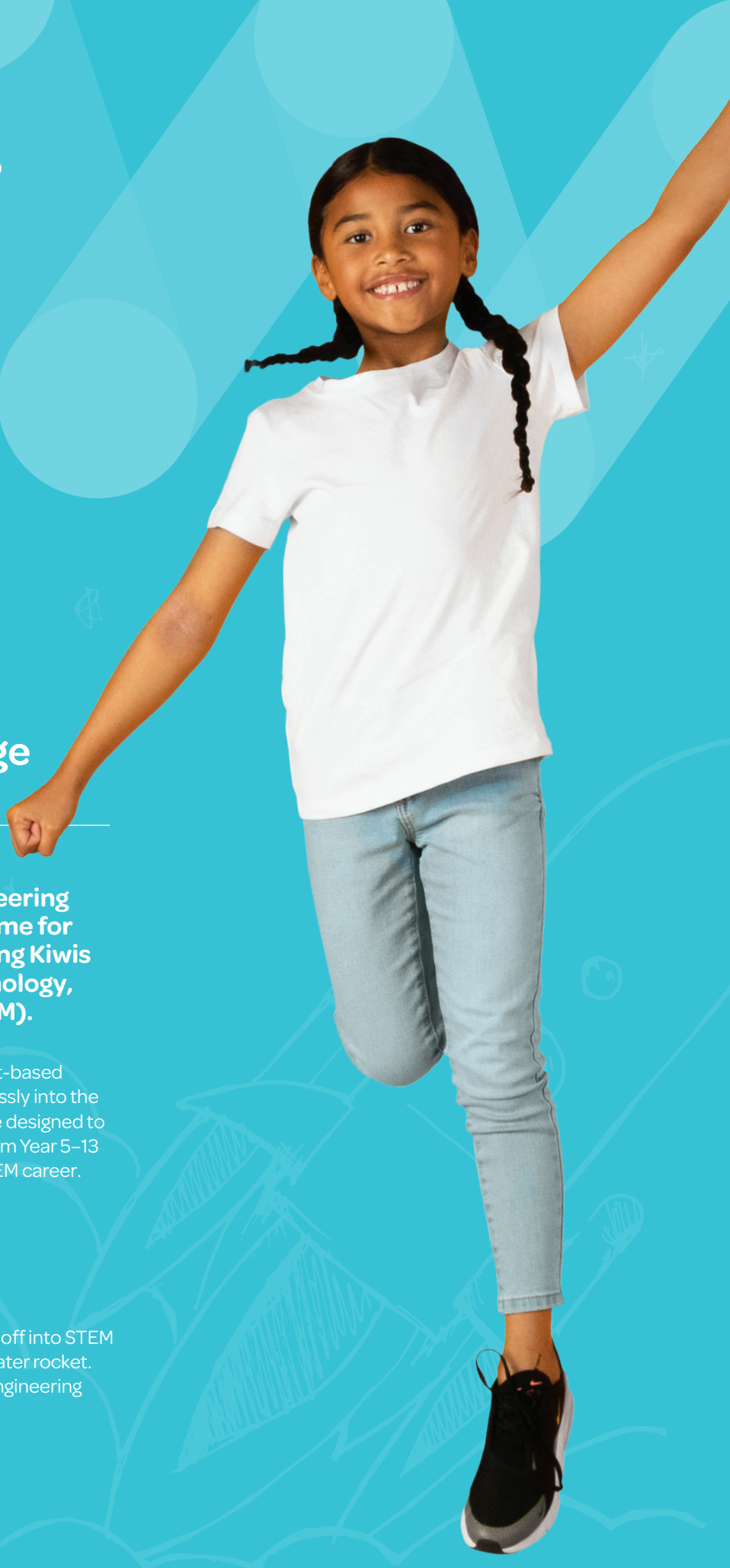
I wonder how rockets fly?



Wonder Project

Rocket Challenge

The Wonder Project is Engineering New Zealand's free programme for schools, designed to get young Kiwis excited about science, technology, engineering and maths (STEM).

The Wonder Project is a series of project-based hands-on programmes that knit seamlessly into the New Zealand school curriculum. They're designed to spark wonder and awe in young Kiwis from Year 5–13 and get them excited about a future STEM career.

Rocket Challenge

Level 3, Year 5–6
Term 1 or 2

Houston, we have lift off! Students blast off into STEM by designing, building and launching a water rocket. They'll learn about Newton's laws, the engineering design process, and working as a team.

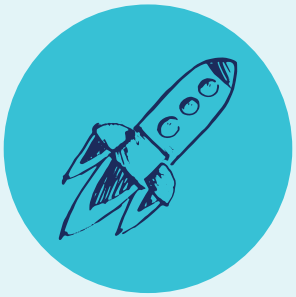
engineering new zealand
te ao rangahau

POWERED BY CallaghanInnovation
New Zealand's Innovation Agency

Rocket Challenge

Starting anytime in Term 1 or 2 each year, the Rocket Challenge provides scaffolded learning aligned to Level 3 of the New Zealand school curriculum. The challenge takes around 12–16 hours to complete across 6–8 weeks or longer if your classroom learning is disrupted. It's also possible to complete the challenge in a more condensed timeframe to fit in with how your class is operating this year.

Newton's laws of motion



Rocketry

Teamwork

Physics concepts

Engineering design process

What we offer schools

- Online training on core STEM principles
- Student learning material and activities
- Detailed lesson plans and teaching guides
- Where possible, support from a volunteer STEM professional (online support available)
- Free rocket kit with all the gear
- Online community of teachers and ambassadors

Our impact

Here's what participants said about the 2021 Rocket Challenge:

- 97% of teachers increased their confidence in teaching STEM
- 98% of teachers and 83% of students said they would do it again
- 58% of students were more interested in STEM jobs after the challenge
- 91% of teachers said students were engaged with the programme

Become a wonder school today at
wonderproject.nz

@WonderProjectNZ

Te reo translated student activities also available

Rocket Challenge modules

Module 1

Get ready for the Rocket Challenge, meet your Wonder Project Ambassador, and find out how the engineering design process can help launch a rocket.

Module 2

Explore what rockets need to get off the ground, understand the health and safety rules for launches. Launch your first test flights and play with variables.

Module 3

Learn about Newton's first law of motion, the forces acting on a rocket and start designing the ultimate rocket.

Module 4

Explore Newton's second law of motion, understand the key features on a rocket, and develop a prototype based on designs.

Module 5

Learn about Newton's third law of motion, launch your second test flights with prototype rockets and record data about each launch.

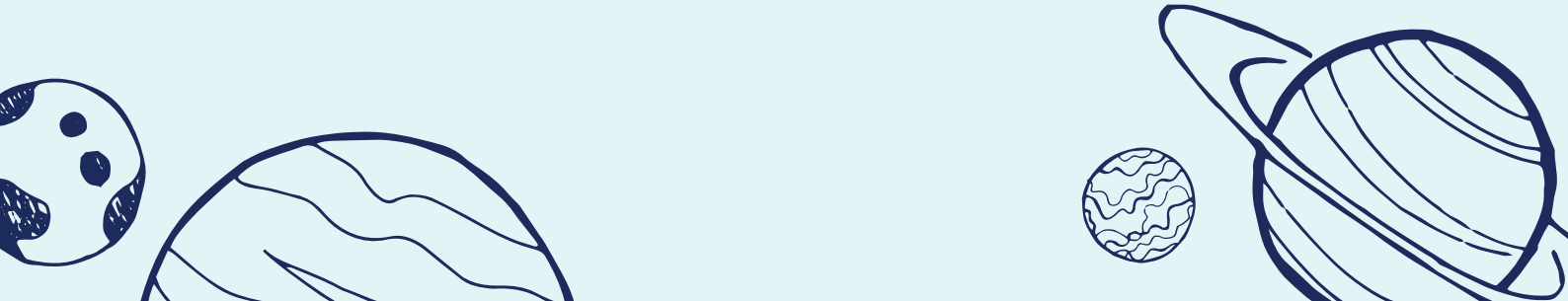
Module 6

Analyse test flight data to improve on rocket designs, launch your best rocket for the final blast-off, and celebrate and share your Rocket Challenge journey.

Achievement objectives

Teachers can also make wider curriculum links to other achievement objectives depending on student level and individual learning programmes.

Achievement objectives	Students will	Curriculum level	Year level
Science: Physical world	**Physical inquiry and physics concepts** Identify and describe how movement and forces effect the motion of rockets.	3	5–6
Technology: Technological knowledge	**Technological modelling** Undertake functional modelling of rocket prototypes to inform decision making. Evaluate rocket prototype fitness of purpose to refine further developments.	3	5–6
Mathematics and statistics: Geometry and measurement	**Measurement and shape** Represent rockets through drawings and models. Use metric units to find length, volume, weight (mass) of the rockets and the angle of rocket launch.	3	5–6



I wonder how we can ignite creativity in young Kiwis?

Engage your ākonga in the wonders of STEM by signing up for one of our hands-on, project-based challenges.

Rocket Challenge

Level 3, Year 5–6
Term 2

Houston, we have lift off! Students blast off into STEM by designing, building and launching a water rocket. They'll learn about Newton's laws, the engineering design process, and working as a team.

Power Challenge

Level 4, Year 7–8
Term 3

Power up! Students design and build a wind turbine and work as a team to light up their own mini town. Along the way they discover the amazing phenomena of electricity and renewable energy.

Open students' eyes to the immense possibilities of a future in STEM.

STEM Careers

Year 7–13
Year Round

The future is bright! Students are inspired to keep taking STEM subjects, and given a taste of the real world with industry visits and motivating career talks from STEM professionals.

Become a wonder school today at
wonderproject.nz

@WonderProjectNZ