STEM SNAPSHOT 2023

Employment and education information in Science, Technology, Engineering and Mathematics

TE HONONGA AKORANGA COMET

STEM ALLIANCE AOTEAROA

STEM Alliance Aotearoa's mission is to create a diverse and equitable STEM-literate Aotearoa New Zealand.

One of the ways to achieve more equity in STEM is to ensure that all tamariki have access to the knowledge, information, opportunities, and resources to participate in STEM.

STEM industries continue to be the largest employing and highest paying industries in Aotearoa.

Average annual full time and annualised hourly salaries (excluding contract roles) in 2022[1]

1 Healthcare & Medical
General Practitioner
$182,022

2 Info & Comms Tech
Change Manager
$157,723

3 Info & Comms Tech
Architect
$155,006

4 Info & Comms Tech
Solutions Architect
$150,222

5 Accounting
Financial Controller
$145,685

6 Info & Comms Tech
Consultant
$144,469

7 Info & Comms Tech
Technical Lead
$140,907

8 Info & Comms Tech
Programme Manager
$140,843

9 Construction
Construction Manager
$140,192

10 Info & Comms Tech
Scrum Master
$137,146

New jobs added by field of study (2022)

Field of Study	Aotearoa	Tāmaki Makaurau
Health	+7300	+2942
Management & Commerce	+6892	+2762
Society & Culture	+6256	+2303
Engineering & Related Technologies	+3942	+1578
Education	+3143	+1067

*Employment opportunities by fields of study (degree/level 7 qualifications) based on job availability in 2022[2]

Employment opportunities

In 2022, the biggest increase in employment in Aotearoa and Tāmaki Makaurau was within the health sector.

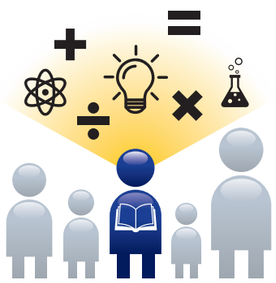
Less than 2% of the scientific workforce is made up of Māori workers[3].

Are we are equipping everyone with the right STEM skills to take advantage of the job market?

STEM SNAPSHOT 2023

Students' scores in technology were lower than last time the subjects were tested (in 2016).

How can we better focus our efforts to increase STEM skills in our region?



IN SCHOOL

Primary & Intermediate students (2022)[4]

176,094 in Auckland

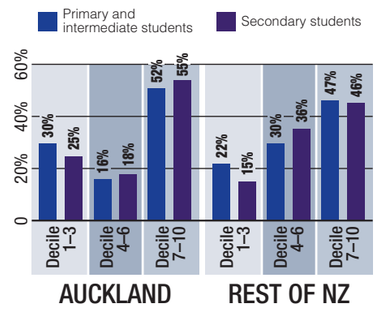
520,131 in Aotearoa

Secondary students (2022)[4]

100,240 in Auckland

295,020 in Aotearoa

Student enrolments in school by decile (2022)[4]



Auckland is unique and its students have unique needs — there were more students enrolled in higher and lower decile schools.

How will the Equity Index influence STEM funding and resourcing in schools?

The 2021 National Monitoring Study of Student Achievement (NMSSA)[5] in technology assessed the achievement and progress of Year 4 and Year 8 students.

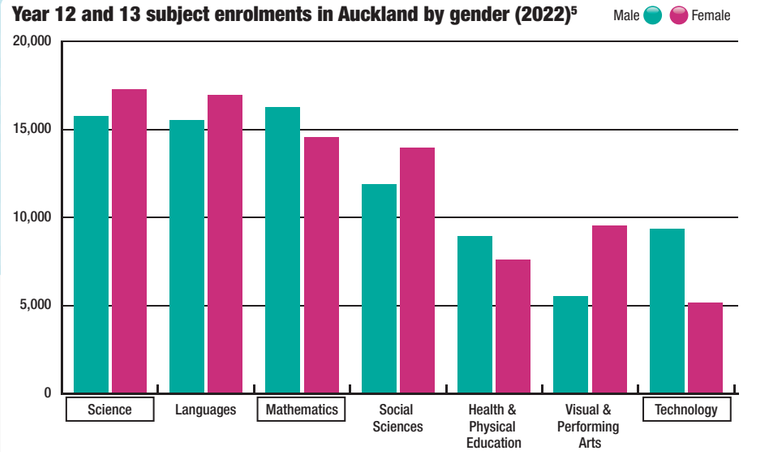
NMSSA findings

Average achievement scores on the Technological Literacy (TELI) assessment (2021)

	Year 4 students	Year 8 students
Low Decile (1–3)	70	104
Mid Decile (4–7)	82	116
High Decile (8–10)	91	124

Year 4 distribution of scores ≈ 10 - 150
Year 8 distribution of scores ≈ 50 - 200

Year 12 and 13 subject enrolments in Auckland by gender (2022)[5]



*Students may be enrolled in more than one subject.

NB. A similar gender bias was observed in subject enrolments for all Aotearoa.[5]

At Years 12 and 13, there are no compulsory subjects. Students need to know what subjects they should focus on for their future as many careers or qualifications have special requirements

Students who do not demonstrate their ability to succeed in STEM subjects are likely to be filtered into different types of study and employment pathways, maybe even before they reach the senior secondary school [6].

- Students at low decile schools scored lower than those in high decile schools by the equivalent of about two-and-a-half years of learning.
- Year 4 students in higher decile schools reported more opportunities to engage in technology.
- Even though girls outperformed the boys in both years levels, boys reported a higher level of confidence.

Year 4 students		Year 8 students	
81	87	113	120

Male Female

Secondary education data shows Māori and Pacific youth are more likely to be streamed out of science education early on in their schooling[7].

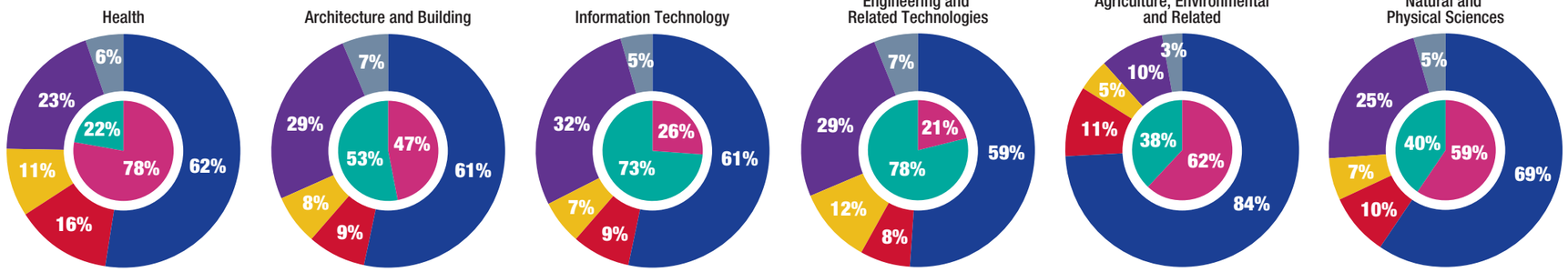
AT TERTIARY

School science teachers play a large role in creating the positive self-concept of STEM-enrolled university students[8].

The influence high school science teachers have on students' confidence and attitudes towards STEM lasts beyond high school.

Increased teacher support and professional development is one way to increase the number of students pursing STEM careers.

Domestic bachelor's degrees students enrolled in STEM related fields in Aotearoa (2021)[5]

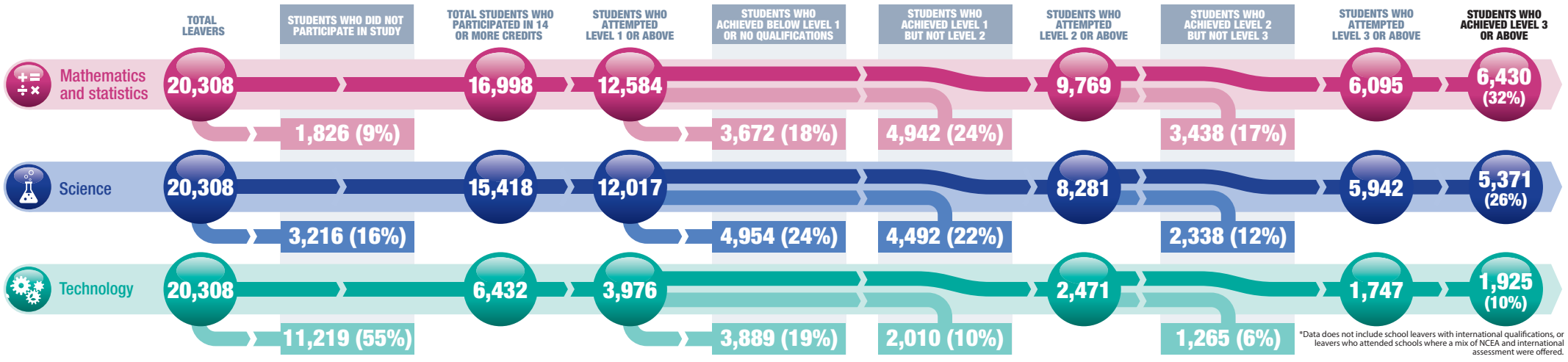


Male Female Pākehā Māori Pasifika Asian Other

NB. Ethnicity totals do not add up to 100% as some students identified with more than one ethnic group

A 2021 CASE STUDY OF AUCKLAND SCHOOL LEAVERS' PROGRESS THROUGH STEM[9]

STEM subjects keep a wide range of potential employment options open, in fields that are economically important[6]. Throughout their journey, students need to be encouraged and supported to participate and succeed in STEM.



How can you contribute to more equitable STEM success?

- Check your personal and organisational biases and expectations about who can and should participate in STEM.
- Make science visible and exciting. Introduce tamariki to STEM from an early age through everyday activities.
- Advocate for greater STEM resources in your community – more staff, more devices, more support, and hands-on opportunities to engage students in learning.
- Get to know your local school and ask how your organisation can support their work.
- Recognise that the best STEM engagement comes from authentic, communicative partnerships. Learn more from www.stemalliance.org.nz/stembook
- Talk to STEM Alliance about how we can help you and your organisation develop effective outreach, engagement and mentoring initiatives.

Produced by

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9. Personal correspondence - School Leavers Assessment against standards on the DAS grouped within Learning Areas. Ministry of Education (2022)

NB. This publication treats gender as binary in keeping with the National Student Number from the Ministry of Education's ENROL database (via Education Counts).