Peas

EDUCATORS GUIDE

NEW ZEALAND EDITION

Year 1 - Year 3

SowtheSeed AGRICULTURAL & HORTICULTURAL SCIENCE ADVISORY TEAM
Rabobank
EDUCATING KIDS ABOUT AGRICULTURE
ppsa PRIMARY PRODUCERS SA
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References

New Zealand Ministry of Education. New Zealand Curriculum.
Retrieved from https://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum

Australian Grain Notes: Pulses
Retrieved from: http://www.pulseaus.com.au/storage/app/media/using_pulses/AGN_Pulse-Note-LR.pdf

Creative Commons (2013) Creative Commons.
Retrieved from http://www.creativecommons.org/licenses/by/3.0/au/deed.en

Crockett, L. & Jukes, I. & Churches, A. (2011) Literacy is not enough. 21st Century Fluency Project Inc.

Strong, L. ozEEnews Issue 134, March 2016

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Introduction

This George the Farmer Educational Resource aims to raise awareness about many of the things the pea industry does to farm, grow, produce, process and provide us with healthy, non-fatty protein-rich food!

WHAT ARE PEAS?

Peas are a type of pulse. Pulses are a food group of dried edible seeds from the legume family. They include peas, green beans, broad beans, lupins, red lentils, chickpeas and mung beans

Peas are food plants whose seeds are enclosed in pods. They fix nitrogen into the soil as they grow, improving the condition of the soil for future uses.

Pulses grown by New Zealand farmers include peas, beans, broad beans, lupins, Rajah red lentils, and mung beans. Peas and beans are grown mostly in the regions of Canterbury, Hawke's Bay, Manawatu-Wanganui, Marlborough, Gisborne and Auckland.

Around 7,000 hectares of land is used to grow peas. New Zealand exports 61 tonnes of peas and is worth $108 million to the New Zealand economy. Frozen peas are exported to Australia, Asian countries like China, and also to African countries. Dried peas are exported to 44 countries like Canada and USA.

There are 1,000 hectares of beans grown. New Zealand exports 21 tonnes which is worth $40 million. We mostly export these to Australia.

Source: Fresh Facts 2021: Compiled by: A G Aitken & I J Warrington, Martech Consulting Group Ltd,.

A message from George!

Not only do I love peas — but I also love to know the who, what, when, where and why of the New Zealand pea industry!

The pea industry's growth is increasingly becoming a key to the future sustainability of the whole of New Zealand's arable industry as the strategic importance of pulses within the cereal cropping system in New Zealand continues to grow.

Research has shown that farm land gains a lot of benefit from increased yield (amount of grain grown) and protein content in cereal and oilseed crops (such as wheat, and barley) that are planted in the growing season following pulse crops.

Pulses naturally put nitrogen in the soil, which means less fertilisers are required, which leads to less growing costs for the farmer. This naturally fixed nitrogen has been scientifically proven to increase the productivity of the subsequent crop and is available in the soil for up to three years. Growing pulses in a cropping rotation also provides a break to soil borne pathogens and plant diseases that can reduce grain yields.

I am keen to share the good work being undertaken by so many farmers growing pulses on farms.

Many farmers grow peas, wheat, barley, and lupins. They rotate their crops by planting three cereal crops (such as wheat, and barley) then a pulse crop (such as peas, clover, broad beans or lupins) to replace the nitrogen in the soil.

Pulses are a high source of protein and a high source of fibre. Medical research has proven that eating pulses 2-3 times per week lowers your blood sugars and cholesterol level.

Research has been found that New Zealanders are not eating enough pulses such as peas and beans and therefore many New Zealanders may be missing out on the essential nutrients and other health benefits of legumes.

So how many pulses do you and I have to eat to achieve the 5 + a day requirements? The answer is three heaped tablespoons of any pulse (beans, peas, lentils).

Our truly multicultural society has introduced our palates to a diversity of tasty cuisines that use pulses such as chickpeas. New Zealanders have progressed from only eating peas for dinner and in dips or soups, to consuming them in economical salads like chickpea and mango, or bean, olive, and chicken bakes.

You can add pulses like peas into your spaghetti bolognaise, most of your salads or even bake them. Pulses can also act as a protein replacement for some people with food allergies. Did you know, for example, people who are allergic to eggs can use the brine from a can of peas to make meringues?

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 "Peas" **https://youtu.be/qNxxsb76tJw** and accompanying Virtual Reality (VR) video on YouTube **https://youtu.be/nvfnylS1U8Y** or through the FarmVR app: **https://farmvr.com**.

For New Zealand, it is suggested to watch Growing and Freezing Peas in New Zealand https://www.youtube.com/watch?v=neUQqV77jAE

It is also suggested that students read 'George the Farmer Harvest Hiccup' https://www.georgethefarmer.com.au/collections/books/products/george-the-farmer-harvest-hiccup which is about broad beans or stream George's 'Pulse Party' song. George's music can be found on Spotify or Apple Music.

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 electronic white board and have the students use their existing workbooks to complete the task.

An additional teacher's resource about pulses can be downloaded from the 'George the Farmer' website.

Curriculum Focus

The guide is divided into a series of Science, Technology, the Arts, and Mathematics 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 understanding 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.

Chemistry and Society

- Find out about the uses of common materials and relate these to their observed properties.

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;
- Evaluating 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.
- Showing some knowledge of text conventions, such as: capital letters, full stops, and word order and simple symbols.

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;
- Beginning to use some strategies to self-correct and monitor spelling;
- Beginning to gain control of text conventions, such as: capital letters and full stops; some basic grammatical conventions; volume, clarity, and tone; and simple symbols.

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;
- Using simple sentences with some variation in beginnings;
- Attempting compound and complex sentences.

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.

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.

Equations and expressions

- Communicate and explain counting, grouping and equal-sharing strategies, using words, numbers, and pictures.

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 understanding 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.

Evolution

- Recognise that there are lots of different living things in the world and that they can be grouped in different ways.

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

Chemistry and society

- Find out about the uses of common materials and relate these to their observed properties.

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, by:

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;
- Writing 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;
- Beginning to use a variety of sentence structures, beginnings, and lengths.

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:

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.

Number and Algebra

Number strategies

- use simple additive strategies with whole numbers and fractions.

Number Knowledge

- Know forward and backward counting sequences with whole numbers to at least 1000.
- Know how many ones, tens and hundreds are in whole number to at least 1000.

Equations and expressions

- Communicate and interpret simple additive strategies, using words, diagrams and symbols.

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.

ACTIVITY 1

Pea environment

The pea is an annual legume of the family Fabaceae (fuh·bei·see·ai) commonly known as the legume family.

Peas are grown by farmers all over the world. They originated from the Middle East and are now eaten in healthy dishes by families everywhere. Peas need soil, sunshine and water to grow. Set up a workstation with recycled containers, soil, paper towel, pea seeds, water, and gardening tools.

With a partner, plan the steps involved in growing 6 peas.

Then create a visual representation to plot the steps involved in the space below.

ACTIVITY 1

Brainstorm what else is needed to help seeds grow.

Record your ideas in the space below.

Talk with your partner about where the pots containing the pea 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 peas....'

ACTIVITY 1

Observe and measure your seedlings regularly. Do they grow fast?
Are some seedlings healthier than others? Does their colour change as they grow?

TIME	DATE	SIZE	OBSERVATIONS

ACTIVITY 1

The pea 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 task is to design an environment for your pea seedlings in the school vegetable garden. How might they be protected from birds, rabbits, pests, heat in summer, or frosts in winter?

Place a drawing here.

Whilst watching the peas grow, imagine a salad menu item that you can share with your class or the canteen...pea pesto, or a pea hummus filling for a salad sandwich, wrap or roll? What flavours or other types of foods do you think would go with peas?

ACTIVITY 1

Visualise the steps involved in harvesting and preparing the pea salad ingredients for your class or the canteen.

Record your ideas in the space below.

Recall what you discovered about what peas need to grow into a plant; what type of environments can be produced to protect seedling and plants in the school vegetable garden from damaging weather conditions and pests.

ACTIVITY 2

Make a pea cookbook

Peas have many uses.

Did you know that there are three main types of peas (fresh, processing and snow peas).

Freshly picked, green peas can be eaten as a vegetable raw and in season found fresh in the vegetable area of the supermarket.

Green peas, (out of season) can be found in the freezer compartment or in cans all year round.

Peas can be cooked. Peas are generally boiled quickly and often mashed and added to mashed potatoes for interest. They can be eaten alone as well.

They are also used in soups, curries, casseroles, and salads.

Peas can also be ground into flour and used to thicken gravy, make crepes, pancakes, pastes and marinades, as well as used in baking biscuits. Pea protein powder can be mixed into your smoothie bowls, chia puddings, granola, muesli, porridge or yoghurt and fresh fruit.

Peas can also be added to many recipes for bliss balls, energy bars, muffins and cookies.

Peas can make great snack food too. Peas can be fried or roasted to make crunchy snack foods.

Peas can be used to make a dip called Dhal.

Your challenge is to design and produce a 'Cookbook' that explains how to use peas.

- **The Cookbook needs to include:**
- An index
- An introduction
- Information about peas
- Information about cooking safely and hygiene
- Recipe ideas for using peas

- **Resources to help you:**
- Book Design Made Simple https://www.bookdesignmadesimple.com/designing-a-cookbook/
- Pinterest Cookbook Design https://www.pinterest.com.au/explore/cookbook-design/

ACTIVITY 2

Use this page to document ideas for your Cookbook about Peas

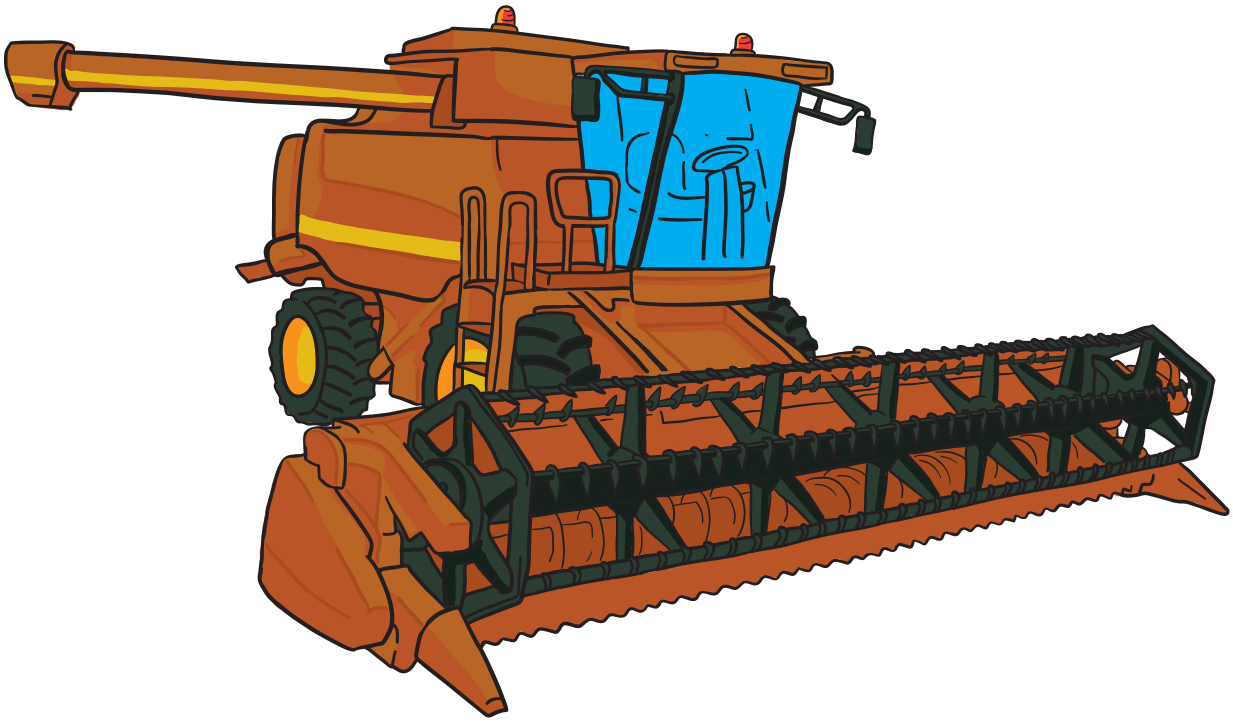
ACTIVITY 3

Careers in peas

New Zealand pea growers, contract harvesters (people who harvest the crops), truck drivers, processing plant managers and agronomists, - like engineers, all use technology to help them in their work.

Do you recall the big harvester, used to harvest the peas seen in the video?

The grower or if needed, a contract harvester, keeps it well maintained so it is ready to work long hours during harvest.



The harvester is one large piece of technology. Did you know that it has computers onboard too?

The computer can help the harvester move in straight rows, and its sensors and computer screens provide the driver of the harvester with information on, for example, driving distances, harvesting speed per hour, grain water content and unloading in tons per hectare.

It also has a sensor which alerts them when the harvester bin is full and needs emptying.

ACTIVITY 3

Using your scientific skills, redraw the harvester and label where you think the sensors and computers might be found.

Draw your design ideas and use labels to explain how the sensors and computers work.

ACTIVITY 3

Truck drivers drive big trucks, transporting the peas from growers, and delivering it to the processing factories, and distribution centres.

How do the peas get into and out of the trucks? They can also cart fertiliser and seed, and other products the farmer might need on farm.

Using your scientific skills, redraw the truck and label where you think the sensors and computers might be found.

Draw your design ideas and use labels to explain how the sensors and computers work.

ACTIVITY 3

An agronomist is a scientist who specializes in the study and care of crops. They use the internet, computers, and mobile phones in their everyday work.

Draw your design ideas and use labels to explain how these technologies support the work undertaken in a pea agronomist's office.

ACTIVITY 4

Pea farms

Every organism, plant, or animal lives in a habitat.
A habitat is another name for their local environment.

A habitat is a place where a collection of organisms, plants and animals live, and which provides them with food and shelter.

Cracks in a path, seashores, farms, gardens, and ponds are all examples of habitats. Habitats can be big (a farm, for example) or small (a leaf, for example).

Survival of individual species of plants and animals depends on the health of the habitat in which they live.

You are invited to create a farm for peas to grow. Peas need important elements to grow and be healthy. Your task is to imagine what their sustainable habitat on the farm might look like.

You can either write and draw, record and video, or design and make a model of the sustainable habitat on the farm, accompanied by a text about what New Zealand grown peas might need – now and in the future – to grow and survive.

ACTIVITY 5

Make a healthy pea snack

Your challenge is to prepare and cook a snack using peas for a Food Fair!

Question: How can we make a buffet of snacks that use peas?

Research various pea recipes, source the ingredients and have fun making snacks for the class to enjoy.

Set up tables in your class and invite teachers, other students or family and friends, to discover what can be prepared and cooked using peas and promote healthy eating.

My research

ACTIVITY 5

My healthy pea snacks

ACTIVITY 5

My photos of my healthy pea snacks

ACTIVITY 6

Can you count the peas?

Dried peas can be coloured easily. You can even make and use your own natural paints.

Natural paints can be made from vegetables such as spinach, beetroot, strawberries or blueberries.

Diluted mustard paste also makes a good yellow ochre.

Colour a number of dried peas and place in a jar for estimation and counting activities.

My estimation is...	How many yellow peas can you find?	How many green peas can you find?
Is this an odd or even number?	**Is this an odd or even number?**	**Is this an odd or even number?**

When added together, how many green and yellow peas can you see?	How many different coloured peas can you find in the picture?
Is this an odd or even number?	**Is this an odd or even number?**

ACTIVITY 6

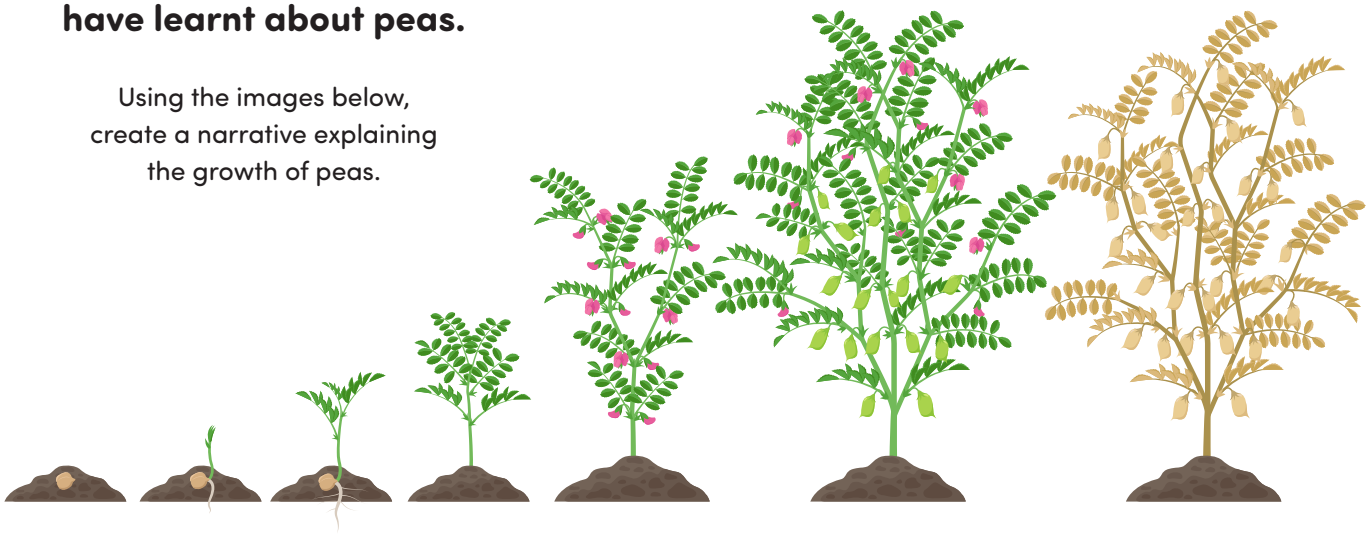
Create a picture graph showing the number of green, yellow, blue, red, orange and black peas represented in the picture.

ACTIVITY 7

How might a pea grow?

Replay the George the Farmer Chickpea video and think about what we have learnt about peas.

Using the images below, create a narrative explaining the growth of peas.



My narrative

ACTIVITY 8A

Create a talking Avatar or create using TurtleArt

Question: How can we share information about all the things we now know about peas?

Design and create a talking avatar to do all the hard work for you.

The task is to create a talking avatar that can share information with others about peas and help us know more about where they are farmed, how they are produced and processed and the important role they play in both human health and sustainable agriculture.

For an example see: Create Your Own 3D Talking Heads
https://www.reallusion.com/crazytalk/avatar.html

My design ideas

ACTIVITY 8B

Create a pea inspired artwork using TurtleArt

Design and create a gallery of pea inspired images using your computer and the TurtleArt programming language.

Explore geometry and programming to design and create pea inspired artworks.

Brainstorm the geometric shapes that exist in producing peas...where might they be found?

Remember geometric shapes can include circles, squares, triangles, rectangles, and trapezoids.

Program the Turtle to draw a square by putting together enough forward, left, and right blocks or use the Repeat block (as a square has four sides and programming the Turtle to repeat a forward and left (or right) movement four times will achieve a square).

Try circles and triangles too.

Experiment and create your design by programming the Turtle to go forward and backward the same number of times and rotate through 360 degrees.

Access a copy of the TurtleArt software here:

https://turtleart.org/programming/index.html

Note your design ideas on the next page.

My design ideas