

# SCIENCE/STEM IN SCHOOLS 2021 TEACHER RESOURCE PACK



# CONTENTS

<b>Teacher Step-By-Step Guide</b>	...3
<b>About the Company</b>	...4
<b>About the Program</b>	...5
<b>Performance Breakdown</b>	...6
<b>Post-Performance Discussion Points</b>	...7
<b>Classroom Activities:</b>	
Activity One	8 - 10
Activity Two	11 - 12
Activity Three	13 - 14
Activity Four	...15
<b>Glossary</b>	...16
<b>Useful web links</b>	...17
<b>Curriculum Content</b>	18 - 24
<b>2022 Incursion Programs</b>	...25
<b>Puzzle Solutions</b>	...26

# TEACHER STEP-BY STEP GUIDE

## BEFORE THE PERFORMANCE:

**TEACHER RESOURCE PACK:** Please copy or email and distribute this pack to all relevant teachers PRIOR to the live-in-school performance.

**STUDENT NUMBERS:** Please prepare IN ADVANCE the number of students attending so you can inform our Team Leader at the conclusion of the performance.

## ON THE DAY OF THE PERFORMANCE:

**SAFETY:** Please ensure the space is clean and clear for the safety and wellbeing of both your students and the performers.

**TABLE REQUEST:** The performance will require one table of medium size. Please pre-set a table in the performance space at least 40 minutes before the scheduled performance start time.

**PERFORMER ARRIVAL TIME:** Performers will arrive approximately 30 minutes before the scheduled performance start time. Please make sure the space is clear and ready to ensure we can setup and start on time.

**START TIME:** Please ensure students are lined up outside the performance space 5 minutes before the commencement of the show to guarantee a prompt start. We are not able to work within your school bell times if the performance cannot start on time.

**PERFORMANCE SPACE REQUIREMENTS:** Access to power is required in the room so we can operate sound for the presentation. The performers require an area of approx. 5m x 5m for the staging area. Students should be seated in front of this stage area and can be on seats or sitting on the floor as long as a good view of the performers.

**PAYMENT:** A tax invoice for the balance of payment will be forwarded to your school the day after the incursion, so please do not prepare a cheque on the day. We have instructed our performers not to handle any money or financial issues. These should all be directed to our office. Please refer to your Booking Confirmation for details on pricing terms and conditions. If you require another copy of your Booking Confirmation then please call our office on 1300 652 470

*Please note:* a small or medium sized room such as a multipurpose room or small hall is more effective acoustically and atmospherically than a large space such as a gym. Please make the performance area available at least 30 minutes prior to the commencement of the show so that the performers can prepare the space to start on time.

**TEACHER PRESENCE:** We request teacher presence and support for the performers at all times during the performance.

## AFTER THE PERFORMANCE:

**STUDENT NUMBERS:** Please provide the total number of students that have attended the performance to our Team Leader before they depart your school.

**EVALUATION:** Go to [performteachers.com](http://performteachers.com) and click on the name of this program to evaluate and be in the draw to WIN \$200

**CLASSROOM ACTIVITIES:** Share with teachers any of the classroom activities in this pack and use in your follow up lessons.

**STUDENT DIGITAL ACTIVITIES:** Direct students onto our website **RESOURCES** page where they can access the digital games, videos and downloadable student activities.

**RESERVE A DATE FOR NEXT YEAR:** Find details for next year's programs at the end of this pack and reserve a date NOW to grab the **EARLY BIRD DISCOUNT!**

**MANY THANKS FOR YOUR ASSISTANCE AND SUPPORT!**



## ABOUT THE COMPANY

**Perform! Education** is a multi award-winning educational production company and part of the largest educational producers operating across New Zealand, Australia, and the USA.

The company specialises in touring curriculum aligned, educational musicals, theatre and sketch comedy into schools and has been operating for twenty years. Every year we tour to over 300,000 students and in all, the company and its writers have toured our specialty educational programs to **over five million students** across the world.

In New Zealand, we tour an annual **Science & STEM In Schools** educational sketch comedy program, as well as a **Book Week In Schools** literacy program. The **Science/STEM** program inspires students with the limitless fun and possibilities offered by Science, Technology, Engineering & Maths – while promoting how science impacts our everyday lives and future careers.

The live performances are **highly interactive** and feature comedic sketches, appealing and identifiable characters, loads of **comedy**, fun scientific facts and student interaction that captivates and engages all audiences from ages 9 to 14 years old (as well as their teachers!).

**Question time** and **Post-Performance** activities reinforce the learning outcomes, and this specially designed **Teacher Resource Pack** sent prior to the performance offers a comprehensive selection of classroom exercises for both before and after the performance.

To find out more about **Perform! Education** or to contact the company, please log onto our website at **[www.performeducation.com](http://www.performeducation.com)**

If you or any of your students would like to find out more details about our company please visit our website: **[www.performeducation.com](http://www.performeducation.com)**



## ABOUT THE PROGRAM

Welcome to the **Science/STEM in Schools** program **THE MARINE TEAM!**

**THE MARINE TEAM** is a 45 minute live-in-school performance that consists of two professional actor/educators with two goals. The first goal is to explore:

- **How oceans impact our planet**
- **What is ocean sustainability**
- **Solutions that generate healthy oceans**
- **What YOU can do**

The second goal is to make your students laugh so hard that they forget they're learning!

**LEARNING AREAS:** Science, Technology, Social Sciences, English, The Arts - Drama

**KEY COMPETENCIES:** Thinking, Using language, symbols, and texts, Managing self, Relating to others, Participating and contributing

### LEARNING POINTS:

- **How oceans impact our planet:** The largest ecosystem on Earth, provide oxygen and food, regulates weather and climate, absorbs CO<sub>2</sub>, supports the global economy and social, cultural and community needs.
- **What is ocean sustainability:** Using the ocean now in a way that ensures its health for the future. Threats include pollution, plastics, global warming, warming oceans, ocean acidification and overfishing.
- **Solutions that generate healthy oceans:** Ocean clean-up technology eg Boyan Slat, reducing greenhouse gas emissions, marine renewable energy, kelp farming, sustainable fishing, aquaculture, marine engineering and innovation.
- **What YOU can do:** Reduce & refuse plastics, throw rubbish in the correct bin, recycle, eat sustainably caught seafood, walk, cycle or take public transport rather than a car, use reef safe sunscreen, use renewable energy and less energy overall.



## PERFORMANCE BREAKDOWN

### **SKETCH 1 – HOW OCEANS IMPACT OUR PLANET**

A passionate ocean scientist is about to conduct his first experiment with a time machine in an effort to travel back in time and take samples of ocean water throughout history. His efforts are hampered by an enthusiastic yet clueless assistant, to whom he must patiently explain why the ocean is essential to humanity's survival.

### **SKETCH 2 – WHAT IS OCEAN SUSTAINABILITY**

A documentary film maker with an over-inflated ego embarks on an ocean journey to the Great Pacific Garbage Patch. When his presenter turns out to have no screen experience, it's too late to turn back and he despairs his Academy Award dreams have been dashed. But not only does he learn about the human activities putting ocean sustainability at risk, he learns never to judge a book by its cover.

### **SKETCH 3 – SOLUTIONS THAT GENERATE HEALTHY OCEANS**

A wannabe evil supervillain is on a mission to win the Best Baddie Award at this year's Villain Convention. His strategy is to steal the best new ocean sustainability technology in the world and use it on a vast scale to put everyone else out of business and take over the world. He handpicks a collection of marine renewable energy technology, ocean clean-up technology, aquaponics and kelp farming technology, and sets off to VillainCon with high hopes.

### **SKETCH 4 – WHAT YOU CAN DO**

A student volunteer is invited onto stage to be a world famous pop-star on their 'Save the Oceans World Tour.' Their bodyguards usher them through a packed pre-show schedule of fan Meet and Greets and press briefings, all the while reinforcing the easy ways we can all support ocean sustainability - from consuming sustainable seafood to preventing pollution.

## QUESTION TIME

Here the actors will reinforce and extend the learning content in the show by asking the audience questions. It's also an opportunity, if time permits, for the students to ask questions of the actors and open up discussion to be taken back to the classroom. The post show question time, in conjunction with this Resource Pack, is designed to inspire students to investigate further as well as understand that **STEM** plays a very practical part in their every day and future lives.

# POST PERFORMANCE

## DISCUSSION POINTS

### – CLASSROOM OR GROUPS

- What does ocean sustainability mean?
- Why is ocean sustainability important?
- Why is the ocean called 'our planet's life support system'?
- Name 3 ways the ocean impacts you today?
- In what ways are humans putting ocean sustainability at risk?
- Why does so much rubbish end up in the ocean?
- What are microplastics?
- Why are microplastics a risk?
- What are some easy ways we can all reduce plastics in the ocean?
- Apart from plastics, what are some other examples of ocean pollution?
- What is global warming?
- What factors lead to global warming?
- What effect does global warming have on our oceans?
- What is ocean acidification?
- What are some easy ways we can all help slow global warming?
- How does eating less red meat help slow global warming?
- What is overfishing and why is it a concern?
- What is sustainable fishing and why is it important?
- How can we ensure the seafood we eat is caught sustainably?
- Why are balloons such a threat to ocean life?
- What are some examples of marine renewable technologies?
- Name 3 easy ways we can all contribute to ocean sustainability.



# CLASSROOM ACTIVITY #1

## THE GREAT PACIFIC GARBAGE PATCH & YOUR SCHOOL'S PLASTIC WASTE STRATEGY

Learning Areas: Science, Mathematics, English, The Arts – Visual Arts



Image sourced from:

<https://www.forbes.com/sites/scottsnowden/2019/05/30/300-mile-swim-through-the-great-pacific-garbage-patch-will-collect-data-on-plastic-pollution/?sh=4e3ba49c489f>

### OVERVIEW

The Great Pacific Garbage Patch is a vast mound of garbage floating in the North Pacific Ocean, between Hawaii and California.

It's approximately 3 times the size of France and weighs about as much as 500 jumbo jets.

There are approximately 1.8 *trillion* pieces of plastic in it which is about 250 pieces of plastic *per human* on the planet.

It's the largest of 5 plastic accumulation zones in the world's oceans.

Ocean plastics threaten the health and survival of marine animals because they routinely confuse the plastics for food. They also can become entangled in it.

This video explains it in a nutshell:

<https://marinedebris.noaa.gov/videos/trash-talk-what-great-pacific-garbage-patch-0>

One way we can all help is to ***refuse, reduce, reuse and recycle plastics.***

# CLASSROOM ACTIVITY #1

## OBJECTIVE:

Assess and update your school's plastic waste strategy.

### MATERIALS:

- Sustainably sourced rubber disposable gloves
- Newspaper
- Pen and paper

### METHOD:

- As a class discuss how waste plastics are currently disposed of in your school.
- Is it an effective strategy? Take a class vote to assess what the majority feels.
- To test this out, choose one general waste bin from the school playground and conduct a plastic waste audit on its contents.
- Wearing gloves, remove all pieces of plastic from the bin and sort into piles of hard and soft plastics on newspaper spread out on the floor.
- How many items of soft and hard plastics did you find, if any?

## REFLECTION:

Do your findings support the effectiveness of your school's plastics waste strategy? If not, break into small groups or, as a class, consider:

- Are there recycling bins for hard plastics on the school grounds or in classrooms?
- Are there bins for soft plastics?
- Are the bins being used?
- Are there enough of both types of bins in the school?
- Are the bins easy to access for students and teachers?
- Are students clear which plastics go into which bin? Is there a way to make this clearer?
- Do students understand why recycling plastics is important?
- Could it be constructive for students to be reminded to use the plastic recycling bins from time to time? How could this be done in an engaging and memorable way?
- Could your school consider a plastic free day once a week? Consider incentives and rewards to students or classes that reach or exceed expectations.

# CLASSROOM ACTIVITY #1

## ACTION:

Create an action plan to update your school's plastic waste strategy. Delegate tasks to small groups including:

- Consult with school leaders to engage them in your project.
- Design posters or infographics educating students on the importance of plastics recycling to hang up around the school.
- Design infographics of The Great Pacific Garbage Patch and hang up around the school.
- Design newsletter advertisements, emails or bulletins informing students of the plastic waste strategy update.
- Source soft plastics waste bins.
- Organise regular disposal of soft plastics. See <https://www.recycling.kiwi.nz/>
- Create 'What Goes in This Bin' posters to attach to general recycling and soft plastic waste bins, to educate students on which items go into which bins.
- Devise a Plastic-Free day once a week. How can you effectively market this strategy to the school community? In what way can you incentivise and reward participants?



Image sourced from:  
<https://www.plhs.sa.edu.au/room-23-launches-recycling-program/>

**Perform Education** would love to know how you go! Send us a photo or update of your innovations so we can share it with our educator community and inspire others to follow your lead! [book@performeducation.com](mailto:book@performeducation.com)

References:

<https://theoceancleanup.com/great-pacific-garbage-patch/>

<https://www.nationalgeographic.org/encyclopedia/great-pacific-garbage-patch/>

# CLASSROOM ACTIVITY #2

## OCEAN ACIDIFICATION AND SHELLS

Learning Areas: Science, Mathematics

### OVERVIEW

When we burn fossil fuels like coal, oil and natural gas for energy, carbon dioxide is produced. The oceans absorb about one quarter of this carbon dioxide where it combines with water to form carbonic acid.

Even though this acid is very weak, it is still strong enough to prevent certain marine organisms like molluscs from making or keeping their calcium carbonate shells.

It also causes coral to weaken and grow more slowly – significant considering about one quarter of the world’s marine species need coral reefs at some point in their life cycle to survive.

So not only are some marine species harmed by changes in ocean acidity, so too are those higher up the food chain that depend on them for survival.



Image sourced from:  
<https://artistsandclimatechange.com/2019/10/28/coral-universe/>

# CLASSROOM ACTIVITY #2

## OCEAN ACIDIFICATION AND SHELLS

### MATERIALS

- 2 eggs
- 1 litre vinegar
- large bowl

Just like coral and molluscs, egg shells are made almost entirely of calcium carbonate. Let's see what happens to an egg shell if we soak it in an acidic solution.

### METHOD:

#### DAY ONE:

- Place eggs in the large bowl.
- Pour vinegar into the bowl until eggs are completely covered.
- Leave eggs to stand overnight.

#### DAY TWO:

- The eggs should be soft. Remove from the vinegar and observe.

### REFLECTION:

How has the egg's shell changed?

This is because the acetic acid in the vinegar neutralizes the calcium carbonate in the eggshell, releasing carbon dioxide and weakening the shell.

In what way does this reflect what is occurring in our oceans?

Reference: <https://sos.noaa.gov/education/phenomenon-based-learning/vinegar-eggshells-and-ocean-acidification/#:~:text=Vinegar%20is%20to%20an%20Eggshell%20What%20Ocean%20Acidification%20is%20to%20Marine%20Ecosystems%3F&text=Leave%20an%20egg%20in%20a,dioxide%20and%20weakening%20the%20shell.>

# CLASSROOM ACTIVITY #3

## GLOBAL WARMING DEMONSTRATION

by NASA JET PROPULSION LABORATORY EDUCATION

Learning Areas: Science, Mathematics

### OVERVIEW

This demonstration uses a water balloon to show how Earth's oceans are absorbing most of the heat being trapped on our warming world.



Image sourced from:  
<https://playingwithrain.com/fireproof-balloon/>

### MATERIALS

- Several balloons
- Lighter (be sure it creates a flame rather than a jet)
- Bottle of water
- Bucket
- Safety goggles
- Watch the "DIY Space: Water Balloon Demonstration" video tutorial: <https://www.jpl.nasa.gov/edu/teach/activity/global-warming-demonstration/>

# CLASSROOM ACTIVITY #3

## GLOBAL WARMING DEMONSTRATION

### PROCEDURES

1. Blow up the balloon and tie it. Ask someone to hold the balloon while you put on safety goggles. Explain to students that the air-filled balloon represents Earth's atmosphere and the flame represents the heat from the sun.
2. Take the balloon and have students stand at least three feet away from you.
3. Hold the bottom of the balloon. Place the lighter's flame onto the balloon, but at a safe distance from where you are holding the balloon. As soon as the flame touches the balloon, the balloon will pop.
4. Now make a water balloon. When filling the balloon, try to remove any air bubbles as placing the flame over an air bubble could cause the balloon to pop prematurely. Explain to students that this balloon represents Earth's oceans.
5. Make sure your safety goggles are still on and hold the balloon over the bucket. Make sure to hold the balloon at the bottom and place the lighter's flame on the balloon, at a safe distance from where you are holding the balloon.
6. Depending on the size of the balloon, the quality and thickness of the rubber, and the presence of any air bubbles, the water-filled balloon should last more than one minute with the flame on it. Be sure to follow any safety instructions on the lighter with regard to how long the lighter may be held lit without cooling off.
7. Eventually the balloon may pop, so position the bucket to catch the water.
8. Explain to students that this demonstration illustrates how Earth's oceans are absorbing a great deal of the heat generated by climate change. In fact, Earth's oceans are absorbing about 80 to 90 percent of the heat from global warming. Since water can withstand a lot more heat than the atmosphere, the temperature of the oceans isn't changing that much.

### Source:

NASA JET PROPULSION LABORATORY - <https://www.jpl.nasa.gov/edu/teach/activity/global-warming-demonstration/>

# CLASSROOM ACTIVITY #4

## RESPONSIBLE FISHING

Learning Areas: Science, Mathematics, English, The Arts – Visual Arts

### OVERVIEW:

Everyone has a role to play in keeping fish populations sustainable.

### OBJECTIVE:

Research the current recreational fishing guidelines your area.

### METHOD:

Use the NZ Government's Recreational Fishing Website <https://www.mpi.govt.nz/fishing-aquaculture/recreational-fishing/> as your source. Summarize the main points and design an infographic that makes it easy for people to read and understand.

Consider:

- Taking only what is needed
- Catching and releasing fish if you have enough for a meal
- Throwing back undersized fish
- Taking home with you all fishing gear
- Disposing of all rubbish, including waste tackle, line and bait, in onshore bins.
- Following the fisheries regulations in your area
- Downloading the NZ Fishing Rules app for information specific to fishing in your area <https://apps.apple.com/nz/app/ministry-of-fisheries/id456121901>
- Reporting any suspected illegal fishing activity by calling 0800 47 62 24



Image sourced from:  
<https://www.troutlands.com/>

# GLOSSARY

<b>Aquaculture:</b>	The farming of fish and other seafood like shrimp and algae.
<b>Boyan Slat:</b>	Founder of The Ocean Cleanup, an organisation dedicated to developing technology to remove waste plastic from the world's oceans.
<b>Carbon Dioxide:</b>	A type of greenhouse gas produced by burning fossil fuels.
<b>Carbonic Acid:</b>	A weak acid produced when water and carbon dioxide mix. Can cause the breakdown of shells and skeletons of ocean organisms like coral and plankton.
<b>Coral bleaching:</b>	When ocean water is too warm, coral gets stressed and expels the algae living in their tissues, causing them to turn white.
<b>Ecosystem:</b>	Made up of all the living and non-living things in an area.
<b>Fossil fuels:</b>	Fuels that come from the remains of plants, animals and other living things that lived long ago. The three most common are coal, oil and natural gas, and we use them to make energy for things like electricity and transport.
<b>Global Warming:</b>	The rising of the average temperature of the Earth.
<b>Great Pacific Garbage Patch:</b>	A big patch of garbage in the Northern Pacific Ocean that is three times the size of France.
<b>Innovation:</b>	A new idea, device, or method. The act or process of introducing new ideas, devices, or methods.
<b>Kelp:</b>	A fast-growing type of seaweed that can absorb lots of carbon dioxide.
<b>Marine Renewable Energy:</b>	Energy sources we can use from the ocean that will never run out, for example tidal energy and wave energy.
<b>Microplastics:</b>	Small particles of plastic smaller than 5mm long that can be harmful to ocean animals and humans.
<b>Ocean acidification:</b>	A change in ocean chemistry due to the absorption of carbon dioxide from the atmosphere. The water becomes more acidic which can be harmful to plants and animals.
<b>Over-fishing:</b>	Catching so many fish that they don't have time to reproduce back to healthy numbers.
<b>Sustainability:</b>	Using natural resources like the ocean in a way that keeps them healthy for the future.



# USEFUL WEBLINKS

MARINE STEWARDSHIP COUNCIL LEARNING RESOURCES

<https://www.msc.org/en-au/for-teachers/teach-learn-about-ocean-sustainability/new-zealand-education-curriculum>

SCIENCE LEARNING HUB – SUSTAINABLE SEAS NATIONAL SCIENCE CHALLENGE

<https://www.sciencelearn.org.nz/resources/2512-sustainable-seas-national-science-challenge>

MOANA PROJECT

<https://www.moanaproject.org/project-overview>

NIWA – COASTS AND OCEANS

<https://niwa.co.nz/our-science/coasts-and-oceans>

BEST FISH GUIDE – SEAFOOD NZ

<https://www.bestfishguide.co.nz/>

WORLDS OCEANS DAY

<https://worldoceansday.org/>

THE OCEAN CLEANUP

<https://theoceancleanup.com/>

UN DECADE OF OCEAN SCIENCE

<https://www.oceandecade.org/>

WWF NZ

[https://www.wwf.org.nz/what\\_we\\_do/marine/](https://www.wwf.org.nz/what_we_do/marine/)

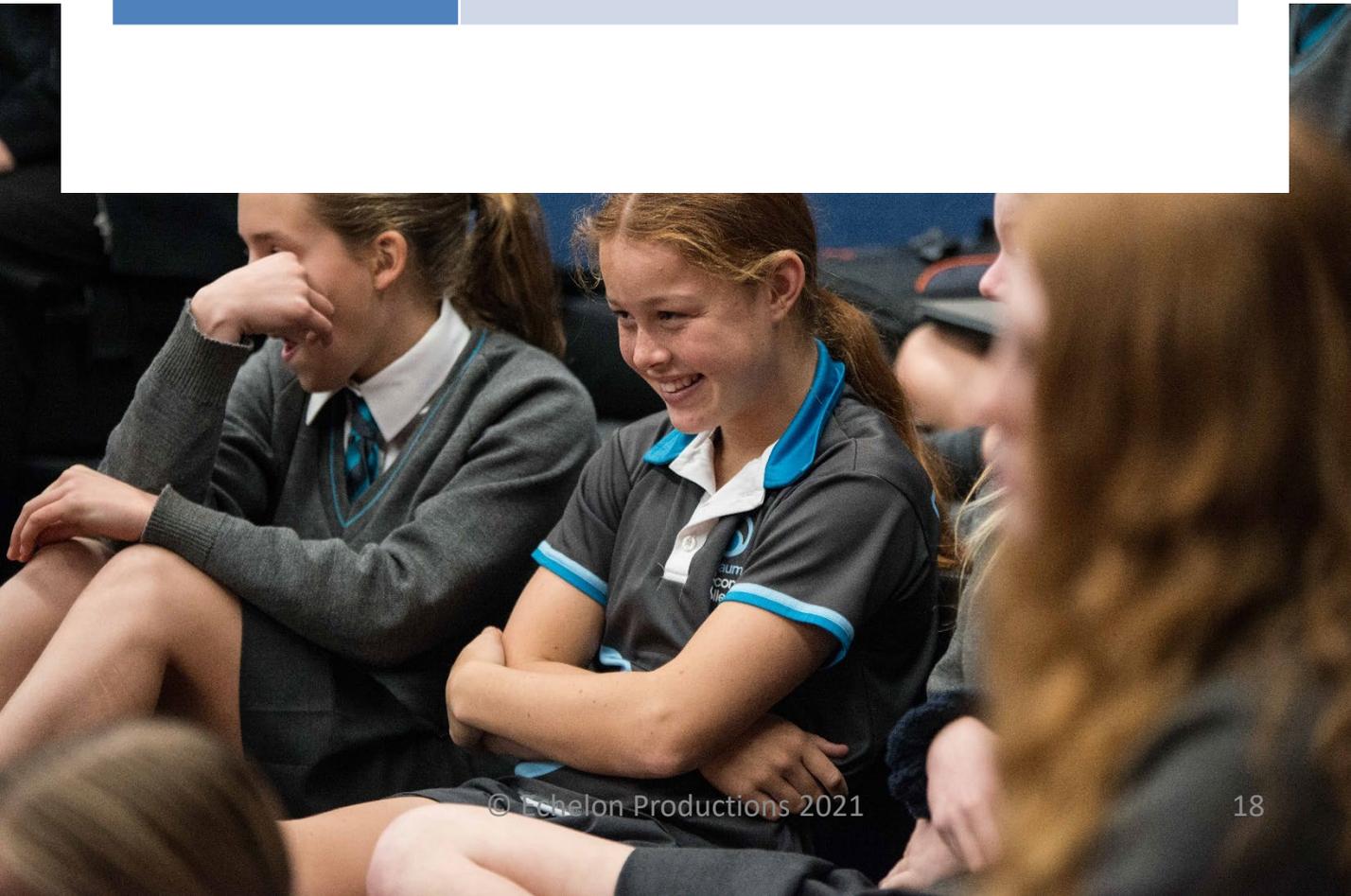
If you or any of your students would like to find out more details about our company please visit our website: [www.PerformEducation.com](http://www.PerformEducation.com)



# CURRICULUM CONTENT

## NEW ZEALAND CURRICULUM CONNECTIONS

<b>LEARNING AREAS</b>	Science, Technology, Social Sciences, English, The Arts – Drama.
<b>KEY COMPETENCIES</b>	In association with the Teacher Guidebook, The Marine Team contributes to:  Thinking, Using language, symbols, and texts, Managing self, Relating to others, Participating and contributing.
<b>THEMES</b>	Marine Science, Innovative Technologies, Environmental Science, Sustainability.



# CURRICULUM CONTENT

## LEARNING AREAS – ACHIEVEMENT OBJECTIVES

### LEVEL 3

### SCIENCE

#### SCIENCE: NATURE OF SCIENCE

Objective	Curriculum Content Descriptions
Understanding about science	<p>Appreciate that science is a way of explaining the world and that science knowledge changes over time.</p> <p>Identify ways in which scientists work together and provide evidence to support their ideas.</p>
Investigating in Science	<p>Build on prior experiences, working together to share and examine their own and others' knowledge.</p> <p>Ask questions, find evidence, explore simple models, and carry out appropriate investigations to develop simple explanations.</p>
Communicating in science	<p>Engage with a range of science texts and begin to question the purposes for which these texts are constructed.</p>
Participating and contributing	<p>Use their growing science knowledge when considering issues of concern to them.</p> <p>Explore various aspects of an issue and make decisions about possible actions.</p>

#### SCIENCE: LIVING WORLD

Objective	Curriculum Content Descriptions
Life processes	<p>Recognise that there are life processes common to all living things and that these occur in different ways.</p>
Ecology	<p>Explain how living things are suited to their particular habitat and how they respond to environmental changes, both natural and human-induced.</p>

#### SCIENCE: PLANET EARTH AND BEYOND

Objective	Curriculum Content Descriptions
Earth systems	<p>Appreciate that water, air, rocks and soil, and life forms make up our planet and recognise that these are also Earth's resources.</p>
Interacting Systems	<p>Investigate the water cycle and its effect on climate, landforms, and life.</p>

#### SCIENCE: PHYSICAL WORLD

Objective	Curriculum Content Descriptions
Physical inquiry and physics concepts	<p>Explore, describe, and represent patterns and trends for everyday examples of physical phenomena, such as movement, forces, electricity and magnetism, light, sound, waves, and heat. For example, identify and describe the effect of forces (contact and non-contact) on the motion of objects; identify and describe everyday examples of sources of energy, forms of energy, and energy transformations.</p>

# CURRICULUM CONTENT

## TECHNOLOGY

### TECHNOLOGY: NATURE OF TECHNOLOGY

<b>Objective</b>	Curriculum Content Descriptions
<b>Characteristics of technology</b>	Understand how society and environments impact on and are influenced by technology in historical and contemporary contexts and that technological knowledge is validated by successful function.

## SOCIAL SCIENCES

### SOCIAL SCIENCES

<b>Objective</b>	Curriculum Content Descriptions
<b>Social studies</b>	Understand how people make decisions about access to and use of resources.

## ENGLISH

### ENGLISH: LISTENING, READING, AND VIEWING

<b>Objective</b>	Curriculum Content Descriptions
<b>Processes and strategies</b>	Integrate sources of information, processes, and strategies with developing confidence to identify, form, and express ideas.
<b>Purposes and audiences</b>	Show a developing understanding of how texts are shaped for different purposes and audiences.
<b>Ideas</b>	Show a developing understanding of ideas within, across, and beyond texts.
<b>Language features</b>	Show a developing understanding of how language features are used for effect within and across texts.

## THE ARTS

### DRAMA

<b>Objective</b>	Curriculum Content Descriptions
<b>Understanding drama in context</b>	Investigate the functions and purposes of drama in cultural and historical contexts.
<b>Communicating and interpreting</b>	Present and respond to drama, identifying ways in which elements, techniques, conventions, and technologies combine to create meaning in their own and others' work.



# CURRICULUM CONTENT

## LEVEL 4

### SCIENCE

#### SCIENCE: NATURE OF SCIENCE

Objective	Curriculum Content Descriptions
Understanding about science	<p>Appreciate that science is a way of explaining the world and that science knowledge changes over time.</p> <p>Identify ways in which scientists work together and provide evidence to support their ideas.</p>
Investigating in Science	<p>Build on prior experiences, working together to share and examine their own and others' knowledge.</p> <p>Ask questions, find evidence, explore simple models, and carry out appropriate investigations to develop simple explanations.</p>
Communicating in science	<p>Begin to use a range of scientific symbols, conventions, and vocabulary.</p> <p>Engage with a range of science texts and begin to question the purposes for which these texts are constructed.</p>
Participating and contributing	<p>Use their growing science knowledge when considering issues of concern to them.</p> <p>Explore various aspects of an issue and make decisions about possible actions.</p>

#### SCIENCE: LIVING WORLD

Objective	Curriculum Content Descriptions
Life processes	Recognise that there are life processes common to all living things and that these occur in different ways.
Ecology	Explain how living things are suited to their particular habitat and how they respond to environmental changes, both natural and human-induced.

#### SCIENCE: PLANET EARTH AND BEYOND

Objective	Curriculum Content Descriptions
Earth systems	Appreciate that water, air, rocks and soil, and life forms make up our planet and recognise that these are also Earth's resources.
Interacting Systems	Investigate the water cycle and its effect on climate, landforms, and life.

#### SCIENCE: PHYSICAL WORLD

Objective	Curriculum Content Descriptions
Physical inquiry and physics concepts	Explore, describe, and represent patterns and trends for everyday examples of physical phenomena, such as movement, forces, electricity and magnetism, light, sound, waves, and heat. For example, identify and describe the effect of forces (contact and non-contact) on the motion of objects; identify and describe everyday examples of sources of energy, forms of energy, and energy transformations.

# CURRICULUM CONTENT

## TECHNOLOGY

### TECHNOLOGY: NATURE OF TECHNOLOGY

<b>Objective</b>	Curriculum Content Descriptions
<b>Characteristics of technology</b>	Understand how technological development expands human possibilities and how technology draws on knowledge from a wide range of disciplines.

## SOCIAL SCIENCES

### SOCIAL SCIENCES

<b>Objective</b>	Curriculum Content Descriptions
<b>Social studies</b>	<p>Understand how exploration and innovation create opportunities and challenges for people, places, and environments.</p> <p>Understand how producers and consumers exercise their rights and meet their responsibilities.</p> <p>Understand how formal and informal groups make decisions that impact on communities.</p> <p>Understand how people participate individually and collectively in response to community challenges.</p>

## ENGLISH

### ENGLISH: LISTENING, READING, AND VIEWING

<b>Objective</b>	Curriculum Content Descriptions
<b>Processes and strategies</b>	Integrate sources of information, processes, and strategies with developing confidence to identify, form, and express ideas.
<b>Purposes and audiences</b>	Show an increasing understanding of how texts are shaped for different purposes and audiences.
<b>Ideas</b>	Show an increasing understanding of ideas within, across, and beyond texts.
<b>Language features</b>	Show an increasing understanding of how language features are used for effect within and across texts.
<b>Structure</b>	Show an increasing understanding of text structures.

## THE ARTS

### THE ARTS: DRAMA

<b>Objective</b>	Curriculum Content Descriptions
<b>Understanding drama in context</b>	Investigate the functions and purposes of drama in cultural and historical contexts.
<b>Communicating and interpreting</b>	Present and respond to drama, identifying ways in which elements, techniques, conventions, and technologies combine to create meaning in their own and others' work.



# CURRICULUM CONTENT

## LEVEL 5

### SCIENCE

#### SCIENCE: NATURE OF SCIENCE

<b>Objective</b>	Curriculum Content Descriptions
<b>Understanding about science</b>	Understand that scientists' investigations are informed by current scientific theories and aim to collect evidence that will be interpreted through processes of logical argument.
<b>Communicating in science</b>	Use a wider range of science vocabulary, symbols, and conventions.  Apply their understandings of science to evaluate both popular and scientific texts (including visual and numerical literacy).
<b>Participating and contributing</b>	Develop an understanding of socio-scientific issues by gathering relevant scientific information in order to draw evidence-based conclusions and to take action where appropriate.

#### SCIENCE: LIVING WORLD

<b>Objective</b>	Curriculum Content Descriptions
<b>Ecology</b>	Investigate the interdependence of living things (including humans) in an ecosystem.

#### SCIENCE: PLANET EARTH AND BEYOND

<b>Objective</b>	Curriculum Content Descriptions
<b>Earth systems</b>	Investigate the composition, structure, and features of the geosphere, hydrosphere, and atmosphere.
<b>Interacting Systems</b>	Investigate how heat from the Sun, the Earth, and human activities is distributed around Earth by the geosphere, hydrosphere, and atmosphere.

#### SCIENCE: PHYSICAL WORLD

<b>Objective</b>	Curriculum Content Descriptions
<b>Physical inquiry and physics concepts</b>	Identify and describe the patterns associated with physical phenomena found in simple everyday situations involving movement, forces, electricity and magnetism, light, sound, waves, and heat. For example, identify and describe energy changes and conservation of energy, simple electrical circuits, and the effect of contact and non-contact on the motion of objects.
<b>Using physics</b>	Explore a technological or biological application of physics.

# CURRICULUM CONTENT

## TECHNOLOGY

### TECHNOLOGY: NATURE OF TECHNOLOGY

<b>Objective</b>	Curriculum Content Descriptions
<b>Characteristics of technology</b>	Understand how people’s perceptions and acceptance of technology impact on technological developments and how and why technological knowledge becomes codified.

## SOCIAL SCIENCES

### SOCIAL SCIENCES

<b>Objective</b>	Curriculum Content Descriptions
<b>Social studies</b>	Understand how economic decisions impact on people, communities, and nations.  Understand how people’s management of resources impacts on environmental and social sustainability.  Understand how the ideas and actions of people in the past have had a significant impact on people’s lives.

## ENGLISH

### ENGLISH: LISTENING, READING, AND VIEWING

<b>Objective</b>	Curriculum Content Descriptions
<b>Processes and strategies</b>	Integrate sources of information, processes, and strategies purposefully and confidently to identify, form, and express increasingly sophisticated ideas.
<b>Purposes and audiences</b>	Show an understanding of how texts are shaped for different purposes and audiences.
<b>Ideas</b>	Show an understanding of ideas within, across, and beyond texts.
<b>Language features</b>	Show an understanding of how language features are used for effect within and across texts.
<b>Structure</b>	Show an understanding of a range of structures.

## THE ARTS

### THE ARTS: DRAMA

<b>Objective</b>	Curriculum Content Descriptions
<b>Understanding drama in context</b>	Investigate the characteristics, purposes, and functions of drama in a range of contexts.
<b>Communicating and interpreting</b>	Present and respond to drama, and describe how drama combines elements, techniques, conventions, and technologies to create structure in their own and others’ work.

## BOOK WEEK IN SCHOOLS 2022 – BIGGER, BETTER, BRIGHTER!

Primary Grades 0-8 (Junior and Senior primary versions available)

One day a girl named Marley woke up to discover that 'Something' was missing... And so begins a quest that will lead Marley through destinations that are strange and challenging but often oddly familiar. However, first she must determine what it is that has disappeared from her life that is causing such a sense of emptiness. Fortunately, her story has a narrator to help her. The thing is Marley sometimes has her own ideas as to how the story needs to be told. There are books around to provide clues and directions which is a great help – if you can figure out what they mean. Marley is determined to sort it out no matter where she travels or what she encounters.

Join Marley and characters from a selection of the **BEST New Zealand Children's Books of 2022**, as she seeks to discover what it is that is missing and how best to recover it.

One thing is certain - once the 'Something' is recovered, everything will become **Bigger, Better, Brighter!**

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## SCIENCE/STEM IN SCHOOLS 2022 – TIME FOR TECH

Primary & Intermediate Grades 5-10 (Ages 9-14)

**Time for Tech** explores how the more we know about food science and technology, the more we can solve problems in everyday life. Students will learn all about sustainable agriculture and laboratory-developed foods as well as its (sometimes unintended) consequences, and so be better informed about STEM, career pathways and how we can all do our bit to support the planet. And how are we going to do that? With comedy of course!

The show consists of four interactive science sketches that centre on different aspects of food technology. Students in grades 5-10 will learn about **sustainable agriculture, the link between food technology and innovation, how technology helps design creative food solutions, and biosecurity in a COVID impacted world**. Throughout, audience members and student volunteers are encouraged to offer suggestions that the actors will incorporate into the action. The result is that students have input into the show while watching it!

SCHOOL: \_\_\_\_\_

SUBURB: \_\_\_\_\_

CONTACT NAME: \_\_\_\_\_

CONTACT EMAIL: \_\_\_\_\_

PREFERRED DATES 2021: 1) \_\_\_\_\_

2) \_\_\_\_\_ 3) \_\_\_\_\_

ESTIMATED NUMBER OF STUDENTS: \_\_\_\_\_

**Reserve your 2022 date  
NOW to receive a 10%  
early bird discount**

### LIVE Tour Dates 2022

- Term 2: CHCH Mon 16<sup>th</sup> May – Fri 20<sup>st</sup> May
- Term 2: WELL Mon 23<sup>rd</sup> May – Fri 27<sup>th</sup> May
- Term 2: AUUCK Mon 30<sup>st</sup> May – Fri 24<sup>th</sup> Jun
- Term 3: CHCH Mon 1<sup>st</sup> Aug – Fri 5<sup>th</sup> Aug
- Term 3: WELL Mon 8<sup>th</sup> Aug – Fri 12<sup>th</sup> Aug
- Term 3: AUUCK Mon 15<sup>th</sup> Aug – Fri 26<sup>th</sup> Aug

# PUZZLE SOLUTIONS

## Word Find Solution:

G R S Z A N O H L Q W G C Z U A Y N W Y N G I A F  
 I B J D M P K Q E L D G J E L B Z J F W L Y U I N  
 L V C L D G L V K Y P H T D B M O E W T B E F U L  
 V H J J C E T Z Y L C I S G A H A N R T K N W D V  
 T Q H G K V V F U Z W P W T B V C Z K Z K J Y F Y  
 N G B R T S P J F M M M C M M Q A C Q J M C T Q O  
 K M T E F Y R W I D J W Z I O R C L C M H F E A N  
 A L O E T N S H F F S K Q L A Q U A P O N I C S S  
 S L Q N H K N O M I C R O P L A S T I C S S G H G U  
 P X F H U A E Z D W I R U P Y Z W Z H W R H N U S  
 E R D O W V E C V I O E Z X W H U G V C L K O A T  
 I P Y U C B U K N L W N Z P T P Z D M J W X L B A  
 C E F S Z O D G T S Z E D N J U F A O O A M O Y I  
 O S P E A J R I N W U W S C N J V H J V M A G P N  
 V T D J A J O A K O H A V W V P S X H E V A Y E A  
 E F O W Z O E M L B J B H C S L B C T E M T P G B  
 R E D A M C C D F B P L Q J H I G S F N P V H N I  
 F Z B L O J I H J U L E P U V F Y K P R O G Q T L  
 I U V A G N J W L O E E R E T S C Q I V B B D C I  
 S G Y V B E A X V K E N A T O O C J K F B J Y C T  
 H G H E B G U C N X Q E Q C L Y Y M E J P V J L Y  
 I T V V Q H V N E W O R E Y H H D E G Z K Y U I P  
 N Y A M U F Y G K V O G V O G I B T Y N R K Y I F  
 G P A Y R R J P Y B I Y A G O C N R K F K G T U H  
 T C A R B O N D I O X I D E H X X G T G T E X L C

SUSTAINABILITY  
 TECHNOLOGY  
 OVERFISHING  
 ECOSYSTEM

OCEANS  
 CARBON DIOXIDE  
 GREENHOUSE  
 RENEWABLE ENERGY

AQUAPONICS  
 CORAL BLEACHING  
 MICROPLASTICS

## Crossword Solution:

### Horizontal

- Oceans are the number 1 source of \_\_\_\_\_ for 1 billion people. **(protein)**
- When the sun heats ocean water, it \_\_\_\_\_. **(evaporates)**
- Marine plants, like seaweed, produce oxygen when they \_\_\_\_\_. **(photosynthesize)**
- The ocean is the largest \_\_\_\_\_ on Earth! **(ecosystem)**

### Vertical

- Oceans generate over half the \_\_\_\_\_ that we breathe! **(oxygen)**
- Rubbish like plastic and fishing lines, along with chemicals like pesticides and fertilisers, all add to ocean \_\_\_\_\_. **(pollution)**

### Vertical

- About one quarter of the world's marine species need \_\_\_\_\_ to survive **(coralreefs)**
- The burning of fossil fuels causes gases to be trapped in our atmosphere, also known as The \_\_\_\_\_ Effect **(Greenhouse)**
- Sea creatures like fish can ingest tiny plastic particles called \_\_\_\_\_! **(microplastics)**
- Oceans absorb \_\_\_\_\_ **(carbon dioxide)**
- \_\_\_\_\_ is one of the fastest growing organisms on the planet and can absorb more CO2 from the atmosphere than a rainforest of the same size **(kelp)**