Apples

EDUCATORS GUIDE

NEW ZEALAND EDITION

Year 1 – Year 4

SowtheSeed AGRICULTURAL & HORTICULTURAL SCIENCE ADVISORY TEAM
Rabobank
EDUCATING KIDS ABOUT AGRICULTURE
ppsa PRIMARY PRODUCERS SA
Australian Government Department of Agriculture, Water and the Environment
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This curriculum resource has been adapted to the New Zealand Curriculum by Sow the Seed and supported by Rabobank.

The curriculum-linked resource is designed to introduce young people to the production of foods and fibres in New Zealand.

The materials in this educational resource have been developed by Angela Colliver from Angela Colliver Consulting Services Pty Ltd.

References

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Table of contents

Introduction

This George the Farmer Educational Resource aims to raise awareness about many of the things the apple industry does to grow, produce, and provide us with healthy apples to eat and enjoy!

APPLES

There is a maze of terminology that surrounds the cultivation of apples, and navigating your way through can be daunting, but it is not as complex as it looks.

Did you know that apples are classified according to their sweetness as well as whether they are dessert apples, 'eaters' or culinary varieties known as 'cookers', and whether they are ready for picking early, mid-season or late?

Apple trees are also categorised according to size and shape. In addition, they are grouped according to when their blossom appears.

Apple trees like to be:

- Planted between July and August while they are dormant.
- Thinned of some fruit in late spring to improve fruit size.
- Cross-pollinated from other compatible trees that flower at the same time as they do.
- Fertilised in spring and autumn.
- Harvested in summer and autumn.
- Pruned for shape in winter while they are dormant.
- Pruned of any dead, damaged, or diseased wood immediately after summer harvest.

Apples are picked in late summer and autumn before the trees lose their leaves and go dormant in winter.

In spring, the trees will start to flower, and it is important that they are pollinated by honeybees to produce high quality fruit.

While the apples are growing, farmers are constantly monitoring the orchards to ensure there is the right amount of fruit on the trees, so the best quality apples are grown.

Farmers also place big nets across their whole orchards. This helps them protect the fruit from birds as well as from hail, which can bruise the apples — just like what happens in the George the Farmer Hailstorm Heroes picture book!

A message from George!

Who doesn't love apples! They are one of my favourite fruits, and they are grown here in New Zealand. I love green Granny Smith's, Red Fuji's, Braeburn, and Pink Lady's — I love them all.

Most of us buy our apples from supermarkets, markets, or shops. But is that where they came from originally? Where are they grown and processed for us to eat and enjoy?

Most people know apples come from a tree, but many do not know how the apples on the trees are produced and processed — and delivered to supermarkets.

Did you know that apples are grown on farms and in orchards? They like to grow in a sheltered site, in full sun, with fertile, well-drained soil that has a slightly acidic pH of about 6.5.

Farmers know that apple trees are best planted in July and August, while they are dormant. They also know that most apple trees need to be cross-pollinated with other trees that flower at the same time, and that insects such as bees carry the pollen from one tree to another.

Farmers fertilise their apple trees in spring and autumn, and sometimes also use compost or mulch around the trees.

It is in early summer that the fresh apples begin to ripen, and farmers harvest them all the way through to late autumn for sale to supermarkets, markets, and shops.

Did you know that sometimes apples can be kept in cold storage rooms for sale later in the year too?

Resource Description

The pages in this resource are intended as starting points for a cross-curricular approach to learning, based on the George the Farmer YouTube video "Apples" https://youtu.be/uCGw4feO3Bs and accompanying Virtual Reality (VR) video on YouTube https://www.youtube.com/watch?v=QyGiCttht2Y or through the FarmVR app: https://farmvr.com

It is also suggested that students read 'George the Farmer Hailstorm Heroes' which is about apples, food waste and sustainability: https://www.georgethefarmer.com.au/collections/books/products/george-the-farmer-hailstorm-heroes

The activities seek to complement and extend the enjoyment students will experience from seeing the video and VR, whilst at the same time meeting some of the requirements of curriculum outcomes.

The activities in this resource can be printed out for students, or alternatively, display the activity page from the PDF on your interactive white board or import an activity page into your online teaching and learning environment such as Google Slides and have the students use their existing workbooks to complete the task.

Curriculum Focus

The guide is divided into a series of English, Science, Technology, Mathematics and the Arts activities aimed at students between the ages of 4 and 8 years.

The activities are also suitable for teachers and students in early childhood and care settings such as long day care services, preschools, kindergartens, and outside school hour care services.

New Zealand Curriculum Connections

Level 1

Technology

Technological Practice

Students will:

Planning for practice

- Outline a general plan to support the development of an outcome, identifying appropriate steps and resources.

Brief development

- Describe the outcome they are developing and identify the attributes it should have, taking account of the need or opportunity and the resources available.

Outcome development and evaluation

- Investigate a context to communicate potential outcomes. Evaluate these against attributes; select and develop an outcome in keeping with the identified attributes.

Technological Knowledge

Students will:

Technological modelling

- Understand that functional models are used to represent reality and test design concepts and that prototypes are used to test technological outcomes.

Technological products

- Understand that technological products are made from materials that have performance properties.

Technological systems

- Understand that technological systems have inputs, controlled transformations, and outputs.

Nature of Technology

Students will:

Characteristics of technology

- Understand that technology is purposeful intervention through design.

Characteristics of technological outcomes

- Understand that technological outcomes are products or systems developed by people and have a functional nature and a physical nature.

Science

Nature of Science

Students will:

Understanding about science

- Appreciate that scientists ask questions about our world that lead to investigations and that open-mindedness is important because there may be more than one explanation.

Investigating in science

- Extend their experiences and personal explanations of the natural world through exploration, play, asking questions, and discussing simple models.

Communicating in science

- Build their language and develop their understandings of the many ways the natural world can be represented.

Participating and contributing

- Explore and act on issues and questions that link their science learning to their daily living.

Living World

Students will:

Life processes

- Recognise that all living things have certain requirements so they can stay alive.

Ecology

- Recognise that living things are suited to their particular habitat.

Physical World

Students will:

Physical inquiry and physics concepts

- Seek and describe simple patterns in physical phenomena.

Material World

Students will:

Properties and changes of matter

- Observe, describe, and compare physical and chemical properties of common materials and changes that occur when materials are mixed, heated, or cooled.

The Arts

Students will:

Understanding the visual arts in context

- Share ideas about how and why their own and others' works are made and their purpose, value, and context.

Developing practical knowledge

- Explore a variety of materials and tools and discover elements and selected principles.

Developing ideas

- Investigate visual ideas in response to a variety of motivations, observation, and imagination.

Communicating and interpreting

- Share the ideas, feelings, and stories communicated by their own and others' objects and images.

English

Listening, Reading, and Viewing

Processes and strategies

Students will:

- Acquire and begin to use sources of information, processes, and strategies to identify, form, and express ideas.

Purposes and audiences

- Recognise that texts are shaped for different purposes and audiences by:
  - Identifying the purposes of simple texts.
  - Evaluation the usefulness of simple texts.

Ideas

- Recognise and identify ideas within and across texts by:
  - Understanding that personal experience can influence the meaning gained from texts.
  - Making meaning of texts by identifying ideas in some texts.

Language Features

- Recognise and begin to understand how language features are used for effect within and across texts by
  - Beginning to recognise that oral, written, and visual language features can be used for effect.
  - Recognising some topic specific words.

Structure

- Recognise and begin to understand text structures, by:
  - Understanding that the words, sentences, and images contribute to text meaning.
  - Recognising some text forms and some differences between them.

Speaking, Writing and Presenting

Processes and strategies

Students will:

- Acquire and begin to use sources of information, processes, and strategies to identify, form and express ideas.

Purposes and audiences

- Recognise how to shape texts for a purpose and an audience, by:
  - Constructing texts that demonstrate some awareness of purpose and audience through the choice of content, language, and text form.
  - Expecting the texts they create to be understood, responded to and appreciated by others.
  - Developing and conveying personal voice where appropriate.

Ideas

- Form and express ideas on a range of topics, by:
  - Forming and expressing simple ideas and information.
  - Beginning to support ideas with some detail.

Language features

- Use language features, showing some recognition of their effects, by:
  - Using some oral, written, and visual language features to create meaning and effect.
  - Using a range of high-frequency, topic-specific and personal-content words to create meaning.

Structure

- Organise texts, using simple structures, by:
  - Using knowledge of word and sentence order to communicate meaning in simple texts.
  - Beginning to sequence ideas and information.

Mathematics

In a range of meaningful contexts, students will be engaged in thinking mathematically and statistically. They will solve problems and model situations that require them to:

Number and Algebra

Number strategies

- Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.

Number Knowledge

- Know the forward and backward counting sequences of whole numbers to 100.

Statistics

Statistical Investigation

- Conduct investigations using the statistical enquiry cycle:
  - posing and answering questions.
  - gathering, sorting, and counting, and displaying category data.
  - discussing the results.

Statistical Literacy

- Interpret statements made by others from statistical investigations and probability activities.

Level 2

Technology

Technological Practice

Students will:

Planning for practice

- Develop a plan that identifies the key stages and the resources required to complete an outcome.

Brief development

- Explain the outcome they are developing and describe the attributes it should have, taking account of the need or opportunity and the resources available.

Outcome development and evaluation

- Investigate a context to develop ideas for potential outcomes. Evaluate these against the identified attributes, select, and develop an outcome. Evaluate the outcome in terms of the need or opportunity.

Technological Knowledge

Students will:

Technological modelling

- Understand that functional models are used to explore, test, and evaluate design concepts for potential outcomes and that prototyping is used to test a technological outcome for fitness of purpose.

Technological products

- Understand that there is a relationship between a material used and its performance properties in a technological product.

Technological systems

- Understand that there are relationships between the inputs, controlled transformations, and outputs occurring within simple technological systems.

Nature of Technology

Students will:

Characteristics of technology

- Understand that technology both reflects and changes society and the environment and increases people's capability.

Characteristics of technological outcomes

- Understand that technological outcomes are developed through technological practice and have related physical and functional natures.

Science

Nature of Science

Students will:

Understanding about science

- Appreciate that scientists ask questions about our world that lead to investigations and that open-mindedness is important because there may be more than one explanation.

Investigating in science

- Extend their experiences and personal explanations of the natural world through exploration, play, asking questions, and discussing simple models.

Communicating in science

- Build their language and develop their understandings of the many ways the natural world can be represented.

Participating and contributing

- Explore and act on issues and questions that link their science learning to their daily living.

Living World

Students will:

Life processes

- Recognise that all living things have certain requirements so they can stay alive.

Ecology

- Recognise that living things are suited to their particular habitat.

Material World

Students will:

Properties and changes of matter

- Observe, describe, and compare physical and chemical properties of common materials and changes that occur when materials are mixed, heated, or cooled.

Physical World

Students will:

Physical inquiry and physics concepts

- Explore everyday examples of physical phenomena, such as movement, forces, electricity and magnetism, light, sound, waves, and heat.

The Arts

Students will:

Understanding the visual arts in context

- Share ideas about how and why their own and others' works are made and their purpose, value, and context.

Developing practical knowledge

- Explore a variety of materials and tools and discover elements and selected principles.

Developing ideas

- Investigate and develop visual ideas in response to a variety of motivations, observation, and imagination.

Communicating and interpreting

- Share the ideas, feelings, and stories communicated by their own and others' objects and images.

English

Listening, Reading, and Viewing

Processes and strategies

Students will:

- Select and use sources of information, processes, and strategies with some confidence to identify, form and express ideas.

Purposes and audiences

- Show some understanding of how texts are shaped for different purposes and audiences, by:
  - Recognising how texts are constructed for different purposes, audiences, and situations.
  - Understanding that texts are created from a particular point of view.

- Evaluating the reliability and usefulness of texts with some confidence.

Ideas

- Show some understanding of ideas within, across and beyond texts, by:
  - Using their personal experience and world and literacy knowledge to make meaning from texts.
  - Making meaning of increasingly complex texts by identifying main ideas.
  - Making and supporting inferences from texts with some independence.

Language features

- Show some understanding of how language features are used for effect within and across texts, by:
  - Recognising that oral, written, and visual language features can be used for effect.
  - Using a large and increasing bank of high-frequency, topic-specific, and personal-content words to make meaning.
  - Showing an increasing knowledge of the conventions of text.

Structure

- Show some understanding of text structures, by:
  - Understanding that the order and organisation of words, sentences, paragraphs, and images contribute to text meaning.
  - Recognising an increasing range of text forms and differences between them.

Speaking, Writing and Presenting

Processes and strategies

Students will:

- Select and use sources of information, processes, and strategies with some confidence to identify, form and express ideas.

Purposes and audiences

- Show some understanding of how to shape texts for different purposes and audiences, by:
  - Constructing texts that demonstrate a growing awareness of audience and purpose through appropriate choice of content, language, and text form.
  - Expecting the texts they create to be understood, responded to, and appreciated by others.
  - Developing and conveying personal voice where appropriate.

Ideas

- Select, form, and express ideas on a range of topics, by:
  - Forming and expressing ideas and information with reasonable clarity, often drawing on personal experience and knowledge.
  - Beginning to add or delete details and comments, showing some selectivity in the process.

Language features

- Use language features appropriately, showing some understanding of their effects, by:
  - Using oral, written, and visual language features to create meaning and effect.
  - Using a large and increasing bank of high-frequency, topic-specific, and personal-content words to create meaning.
  - Writes legibly and with increasing fluency when creating texts.
  - Gaining increasing control of text conventions, including some grammatical conventions.

Structure

- Organise texts, using a range of structures, by:
  - Using knowledge of word and sentence order to communicate meaning when creating text.
  - Organising and sequencing ideas and information with some confidence.

Mathematics

In a range of meaningful contexts, students will be engaged in thinking mathematically and statistically. They will solve problems and model situations that require them to:

Number and Algebra

Number strategies

- Use simple additive strategies with whole numbers and fractions.

Number Knowledge

- Know the forward and backward counting sequences with whole numbers to at least 1000.
- Know the basic addition and subtraction facts.

Patterns and relationships

- Generalise that whole numbers can be partitioned in many ways.

Statistics

Statistical investigation

- Conduct investigations using the statistical enquiry cycle:
  - posing and answering questions.
  - gathering, sorting, and displaying category and whole number data.
  - communicating findings based on the data.

Statistical literacy

- Compare statements with the features of simple data displays from statistical investigations or probability activities undertaken by others.

ACTIVITY 1

Design and make an apple journal

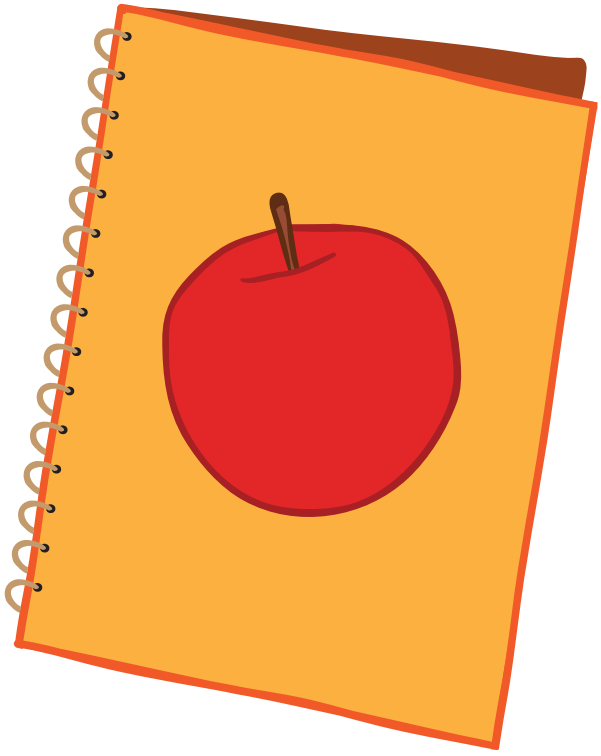
Play the George the Farmer Apples video and think about what we can record in our journal.

Think about what you saw, what you discovered about apples, how they are grown and who produces them.

Then, tell the story of where apples and pears come from and how they are produced.

You can draw pictures, write information, document data and you can decorate your journal in any way you wish. Make a colourful, exciting cover.

Create a journal by folding 6 pieces of A4 paper together and stapling at the spine to create a book for journaling.



Write a journal entry in your apple journal to retell what you know about apple farming.

ACTIVITY 2

Sprout an apple seed

Most apples that we eat are grown by passionate farmers.

It is said that apples originated from the mountains of Kazakhstan in the Middle East, and that pears originated from south eastern Europe. Apple seeds have been found in these places.

Apples trees have beautiful leaves, flowers, and fleshy fruits, each of which contain seeds.

Believe it or not, these seeds are fairly easy to germinate, and to grow into trees.

It's important to note that no commercial apple trees are grown from seedlings and not many seedlings will even produce fruit. Trees are all grafted onto rootstocks.

Bite into and apple or pear and extract the seeds within them. Make sure there isn't any flesh on them. You can clean them with an old toothbrush. Wash them in clean water and leave them to soak for 24 hours.

Did you know that these seeds are the 'embryo' which grows into a new plant?

Remember: Apple and pear trees need soil, sunshine, and water to grow.

Remember: You need to position the seeds with the pointy end facing up.

What you need to do — record your findings in your diary:

Set up a workstation with recycled containers, soil, paper towel, apple seeds, water, and gardening tools.

1. With a partner, plan the steps involved in growing 6 apple seeds.
2. Then create a visual representation to plot the steps involved in your journal.
3. Brainstorm what else is needed to help seeds grow. Record your ideas in the space below.
4. Talk with your partner about where the pots containing the apple seeds might best be placed for them to receive what they need (sunlight and regular watering). Then construct a procedural text: 'How to grow your own apple seeds....'
5. Now, estimate and measure your seedlings regularly. Make tables with headings such as time, date,

TIME	DATE	SIZE	OBSERVATIONS

Remember to observe your planted seeds regularly and keep a diary of observations on your apple.

ACTIVITY 2

The apple tree seedlings will need to be planted in the school garden when they are approximately 10cm in height, in a position where they are protected from damaging weather conditions. Be careful not to damage the roots when they are transplanted.

Your final task is to design two environments for your apple tree seedlings to grow.

Recall the video and how the farmers protected their apple trees and recall what they need to grow and be healthy. What other new designs could you make to ensure the environment is safe.

Place a drawing of your designed environments below and replicate your finished drawing to your journal.

ACTIVITY 2

Create a prototype and consider what modifications or changes you could make.

Share the prototype with the class and ask for constructive feedback. Then, take the feedback onboard and redesign your apple environments.

Place photographs of them below.

Additional ideas:

Students might cut open an apple and count the number of seeds as well as measure the shape of an apple and how symmetrical it is. Explain to the students that if all the carpels contain seeds and the fruit is symmetrical it has been well pollinated. If it is of uneven shape and/or some of the carpels are empty, then the fruit has not been so well pollinated.

Keep some apples in the fridge and some on the shelf and do some taste testing of each over several days/weeks to see which ones remain crunchier.

Design and make fruit stamps

This is a great way to spend part of a rainy day. All you need are some colourful paints, lots of white paper, cookie cutters and some apple.

Your task is to create your own stamps using either an apple or pear, some cookie cutters, paints, and paper.

1. Ask a grown up to cut an apple in half.
2. Press the cookie cutter into the flat side of the cut apple.
3. Ask a grown up to cut out around the cookie cutter with a knife.
4. Remove the cookie cutter leaving the shape it made behind.
5. Apply paint to the shape.
6. Then, stamp and re-paint it.
7. Design and create an artwork that speaks apples.

My design ideas

ACTIVITY 4

Design an engineered solution that picks apples

Engineers do an amazing job designing and building different types of products.

Did you know that there are many types of engineers?

1. Marine engineers design, build, and maintain ships, from aircraft carriers to submarines and from sailboats to tankers. They are responsible for the internal systems of a ship, such as the propulsion, electrical, refrigeration, and steering systems.
2. Aerospace engineers design and build satellites that are used to monitor the oceans.
3. Chemical engineers discover and manufacture plastics, paints, fuels, fibres, medicines, fertilisers and paper.
4. Structural engineers oversee the construction of boats, submersibles, buildings and structures.
5. Civil engineers design roads, bridges and unique structures.
6. Electrical engineers develop the electrical parts of most things we use.
7. Mechanical engineers design and make all sorts of equipment.
8. Industrial engineers design efficient systems that integrate workers, machines, materials, information, and energy to make a product or provide a service.

The challenge:

Imagine you are part of a team of expert engineers and design and build your design solution that can collect and retrieve apples from apple trees.

What investigations can assist you to develop your engineering skills? How might you design and build a tool or product that can collect and retrieve apples from apple trees?

How might you test it and demonstrate that it can safely grip, retrieve, and collect apples?

Note: As part of the engineering considerations, consider how gentle you need to be on the fruit to avoid damage to the skin or internal bruising.

Hints:

Imagine a crane that grips and collects building materials, a robot that can grip and retrieve objects, or a prosthetic hand that can grip and pick up items.

Imagine a dragline with a bucket that can scoop and retrieve the apples.

Locate where different kinds of grippers or draglines can be found. Think about what they are used for and the types of people who design and build them.

Look at barbecue tongs, pegs, and grippers and investigate their shapes and properties. Talk about their ability to grip and retrieve objects.

Look at their shape and design features and describe what you see in the space below.

Brainstorm ways to use similar ideas in your designs and determine the materials you might use. Record ideas and your ideas about materials in the space below.

ACTIVITY 4

Consider manipulating materials, developing prototypes, testing ideas, and accessing information sources to use in your designs.

Share the design ideas with a friend and ask for positive feedback.

Think about using high-tech solutions, like Minecraft, to scope the design. Low-tech solutions, like LEGO®, or no-tech solutions, like recycled materials for the product are all possible!

Sketch your design ideas below.

Take 6 photos of your design in progress. Attach photos in the space below.

How might you test it and demonstrate that it can safely grip, retrieve, and collect apples?

Design an exhibition piece

Your challenge is to design an exhibition piece for an apple museum display that explores the living or non-living things that can be found in an apple.

How might you design an exhibit of things you have identified as either living or non-living? How might you decide what to include? What could you put in your own exhibition piece so that other people could understand more about apples?

How might you anchor your design pieces? What materials will they be made of?

Recall exhibits that you really liked. What made the exhibits interesting and so memorable? Use Pinterest to find exhibits and displays made by students and consider their features.

Make a list of the features of exhibits that you like.

Think about the words ‘living’ and ‘non-living’. What do the words mean?

Recall the ‘Apple’ video. Share what you know about any living and non-livings things that we might find in an apple orchard.

ACTIVITY 5

Think about and answer the following questions:

- What different animals live in an apple orchard?
- What different plants live in an apple orchard?
- Give examples of non-living things in an apple orchard.
- Give examples of how apple trees use living and non-living things to help them produce fruit.

How might you create your exhibition piece using digital devices? Could you create the exhibition piece using other materials and tools?

Record your thinking in the space below.

ACTIVITY 6

Design and make apple turnovers

An apple turnover is a classic pastry made by spooning a simple apple filling into the centre of a sheet of puff pastry.

For traditional apple turnovers, the challenge then is to fold opposite corners of the square and encase the filling. Finally, with an adult's help, the turnovers are then baked to golden brown.

Your challenge is to prepare and with an adult's help, cook apple turnovers.

Question: How can we make a lovely afternoon snack?

Research various apple turnover recipes, source the ingredients and have fun making apple turnovers for others to enjoy.

Whilst cooking observe how the apples change when sliced and mixed with other ingredients.

My observations

ACTIVITY 6

Whilst in the oven, make observations about the apple turnovers. How are they changing? Why?

My observations

Set up place settings and invite family and friends, to discover what can be prepared and cooked using apples and promote healthy eating.

My research

ACTIVITY 6

List the ingredients and method for making your apple turnover below and then transfer this information to your apple journal.

My apple turnovers ingredients

My photos of my apple turnovers

Before Cooking

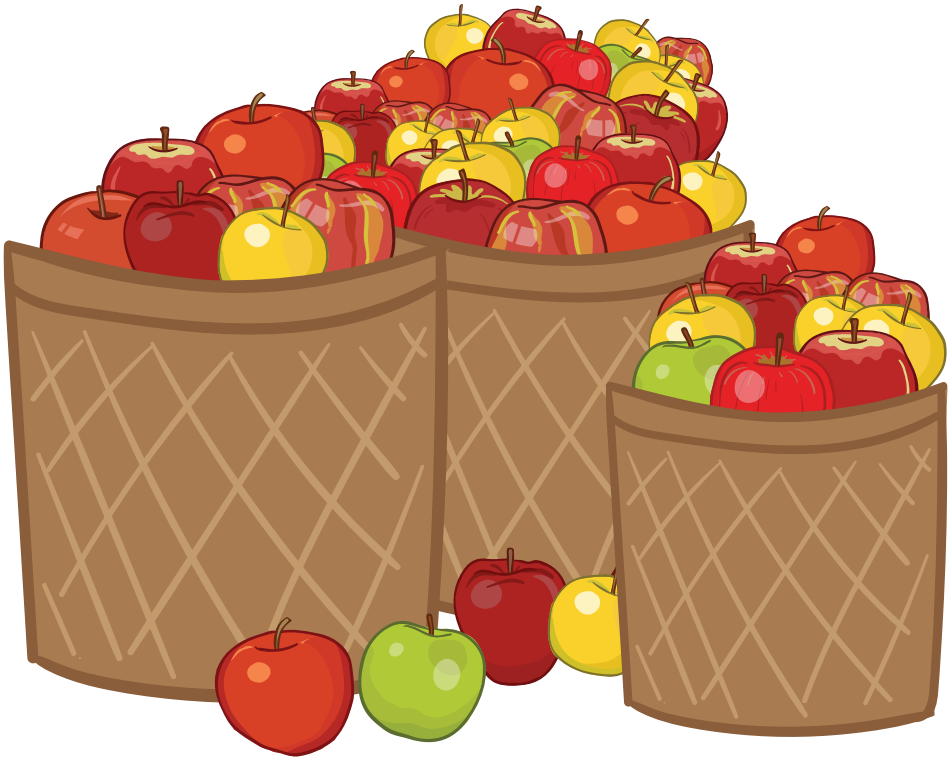
After Cooking

Fun facts about apples

Apples

Who knew that:

- There are more than 2,500 varieties of apples grown in the world.
- A large apple tree can take 8 to 10 years to produce its first fruit, and a small tree usually takes 3 to 5 years.
- Apples are from the rose family.
- The top apple producers around the world are: China, United States, Poland, Turkey, and Italy.
- The variety of apples range in size from a little larger than a cherry tomato to as large as a grapefruit. The largest apple ever picked weighed 6 kilos!
- Apples are a good source of fibre.
- Ripe apples should come away easily from the tree. When held in ones hand and given a gentle twist, the apple should come free, if it doesn't, its not fully ripe.
- Apples ripen or soften ten times faster at room temperature than if they were refrigerated.



Your tasks:

Look at the farm fresh apples shown in the previous drawing and answer the questions below.

My estimation is

Is this an odd or even number?

How many green apples can you find?

Is this an odd or even number?

How many red apples can you find?

Is this an odd or even number?

How many yellow apples can you see?

Is this an odd or even number?

When added together, how many green, yellow and red apples can you see?

Is this an odd or even number?

Read the table below showing which apples can be grown in New Zealand.

It's all apples

Apple Varieties	Colour	Harvesting time
Royal Gala	Red with a yellow stripe	Early season
Jazz	Red	Mid-season
Braeburn	Reddish orange stripes/blush	Mid-season
Fuji	Soft pink, red blush or stripes	Mid-season
Pacific Rose	Red	Mid-season
Golden Delicious	Yellow	Mid-season
Red Delicious	Red	Mid-season
Granny Smith	Green	Late season
Pink Lady	Pink and red	Late season

ACTIVITY 7

Collect data about the different varieties of apples and their colours from the table. Then organise the data into categories and create displays using lists, picture graphs and simple column graphs, with and without the use of digital technologies.

ACTIVITY 7

Collect data about when the apple varieties are harvested.

Then construct a data display from the collected data.

Include a column graph and picture graphs.

Apples are also available at different times of the year. Use the data in the table below and explain when 3 different apple varieties are available in New Zealand.

Variety	Availability											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Braeburn												
Royal Gala												
Fuji												
Granny Smith												
Red Delicious												

Available Unavailable

ACTIVITY 8

Can you create an apple orchard and program a Sphero robot to navigate it safely?

Replay the George the Farmer video and think about what we have learnt about apples, where they are grown and how they are produced.

Be creative and design and make an apple orchard using all your knowledge gained from the video.

Will your apple orchard have rows of trees as seen in the images in the video?

What might you add to make the orchard productive?

Once you have created your orchard, drive a Sphero robot from the 'drive App' or program your Sphero and tell it how to navigate safely around your orchard.

Document your project from start to finish using a video camera and share your video too.

ACTIVITY 9

Create seed jewellery using apple seeds

Design and create a piece of jewellery from apple seeds.

You will need:

- Seeds
- Sand (to dry the seeds)
- A container for the drying process
- Hairspray
- A needle
- Thread (for stringing)
- An adult to help piece the seeds
- Vivid or permanent marker (to colour the seeds)

My design ideas

Photos of my jewellery

ACTIVITY 10

Let's repurpose food waste

George the Farmer is searching for classes to investigate ways which bring awareness to food waste avoidance as well as ways that encourage sustainability considerations when we buy, eat and use apples.

Educate others about how to shop with a list, how and why to buy local and seasonal ingredients in small quantities that will be eaten, avoiding packaging around food, and how to prepare, cook and eat nutritious apples in a sustainable manner.

There are ways to bring awareness to this. What about a video, poster, or fact sheet? Show audiences what we can do to make things better for ourselves and our environment!

Resource Links

Think Eat Save http://www.thinkeatsave.org/

Food Wise http://www.foodwise.com.au/category/food-waste-toolkit/

Canva Free Online Poster Maker https://www.canva.com/create/posters/

Xtensio How to Create a Fact Sheet https://xtensio.com/how-to-create-a-fact-sheet/

Moviemaker for Windows www.windows-movie-maker.org or

Apple iMovie https://www.apple.com/au/imovie

Floating and sinking

Who knew that when an object is placed in liquid, its weight displaces (pushes away) a volume of the liquid.

This liquid pushes back on the object with a force called 'upthrust'.

If the upthrust is equal to or greater than the object's weight, the object will float.

The object will sink if its weight is not equal to the thrust of the water.

Thanks to scientists, physicists, engineers, technicians, mathematicians, software experts, and designers we have put lots of equipment and people on the oceans.

Your challenge is to think like a scientist, engineer or a designer and try to build a model with only apples that floats — and to then test it on water at school.

Are you up for the challenge?

Discover ideas about floating and sinking by sharing a story titled 'Who Sank the Boat' by Pamela Allen or watching a video reading on YouTube (2:15 min) here:

https://youtu.be/ZpFWuHSDFtQ

Do you know something about the Greek mathematician Archimedes who was the person who first worked out the answer to why things float or sink?

Read or view a reading of 'Mr Archimedes Bath' by Pamela Allen on You Tube (3:09 min) here: https://youtu.be/1OPsrVIBW5I

My design ideas

My model that floats

ACTIVITY 12

New tools and technologies

Knowing the best time to harvest, store or process fruit can extend shelf life, ensure quality, reduce waste, and increase profits.

Think back and recall the section of the George the Farmer 'Apples' video that shows the camera technology which takes 60 photos of an apple every second to assess their quality before they go to market.

Write a story about how apple growers are using science to assess the quality of their apples.

My story