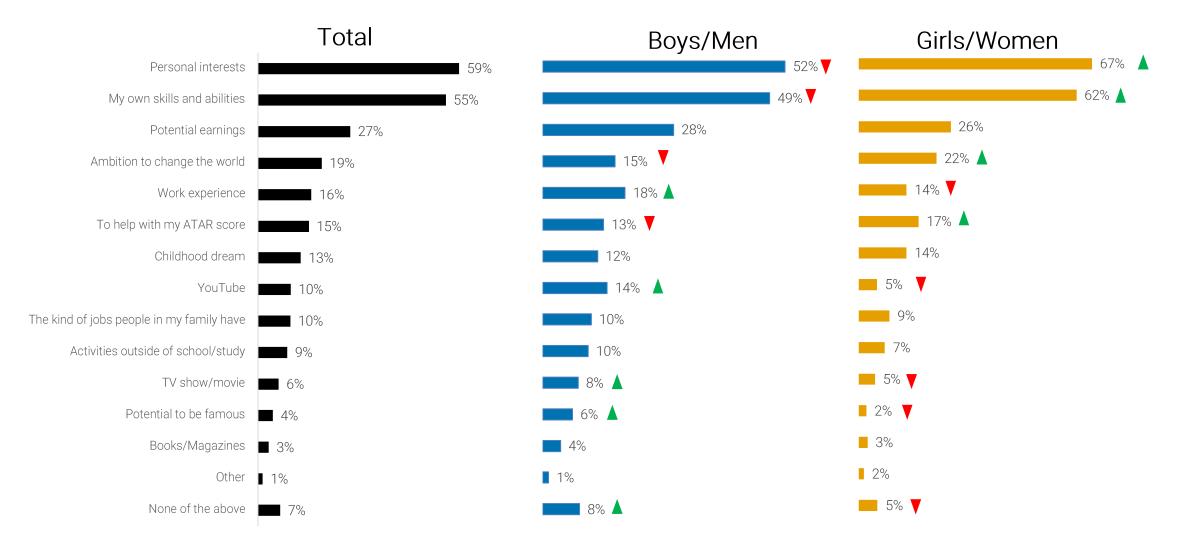
Courses considered for higher education - Top 10



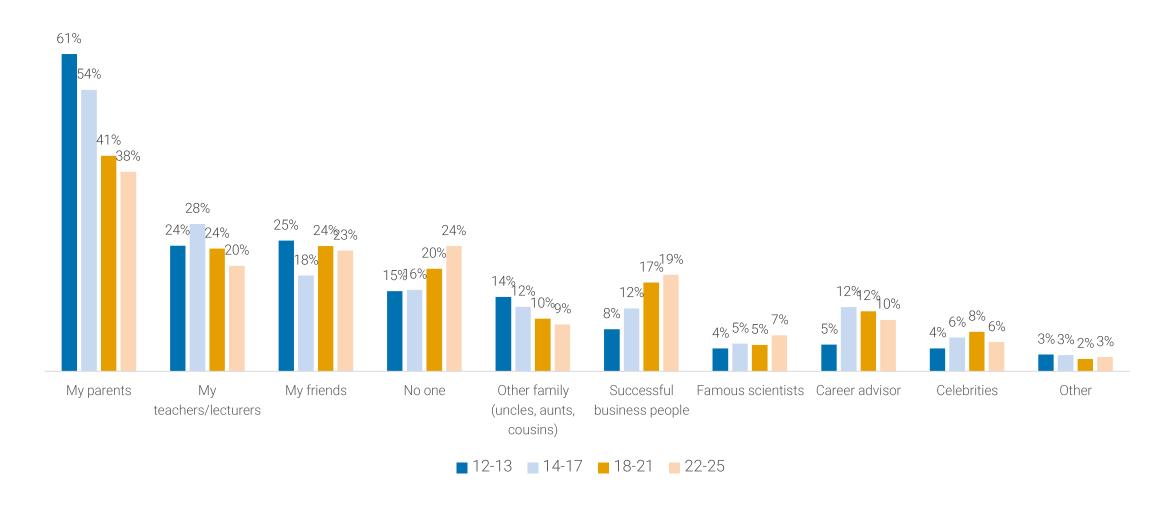
Courses considered for higher education – STEM only subjects

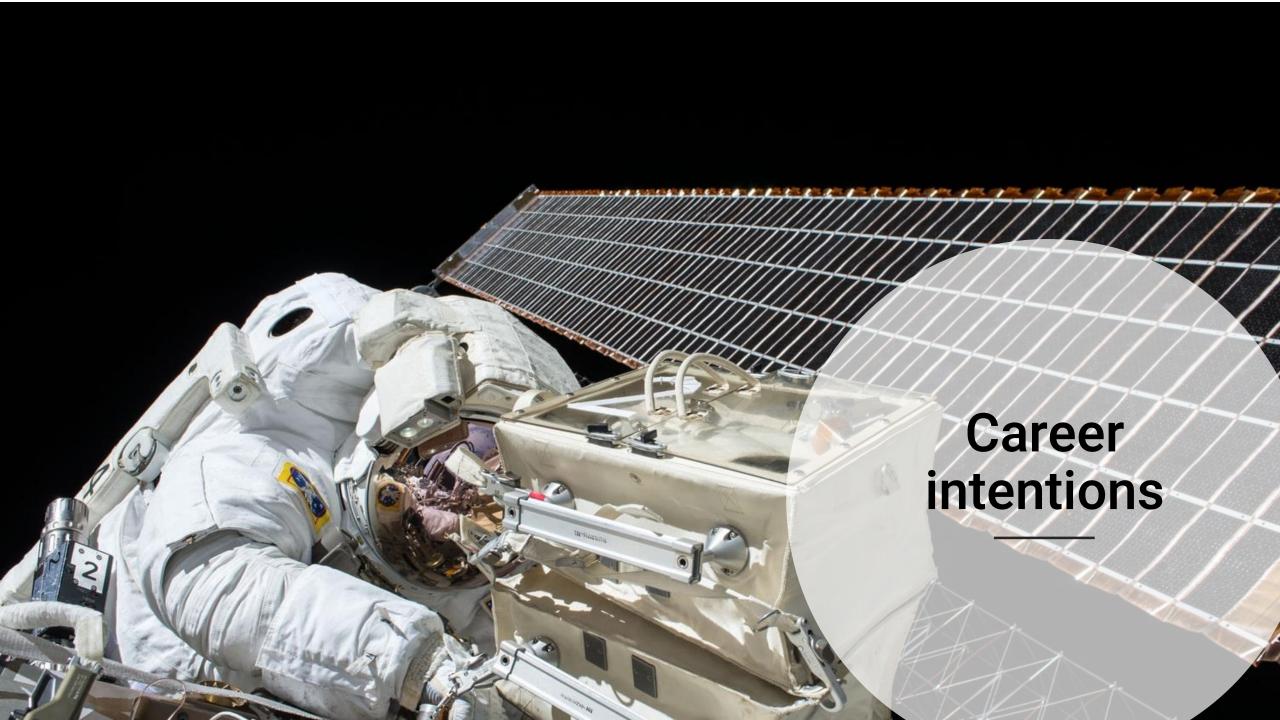


Factors influencing subject selection

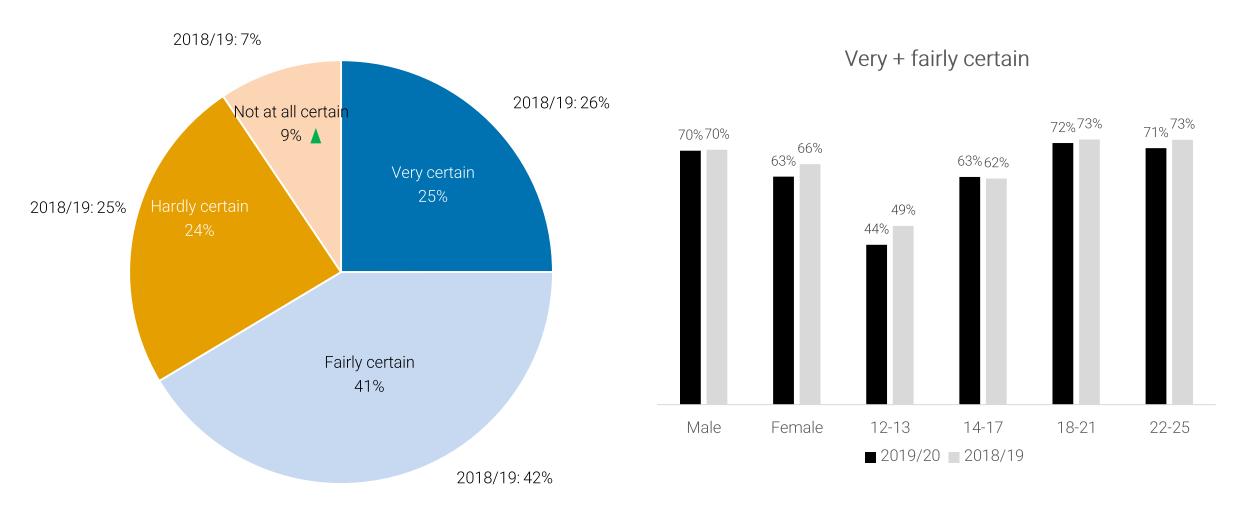


People influencing subject selection

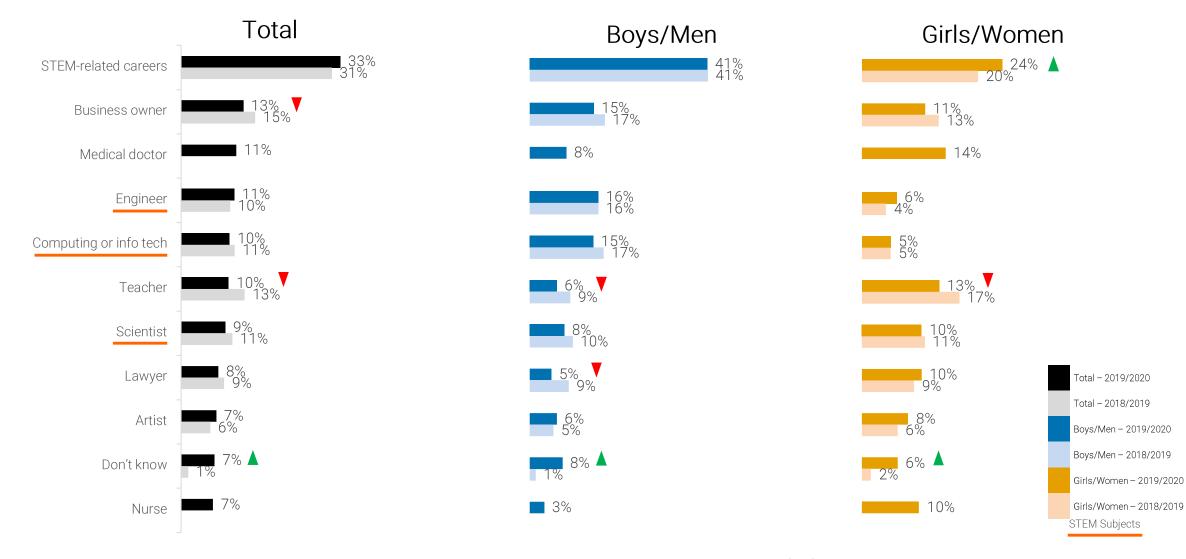




Career certainty



Career preference - Top 10



Q. And what type of career would you like to have in the future? Select up to 3 choices

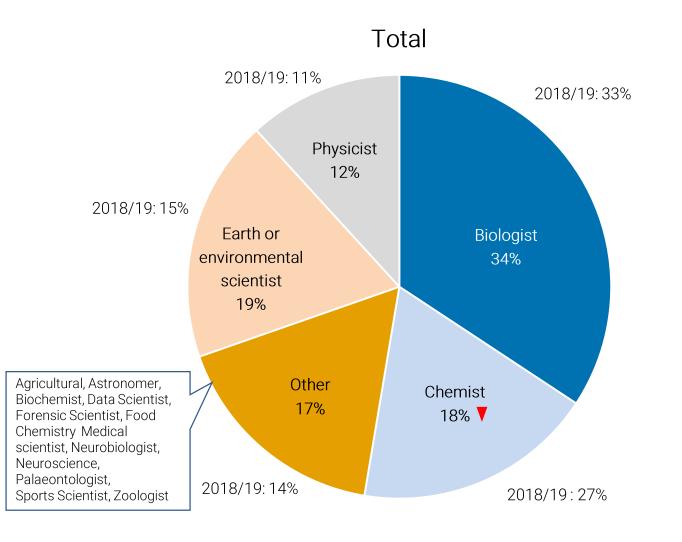
Base: 2019/20 Total - 3,021, Boys/Men - 1462, Girls/Women - 1542, 2018/19 Total - 1,434, Boys/Men - 691, Girls/Women - 714

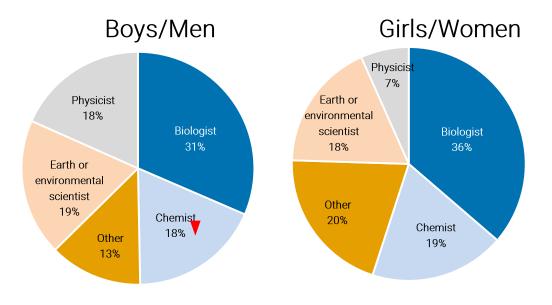
Note: Medical Doctor was not asked in the 2018/19 survey

34
■ Significantly higher/lower than counterpart.

Based on 95% confidence interval.

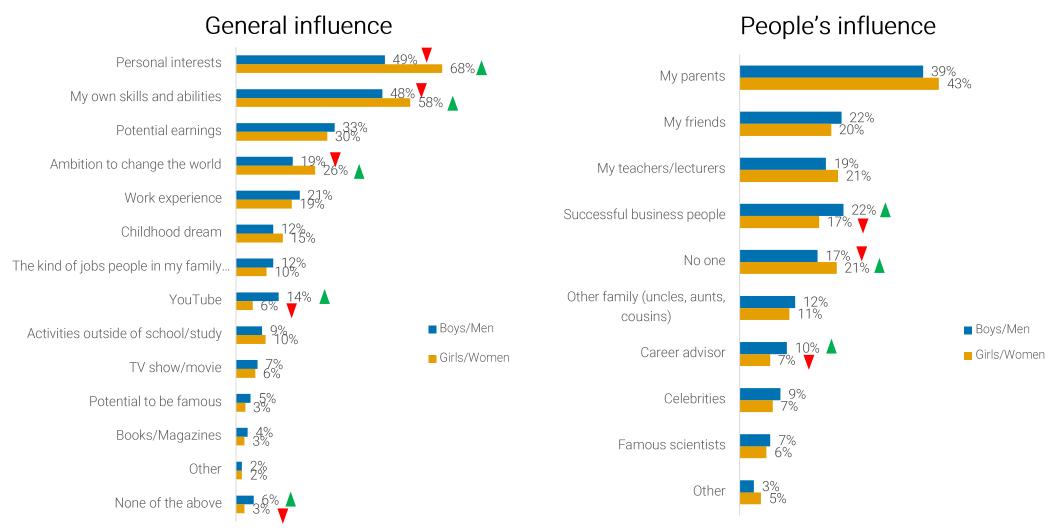
Types of science careers interested in





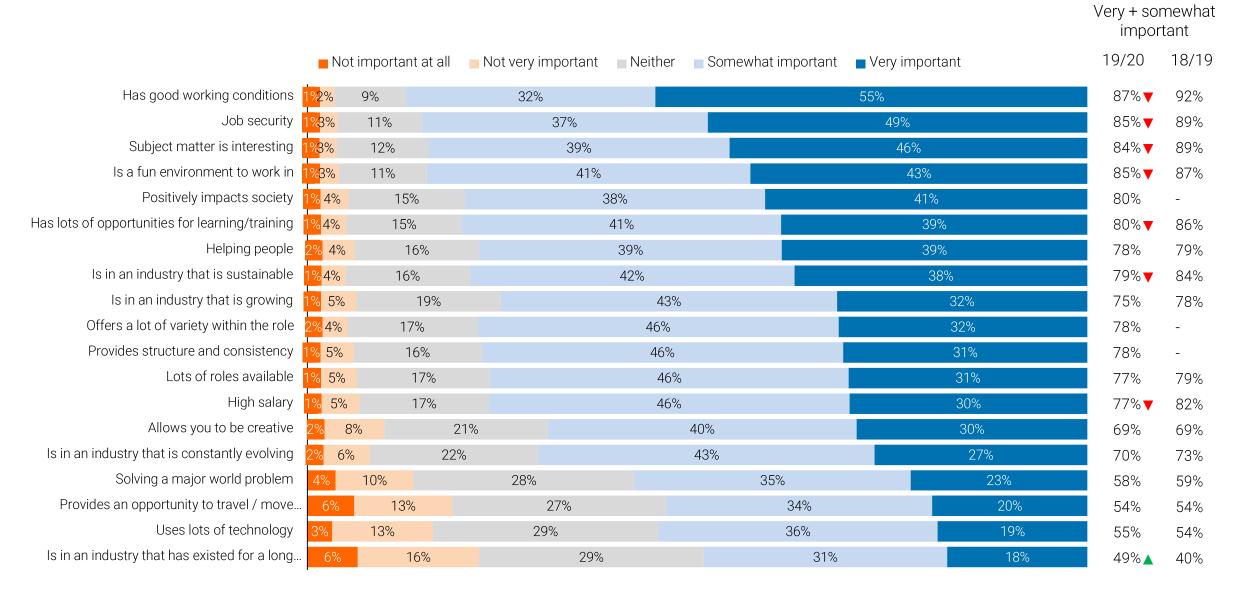
2018/19	Boys/Men	Girls/Women
Biologist	20%	47%
Chemist	31%	25%
Other	13%	13%
Earth or environmental scientist	18%	11%
Physicist	18%	4%

Factors influencing career choice

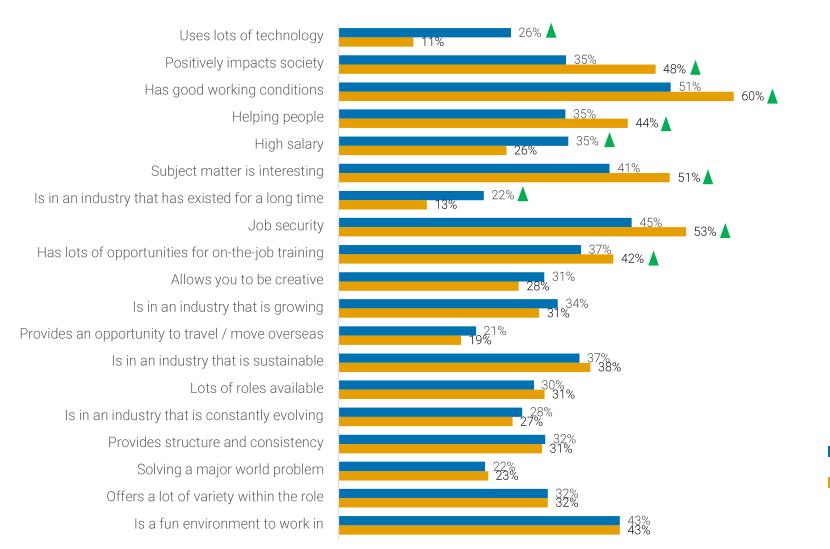


Q. From the below list, which factors most influence your decision of the subjects you choose to study? Please select up to 3 factors which influence you the most. Q. And which of the below people influence the career you aspire to? Please select up to 2 groups of people who influence you the most Base: Boys/Men – 1462, Girls/Women – 1542

Importance of factors on career choice



Importance of factors on career choice – gender difference



Technology use is one of the more dividing factors between genders, with girls and women ranking it as the least important factor.

'Having good working conditions' is the most important factor on career choice for both genders.

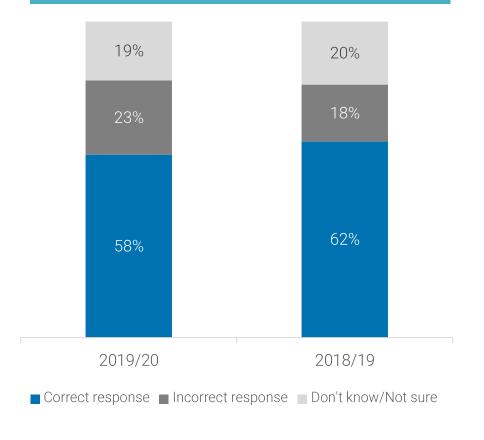
■ Boys/Men

Girls/Women

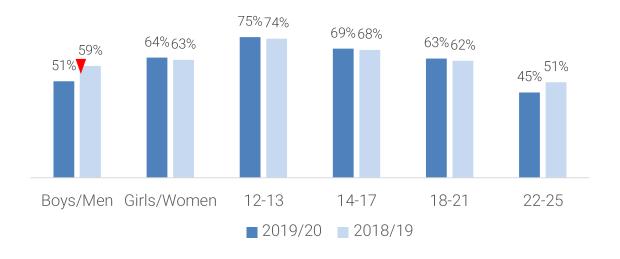


Understanding of STEM

Each respondent was asked what each letter of STEM stands for. Three in five students provided the correct response for all letters – science, technology, engineering and maths.



Correct response (age and gender)

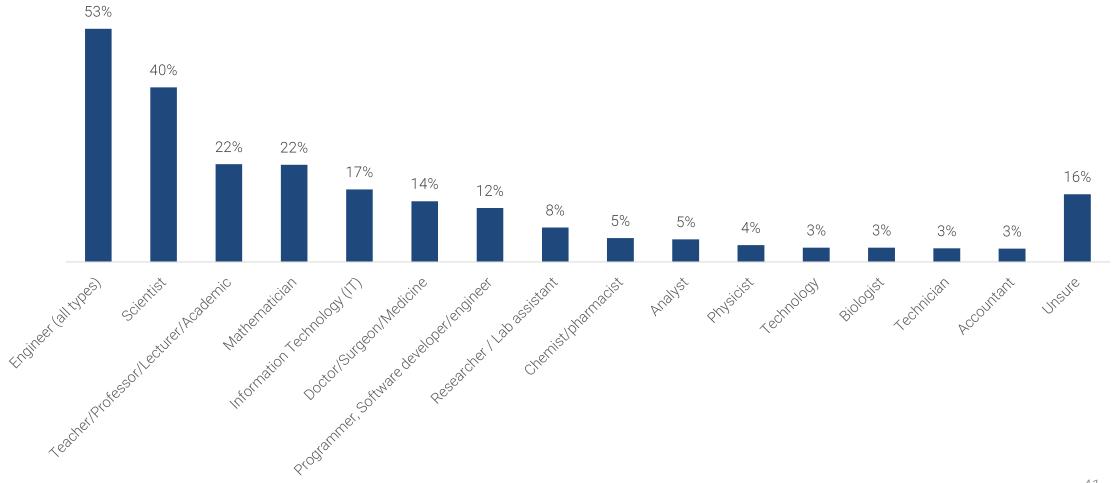


Sample of incorrect responses

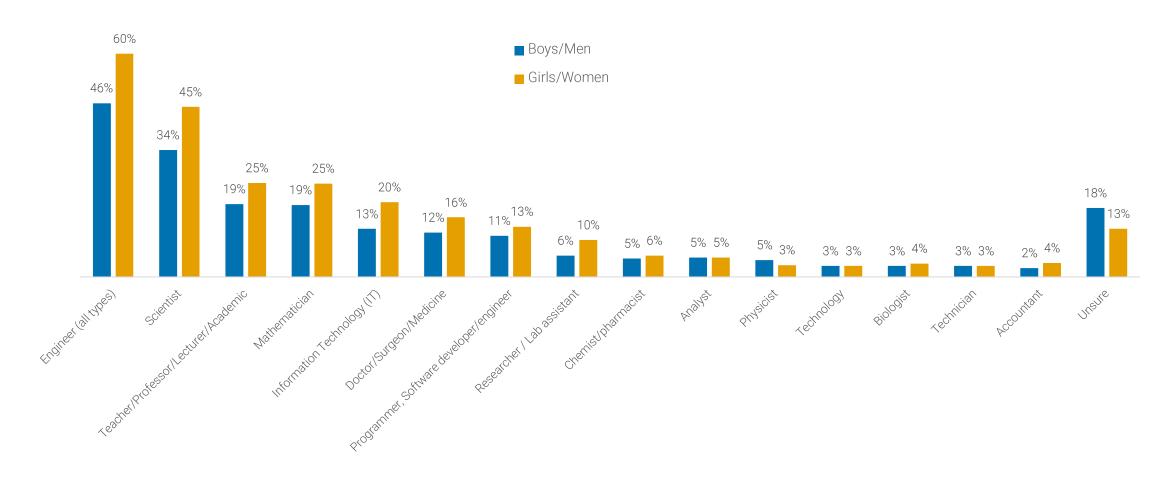
- Science, Technology, English, Maths
- Science, Technology, Economics, Maths
- Science, Technology, Education, Maths
- Science, Technology, Enterprise, Maths
- Science, Technology, Environment, Maths
- Science, Technology, Electronics, Maths

- Science, Technology, Engineering, Medicine
- Science, Technology, Engineering, Marketing
- Science, Technology, Engineering, Management
- Science, Technology, Engineering, Mechanics
- System, Technology, Engineering, Management
- Sustainability, Technology, Environment, Management

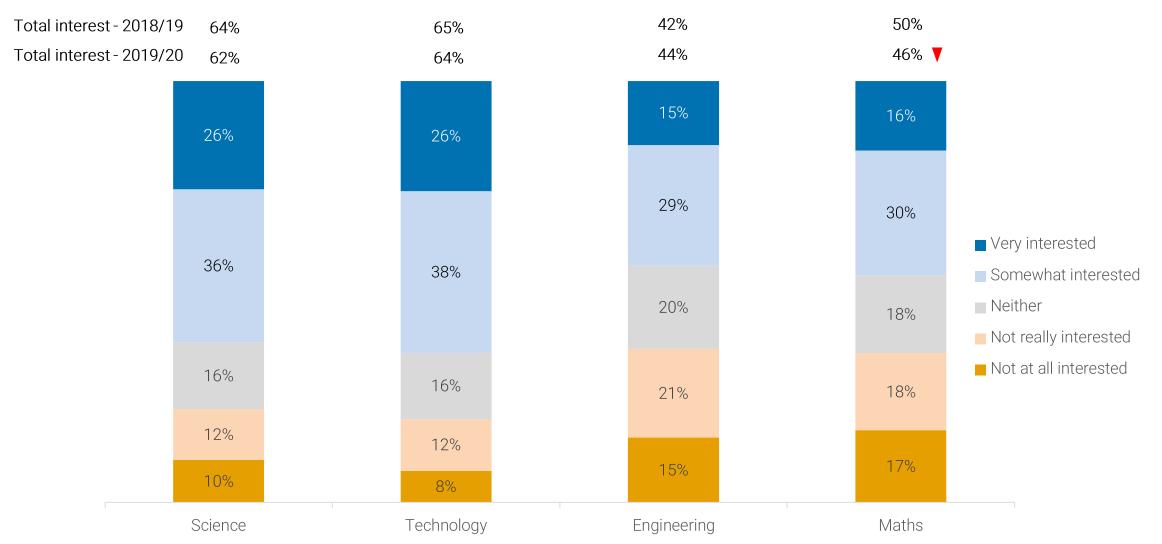
Types of jobs associated with STEM qualifications



Types of jobs associated with STEM qualifications – by gender



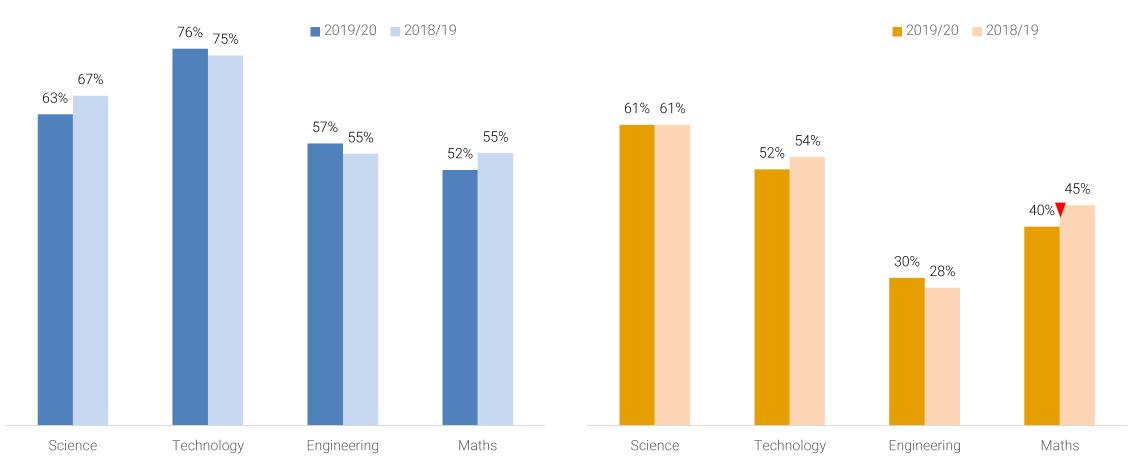
Level of interest in STEM subjects



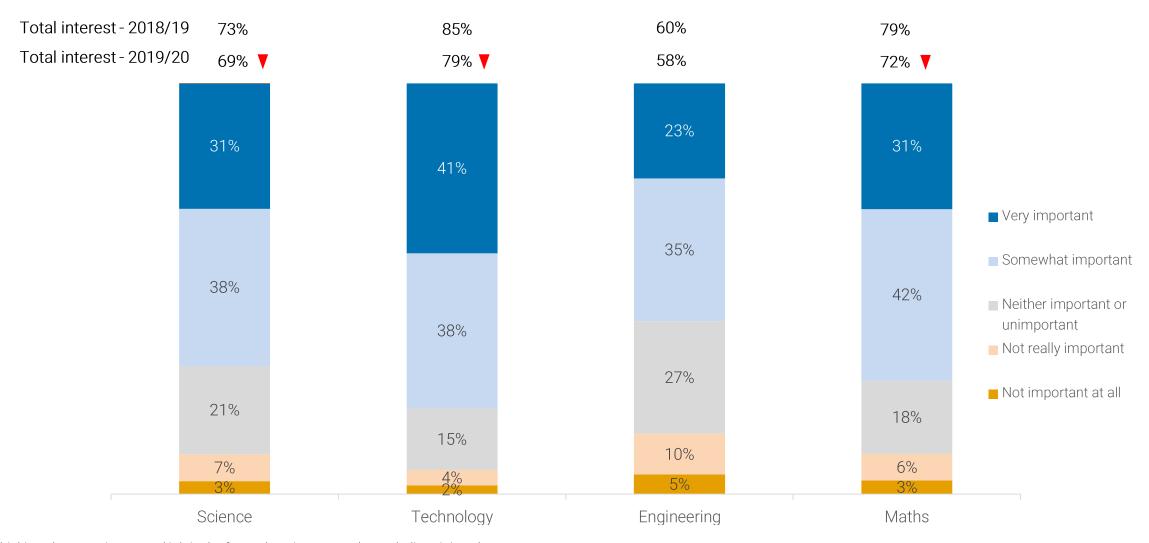
Level of interest in STEM subjects – by gender

Very or somewhat interested - Boys/Men

Very or somewhat interested – Girls/Women

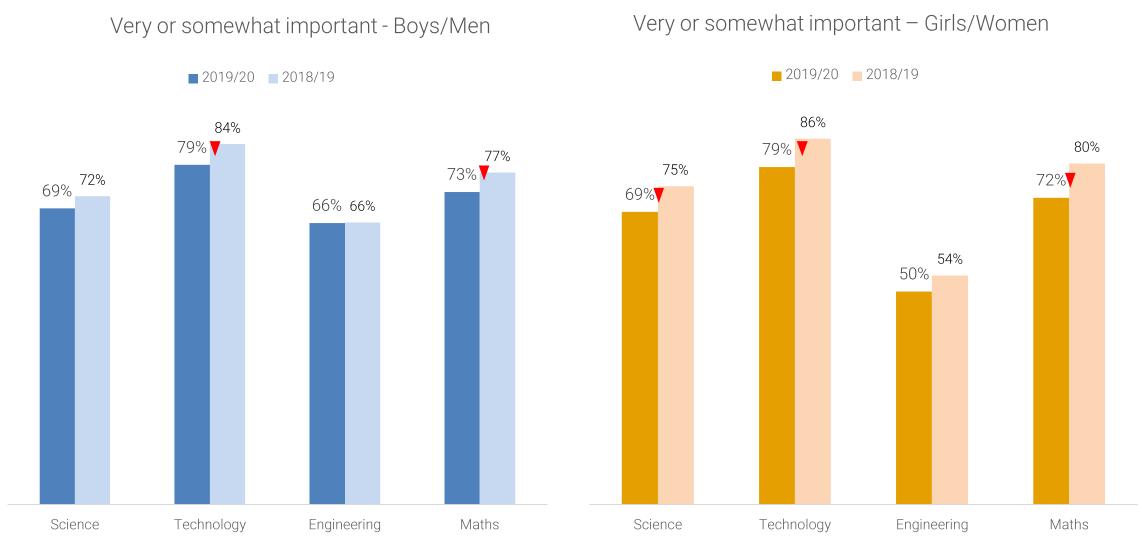


Importance of STEM knowledge for employment



Q. 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 Base: 2019/20 Total – 3,021 2018/19 Total – 2,092

Importance of STEM knowledge for employment - gender



Q. 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?

Base: 2019/20 Boys/Men – 1,462, Girls/Women – 1,542 2018/19 Boys/Men – 813, Girls/Women – 1,051

Reasons for and against studying **Science**

FOR studying science

Understand how the world works

"To get a good job you need to know the fundamentals of how the world works so it can help you with matters such as social, life and workplace hazards. You can also solve problems and identify dangers and know the solutions to solve them." & 16

Science teaches transferrable skills

"Science knowledge exists in every field (even in nonscience fields) & scientific skills are readily transferable and are an asset to any job." ?, 23

Prepares people for good jobs

"Good jobs pay well, therefore knowledge about science would land you a good job with good pay." ?, 18

Develops critical thinking and analysis

"Science teaches you how the things work and also teaches problem solving and critical thinking." • 20

AGAINST studying science

Science is not required for employment / too specific

∠"There are many other roles that don't require science."

♀, 17

"I aspire to work in the area of law so science is not important to me." **3**, 19

"Because the job I am after does not include science. ©7, 21

"It is a specific field with specific skills and as a generalisation isn't necessary for a good job." \mathfrak{P} , 15

Don't like it, its boring....

"Boring, and not as exciting of a job." 67, 25

Reasons for and against studying <u>Technology</u>

FOR studying technology

Key requirement for getting good jobs

"Technology is extremely important to get a good job especially in today's day and age. ..we discover new technological advances everyday, thus we need to stay informed about them." ?, 16

Tech is everywhere / need to keep pace

"Technology is everywhere in modern society. It is used in nearly every business I can think of in some shape or form. Not having knowledge in this field would inhibit one's ability to work in businesses." **?**, 19

Technology is the future

"Technology is the way of the future. If you don't get it you're already 10 steps behind." &, 16

Constantly evolving and a disruption agent

"Technology is taking over the world and certain industries have been revolutionised by technology so it's important to keep up." \(\begin{aligned} \gamma & 15 \end{aligned} \)

AGAINST studying technology

Technology is not need for all jobs / not relevant to me

"Not every job requires tech." **?**, 19

Having basics is enough

"Technology knowing the basic to intermediate level should be enough instead of knowing full on what everything about it."

67. 19

Training is provide / easy to learn outside school

"You can get training in relevant tech, don't need skills beforehand for most jobs." ?, 19

Reasons for and against studying **Engineering**

FOR studying engineering

Teaches problem solving skills

"Engineering needs good problem-solving skills and coming up with effective solutions, which can be transferred to any type of job." **?**, 15

Innovation in nature and solution-focused

"Engineering is innovative and all about providing solutions which are important." **3**, 17

Opens up career options

"Engineering opens many doors for future careers." 🗗, 23

Promotes creativity

"Engineers are the most creative people on planet. No matter what field we choose we constantly have to learn and adopt new skills." ©7, 21

AGAINST studying engineering

Many jobs not require these skills

"Unless you are becoming an engineer they are not required." **©**, 17

"Not all jobs that are of a high performance require engineering knowledge." \$\mathcal{G}\$, 15

Too specific and specialised

"Engineering is very specific and specialised, whereas the other areas are more likely to be useful in other fields." ${\cal G}$, 19

Not interested in engineering

"Personally, I am not interested in engineering so my opinion is biased." **6**, 19

Reasons for and against studying Maths

FOR studying maths

AGAINST studying maths

Basic maths knowledge is important for all jobs

"Basic math skills are used in every job therefore it is good to have these skills.." **?** 23

Essential life skill

"Maths is important in all areas of our life. I think it's an important life skill in general." 🚱, 17

Foundation for all STEM subjects

"Maths underpins the other sections of STEM." 67, 18

Pays well

"Most good paying job involves some maths." 🗗, 19

Technology does maths better

"For example, we learned university mathematics, but there is an automatic mathematical calculation feature in programs and I don't think we live at a time when people need to sit down one by one. Everything's ready for us." §, 22

Maths is not required for all jobs

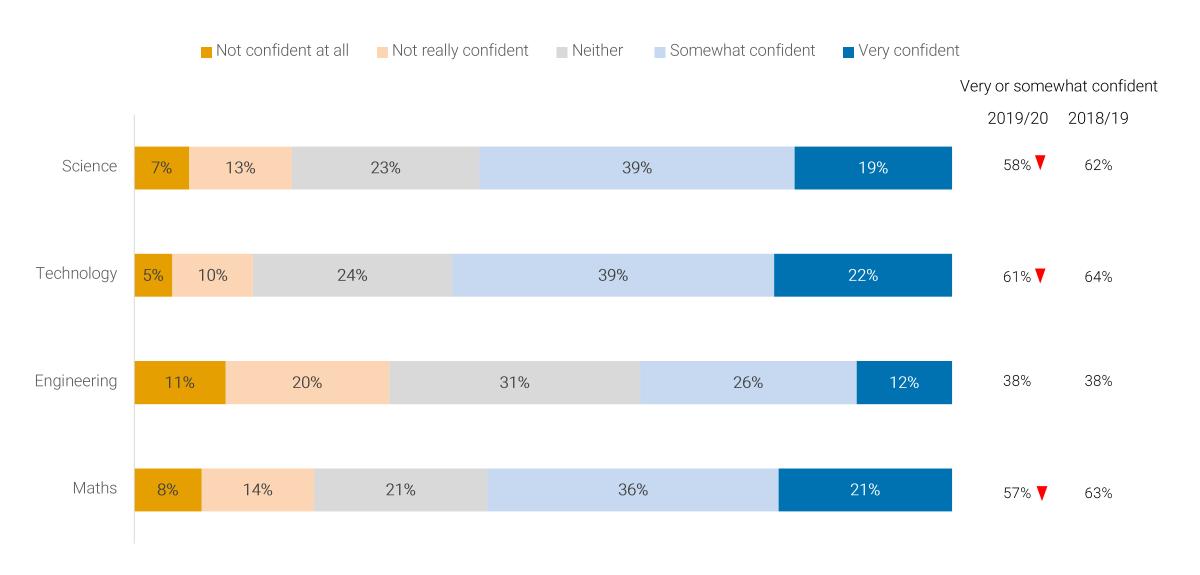
"A lot of people struggle at maths and still have successful careers in law or education." ?, 19

Only basic maths is required

"While basic maths skills are important for most occupations, a complex understanding is not required for most positions." ?, 22



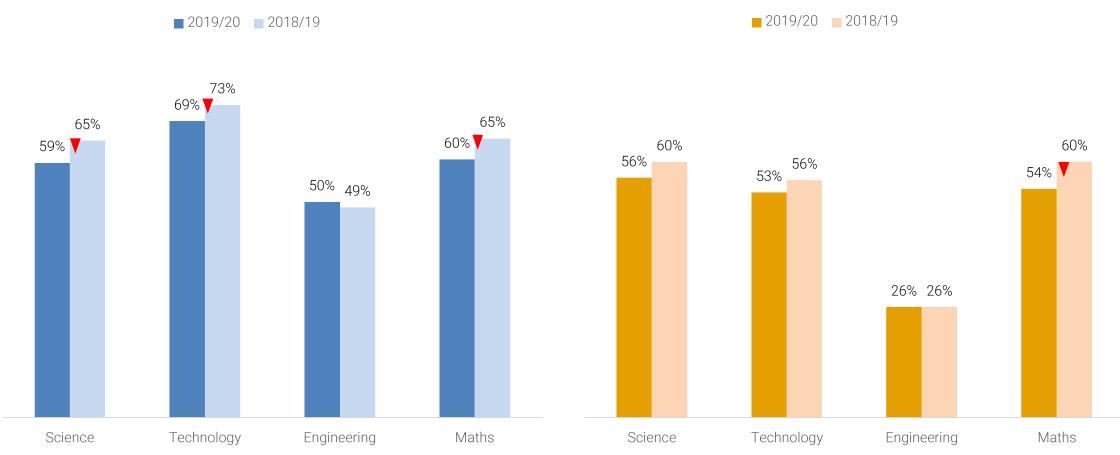
Confidence in getting good results in STEM subjects



Confidence in getting good results in STEM subjects

Very or somewhat confident - Boys/Men

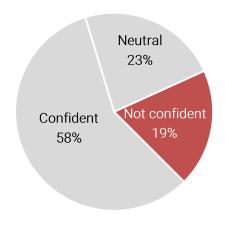
Very or somewhat important – Girls/Women



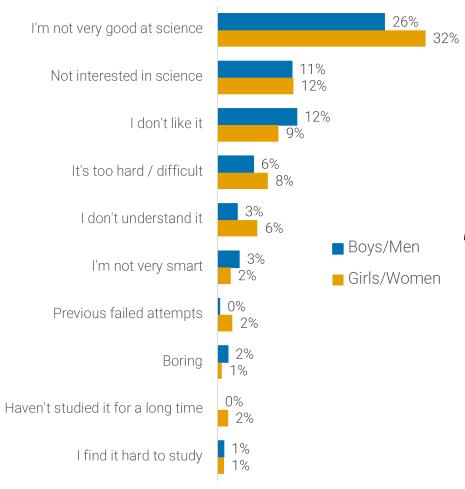
Q. How confident do you feel that you can study and get good results in each of the following subjects? Base: 2019/20 Boys/Men – 1,462, Girls/Women – 1,542 2018/19 Boys/Men – 813, Girls/Women – 1,051

^{*} Top 2 box – Respondents who selected very or somewhat confident

Reasons for low confidence in Science



Reasons for low confidence in Science



"I am not really good at logical and critical thinking and reading the complex language of science." ?, 24

"I have never excelled in these subjects, and avoided them in high school." \$\mathcal{\sigma}\$, 21

"As it doesn't interest me in the slightest and I know I don't have the capacity nor the brains to do science." ?, 18

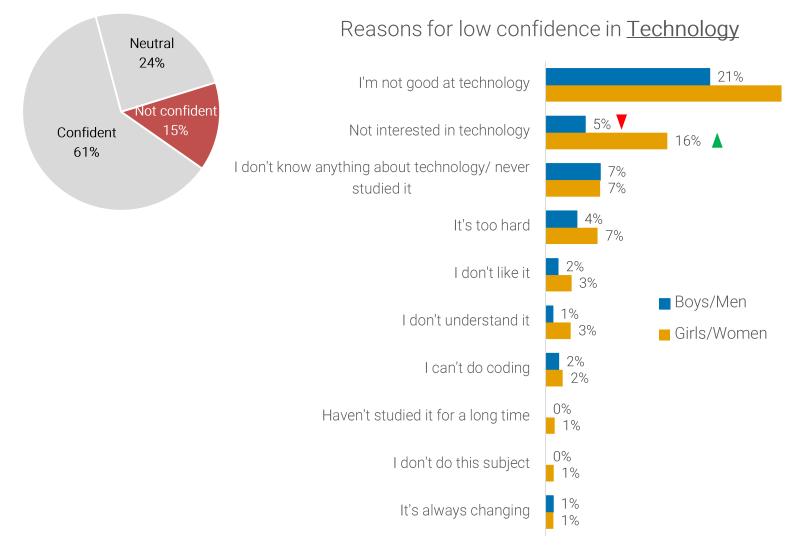
"Because from my experience science is difficult to understand. Science has lots of features and subtopics that confuse the brain too much." \$\mathcal{C}\$, 13

"Because I'm terrible at them." 🛭 19

"I don't feel confident because I don't properly understand the concepts and rules of science." ?, 15

"As I try my hardest in my science subjects but my school scales marks so low I get a low score.." \$\mathcal{G}\$, 17

Reasons for low confidence in Technology



"As much as I love technology, coding language and such has always been hard for me to grasp." ?, 18

"I'm more of an arts and social science student." 🗗, 23

"I don't know one thing to the next about technology as its getting more advance and harder for me grasp." **?**, 18

"Coding is confusing." 👂, 22

"I'm not very good at programming and it seems pretty confusing." **?**, 17

"Although I know how to use technology, I would struggle to understand the concepts behind it." 👂, 17

"Because I am not smart." 👂, 17

"I'm not a tech geek, I guess". 👂, 20

"It's not applicable in my field". Non-binary, 21

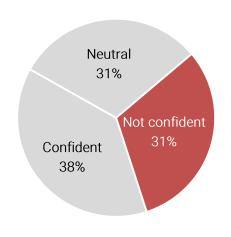
"I have very little understanding about it." 🗗, 15

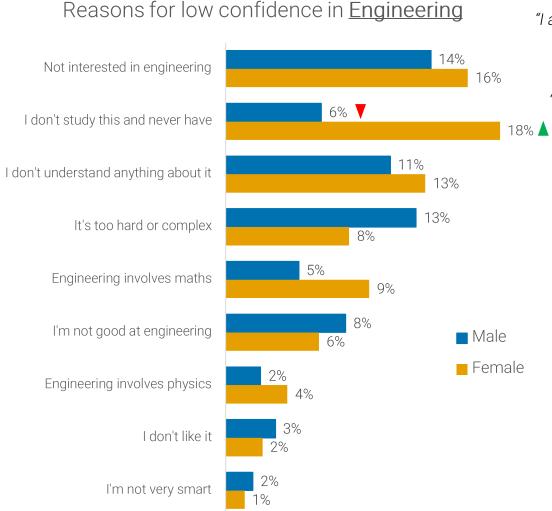
55

▲ ▼ Significantly higher/lower than counterpart. Based on 95% confidence interval

Q. Why do you not feel confident about getting good results with technology subjects? (only top reasons shown) Base: Boys/Men - 139 Girls/Women - 294

Reasons for low confidence in Engineering





"I am not really interested in engineering and not sure what engineering subjects are. Although if it is hands-on, I definitely am not capable." **?** 16

"Not within my area of interest nor expertise. I don't know much about engineering." **?**, 20

"I have never done anything related to engineering." \mathbf{g} , 20

"I have never done engineering." ?, 16

"I don't have brains to do it as its far out of my comfort zone." \mathcal{P} , 15

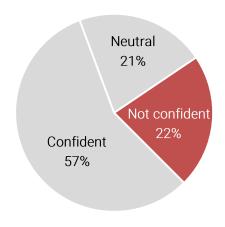
"I'm not so good at maths." 🛭 , 17

"I don't do this subject and you have to be very good at maths and I don't like maths." \(\mathcal{G} \), 16

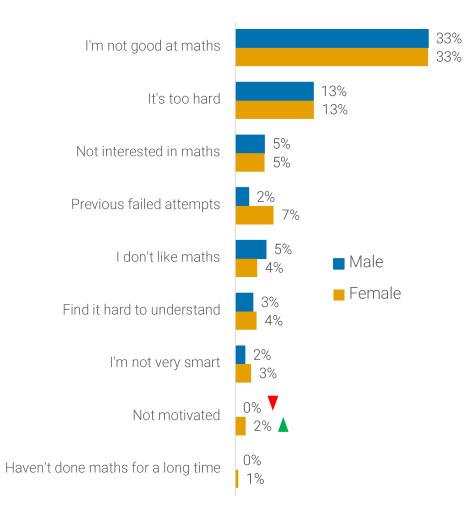
"I know nothing about engineering and I don't consider myself a creative individual." **?**, 15

"Hard concept. More for boys." 🙎, 21

Reasons for low confidence in Maths



Reasons for low confidence in Maths



"I try my hardest but I'm only just below average." 🗗, 15

"I find it extremely boring and would struggle to be motivated." ??, 25

"I do not always fully understand the concepts I am learning in maths and I must be able to know WHY I am doing things to do well in a subject." **?**, 17

"Whilst I'm good with finances, more abstract concepts of maths are hard to grasp and don't interest me." \$\mathcal{G}\$, 20

"I perform better in subjects such as English, community and family studies or PDHPE. Whereby there is more writing and explanation, rather than calculations." ?, 17

"Because I've got a poor track record in it." ${\it Q}$, 16

"Because of past experience and it does not interest me."

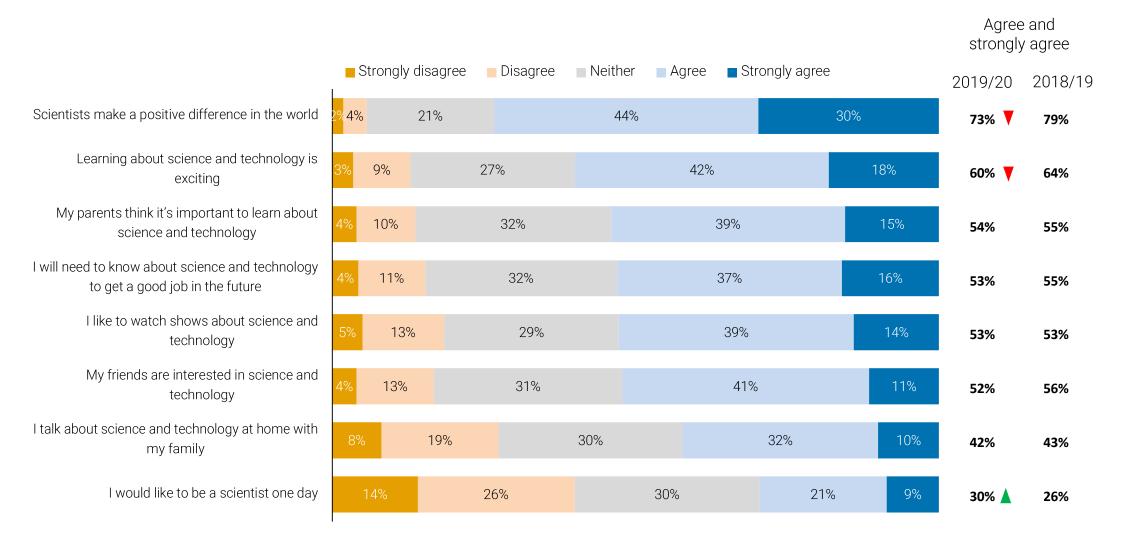
67, 18

"As I'm literally a test dummy to this new ATAR system it's changed everything and now I don't feel as smart in math anymore I went from an A to barely passing." $\mathbf{\mathcal{P}}$, 16

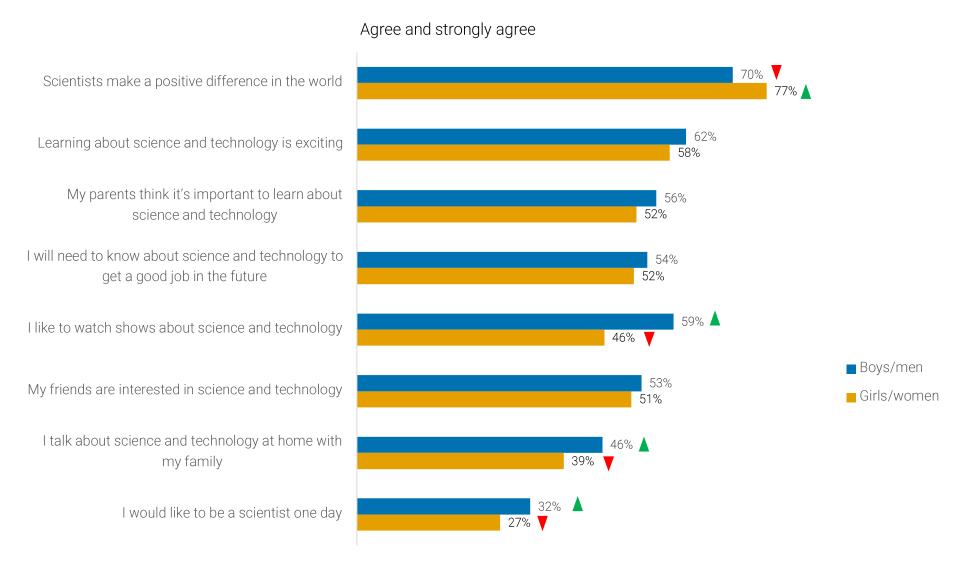
Q. Why do you not feel confident about getting good results with maths subjects? (only top reasons shown) Base: Boys/Men - 252 Girls/Women - 377

▲ ▼ Significantly higher/lower than counterpart. Based on 95% confidence interval

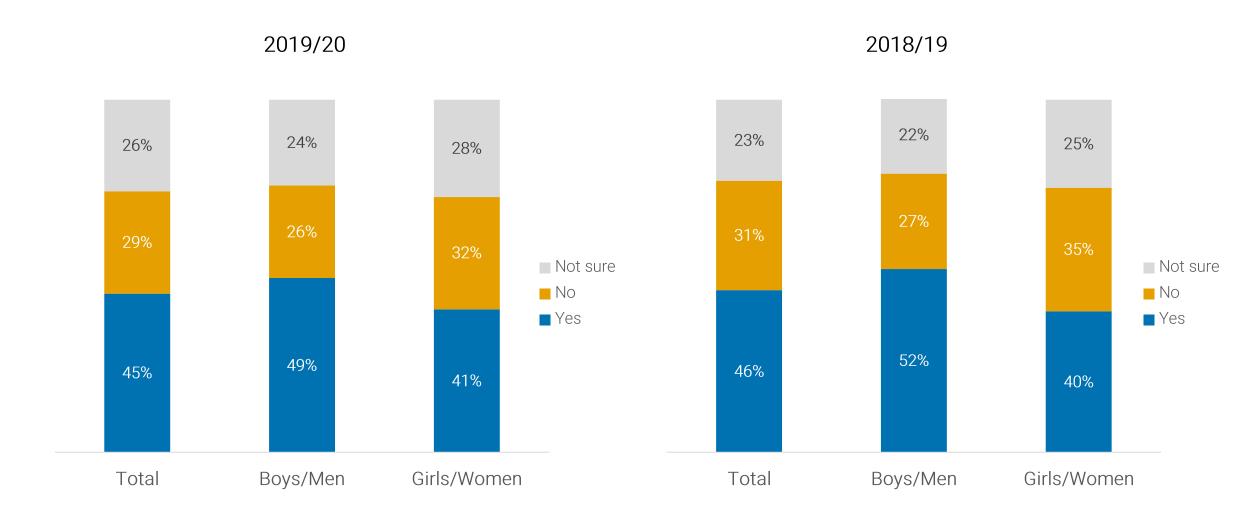
Perceptions on science and technology



Perceptions about science and technology by gender



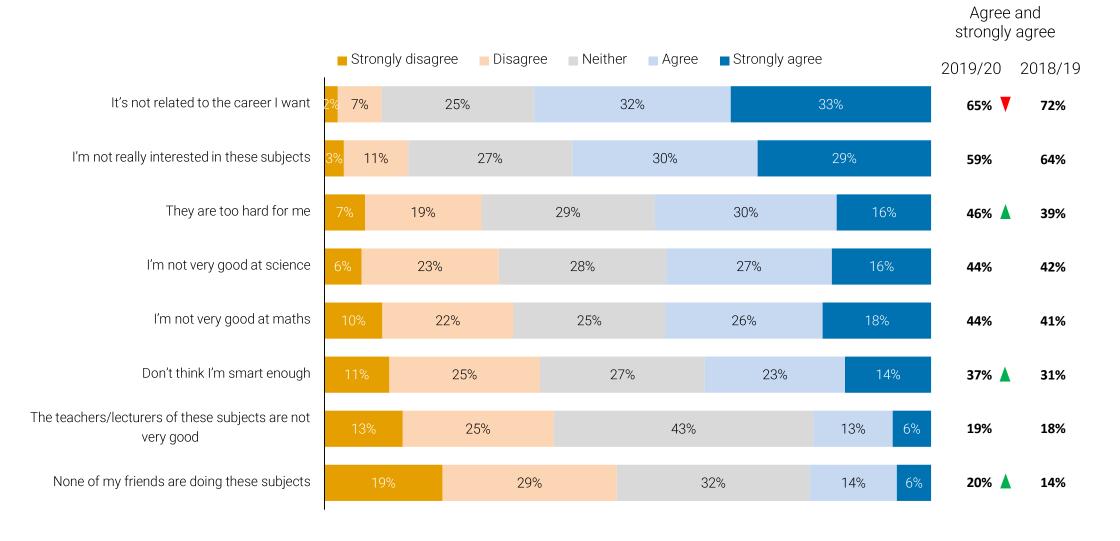
Consideration to study STEM in the future



Q. Are you considering studying STEM related subjects in the future? STEM stands for Science, Technology, Engineering and Maths, but it also includes subjects such as biology, chemistry, physics, computing, programming, coding, mechanical and electrical trade.

Base: 2019/20 Total – 3,021, Boys/Men – 1,462, Girls/Women – 1,542. 2018/19 Total – 2,092, Boys/Men - 978, Girls/Women - 1,069.

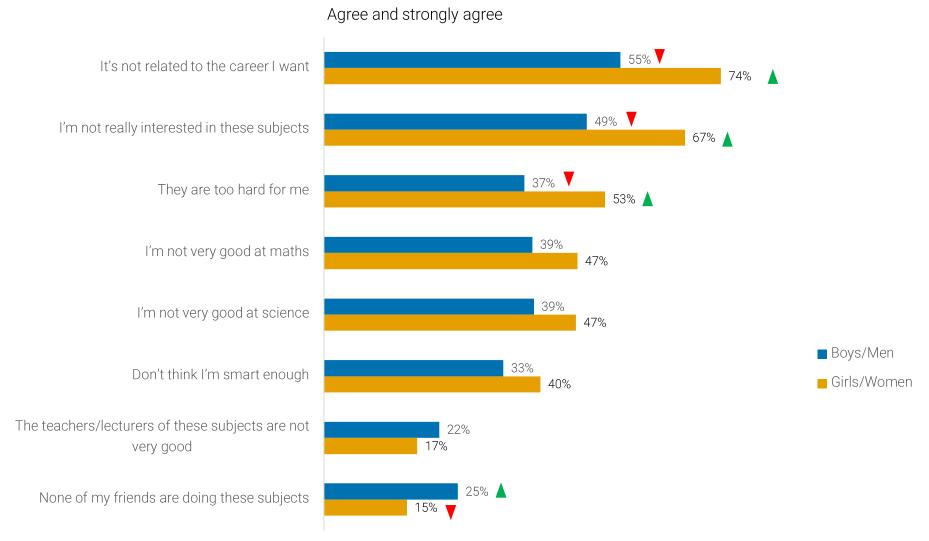
Reasons preventing students from studying STEM subjects



Q. 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

Base: Not consider studying STEM subjects: 2019/20 Total – 873 2018/19 Total – 659

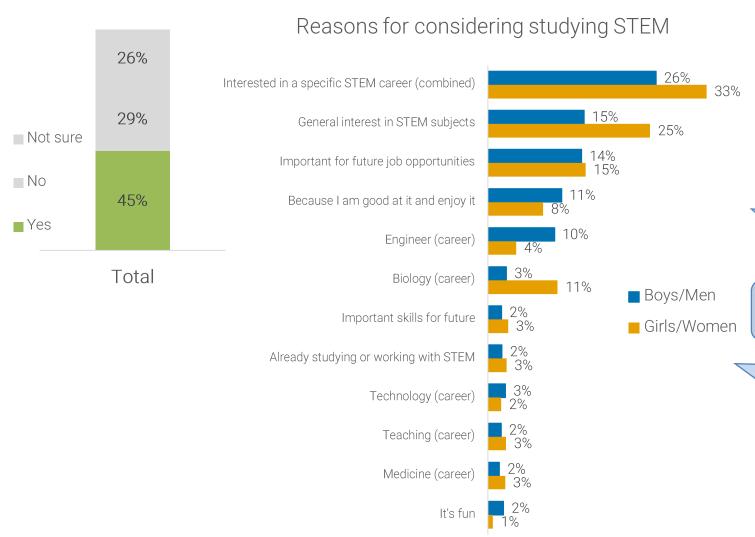
Reasons preventing students from studying STEM subjects – by gender



Q. 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

Base: Not consider studying STEM subjects: 2019/20 Total – 873 2018/19 Total – 659

Reasons for considering studying STEM



Accounting, Actuary, Architecture, Astronomer, Biomedicine, Biology, Civil Engineer, Chemistry, Computer Science, Computing, Data science, Doctor, Electrical trades, Maths, Medicine, Neurosurgeon, Nursing, Other Science, Paramedical Sciences, Pathology, Pharmacy, Physics, Programmer, Psychiatrist, Psychologist, Science, Software developer, Sports science, Teacher, Technician, Vet.

"I want to work in the IT industry as I have always enjoyed computers." **F**, 17

"As it is beneficial for the future and ensure job security within the near future as you will have developed many skills." ?, 16

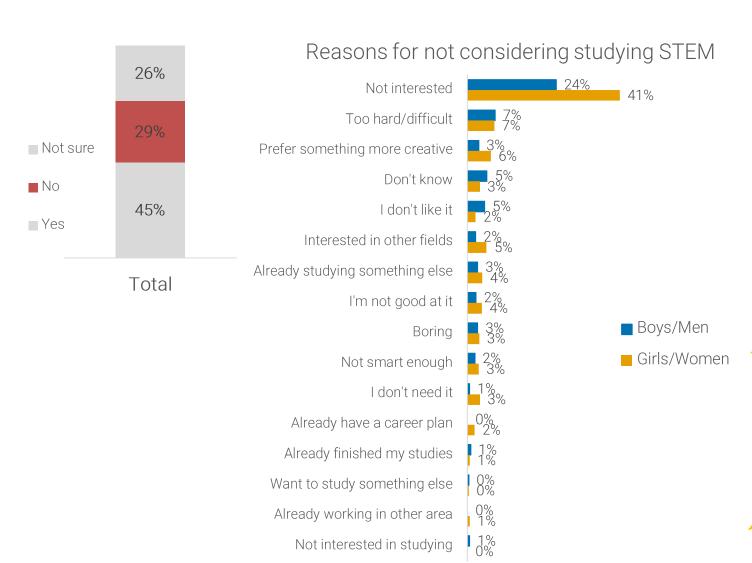
"I like science and want to help better the world and I believe I can do that through studying biology." 🛭 ,17

"It is interesting to learn about up and coming technologies that are being developed at the moment (e.g. Al, machine learning) and their applications." ?, 18

"The world is heading more and more into the direction of STEM and so having ability and skills in this areas will make me employable." \$\mathcal{G}\$, 19

Q. Why are you considering studying subjects related to STEM in the future? Base: Boys/Men-404 Girls/Women-384

Placeholder for Reasons for not considering studying STEM



"Too complicated I'm not very smart." 👂, 14

"They don't interest me or benefit my current career aspirations." 🚱, 19

"Because I just don't have an interest in the fields that involve STEM." **3**, 15

"I find the whole area quite dull and boring to me. I am both a logical and creative thinking person, but I enjoy thinking creatively much, much more." \$\mathcal{G}\$, 16

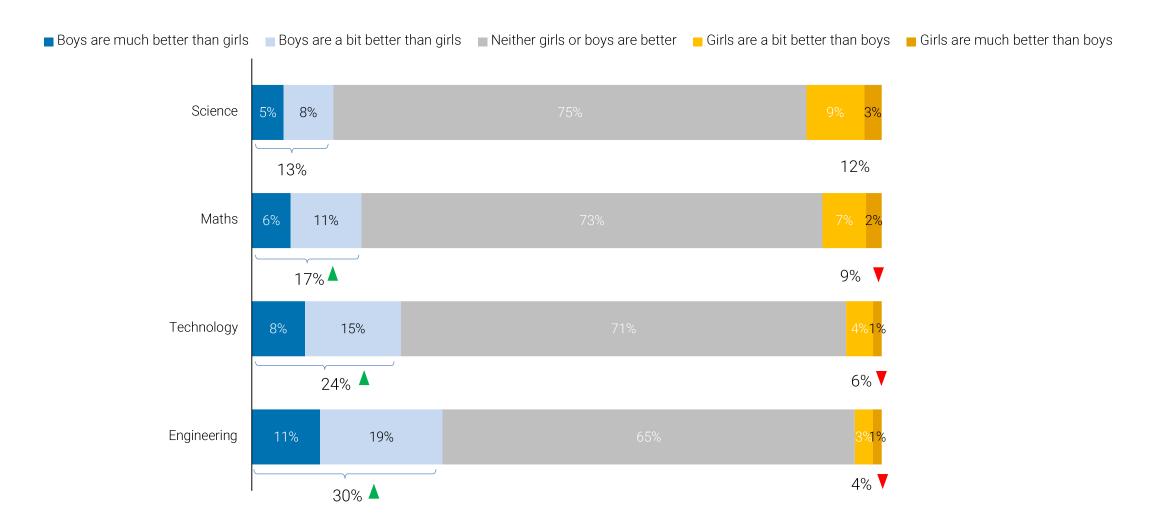
"It is not my preferred field of study. Although it is lucrative and offers many opportunities, my passion lies elsewhere.." \$\mathcal{C}\$, 25

"The lack of knowledge and ignorance on STEM careers and pathways has lead me to not have invested interest." \cite{S} , 25

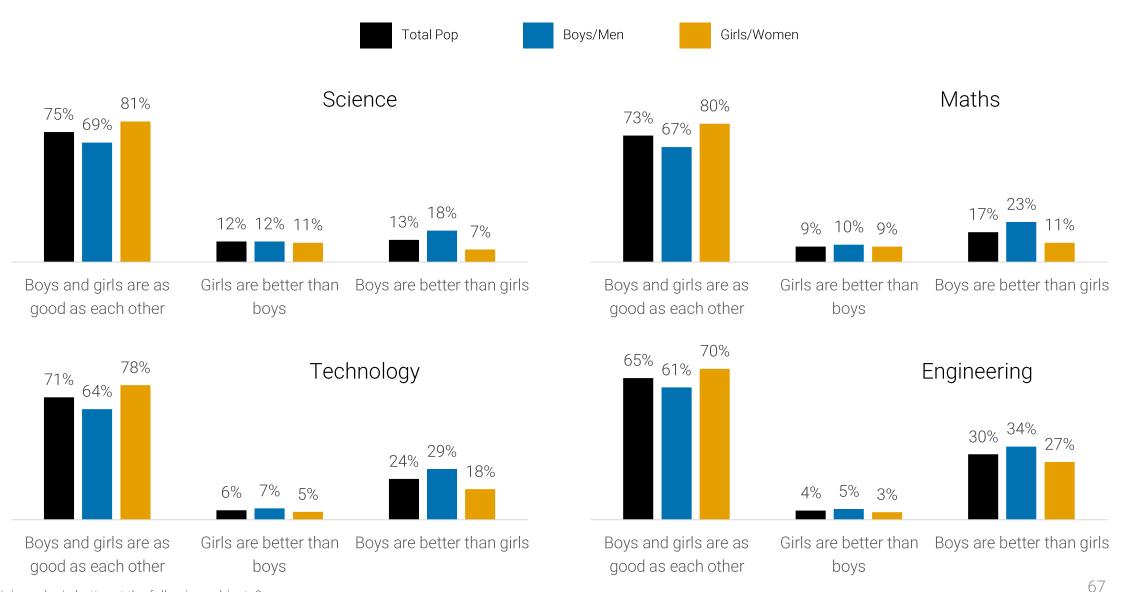
"I love learning about science but do not want to pursue it as a career. Instead, I am passionate about people and prefer writing to mathematics." ?, 17



Perceived gender superiority studying STEM subjects



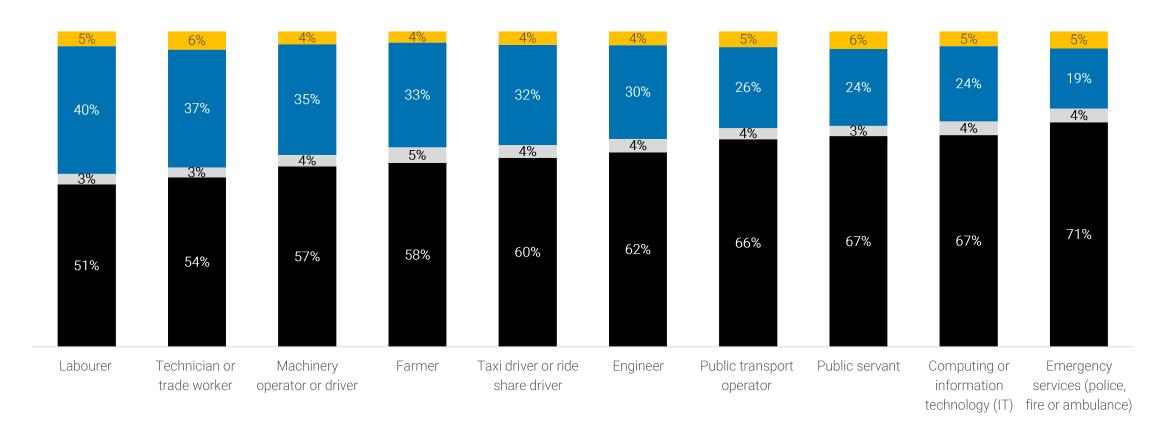
Perceived gender superiority studying STEM subjects – by gender



Q. In your opinion, who is better at the following subjects? Base: Total – 3,021 Boys/Men – 1,462, Girls/Women – 1,542

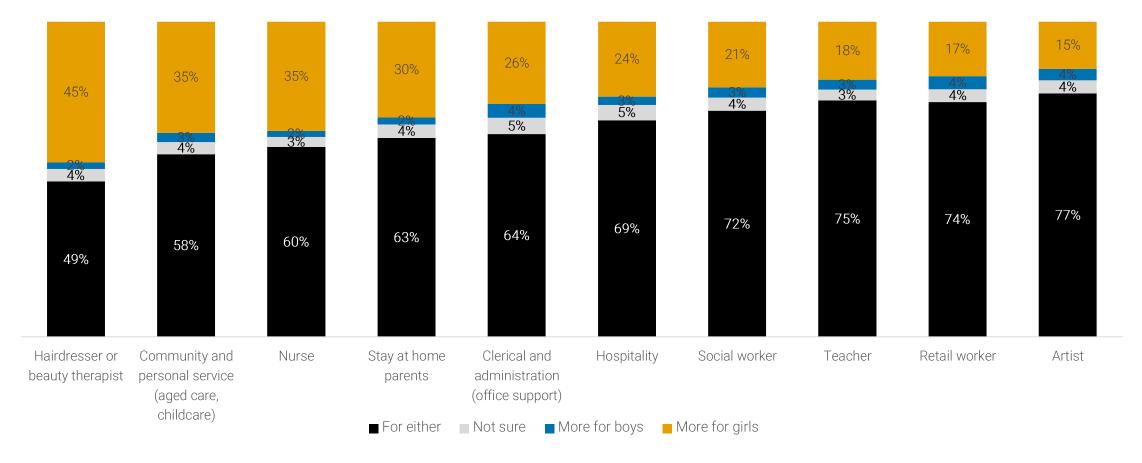
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Perceived male-oriented careers – Top 10

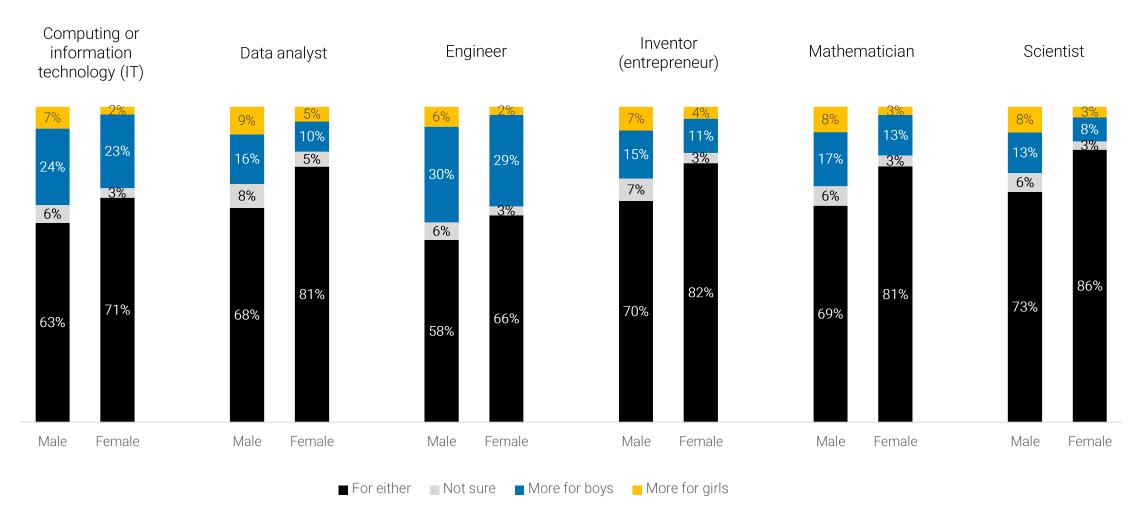


■ For either ■ Not sure ■ More for boys ■ More for girls

Perceived female-oriented careers – Top 10

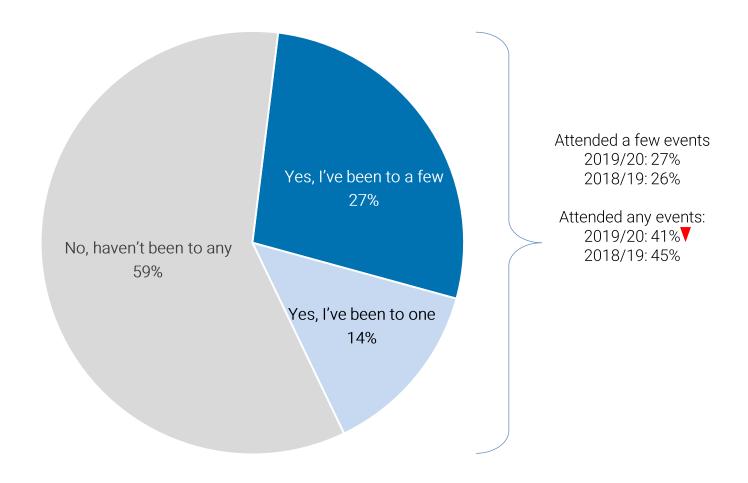


STEM careers perceived gender superiority





Science-related extracurricular activity participation

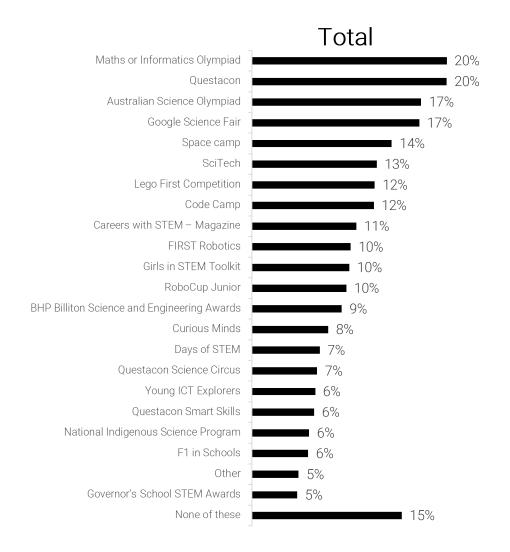


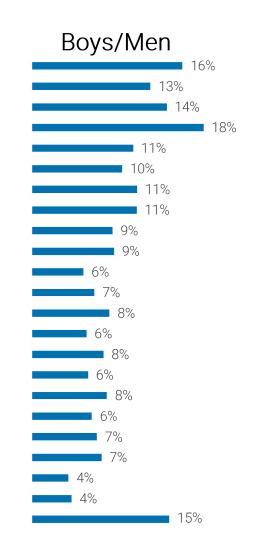
Attended a few events	2019/20	2018/19
Boys/Men	30%	28%
Girls/Women	25%	23%

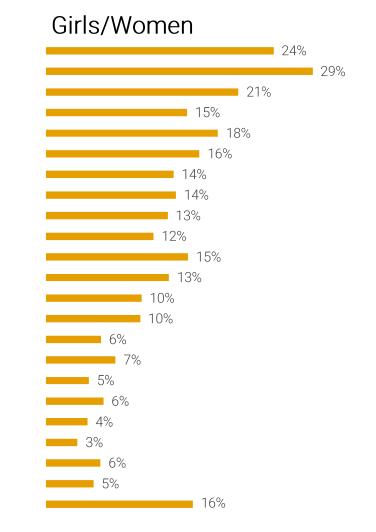
Attended any events	2019/20	2018/19
Boys/Men	44%	47%
Girls/Women	38%	42%

Q. Have you attended any science activities outside of school/study in the past 12 months? This could be anything from a science fair, to a museum, an expo or any other event related to science?

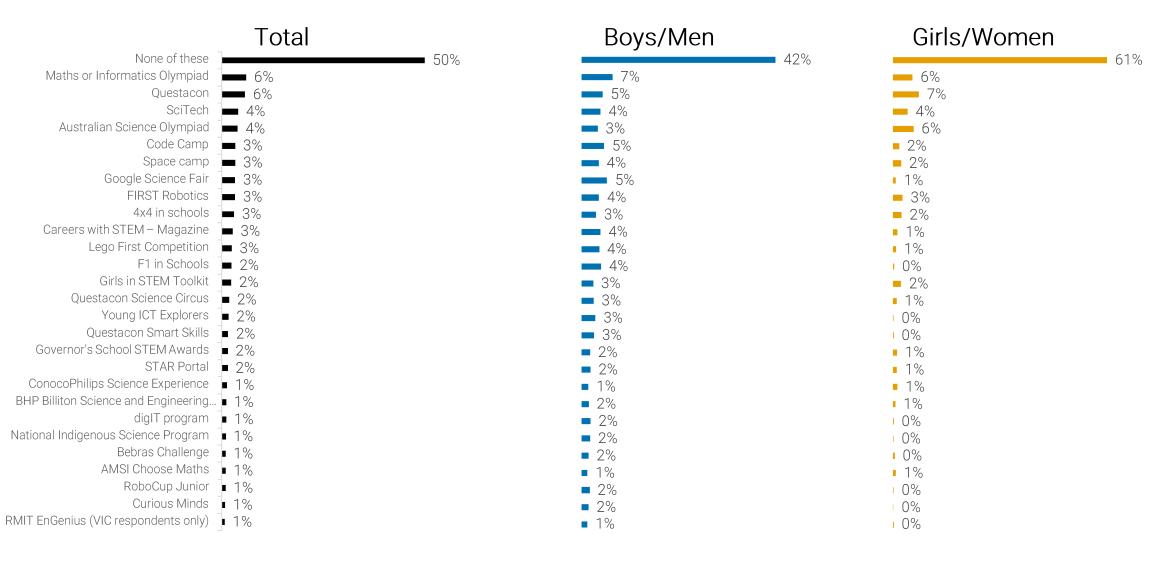
Awareness of STEM events





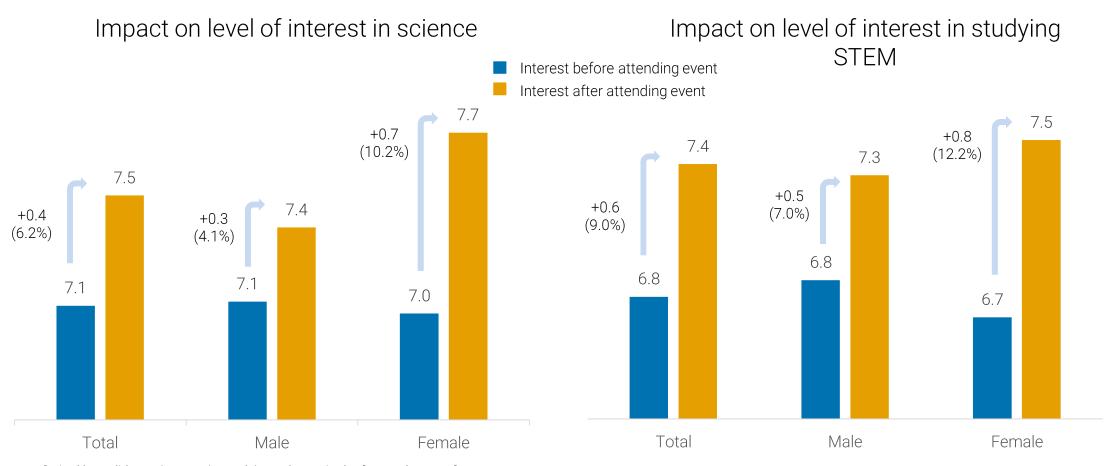


Attendance of STEM events



Impact of participating in STEM events

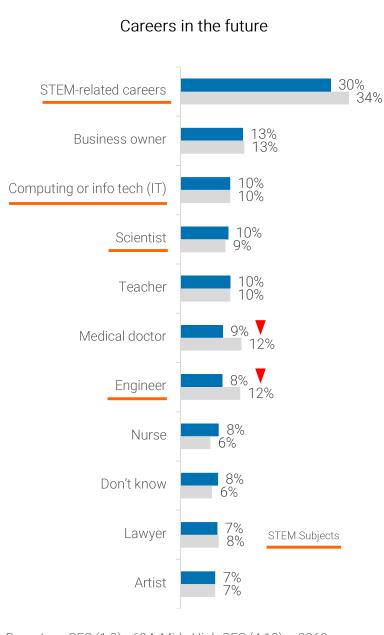
Participating in STEM events has had a greater impact on girls/women's level of interest in science and STEM

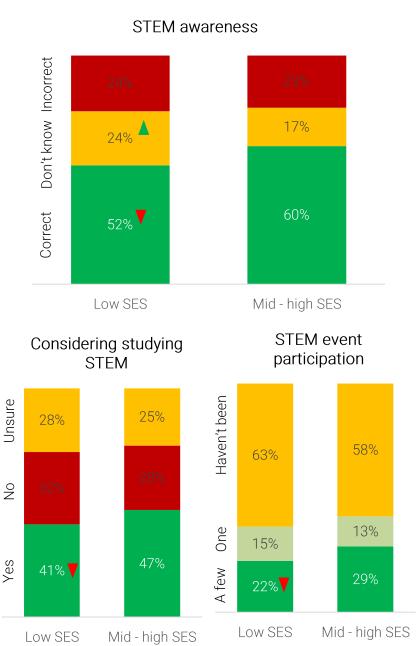


Q. And how did your interest in studying science, in the future change after attending these events? Base Attended one or more events: Total – 506, Boys/Men - 320 Girls/Women – 184

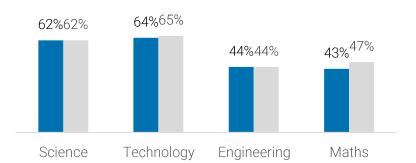
Q. And how did your interest in studying science, technology, engineering or mathematics subjects in the future change after attending these events? Base Attended one or more events: Total – 506, Boys/Men - 320 Girls/Women – 184



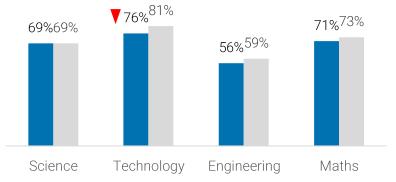




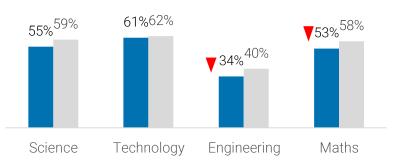
Interest in STEM (Very or somewhat interested)



Importance in STEM (Very or somewhat important)



Confidence in STEM (Very or somewhat confident)



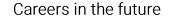
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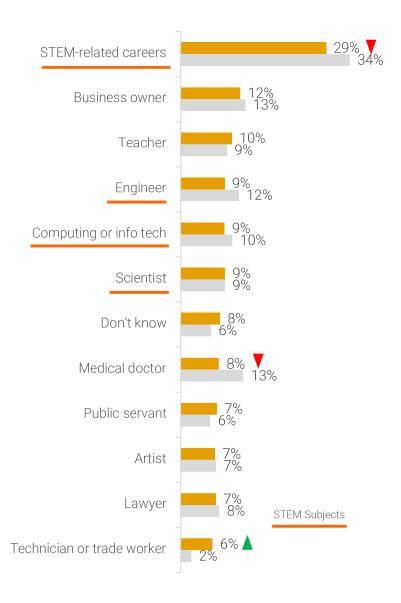
Regional & rural vs Metro

Unsure

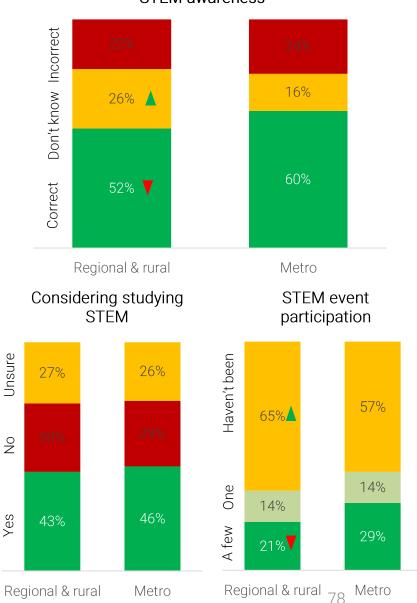
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Yes

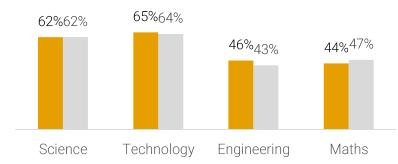




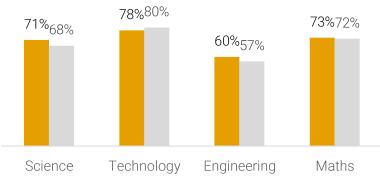
STEM awareness



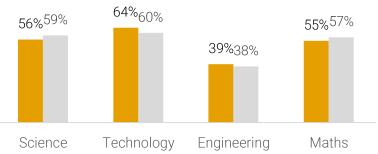
Interest in STEM (Very or somewhat interested)



Importance in STEM (Very or somewhat important)



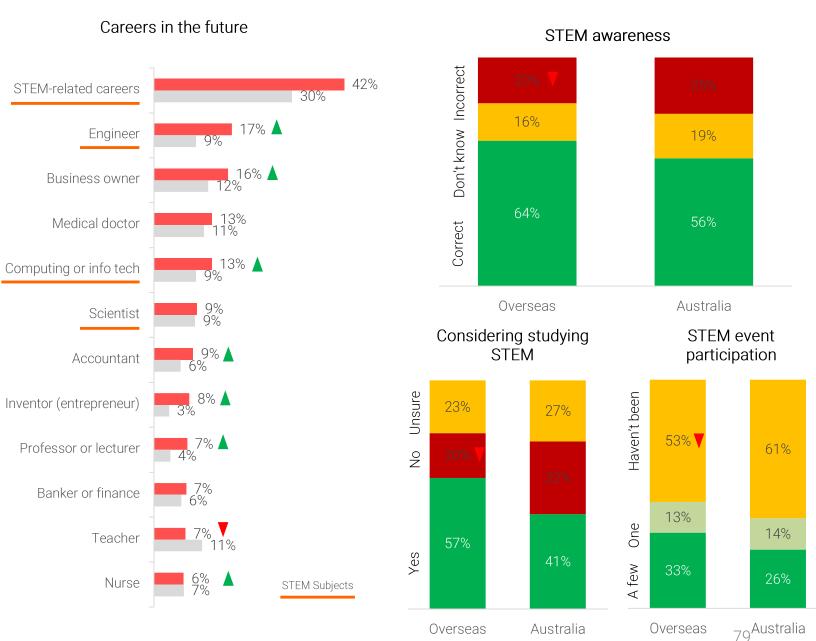
Confidence in STEM (Very or somewhat confident)



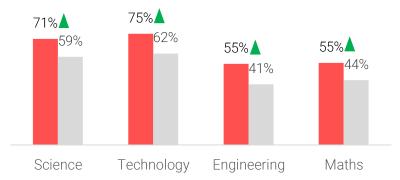
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Base: Regional and rural - 622, Metro - 2385

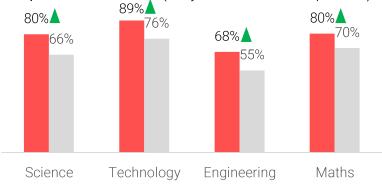
Born overseas vs in Australia Born overseas Born in Australia



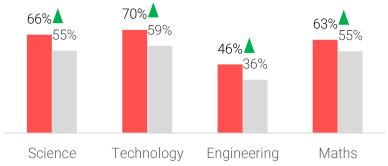
Interest in STEM (Very or somewhat interested)



Importance in STEM (Very or somewhat important)

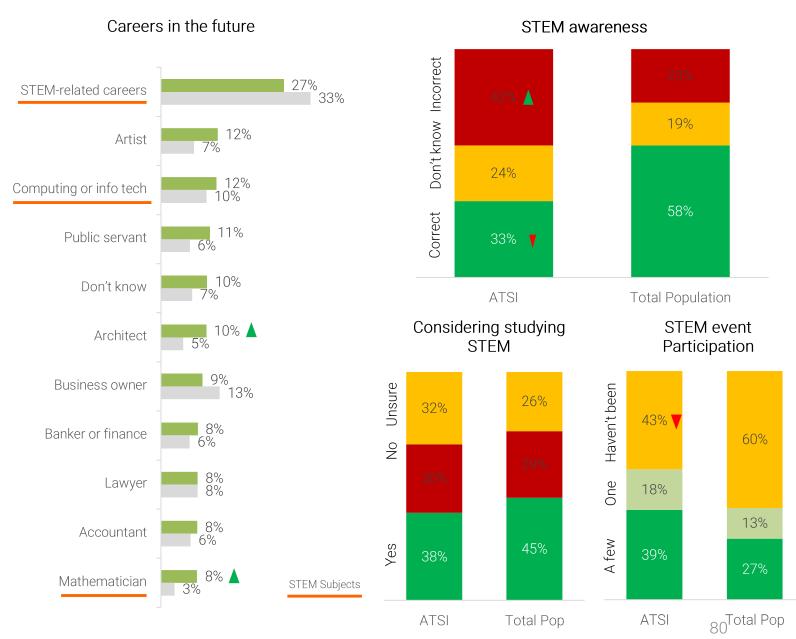


Confidence in STEM (Very or somewhat confident)

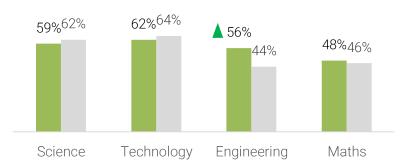


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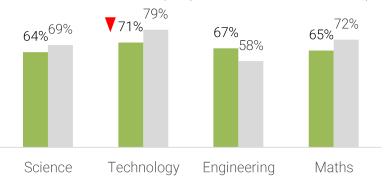
ATSI vs Total pop ATSI Total Pop



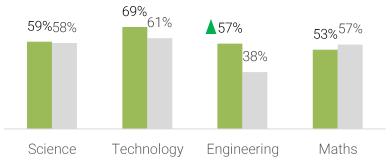
Interest in STEM (Very or somewhat interested)



Importance in STEM (Very or somewhat important)



Confidence in STEM (Very or somewhat confident)



▲ ▼ Significantly higher/lower than counterpart. Based on 95% confidence interval

