



WHERE SCIENCE
TECHNOLOGY
ENGINEERING AND
MATHS COME ALIVE.

Rocket Challenge 2024

Impact report



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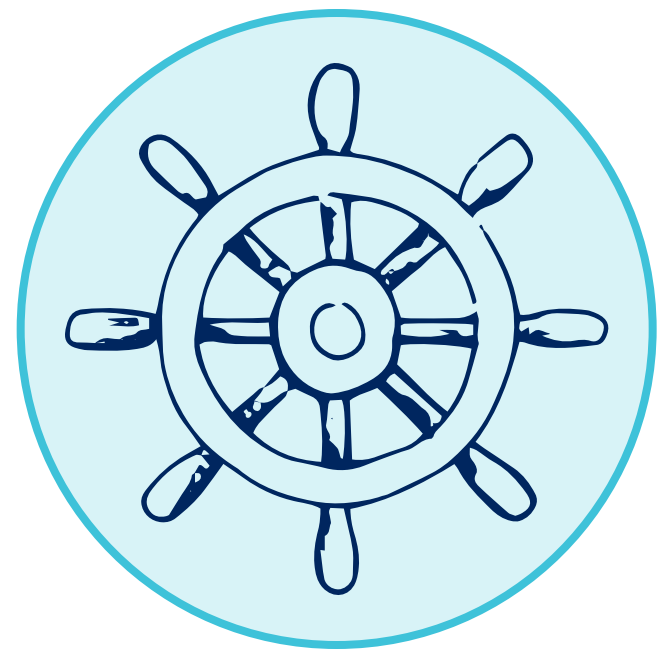
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Houston, we have lift off!

Ākonga blast off into STEM by designing, building and launching a water rocket. They learn about Newton's laws, the engineering design process, and working as a rōpū.

Modules



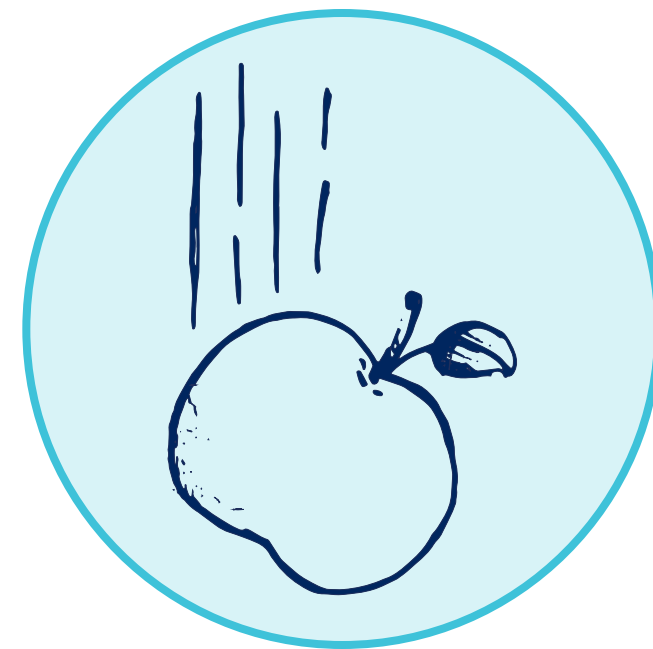
Module 1: Mission Command

Ākonga meet Mission Command (their kaiako and ambassador), unpack their rocket kit, and form their superstar space crew before exploring the first stage of the engineering design process – ask.



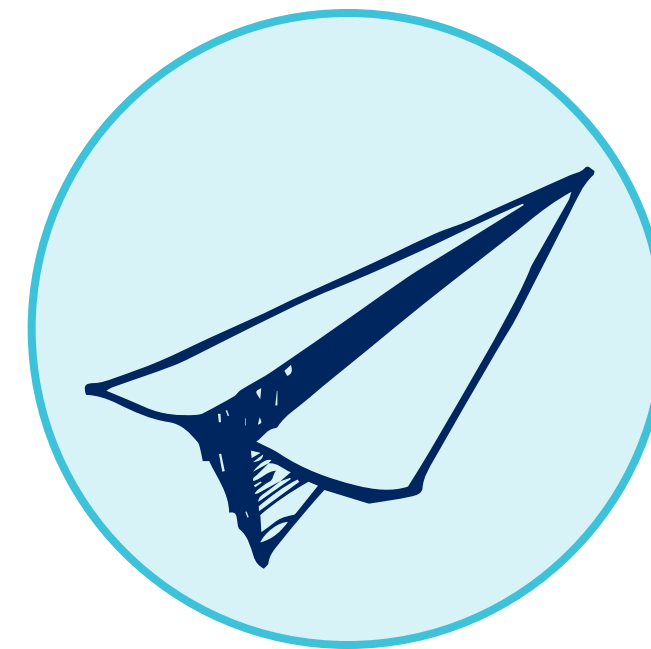
Module 2: Fly

Ākonga learn what it takes to launch a rocket, become health and safety experts, and perform their first test flight.



Module 3: Force

Ākonga are introduced to Sir Isaac Newton and explore his first law of motion, learn the second step in the engineering design process and design their rocket.



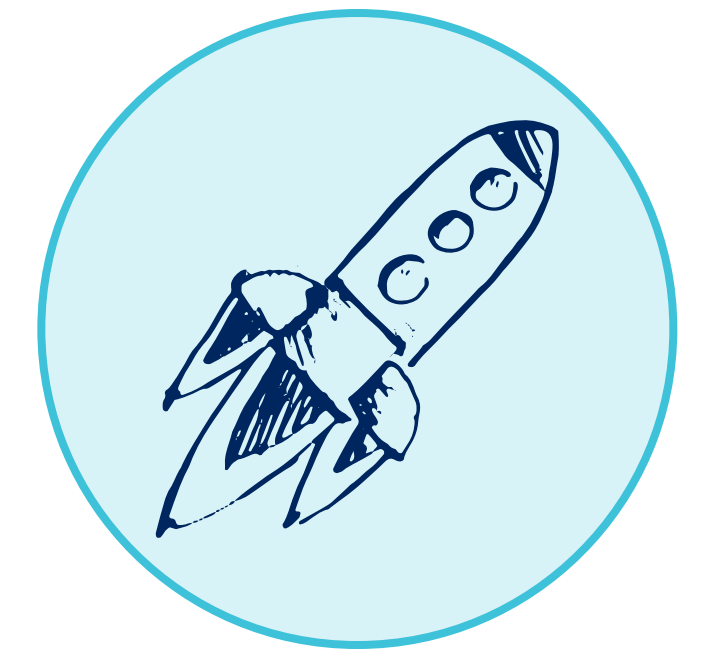
Module 4: Aerodynamics

Ākonga learn Newton's second law and aerodynamics and how this applies to rockets. They then continue the engineering design process by creating and testing a rocket prototype.



Module 5: Thrust

Ākonga learn Newton's third and final law of motion and what this has to do with thrust. They then put their prototypes to the test in their second test launch.



Module 6: Blast off!

Ākonga make final improvements to their rockets before celebrating their achievements by sending their rocket on its final flight.

Spreading STEM wonder

Reach

After losing our primary funding source, 2024 was a year for maximising ākongā reach with limited money. We're proud to have still had over 18,000 ākongā take part – around 14% of rangatahi at that age level at 21% of target schools. We're also excited to report that during the Rocket Challenge's seven years, it's now been in 70% of schools with Level 3 ākongā.

For the first time ever, we had more demand from kaiako than free kits available. We had over 800 kaiako registrations for the Rocket Challenge, but were limited to 400 new kits. To maximise ākongā reach, we asked schools with multiple registered kaiako to share kits, and asked repeat participants if they could reuse their kits, topping up any componentry by purchasing through our online shop. We maximised our stock and were able to supply 407 new kits. After withdrawals due to changing circumstances, we had 132 kaiako left on our waitlist who we did not have free kits available for. We were able to let 609 kaiako into the programme, representing 627 classes (425 of those being new to the Wonder Project utilising a free kit, and 202 repeat participants reusing an older kit).

280 of the participating classes were matched with Wonder Project Ambassadors (45%), from a pool of 271 STEM professionals. We had an additional 64 ambassadors register to take part who we were unable to match due to them withdrawing from the programme (usually because of workload reasons) or regional differences from participating schools.



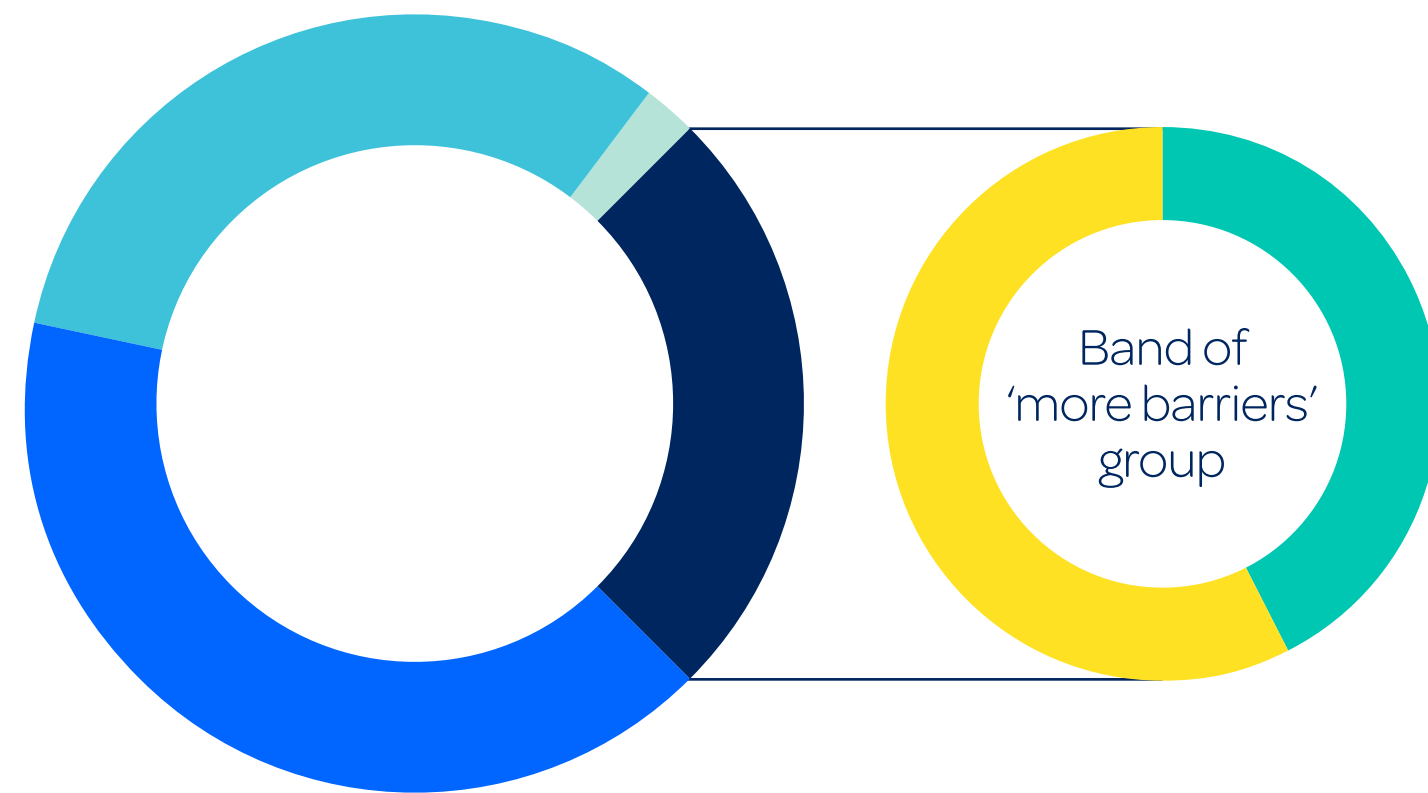
	2018	2019	2020	2021	2022	2023	2024
Ākongā*	841	12,760	19,198	18,067	16,095	27,202	18,183
Classes	29	440	662	623	555	938	627
Schools	29	200	439	360	290	499	383
STEM professionals	55	456	472	377	277	271	274

*Based on average of 29 ākongā per class

Demographics

Socio-economic barriers

In 2024 we had a goal to increase the participation of schools with high socio-economic barriers, after moving from the previous decile system to the new Equity Index model. We met our goal with 25% of participating schools (which received a new free kit) having high socio-economic barriers – a 39% increase from 2023.



Equity Index group

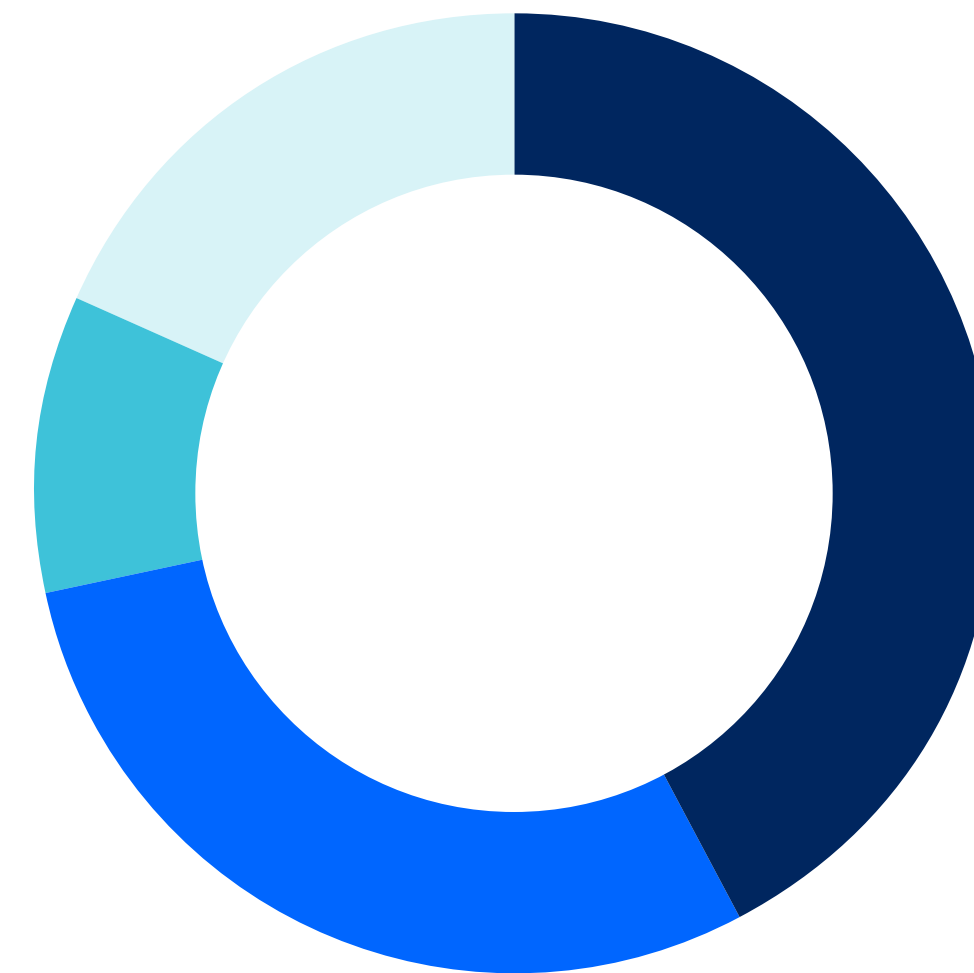
- More barriers, 25%
- Moderate barriers, 41%
- Fewer barriers, 32%
- N/A, 2%

Equity Index band

- Most barriers, 11%
- Many barriers, 15%
- Band of 'more barriers' group, 74%

Ākonga ethnicity

We achieved our goal to reach 20% Māori and 10% Pacific Peoples, at 29% and 10% respectively. We had 19 kura kaupapa participating, as well as 23 Māori immersion classes – making the most of the Rocket Challenge's te reo Māori ākonga resources.



- European/Pākehā, 42%
- Māori, 29%
- Pacific Peoples, 10%
- Other, 18%

Region

We had 53% of participating schools in the main centres (Auckland, Wellington and Canterbury), and 47% across the regions.



- Auckland, 29%
- Canterbury, 12%
- Waikato, 12%
- Wellington, 12%
- Bay of Plenty, 9%
- Hawke's Bay, 5%
- Otago, 4%
- Manawatū-Whanganui, 4%
- Northland, 3%
- Nelson-Tasman, 3%
- Taranaki, 3%
- Southland, 2%
- Marlborough, 1%
- West Coast, 1%

Impact in short

79%
ākonga
said the Rocket Challenge
**made them feel more
confident** in STEM subjects

56%
ākonga
were **more interested
in STEM jobs** after
the challenge

80%
ākonga
said they
**would do
it again**

99%
kaiako
**would recommend
the programme
to others**

91%
kaiako
**enjoyed
teaching the
Rocket Challenge**

98%
kaiako
said they
**would do
it again**

87%
kaiako
noticed a **positive
shifts in ākonga
perceptions** of STEM

96%
kaiako
**increased their
confidence in
teaching STEM**

93%
kaiako
said **ākonga were
engaged** with the
programme

96%
ambassadors
**enjoyed
supporting the
Rocket Challenge**

94%
ambassadors
**would recommend
the experience
to others**

Pre and post surveys

Before doing the challenge, ākonga and kaiako are asked to complete a survey to understand their perceptions of and confidence in STEM. They repeat this, with some additional pātai, at the end of the challenge to measure the impact of the Wonder Project. Ambassadors are asked for feedback at the end of the challenge.

Survey completion rate

	Pre	Post
Ākonga	6,184	1,632
Kaiako	146	170
Ambassador	-	122

The Rocket Challenge provided an amazing term of learning for our kids and the whole school was inspired by the project. Those kids that often struggle in their learning were fully engaged!

Kath Dillon,
Kaiako – Balfour School



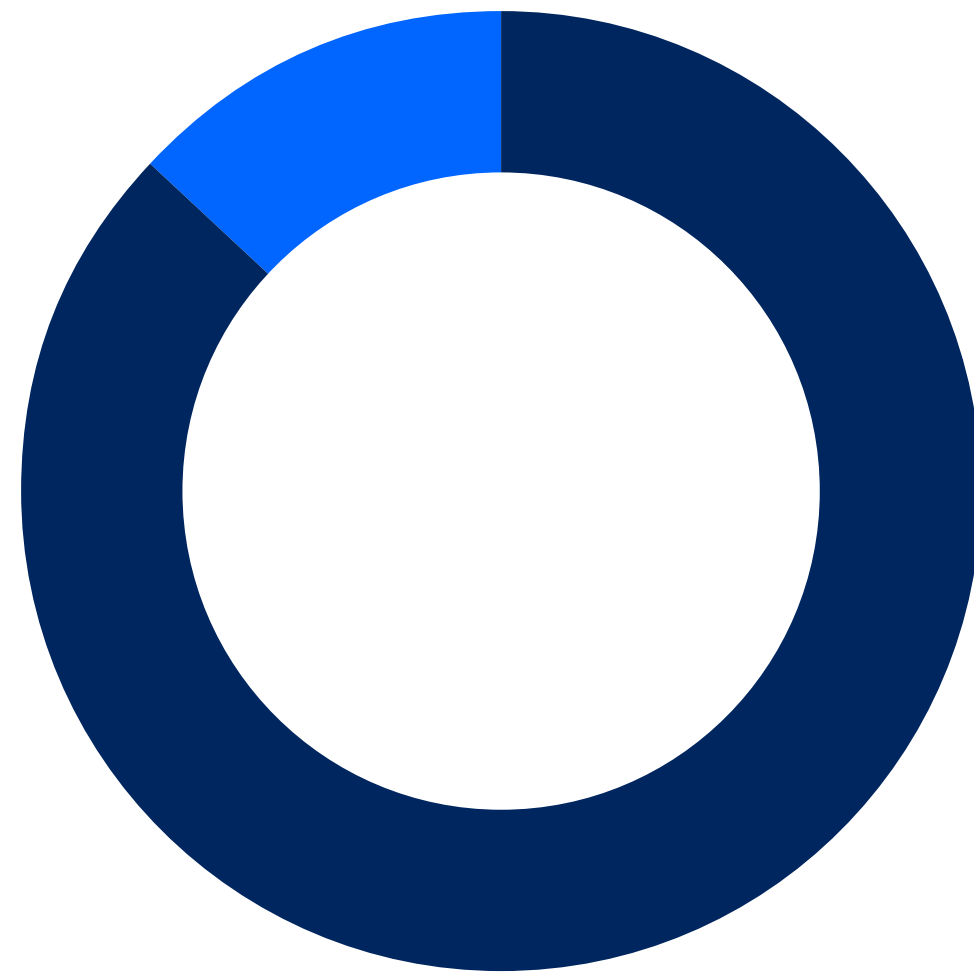
Ākongā
experience



Perceptions

STEM perception

When kaiako were asked if they noticed a shift in ākonga perceptions towards STEM over the challenge, 87% said they noticed a positive shift.



- Their perceptions changed positively, 87%
- Their perceptions didn't change, 13%
- ☐ Their perceptions changed negatively, 0%

Interest in STEM jobs

74% of kaiako believed their ākonga were more curious about the opportunities that different careers in STEM can provide, after the challenge.

More than half of ākonga reported that they were more interested in STEM jobs after completing the challenge. With a further 19% of rangatahi already interested in STEM jobs, post the challenge, 75% of ākonga would consider a STEM career.



- Yes – I was more interested, 56%
- No – I was already interested, 19%
- Yes – I was less interested, 10%
- No – I am still not interested, 15%

So professional and easy to run – I loved feeling like my students had access to something fancy and proper instead of a resource cobbled together by me. I loved it! My students loved it!

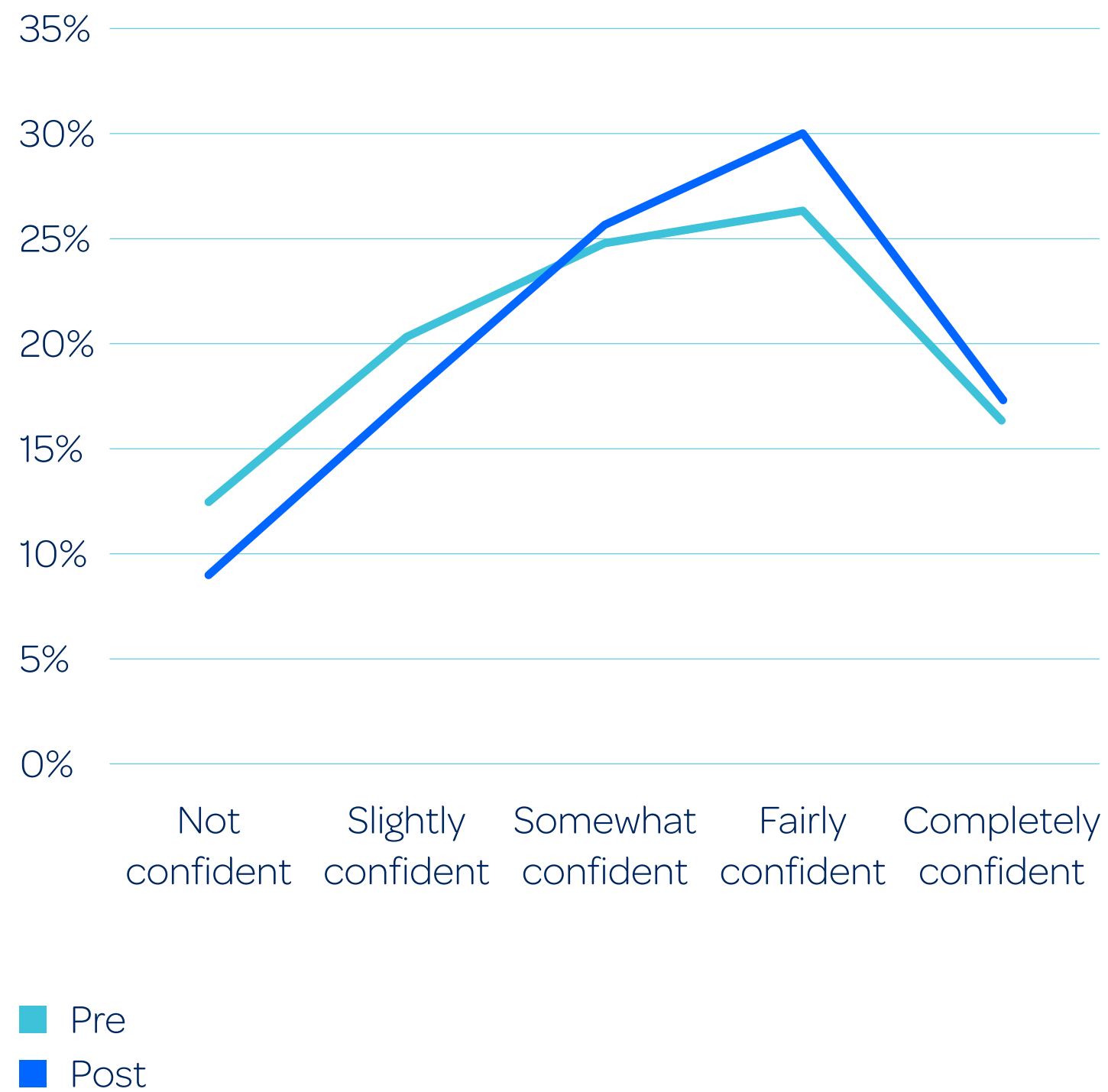
Anna-Sofia Filer,
Kaiako – Onewhero Area School

Confidence

STEM subject confidence

When asked if taking part in the challenge made them feel more confident in STEM subjects, 79% reported that it did.

When asked about confidence across each subject, we saw an 11% increase in ākongā being fairly or completely confident.



Knowledge and skills

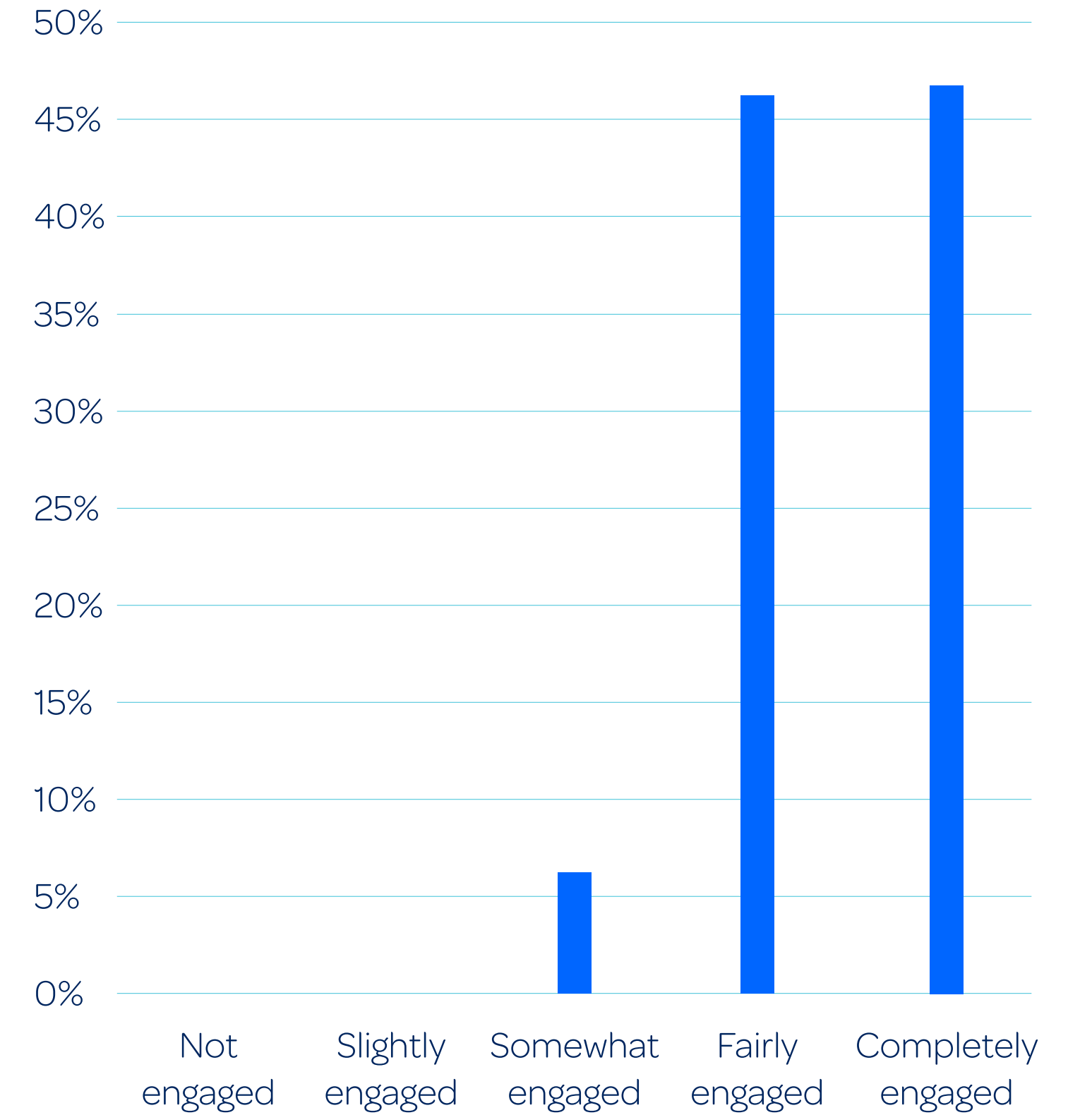
Level of challenge

Most kaiako said ākongā were challenged by the learning material at about the right level.



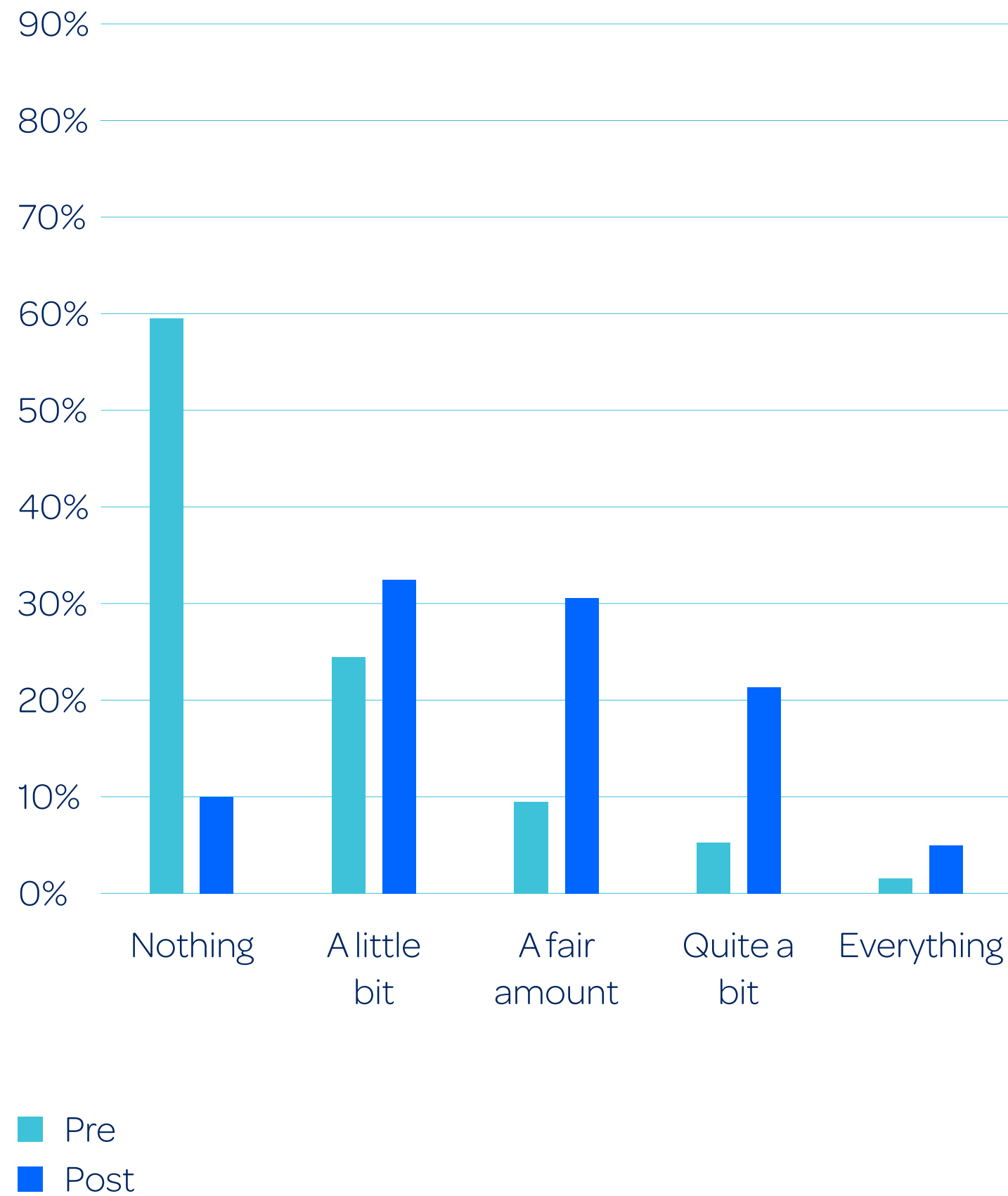
Engagement with learning

Kaiako reported that 93% of their ākongā were fairly or completely engaged with the learning journey.



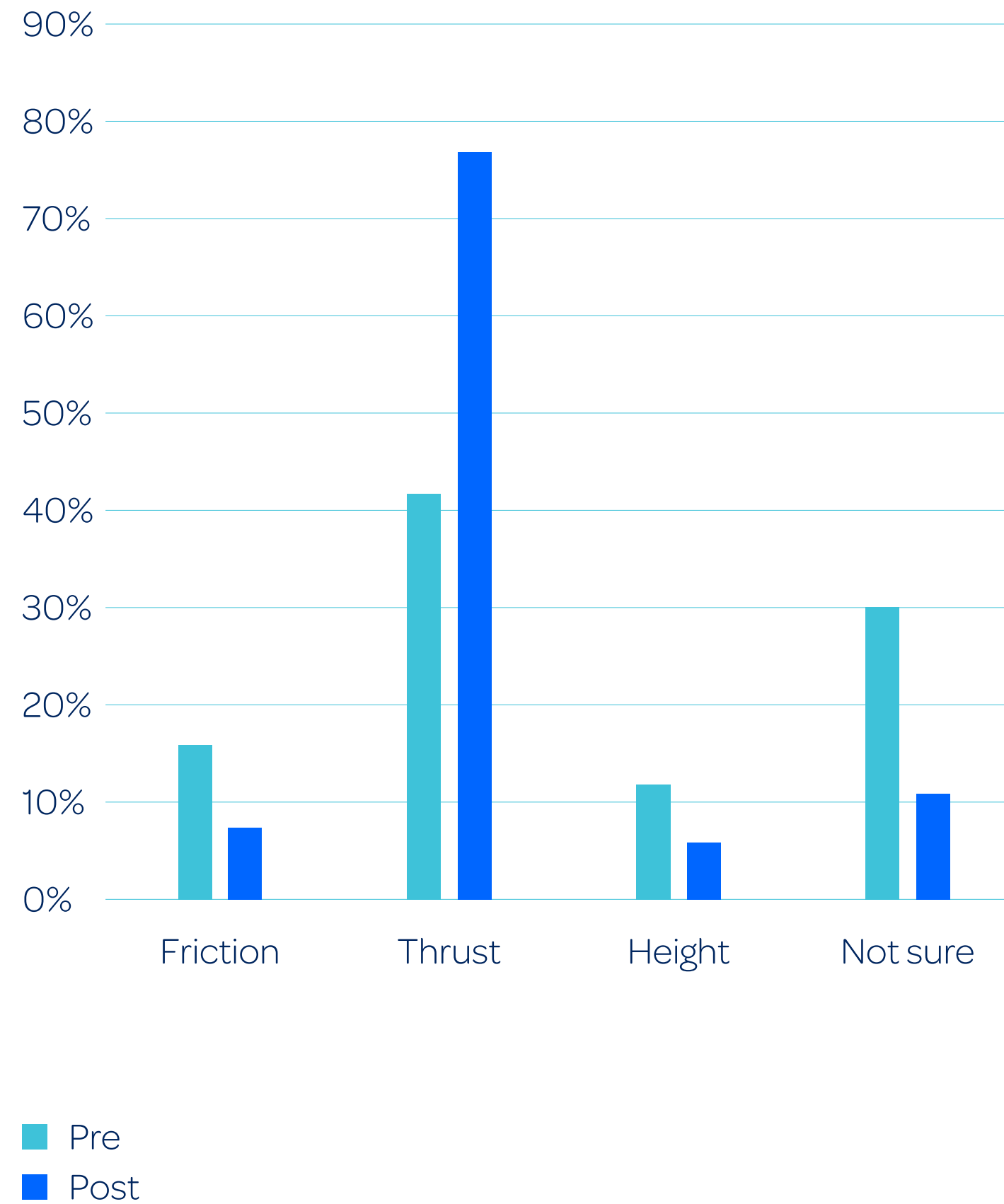
Newton's laws of motion

We saw a positive shift in what ākongā knew about one of the key learning outcomes, Newton's laws of motions, including a 500% decrease in ākongā saying they knew nothing about it.



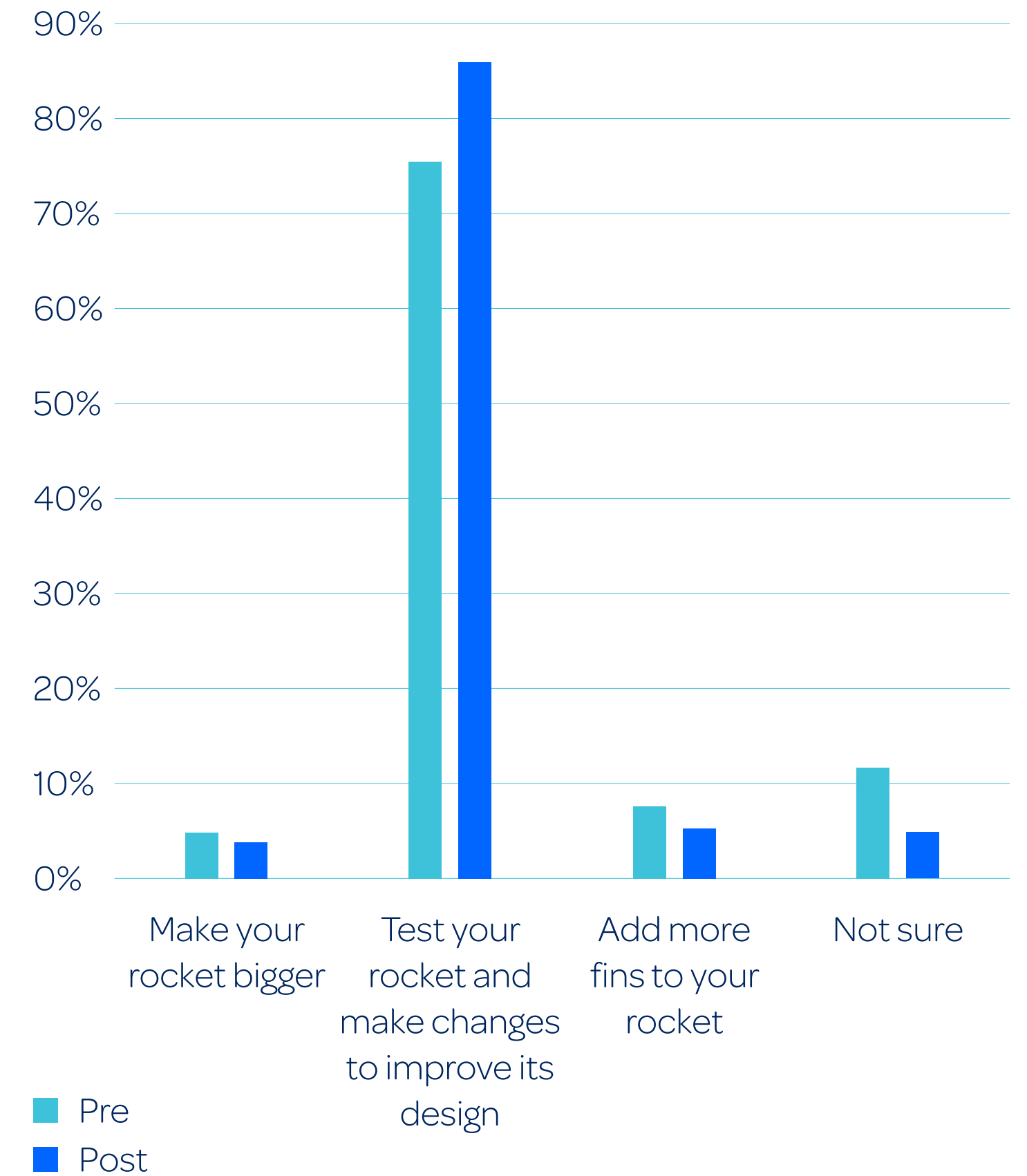
Force of flight

Before the challenge, 42% of ākongā could correctly identify thrust as a force of flight. After the challenge this rose to 77% of ākongā, an 84% increase.



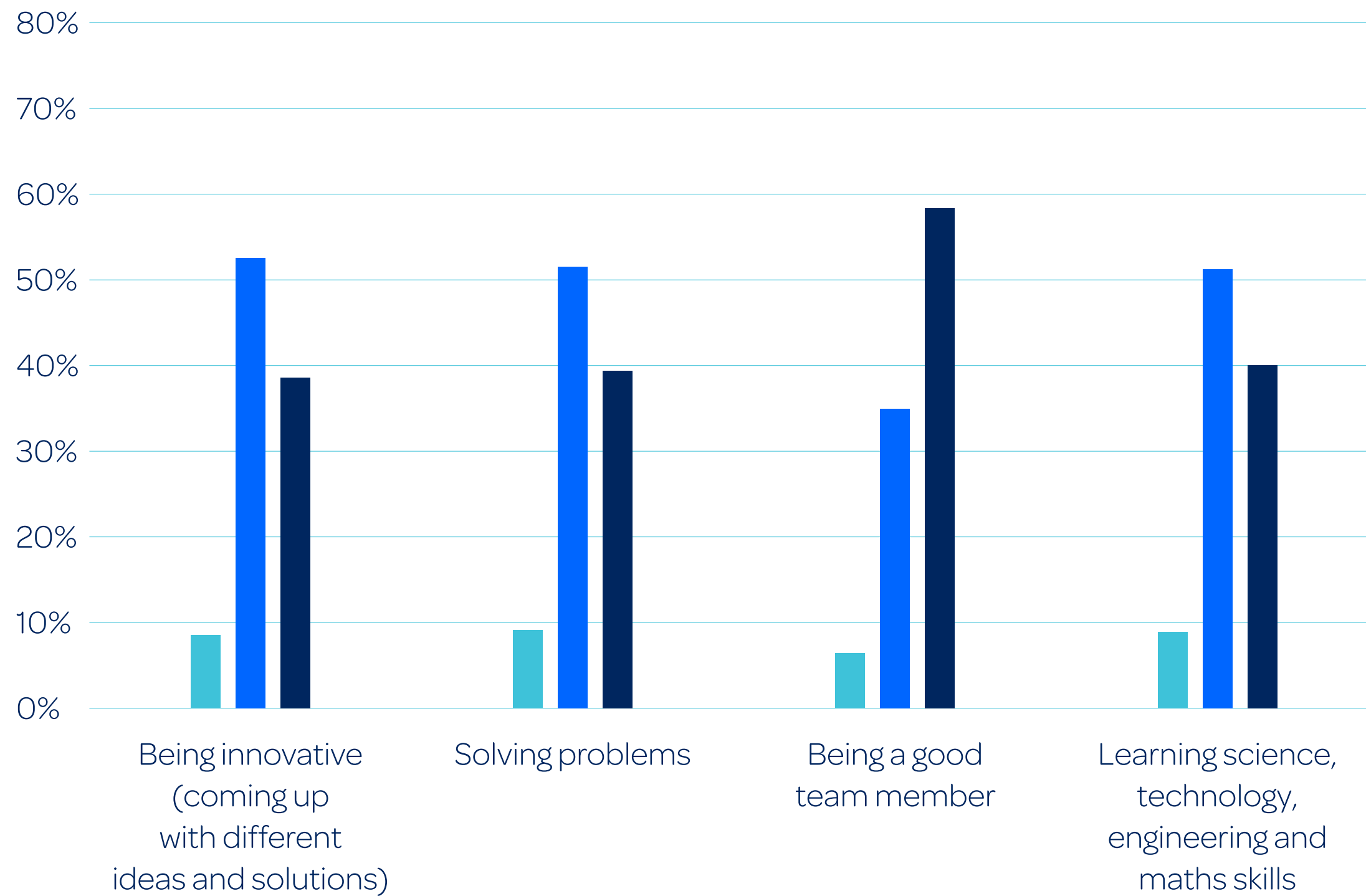
Engineering design process

Before the challenge, 76% of ākongā could correctly identify testing and improving their rocket as the best way to get it to fly higher and further. After the challenge this rose to 86% of ākongā, a 13% increase.



STEM skills practiced

During the challenge, we expect ākonga will learn about and practise four key STEM skills. The majority of ākonga were exposed to these and could identify that they'd been able to practise them. Teamwork was a stand-out, with 59% of ākonga saying they practised this skill a lot. 96% of kaiako also said there were lots of opportunities for ākonga to discover and develop STEM skills.

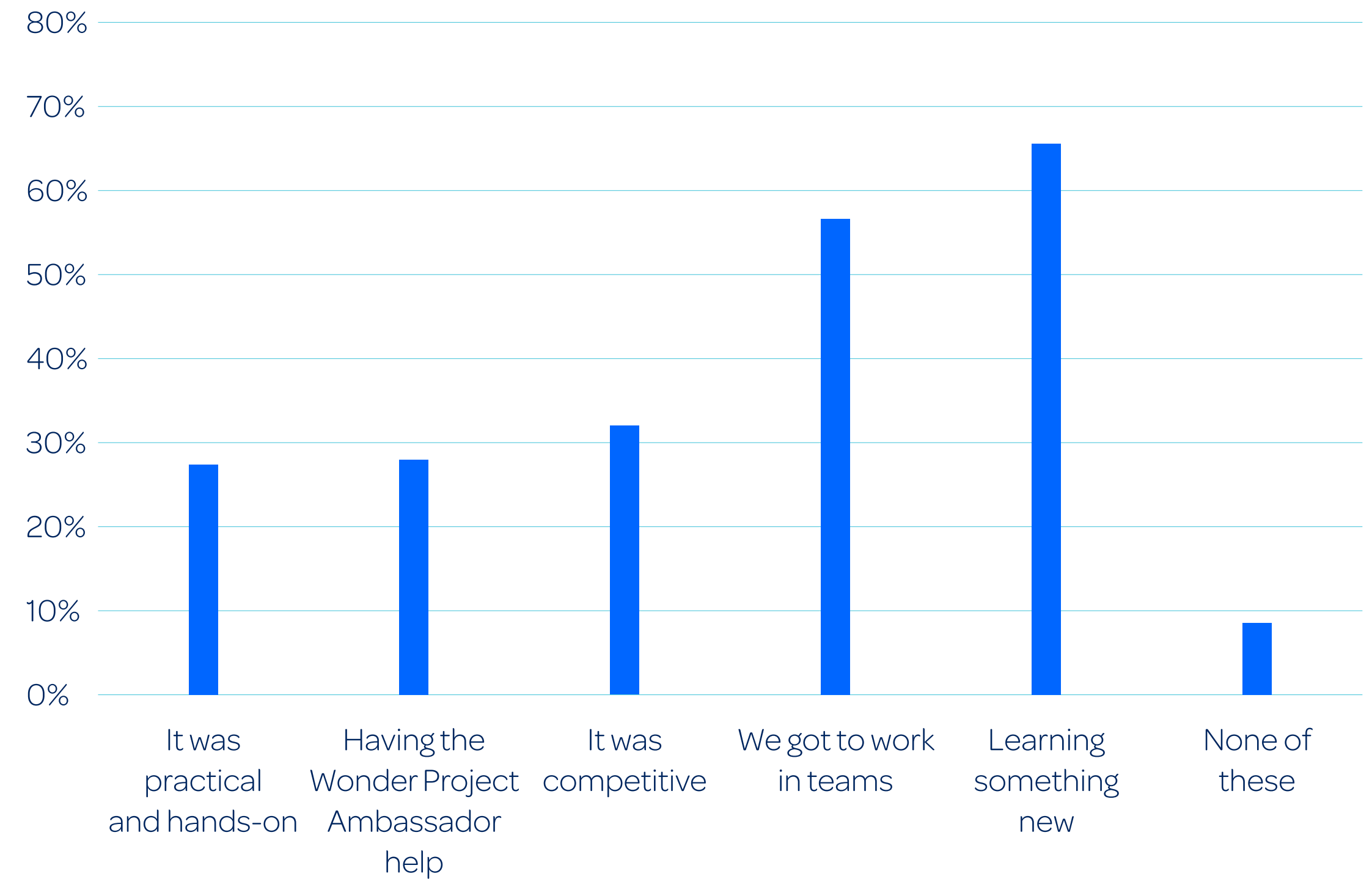


- Not at all
- Just a little
- A lot

Enjoyment

What they liked

From their Wonder Project experience, ākonga mostly valued learning something new and working in teams, when asked what they enjoyed about the challenge.



80% said they **would like to take part in another challenge**



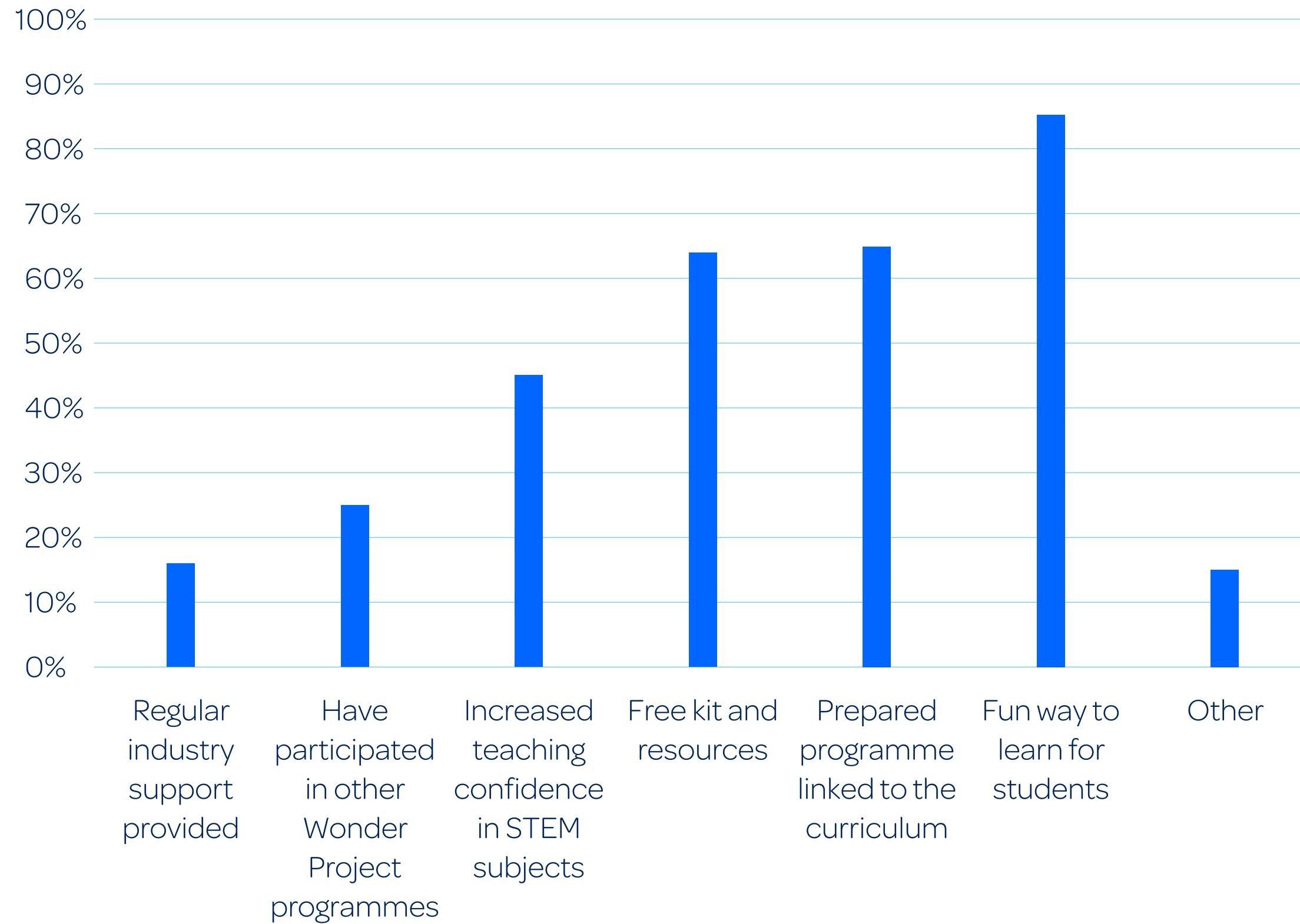
**Kaiako
experience**



Registering

Motivation to sign up

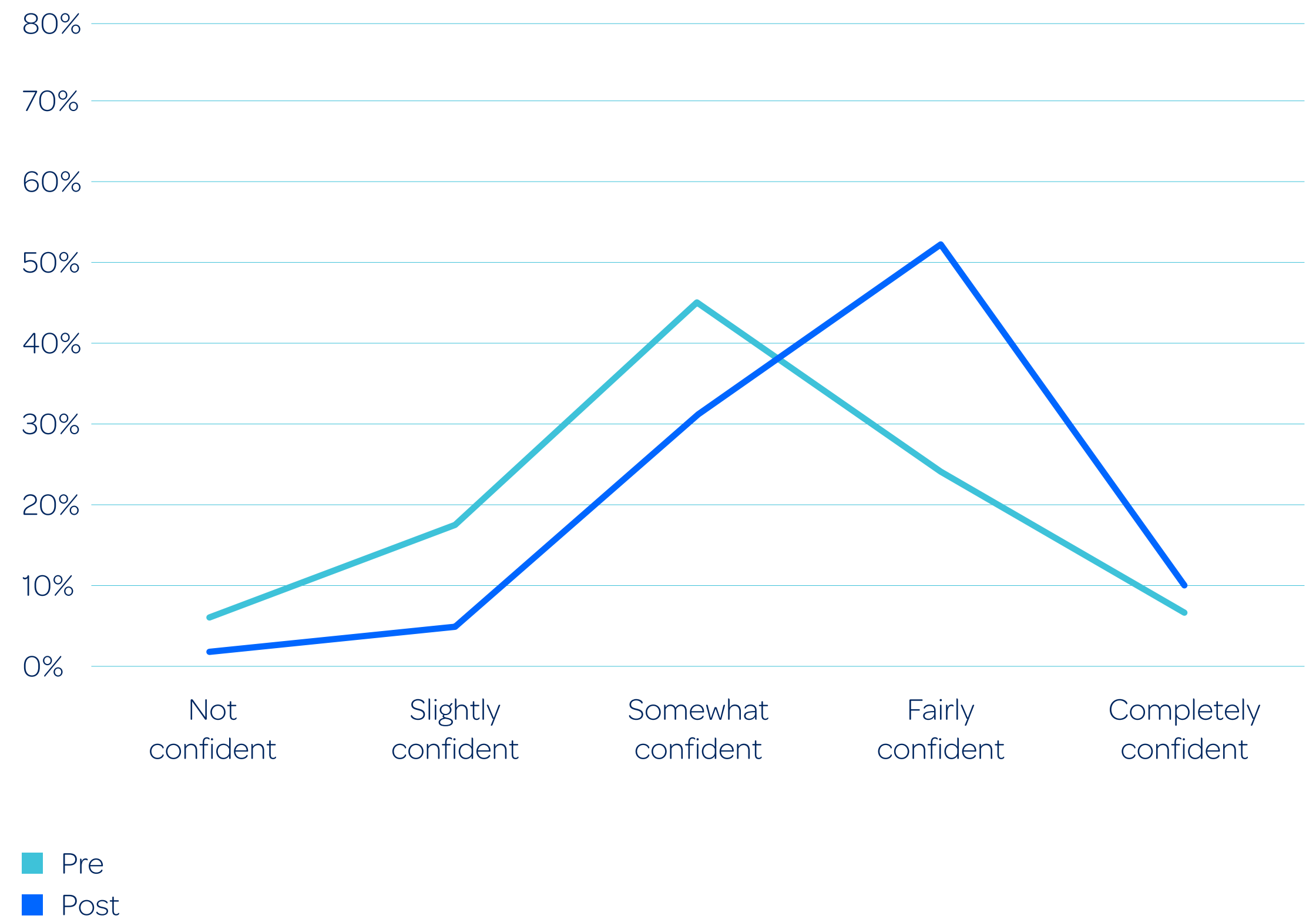
Kaiako primarily registered for the Rocket Challenge because it looked like a fun way for their ākongā to learn. Having a prepared programme linked to the curriculum, the free kit and resources, and increasing their confidence teaching STEM were also predominant reasons they signed up.



Confidence

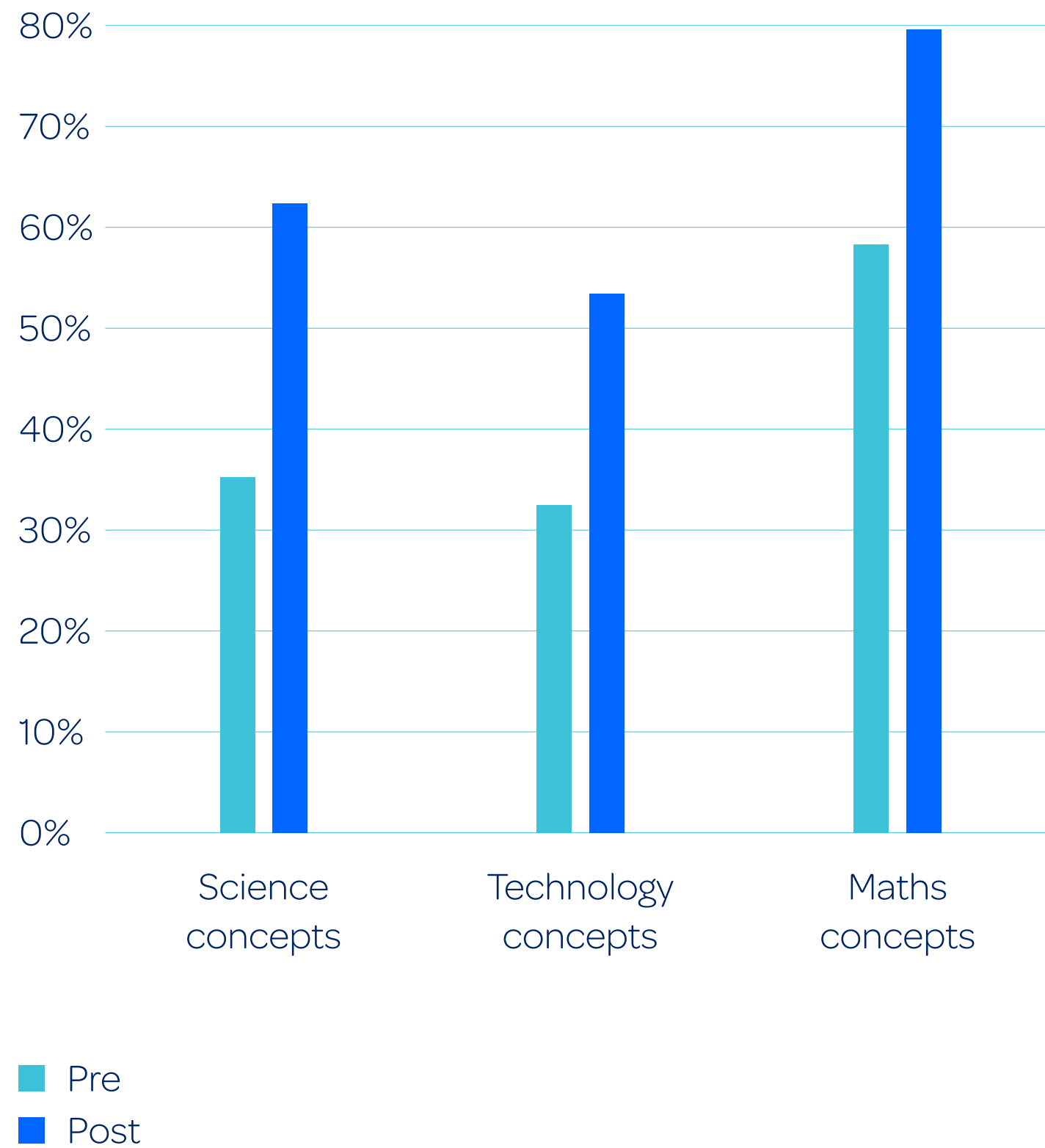
Teaching STEM subjects

When asked if they felt participating in the challenge has increased their confidence in teaching STEM, 96% of kaiako agreed. We had a 99% increase in kaiako feeling fairly or completely confident teaching STEM subjects.



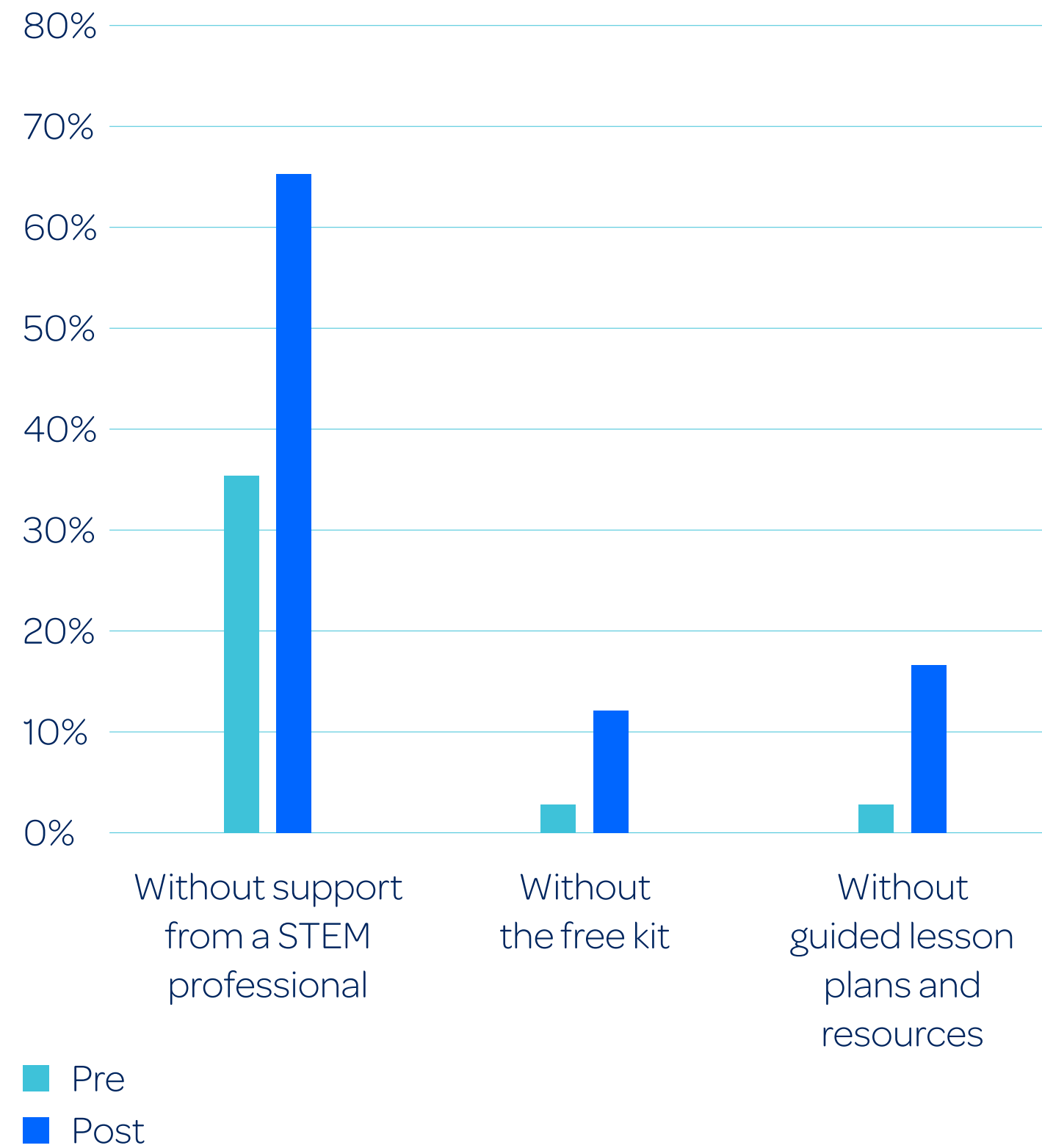
Demonstrating STEM concepts

There was a 54% increase in kaiako feeling fairly or completely confident demonstrating STEM concepts overall. The largest increase was for science concept demonstration.



Wonder Project support

When asked how confident kaiako would feel running the challenge on their own and without various aspects of support provided by the Wonder Project, we notice that kaiako still value the free kit and lesson plans post the challenge. They do feel more able to run the challenge without support from a STEM professional, which aligns to their increase in confidence teaching STEM subjects and demonstrating concepts.



This is the MOST successful and motivating kit I have ever had. Almost all kits we receive are full of 'time fillers' or flash looking resources but lacking substance. This was packed with learning and challenging child-centred experiences.

Heather Folly,
Kaiako – Clifton Terrace School

Challenge content

92%
kaiako

said the challenge was **well structured and paced to support ākonga learning and agency**

Structure and pace

95%
kaiako

said the challenge was **appropriate for ākonga from different cultures and backgrounds**

Accessibility

84%
kaiako

said the online Learning Hub **was helpful, easy to use and navigate**

Online Learning Hub

87%
kaiako

were fairly or completely **satisfied with the teaching content**

Teaching content

90%
kaiako

were fairly or completely **satisfied with the ākonga module content**

Ākonga module content

Enjoyment

91%

kaiako

said they
enjoyed teaching
the Rocket Challenge

**Experience teaching
the challenge**

99%

kaiako

would recommend
the Wonder Project
to other kaiako

Recommendation

98%

kaiako

said they'd
take part in
another Wonder
Project challenge
based on their
experience

Take part again



Ambassador
experience

Challenge content

Teaching content

88%
ambassadors

were **fairly or completely satisfied** with the teaching content

Ākongā module content

86%
ambassadors

were **fairly or completely satisfied** with the ākongā module content

Enjoyment

Experience supporting the challenge

96%
ambassadors

said they **enjoyed supporting** the Rocket Challenge

Recommendation

94%
ambassadors

would **recommend** others become Wonder Project Ambassadors

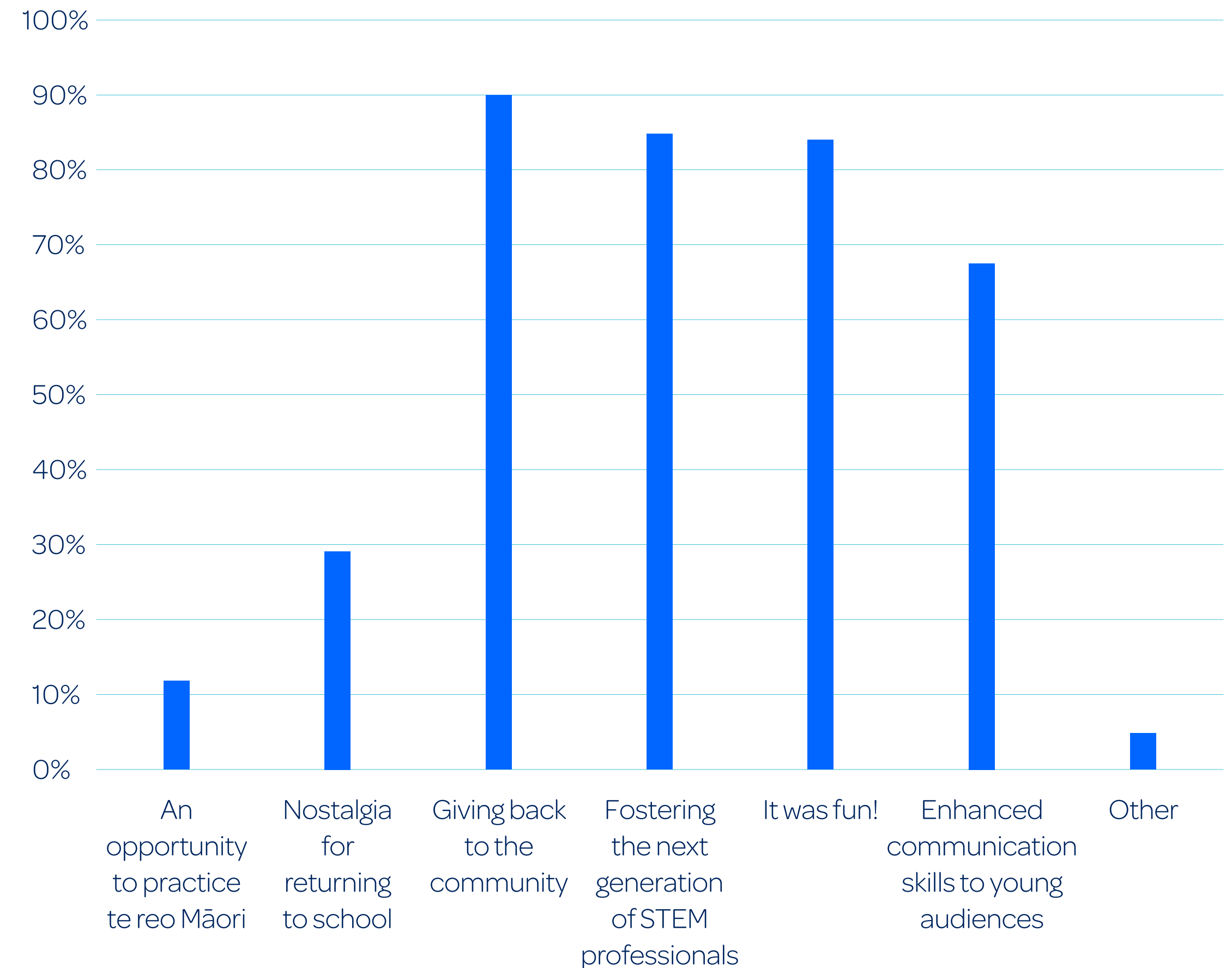
Take part again

82%
ambassadors

said they'd **like to be involved again**

Benefits

Ambassadors rated giving back to their community, fostering the next generation of STEM professionals, and having fun as the top things they gained from being part of the Wonder Project. We also noticed a big increase in ambassadors using the experience to practice te reo Māori – up from 2% in 2023 to 12% in 2024 – a 500% increase.





Final blast off winners



Rangatahi soar to new heights

Each year we ask our rocketeers to create a video or poster that showcases their learning journey, to enter the final blast off competition. Watch the 2024 winners soar to new heights!

Winner: Balfour School



Runner up: Botany Downs School



Special mention: Mellons Bay School

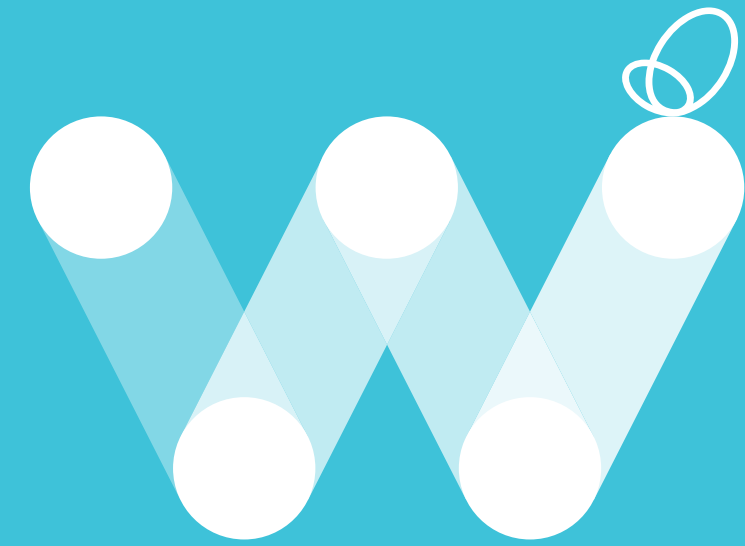


Special mention: Stanhope School



What a fantastic STEM kaupapa! I thoroughly enjoyed meeting with my local kura, and seeing the eyes of our tamariki light up when their ideations were met with hands on activity.

Beth McGregor,
Ambassador – WSP



Wonder
Project

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