GEORGE the FARMER

Sustainable Forest Management

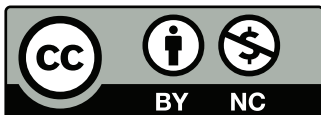## EDUCATORS TOOLKIT

NEW ZEALAND EDITION

Year 1 – Year 4

Acknowledgments

This online curriculum-linked resource was produced by George the Farmer Pty Ltd for ForestLearning, an initiative of Forest and Wood Products Australia.

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 food and fibre in New Zealand.

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References

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

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.

Table of contents

Introduction

The forests of New Zealand serve many important purposes. They provide habitats for plants and animals and places for recreation, enjoyment, spiritual values, and culture.

Trees in forests help clean our water, protect our soils, and help fight climate change by capturing and storing carbon from the atmosphere in their wood. Plantation forests are sustainably managed in New Zealand to provide us with renewable wood products (timber), paper (wood fibre), and other forest services like honey. It is important that plantation forests are managed sustainably – for today and forever - to balance various objectives and services.

NEW ZEALAND FORESTS – NOW AND FOREVER

A small area of New Zealand forest cover is classed as plantation forestry and is a sustainable source of wood and wood fibre. They are like farms — every tree that is grown and harvested is again replaced with at least one more, just like a crop.

A message from George!

In forestry, trees are the crop being grown to produce wood products (timber) and wood fibre (for paper, board and bioenergy).

Whereas our farmers can grow and harvest a plant crop once or more a year, it can take up to twenty eight years or longer for plantation trees to be ready to harvest, and even longer for trees in a native forest.

New Zealand has a total of 9.9 million hectares of forests, covering 38% of the land. Of this, 8 million hectares are native forest, and 1.7 million hectares are plantation forest. New Zealand's forestry industry is largely based around sustainably-managed plantation forests. About 90% of our plantation forests are radiata pine (Pinus radiata). The remainder are Douglas fir (Pseudotsuga menziesii) (5.5% of plantation area), eucalyptus, and other softwood and hardwood species. About 50,000ha., or 25 million m3, is harvested each year. For every tree that is harvested 4 seedlings are replanted, or naturally regenerated from seed.
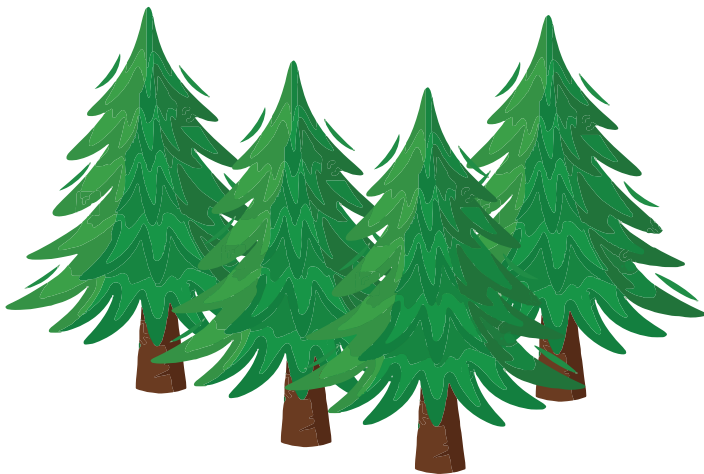
Both plantation and native forestry involves careful short-, medium- and long-term planning, often over 100 years, and on ground management based on science to ensure the forests' continued health, resilience and sustainability.

A forest has lots of trees, and is a habitat for animals, plants, fungi and micro-organisms. It is also an ecosystem where the soil, water, climate, plants, animals, fungi, and micro-organisms interact in complex food chains.

So forests not only provide us with wood, but they also provide a range of other benefits such as:

- environmental services, such as salinity and erosion control
- clean our air and protect our water catchments
- provide habitat for native flora and fauna species that generally do not inhabit cleared agricultural land
- provide a space for recreational activities like bird watching, bushwalking, camping, and mountain bike riding
- protect and preserve Māori cultural sites and allow for Māori cultural practices
- support regional employment

Plantation forests are managed for multiple uses, including sustainable wood production, by foresters who plant, manage, care for and harvest trees for wood while ensuring that the amount of wood that is harvested is not more than that being replaced by new tree plantings.
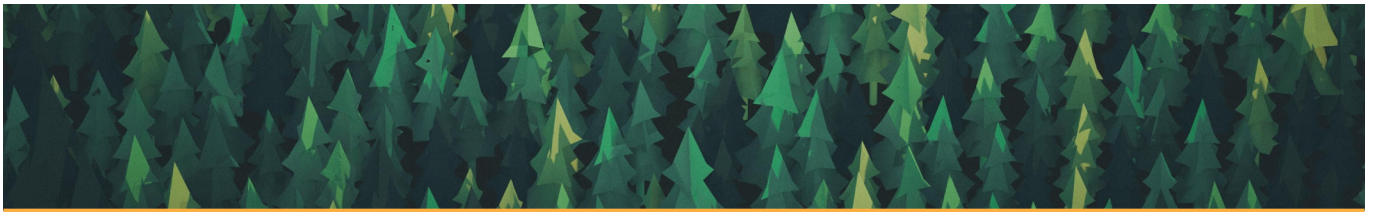
Foresters conduct environmental surveys to identify the plants and animals that live there and regularly monitor them through the plantation forestry cycle. Forest surveys often detect many bird and animal species. Some species may utilise plantation trees on a full-time basis including kiwi, karearea, Hochstetter's frogs, and long-tailed bats. Other species often utilise plantation forests to supplement food supplies but remain reliant on adjacent natural forest such as kaka, kea, kakariki, and kereru.

Wildlife corridors are incorporated into the planning maps of plantation forest areas and are important as they connect remnant forest areas with adjoining plantation forests. This enables animals to have safe passage to surrounding habitat for migration, and access to water.

New Zealand's forest management practices are among the best in the world for sustainability. New Zealand has two forestry certification schemes - FSC and PEFC. These schemes are very important as wood or paper products displaying their logos let us know we are buying wood products sourced from forests that are sustainably managed to meet a large number of sustainability criteria. This ensures our forests provide wood and their many other benefits for today as well as for all future generations.

Sources: http://www.daff.gov.au/forestry; http://au.fsc.org/; http://www.forestrystandard.org.au/; http://www.naturallybetter.com.au/; https://www.agriculture.gov.au/abares/forestsaustralia/australian-forest-and-wood-products-statistics; https://www.forestrycorporation.com.au/sustainability/education/resources-and-publications/wild-forest/woodwork/info/forest-supermodels/radiata-pine/remarkable-pine; www.forestlearning.edu.au.

Resource Description

This George the Farmer educational resource is intended as starting points for a cross-curricular approach to learning, based on the George the Farmer YouTube video "George the Farmer Forestry" https://youtu.be/9V_ f4P4bYNE and its accompanying Virtual Reality (VR) experience 'George the Farmer Forestry VR' on YouTube https:// youtu.be/ywRlqdUet-8 or through the FarmVR app: https://farmvr.com. Classes are encouraged to look at the video, the VR and read the lyrics to the song included in this resource. Follow up this guide with the Plantations Forests educators resource.

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.

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 Science, Technology, English 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

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.

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.
- Seek and describe simple patterns in physical phenomena.

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.

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

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.

Geometry and Measurement

Measurement

- Order and compare objects or events by length, area, volume and capacity, weight (mass), turn (angle), temperature, and time by direct comparison and/or counting whole numbers of units.

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.

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.
- Seek and describe simple patterns in physical phenomena.

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.

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:

Number and Algebra

Number strategies

- Use simple additive strategies with whole numbers and fractions.

Number Knowledge

- Know the forward and backward counting sequences of whole numbers to at least 1000.
- Know the basic addition and subtraction facts.
- Know how many ones, tens, and hundreds are in whole numbers to at least 1000.

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.

Geometry and Measurement

Measurement

- Create and use appropriate units and devices to measure length, area, volume and capacity, weight (mass), turn (angle), temperature, and time.
- Partition and/or combine like measures and communicate them, using numbers and units.

Where does paper and timber come from?

Your task is to create a persuasive TV ad or podcast.

You will then hold a press conference with an audience at the school and share how the forest industry is using improved sustainable management practices in the production of timber.

Some information to get you started:

- Forest managers aim to make sure that forests are managed sustainably.

- Sustainable use means finding a balance between meeting our present needs for resources while conserving natural resources and protecting the environment for the benefit of future generations.

- In sustainable forestry, this involves balancing timber harvesting and replanting to ensure a continuous supply of wood.

? ? ?

DID YOU KNOW?

Sustainability = balancing financial + social + environmental outcomes/impacts

Did you know that when a forester thinks of being economically or financially sustainable, they might ask themselves a question like 'how can we be profitable while meeting our other objectives'?

When a forester thinks of being socially sustainable, they might ask themselves questions like 'are we behaving in a way that the community will support what we're doing into the future?' or 'are we protecting the interests of the community for the future?' or 'how do we maintain our social license to operate?'

When a forester thinks of being environmentally sustainable, they might ask themselves a question like 'are we maintaining our forests and their natural assets for future generations?' or 'is this best practice environmentally?'

Recall the George the Farmer video and visualise what might sustainable forestry look like, sound like, and feel like? Draw a sustainably managed forest.

Find examples in the video of what actual foresters are doing to address sustainable forest management and share these to build a bigger picture of what is happening in the industry in your video or podcast.

Draft your storyboard for the video or podcast and record
your video or podcast and share it with others!

Title

Setting

Characters

Beginning

Middle

End

Sustainable Development Goals

In September 2015, world leaders committed to 17
Sustainable Development Goals (SDGs).

SDGs provide a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognise that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

> Activity: In pairs, discuss and draw a mind map of
> what sustainable forest management means to you.

In groups, choose one goal from the list below. Based on your understanding of forests, outline some possible strategies that foresters can do to address the goal.

- ■ Goal 15: Life on land.
- ■ Goal 12: Responsible consumption and production.
- ■ Goal 9: Industry, innovation, and infrastructure.
- ■ Goal 17: Partnerships for the goals.
- ■ Goal 6: Clean water and sanitation.

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Think about the messages in the George the Farmer video and ways foresters and forests themselves might be addressing these goals.

For example:

- ■ Goal 6 – 75% of our fresh water comes from forest catchment areas. Certified sustainable forest management standards mandates best management practices relating to water quality and soil.

- ■ Goal 15 – 80% of terrestrial animals and plants live in forests. Safeguarding forest biodiversity is core to sustainable forest management certification standards. 60% of all certified forests worldwide are managed in line with PEFC's Internationally recognised requirements.

PEFC & SUSTAINABLE DEVELOPMENT GOALS — PEFC/01-00-01

The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all.

Sustainably managed forests have a big role to play as we all strive to achieve these vital goals. At PEFC, we care for forests globally and locally. We work to protect our forests by promoting sustainable forest management through certification.

We are committed to doing our part towards the SDGs as we work towards unlocking the full potential of forests for a sustainable world.

PEFC is the world's leading forest certification system.

More than 300 million hectares are certified to PEFC's internationally recognized Sustainability Benchmarks.

Discover more about PEFC at www.pefc.org

80% of terrestrial animals and plants live in forests.

Safeguarding forest biodiversity is core to PEFC. 60% of all certified forests worldwide are managed in line with PEFC's internationally recognized requirements.

Good sustainable forest management practice reduces sedimentation, improving the condition of rivers and coastal waters and benefitting aquatic ecosystems.

The world's forests absorb almost 40% of man-made CO$_2$.

Sustainably managed forests have a central role in climate change mitigation and adaptation.

81% of global consumers feel strongly that companies should help to improve the environment.***

The PEFC label helps businesses and consumers make responsible choices.

PEFC standard setting is governed by the key principles of inclusive stakeholder engagement (based on Agenda 21), balanced representation, consensus, continuous improvement and transparency.

PEFC is a partnership for the SDGs. We bring together 51 national members, more than 30 international stakeholder members, and thousands of actors locally.

Sustainably managed forests provide economic benefits and improve the lives of millions of people.

1.6 billion people depend on forests for their jobs and livelihoods.

Forests provide 76 million tonnes of food per year.*

PEFC Trees outside Forests and Non-Wood Forest Products certification contribute to food security.

Trees and woods can have a restorative and therapeutic effect on the mind.**

PEFC certification promotes sustainable forest management, helping to ensure we can all enjoy the benefits that forests provide forever.

PEFC certification contains a range of requirements to improve the capacity and understanding of forest workers and affected communities.

330 million women and girls live on less than $1.90 a day, which is 4.4 million more than men.

PEFC certification provides a forum that better enables women to participate in forest decisions.

75% of our freshwater comes from forest watershed areas.*

PEFC's sustainable forest management standard mandates best management practices relating to water quality and soil.

Energy from wood fuel is equivalent to roughly 40% of our renewable energy supply.

PEFC certification helps ensure that renewable energy products are sourced responsibly.

70% of the world's population will be urban by 2050.

Families, communities and indigenous peoples manage 30% of global forest area.

Timber products store 1 tonne of CO$_2$ per 1m^3 of wood.

Forests make up 22.2% of household incomes in developing countries.

PEFC's construction and textile campaigns promote responsible sourcing of wood-based materials.

PEFC social requirements promote equal opportunities & non-discrimination within the forest workforce.

PEFC Project Certification promotes the use of certified timber and engineered wood products within the construction industry.

PEFC Group Certification enables small-forest holders to achieve certification, giving them access to international markets and helping to alleviate poverty.

Sources:
* Booklet: Global Forest Goals and Targets of the UN Strategic Plan for Forests by 2030
** "Tracking restoration in natural and urban field settings" – Journal of Environmental Psychology 2009
*** The Conference Board® Global Consumer Confidence Survey, conducted in collaboration with Nielsen, Q2 2017

To be certified as being sustainably managed, forests need to meet criteria outlined in the scheme. In pairs, outline how a forester could measure and record whether they are meeting the standard of water quality in their forest?

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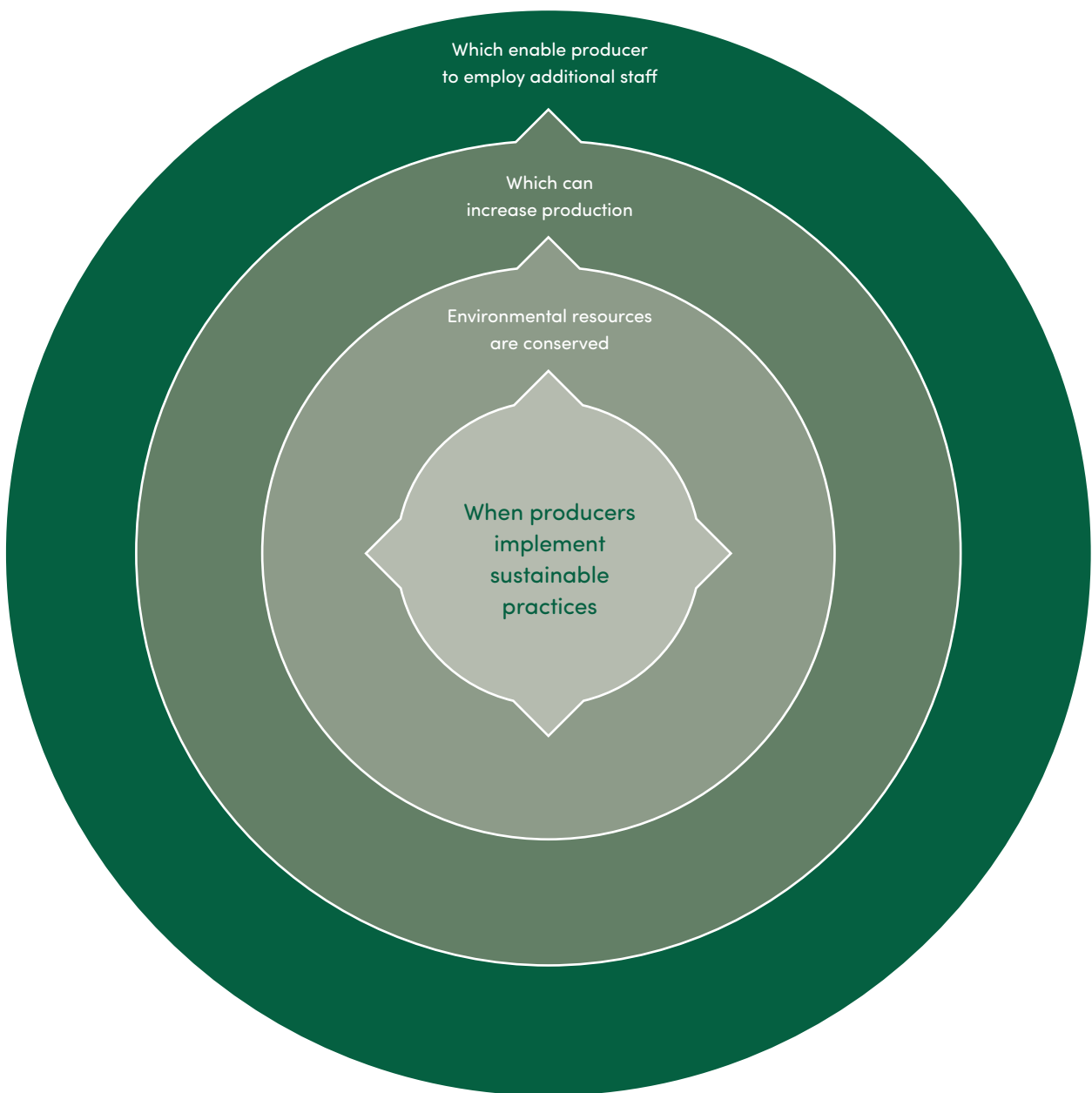
Use a Consequence Wheel

Consequence wheels can be used to explore wide ranging consequences that can follow from actions like producing food, fibres, or industrial materials. Look at the example below.

Which enable producer
to employ additional staff

Which can
increase production

Environmental resources
are conserved

When producers
implement
sustainable
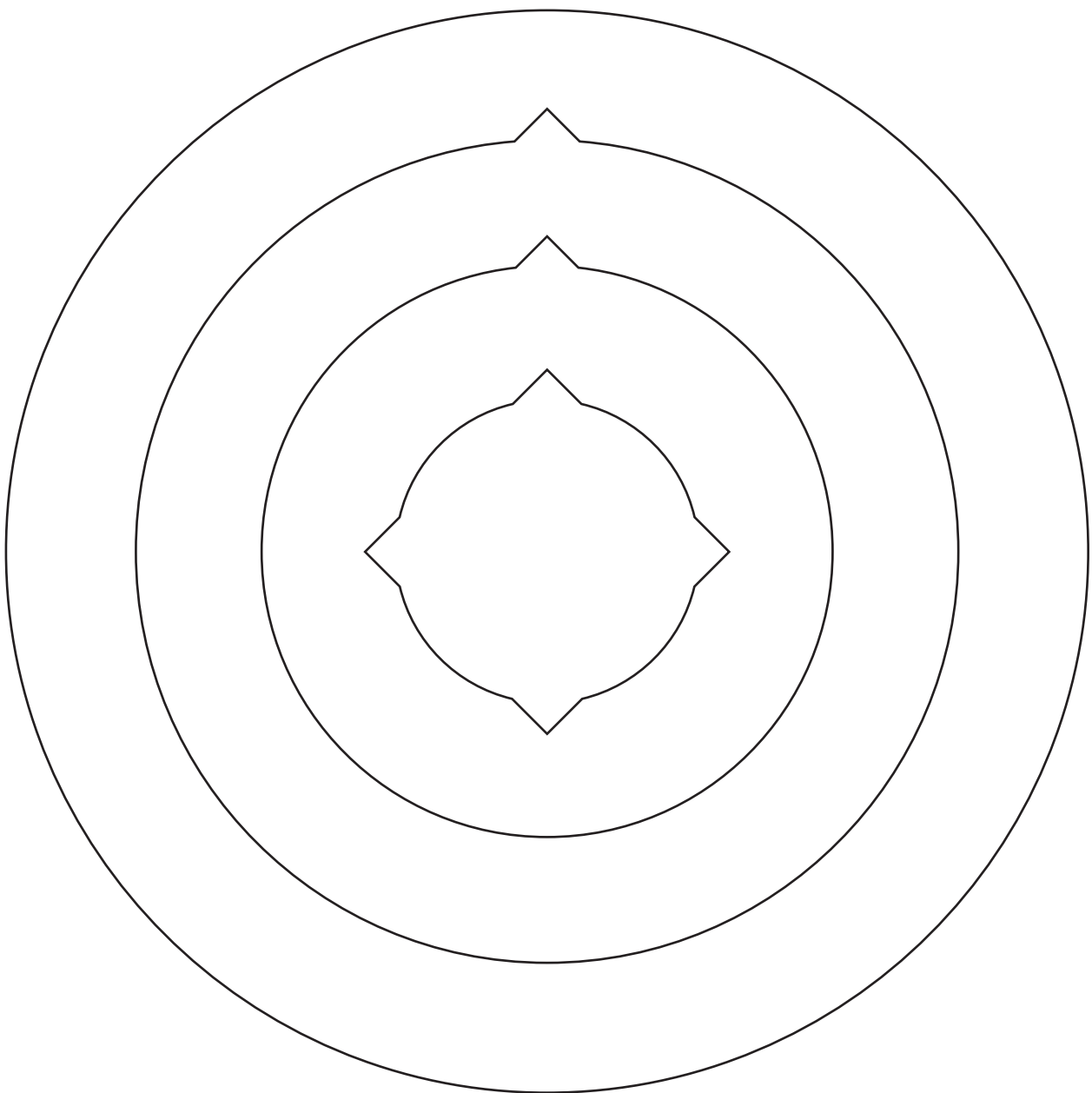practices

Try making your own consequence wheel.

Place the statement 'When we are aware of the need to sustainably manage forests everywhere...'.

Then, explore the focus by asking the question "What are the immediate consequences?"

Write the immediate consequences in the inner ring around the main idea.

Link each consequence to the main idea with a single line. This indicates that they are first order consequences.

Continue exploring second, third and fourth order consequences using the outer circles.

Get into advertising!

Your advertising agency has been approached by George the Farmer to create a poster and e-brochure to raise awareness about the sustainable management practices in the forest industry.

You should develop an understanding of:

- What New Zealand sustainable forests need to grow, survive and produce renewable wood;

- How New Zealand foresters plant and grow trees, maintain healthy forests and care for the environment;

- The resources used to manage forests; and

- The sustainable management practices used in New Zealand productive forests that are managed for wood production.

Your task is to design and produce a poster and an e-Brochure incorporating these topics.

You can use high, low and no tech options.

For the poster:

Tech: You can use block-poster software to transfer high-resolution graphics and pictures to a wall-sized image.

No Tech: You can draw graphics and paste images from the Internet on poster board.

Check out Lucidpress, a free online poster maker.
See https://www.lucidpress.com/pages/examples/free-online-poster-maker

Check out Glogster which is another digital tool that can create posters at http://edu.glogster.com/

For the e-brochure:

Tech: You can use software to transfer high-resolution graphics and pictures to produce a digital brochure.

Low Tech: You can use graphics and photo-editing software to produce a digital brochure.

No Tech: You can draw graphics and paste sourced images from the Internet on paper.

Check out 'Canva' a free digital tool that can assist create brochures, presentations and more! Note that it has a great photo library that includes trees and forests!
See: https://www.canva.com/about

De Bono's Six Hat Thinking

Recall the George the Farmer forestry video and how plantation forests are managed.

De Bono's Six Hat Thinking is a useful way of exploring an issue from a range of viewpoints. Each hat represents a different viewpoint, and the purpose is to look at an issue in different ways.
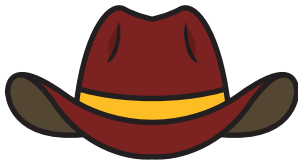
Red Hat

Feelings

What emotions which will be experienced if forests are replanted?

White Hat

Information

List some of the facts you know about how plantation forests are managed.

Blue Hat

What thinking is needed

What has happened so far?

What should happen next?

What questions or issues does the information raise?

Green Hat

New ideas

What are some new ways we might manage plantation forests which no-one might ever have thought before?

Black Hat

Weaknesses

What questions do you have about plantation forests?

Yellow Hat

Strengths

What are the good points about plantation forests?

Map your findings from the George the Farmer forestry video to the 6 hats.

Red Hat

Feelings

White Hat

Information

Blue Hat

What thinking is needed

Green Hat

New ideas

Black Hat

Weaknesses

Yellow Hat

Strengths

The big school tree count

Foresters regularly conduct forest surveys to identify the plants and animals that live there and to regularly monitor and work to rehabilitate these forests to ensure that they are healthy and resilient.

Your job is to form a group and conduct a survey or tree count in your school grounds (each group in your class could survey a different area of the school).

You need to:

- Count and number the trees in your designated area;

- List the type of trees that you have found (do you think they're native or an introduced species);

- Determine the percentage of native trees;

- Suggest how you can encourage more native birds and other animals to live in this area.

Record your data on the table on the next page.

Record your findings.

MY GROUP NAME IS

THE PEOPLE IN MY GROUP ARE

NUMBER OF TREES COUNTED

SECTION 1	TREE TALLY	NATIVE TREES
(eg: junior playground area)		
SECTION 2	TREE TALLY	NATIVE TREES
SECTION 3	TREE TALLY	NATIVE TREES
SECTION 4	TREE TALLY	NATIVE TREES

COMMENTS ABOUT THIS TASK AND WHAT MY GROUP FOUND OUT

A changing climate

We have all heard how trees are good for the planet. They help to lessen the impacts of climate change through their ability to take in the gas carbon dioxide from the atmosphere and turn it into wood.

Foresters talk about the importance of managing 'climate risk' in plantation forests and native forests.

Climate determines the growing conditions and climatologists predict that New Zealand's climate will become warmer and drier, with changes to rainfall patterns and more extreme weather events like floods, fires, and droughts.

Explore how much carbon dioxide equivalent (CO_2-e) trees in your school environment have offset so far in their lifetime by measuring a tree at chest height with the ForestLearning Carbon Storage Tape Measure.

This tape measure has been developed by ForestLearning in partnership with CSIRO using their scientific data on tree carbon storage, and Lifecycle's analysis of average everyday products and energy use.

How to make your Carbon Storage Tape Measure:

STEP 1

Print the following page out at actual size on either an A3 sheet or A4 sheet.

IMPORTANT PRINTING NOTE:
To print at the correct scale, set all printer outputs to 100% (not the default 'scale to fit').

Measure the print out against a standard ruler for accuracy.

STEP 2

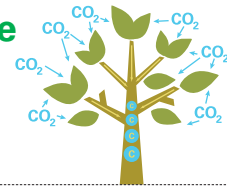Cut out all 14 sections along the dotted lines.

STEP 3

Glue, staple or tape the sections together as shown.
The finished tape measure should be 200cm long x 2.5cm high.

STEP 4

Follow the directions on the tape!

Carbon Storage Tape Measure

FOREST LEARNING **CSIRO** **lifecycles.**

Made from certified wood fibre. A renewable resource.

CO_2 CO_2 CO_2 CO_2 CO_2 CO_2

TAB A

PINE TREE

Explore how much carbon dioxide equivalent (CO2-e) your pine tree has offset so far in its lifetime by measuring the tree at chest height with the ForestLearning Carbon Storage Tape Measure.

This tape measure has been developed by Forest Learning, an initiative of Forest and Wood Products Australia, in partnership with CSIRO using their scientific data on tree carbon storage, and Lifecycle's analysis of of average everyday products and energy use!

START 0

TAB B

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15 cm = Ship 800 iPads from China to Australia

111 CO_2-e (above ground kg/tree)

5   10   15

TAB C

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30 cm = 2 families commute to and from school each day for 1 year in an electric car

612 CO_2-e (above ground kg/tree)

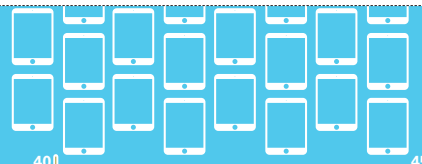20   25   30

TAB D

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45 cm = Manufacture 20 Apple iPads

1660 CO_2-e (above ground kg/tree)

35   40   45

TAB E

60 cm =
Wash household clothes for 1 year

2521 CO_2-e (above ground kg/tree)

50   55   60

TAB F

75 cm = Heat and cool a single Sydney home for 1 year

4408 CO_2-e (above ground kg/tree)

65   70   75

TAB G

90 cm =
Run a refrigerator for 5 years

6958 CO_2-e (above ground kg/tree)

80   85   90

TAB H

105 cm =
Manufacture a small passenger car

10236 CO_2-e (above ground kg/tree)

95   100   105

TAB I

120 cm = Drive a petrol car 2.5 times around Australia on National Highway 1

14300 CO_2-e (above ground kg/tree)

110   115   120

TAB J

135 cm = Produce nylon carpet to cover 9.5 average sized house floor areas

19205 CO_2-e (above ground kg/tree)

125   130   135

TAB K

150 cm = Electricity used to watch an average amount of TV by 250 students for 1 year

25003 CO_2-e (above ground kg/tree)

140   145   150

TAB L

165 cm = Fly 60 students from Perth to Port Headland, WA one way

31743 CO_2-e (above ground kg/tree)

155   160   165

TAB M

180 cm =
Manufacture 500 smartphones

39470 CO_2-e (above ground kg/tree)

170   175   180

Plant trees

We have all heard how trees are good for the planet. They help to lessen the impacts of climate change through their ability to take in the gas carbon dioxide from the atmosphere.

They are also proven to reduce levels of pollution by greatly increasing the surface area on which pollutants may be absorbed or dissolved (especially after rain).

Check out ForestLearning's video Trees Save the World – www.forestlearning.edu.au/find-a-resource/article/41/trees-save-the-world.html

Perhaps the greatest value of trees lies in the fact that they serve as habitats for countless animals, plants, and fungi. A single large old-growth tree may be home to thousands of organisms belonging to hundreds of species, not least, in hollows used by animals for generations.

Across New Zealand, foresters work to replant native tree species and regenerate the environment.
You can work like a forester by planning and planting native garden to improve biodiversity in your school and neighbourhood.

Check out
https://www.rbgsyd.nsw.gov.au/Stories/2020/The-wonder-of-a-school-habitat-garden
and how it re-plants native trees on farms.

Design a native garden for biodiversity in your school or local area.
Remember to think about things like:

- Which species would be best to plant?
- How big will it be when fully grown?
- Will its roots affect any nearby buildings?
- Will its branches interfere with any overhead cables?
- Is it a native tree that will host a lot of wildlife?

Create a video about your ideas and share with family and friends.

My native garden for biodiversity plans.

My storyboard for my video.