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Yachting New Zealand

KŌKŌKAHA

POWERED BY WIND

TERM 1 2021

TEACHER GUIDE

Yachting New Zealand

Kia ora

Welcome to Kōkōkaha - powered by wind.

Kōkōkaha is an integrated unit of work that focuses on the science, technology, engineering and maths (STEM) associated with harnessing the wind.

Kōkōkaha's learning experiences are designed for students in years 5 through to 10 and are intended to provide them with the skills and knowledge to design their own technologies to harness the power of the wind.

Kōkōkaha learning experiences can easily be adapted for older or younger children and are available to schools and kura throughout New Zealand through the website:

www.kokokaha-yachting.nz

During Kōkōkaha learners are challenged to design a technology to harness the power of the wind.

Before launching into their designs learners participate in a range of hands on **learning experiences** to build their knowledge about wind.

They can also feel the power of the wind by participating in a **sailing experience** at sailing clubs or providers around Aotearoa New Zealand.

Then when they are ready learners design a technology to harness the power of the wind and upload their ideas to the **Kōkōkaha Ideas Gallery**.

This teacher's guide gives you all the information you need to get underway with Kōkōkaha in your classroom.

We hope you enjoy Kōkōkaha and look forward to seeing your students' designs later in the term.

Ngā mihi
The Kōkōkaha team

PROUDLY SUPPORTED BY

VOLVO

CURIOUS MINDS
HE HIHIRI I TE MAHARA

the Southern trust

Nō te rere moana Aotearoa
MARITIME NEW ZEALAND

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MINISTRY OF EDUCATION
Te Tāhuhu o te Mātauranga

SPORT NEW ZEALAND

NEW ZEALAND 2021
Emirates TEAM NEW ZEALAND
OFFICIAL LEGACY PROGRAMME

1. TE WERO

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Kōkōkaha challenges students to take action in their local community to help solve a problem that faces us all - climate change. In introducing Kōkōkaha teachers should present students with the following challenge and mission.

The world is continuing to increase its use of energy. Much of this energy is from non renewable sources. This is having an impact on our climate as more and more carbon dioxide is released into the atmosphere.

In New Zealand more than 80% of energy is generated from renewable sources, with wind being one of those sources. We need to find ways to harness even more power from the wind.

Your mission is to design a technology to harness the power of the wind.

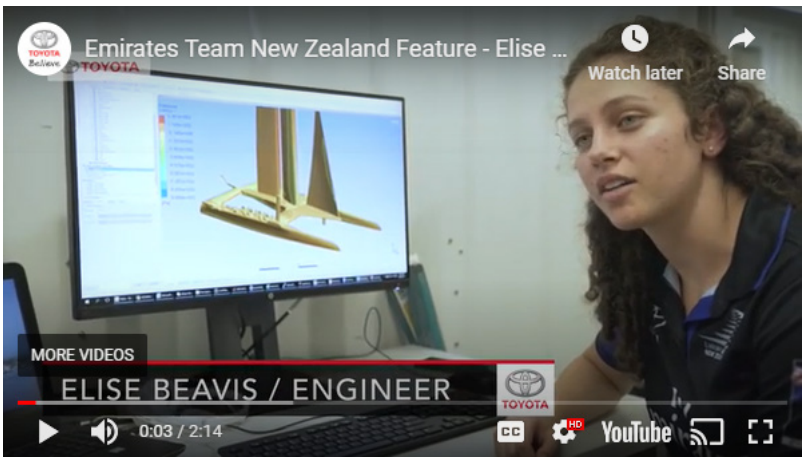
2. SETTING THE SCENE

A key outcome of Kōkōkaha is for learners to get the opportunity to develop their capability to use the technology development process.

Emirates Team New Zealand are world leaders at developing technological solutions to harness the power of the wind.

Elise Beavis is a member of the design team and spends her working days using the technological problem solving process to find ways to make the racing boats sail faster.

Kōkōkaha links to a video where Elise explains how the team designs, tests and refines new ideas. There are clues in her video that your learners will be able to use to help them with their design ideas.



3. CLASSROOM LEARNING EXPERIENCES

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Kōkōkaha has 12 learning experiences which teachers can pick and choose from to help learners develop the skills and knowledge needed to design their own technology idea. The learning experiences are organised into three sets of four experiences.

SET ONE WHEN THE WIND BLOWS

Discovering wind

How can you see it? How do you know it is there? How is it recorded? What are tell-tale signs of the wind?

Which way wind

How do you know where the wind is coming from? Learners design and build a wind vane.

The need for speed

How do you measure the wind? Learners design and build an anemometer.

Wind and waves

Where do waves come from? What makes the water move? How do you measure waves?

SET TWO A FORCE TO BE RECKONED WITH

Tāwhirimātea is howling

Who is Tāwhirimātea? Where did he come from and what does he do? Learners create a dance to represent a type of wind.

Harvesting wind

How do wind turbines work? Where are wind farms in Aotearoa New Zealand? Learners design a pinwheel.

Capturing wind

Why do sailors love the wind? How do they capture it? Learners design a wind sock to capture the wind.

Power my car

How do blokarts use the wind? What is kinetic energy and friction? Learners design and test a sail car?

SET THREE HOW SAILBOATS WORK

Float your boat

What makes a boat float? Why do some boats sink? Learners design and make a clay boat and test its ability to float.

Sail away

What are the parts of a sail boat? How do they work? Learners build, test and improve a model sail boat.

Sail power

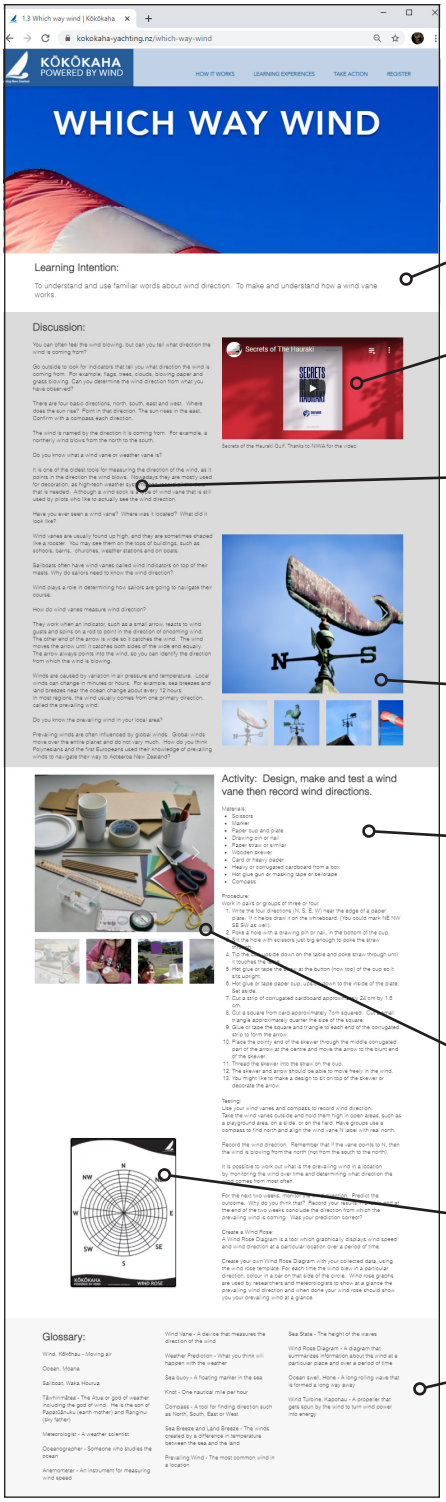
How do sails work? Learners work out how to measure the perimeter and area of a sail.

Up on the foils

How have sail boats changed over the years? How have these changes led to foils on boats? Learners design and test a simple foil.

Each of the 12 Kōkōkaha learning experiences are presented in the same way on the website.

www.kokokaha-yachting.nz/learning-experiences



Each experience has a set of learning intentions.

Most of the experiences have a video that helps unpack the topic.

Each experience has a discussion section to help engage learners with the topic. The discussion section includes questions that teachers might like to ask learners to get them thinking about the topic. Brief answers to the questions are provided as well to help teachers who might not have the prior knowledge of the topic.

Many of the experiences have a gallery of images that help illustrate the topic under discussion.

Each experience has an activity section which in most cases involves learners in making and testing something. The activity section includes a list of the materials that are needed. The activities have been designed to use materials that are already in most schools and kura or are easy to source. The activity descriptions also give step by step instructions for learners to complete the task.

A gallery of photos to help illustrate the activity is included with most experiences.

In some experiences there are downloadable templates provided to help learners record and analyse data.

Each experience has a glossary of terms that relate to the topic.

4. SAILING EXPERIENCE

In addition to the classroom learning experiences, learners can feel the power of the wind during a sailing experience.

www.kokokaha-yachting.nz/sailing-experience

We have set up 23 Kōkōkaha providers around Aotearoa New Zealand to deliver a day long Kōkōkaha sailing experience to classes of up to 30 students. In addition there are a network of sailing clubs around the country, and a group of commercial providers, who can provide have-a-go experiences for schools and kura. The Kōkōkaha website provides registration and contact details for the two types of sailing experience.

For schools and kura registered for the Kōkōkaha sailing experience, the day typically has two parts. Generally each group of up to 30 students is split into two groups.

In the morning the first group goes sailing to experience the power of the wind. Meanwhile the second group undertake a set of hands-on challenges to introduce them to some of the technologies used in sailing. After lunch the groups swap.

The hands-on challenges are lead by the teachers from the participating school, while the sailing experience is facilitated by Kōkōkaha kaiako.

Part one: Feel the power of the wind

Learners are introduced to safer boating skills as they get out on the water and go for a sail. All the equipment including boats and life jackets are provided. The focus is on learners feeling the power of the wind.

Part two: Hands-on technology challenges

There are four challenges to introduce learners to technologies involved in sailing.

Pulley Power: How can pulleys be used to reduce the amount of effort required to lift a weight?

Knot Know How. What are some of the common knots used in sailing?

Sink & Float. What makes a boat float and what makes it sink?

Hull & Sail Materials. How have the materials used to build hulls and sails changed over the years?

5. TAKE ACTION

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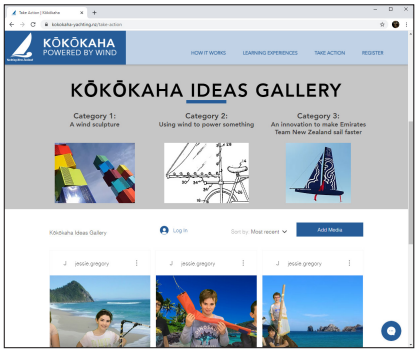
Once learners have learned all they need to know about wind their mission is to design a technology to harness the power of the wind. Designs can be presented as either an image or as a video. If a video, they need to be less than one minute in length. There are three categories of design to choose from.

1. A wind sculpture
2. Using wind to power something
3. An innovation to make Emirates Team New Zealand sail faster

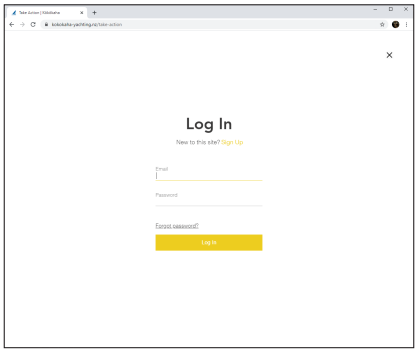
Teachers are responsible for loading the designs into the Kōkōkaha ideas gallery.

www.kokokaha-yachting.nz/take-action

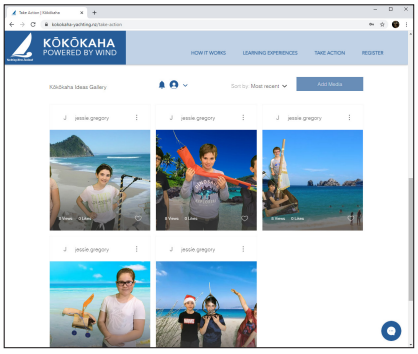
1. Click the login icon on the ideas gallery.



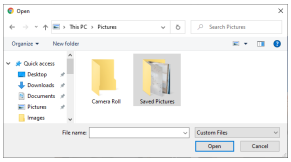
2. Enter your user name and password. If you have not got one already the gallery will prompt you to set one up.



3. Click the add media button.



4. Choose the file you want to upload to the gallery from your computer.



Later this year members of the NZL Sailing Team will review the designs and the top design in each category will receive a school visit from members of the New Zealand Sailing team.

Good luck!

NZL SAILING TEAM KŌKŌKAHA IDEAS JUDGING PANEL

Molly Meech
Silver Medalist Rio Olympics

Josh Junior
America's Cup Champion
World Finn Champion

Alex Maloney
Silver Medalist Rio Olympics

Andy Maloney
America's Cup Champion

Erica Dawson
Olympian Tokyo

Daniel Wilcox
Olympian Rio and Tokyo