Waka Transportation

Are we making good use of our transport technology?
What is the impact of doing so?

Focus

The focus of this context is how we move people and products efficiently and the impact of doing so.

Students design, plan, and create outcomes to address a range of transportation needs. They are to model their outcomes and have others critique their work.

Students are to consider how we currently transport goods and people, and how this can be better managed in the future.

Links

Technology in the New Zealand curriculum
Glossary of technological terms

Elderly Kaumātua	**Electric vehicles** Waka hiko	**Feed the team** Whangāia
Health Hauora	**Identity** Tuakiri	**Plastic** Kirihou
Rubbish overload Tūwhiti rāpihi	**Shelter** Tāwharau	**Transportation** Waka
	Water Wai	

Keen to find more resources? Go to the authentic curriculum resources on the Grow Waitaha website and select the Year 7/8 technology resources filter.

Horopaki Learning contexts

Choose a learning context:

Design a graphic

Transportation is said to be the movement of people and goods from place to place. Riding a skateboard is a fun way to get around, a healthy activity, and it's a lot faster than walking.

Design an e-bike trailer

Nowadays more people are using bikes and e-bikes as a cost efficient form of transportation. E-biking is a healthy activity, and in busy streets it can be faster and greener than using cars.

Evolution presentation

We have evolved our shelters, our access to water, and our movement across land. This has led to improving how we travel and how we transport our goods and products.

Create a waka

There are many forms of vehicles used to travel within water: canoes, hovercrafts, jet-skis, power and sailboats, ships, submarines, waka, and yachts. Watercraft have a propulsive capability (sail, oar, paddle, or engine) and are different from a simple device that merely floats, such as a log raft.

#growreallearning
#growcollaboration

The Context/Horopaki: Transportation is said to be the movement of people and goods from place to place. Riding a skateboard is a fun way to get around, a healthy activity, and its way faster than walking.

The Brief 1: *Your friend/stakeholder has asked you to create a cool graphic for their skateboard. The deck needs personalisation. You are to design an original graphic for the deck. NB: the design can be for a friend or maybe for you.*

The Brief 2: *Your friend/stakeholder is impressed with your deck design and wants you to design something similar, but also special, for their snowboard.*

(WALT) We are learning to:
- design using stakeholder input and key attributes.
- use scale drawings/proportion to develop concepts/ideas.
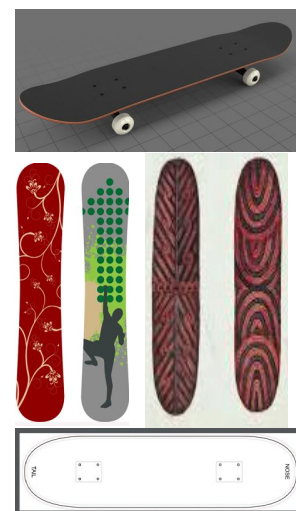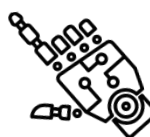
Activity 1 Skateboard deck design

1. Watch digital rauemi #1 if you want to learn the basics of riding a skateboard.

2. Click on digital rauemi #2, 3 and 4. View both the Pinterest pages and the Māori design pages to get inspiration before starting your skateboard design.

3. Draw two rectangles 160 x 40 mm to represent two skateboard decks. The scaled deck size ratio is 1:5.

4. Talk with your friend about what theme they'd like. You could get them to look online at the Pinterest pages and tell you what they like.

5. Sketch two potential graphic designs for the underside of a skateboard deck. Show your friend. Based on their feedback, select one to create.

6. Draw a final design. Add colour.

7. Take a picture and send it to your teacher.

Activity 2 Snowboard graphic

1. Watch digital rauemi #5 about snowboarding.

2. Click on digital rauemi #3, 4 and 6. View the Pinterest pages to get inspiration before you begin your snowboard design.

3. Using your final skateboard design from Activity 1, design a similar but unique design for a snowboard. Sketch a rectangle 300 x 50 mm. Plan out your design. You may want to bring in new elements. Finalise your concept.

4. Produce the final drawing. Add colour.

5. Take a picture of the skateboard and snowboard designs and send them to your teacher.

Digital resources/Rauemi

1. How to skate
https://www.youtube.com/watch?v=p3NXd3DhH08
2. Pinterest—NZ-inspired skateboard
https://www.pinterest.nz/leandrobessa/skateboard-deck-design/
3. Taonga traditional design
https://www.mountainjade.co.nz/pages/greenstone-meanings-and-designs
4. Easy whakairo patterns
https://bit.ly/2YBmP3c
5. Snowboarding fundamentals
https://www.youtube.com/watch?v=qogHpCP9G9g
6. Pinterest—NZ-inspired snowboard
https://www.pinterest.nz/ulrichlange/snowboard-graphic-design/

The Context/Horopaki: *Transportation* is said to be the movement of people and goods from place to place. Nowadays more and more people are using bikes/e-bikes as a cost-efficient form of transportation. E-biking is a healthy activity, and in busy streets and inner-city streets it can be faster, but most of all greener, than using cars.

The Brief 1: *You are to design and model a small kāta/trailer to tow behind an e-bike. The kāta is to transport items such as bags, laptops and groceries but not children.*

The Brief 2: *You are to create a cool name and logo for this radical new product, e.g. T E-Pod, T E–xtension, MiniKab, OM Capzule, Metarahi kāta.*

(WALT) We are learning to:
- model using aluminium foil
- use design elements to create a logo.
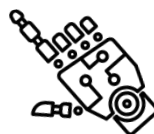
Activity 1 Modelling your kāta

1. Look at digital resources 1 and 2 to get design ideas.

2. Design a solution for transporting things with an e-bicycle, e.g. food or camping gear. You decide. It is NOT to transport children. It should have the following attributes:

- can be towed behind an e-bike
- is strong and stable
- can be easily fitted to and uncoupled from an e-bike
- is weatherproof

3. Sketch two ideas for your cart, thinking about how to load it up and what can be done to secure the load when travelling.

4. Show others, get their feedback and select the best design. Create a model of your chosen concept using these construction tips:

- The FRAME—take a 300 mm sheet of aluminium foil, fold it lengthwise in half, then fold it in half again and again until you get a strip that is 5 mm wide. This will be strong and can be bent to form the frame. Use sellotape to fix it in place.
- The AXLE—use a drinking straw and skewer.
- The WHEELS—use milk tops (see picture above).

5. Take a picture and share it with your teacher.

Activity 2 Logo design

1. Ask people at home what they think would be a cool name for your new product.

2. Create a logo for the cart. It needs to be:
   - one or two words long
   - easily seen from two metres
   - colourful

Choose your font and font size carefully so it is easy to read.

3. Sketch a couple of ideas and show others at home to confirm the best one.

4. Trace the selected one twice. If you have a scanner, then scan and print.

5. Render and add colour to make it look awesome. Select one to be your final outcome

6. Take a picture or scan your final outcome to share with your teacher.

Digital resources/Rauemi
1. Bike trailers
https://www.amazon.com/bike-trailers/b?ie=UTF8&node=3403501
2. Bike trailers for kids
https://www.twowheelingtots.com/best-bike-trailer-for-kids/
3. Aluminium hacks
https://www.youtube.com/watch?v=NRG_vPcaSfU

Material resources/Rauemi
Aluminium foil
Sellotape
Drinking straw
Food skewer
Milk bottle tops

The Context/Horopaki: We as people have evolved our shelters, our access to water and our movement across land. This has led to improving how we travel and how we transport our goods and products.

The Brief 1: *You are to research an e-transportation/waka product used in Aotearoa New Zealand today, and show how it has evolved to be electrically operated over the past 100 years. You might consider, for example, bikes, scooters, boats or cars that are now powered by rechargeable batteries. You are to present your findings as a digital presentation.*

The Brief 2: *You are to create a visual diagram that shows the positive and negative impacts of new e-transport* technology on society and the environment*.*

(WALT) We are learning to:
- create a multi-slide presentation with embedded URL links, audio, and text.
- use a Venn diagram to show the impacts of technology on society and the environment.
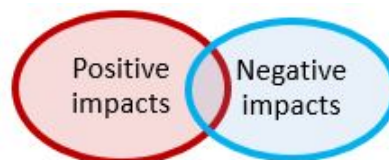
Activity 1 Multi-slide presentation

1. Read through digital resources/rauemi 1–3.

2. Select a form of e-transportation—*bike, scooter, car, boat etc*. Do some research to compare 'old' and 'new' versions of it.

3. Create a multi-slide presentation (max. 5 slides) using PowerPoint, Google Slides, Prezi, or another presentation application.

4. Create a timeline of pictures from old to new for your e-transportation.

5. Combine text, audio sound bites, pictures and video to explain how the changes in technology have impacted on the lives of the end users.

6. Your slides need to:
   - clearly identify the chosen electric transportation technology
   - describe who uses them and why
   - explain the advantages of the new e-products today over the older versions
   - discuss the disadvantages for people today using the electric technology

7. Share your presentation with your teacher.

Activity 2 Venn diagram

Positive impacts / Negative impacts

1. Select an e-transportation technology, e.g. e-bikes, e-scooters, e-cars, e-buses, e-trucks.

2. Research the positive and negative impacts that new 'E Technology' is having on the people that use it and the environment.

3. Draw a Venn diagram. Have two bubbles to present your research findings— positives (e.g. *quiet, less mechanical parts to fail)* and negatives (e.g. *batteries difficult to recycle, long charge times)*. You can use pictures and text.

4. Are there things that are both good and bad for the users and environment? List these in the overlapping zone between the two bubbles.

5. Add the title *Electric Transportation*.

6. Share with your class and teacher.

Digital resources/Rauemi

1. History of electric cars
https://www.energy.gov/timeline/timeline-history-electric-car
2. History of electric bikes
https://www.electricbike.com/e-bike-patents-from-the-1800s/
3. History of electric scooters
https://www.smithsonianmag.com/history/motorized-scooter-boom-hit-century-dockless-scooters-180971989/

The Context/Horopaki: There are many forms of vehicles used to travel within water: canoes, hovercrafts, jet-skis, power and sailboats, ships, submarines, waka and yachts. Watercraft have a propulsive capability (sail, oar, paddle or engine) and are different from a simple device that merely floats, such as a log raft.

The Brief 1: *You are to design a floatation device that can sail for five metres in the shortest period of time.*

The Brief 2: *You are to present your outcome from Brief 1.*

(WALT) We are learning to:
- design a product that can float and be propelled over water.
- use harakeke or recyclable man-made materials as the body of a watercraft.
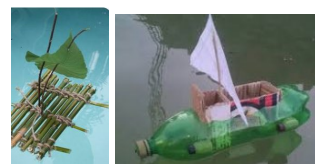
Activity 1 Design your waka for speed

1. You are to build a watercraft to sail 5 metres**.**

2. Watch digital resource 1 'Make a mokihi'.

3. Watch videos 2–3 for ideas. Think about whether to use traditional materials (raupō, harakeke, sticks, and ropes) or modern and recycled materials (plastic bottles, bamboo sticks, stakes, ropes, tape etc.)

4. Before designing, answer these questions.
   - What will it be made out of?
   - How will it be propelled through the water?
   - How will it be steered?
   - Does weight matter?
   - What will it look like?
   - How will the parts be held together?

5. Sketch several ideas. Show others at home and get their input. Look at digital resource 4—sketching and rendering.

6. Create a construction plan—a written list of steps and/or a number of drawings to guide you.

7. Create your watercraft. Take a picture and store the outcome safely at home. Share a picture of your design plan and outcome with your teacher.

8. Your teacher will arrange a time to bring these to school to race later in the year (venue to be confirmed).

Material resources/Rauemi
Raupo, string
Tape, glue sticks, hot glue gun and glue (tape will do most things)
Plastic bottles, cardboard, paper rule, rubber bands, balloons

Activity 2 Presenting outcomes

1. Create a presentation of the watercraft you have created in Brief 1. Choose one of these presentation modes:
   - Prezi
   - PowerPoint
   - Google slides
   - Stop motion video
   - A collage of pictures
   - Sketches

2. Provide a picture of the outcome (product) and a description of its performance.

3. Share the presentation with your teacher.

Digital resources/Rauemi
1. Make a mōkihi/raft
https://ngaitahu.iwi.nz/culture/mahinga-kai/#mokihi
2. Sail boat plastic and sticks
https://www.youtube.com/watch?v=QBVqTKZr_qM
3. A two bottle boat
https://www.youtube.com/watch?v=CKvQosK03rI
4. Sketching and rendering
http://www.technologystudent.com/pdf14/poster_isometric1.pdf