



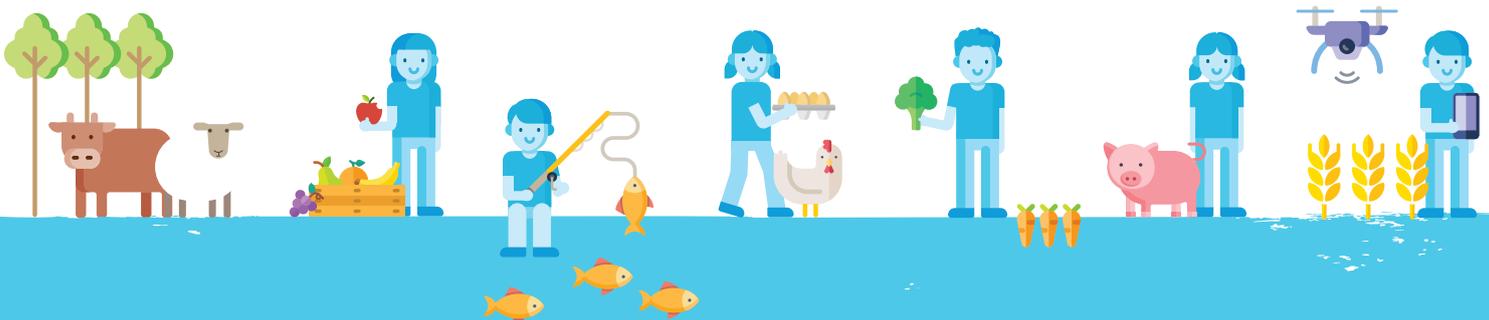
Tools and Technology Over Time

Level: 3/4

Lesson One: Agriculture, Then and Now

Time: Approx. 90 mins

Key Vocabulary: Agriculture, tools, technology, efficient, rain gauge, data, column graph.



➤ Lesson Overview:

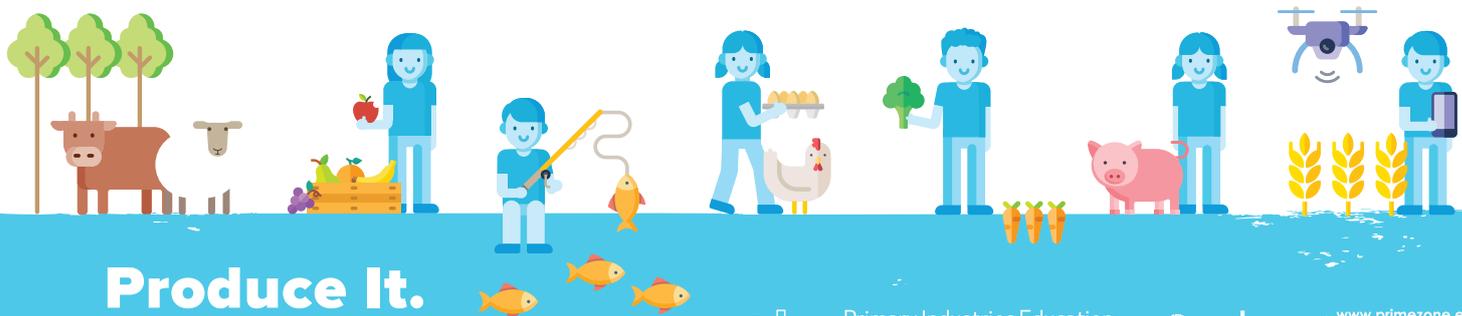
Throughout this lesson, students will investigate the tools and technologies used in food and fibre production and the ways that agricultural practices have been influenced by technology over time. Students will have the opportunity to hear first-hand from Victorian producers and learn about how technological advances have made farm work safer, more efficient, easier, and allowed for greater accuracy. Students will apply their design skills to create their own rain gauge and will practice interpreting and representing data relating to rainfall in a region of Victoria.

➤ Students Will Learn To:

- Compare tools and technologies used in food and fibre production from the past and present
- Identify the purposes of selected tools and technologies
- Recognise that technology is developed to address problems and make tasks more efficient
- Make observations about improvements in technology over time
- Apply design skills to create a rain gauge.

➤ Victorian Curriculum Outcomes:

VCDSTC025, VCMMG140, VCMMG165, VCMSP149, VCMSP150, VCMSP179, VCMSP180, VCDDI020, VCSIS067, VCSIS068, VCSIS069



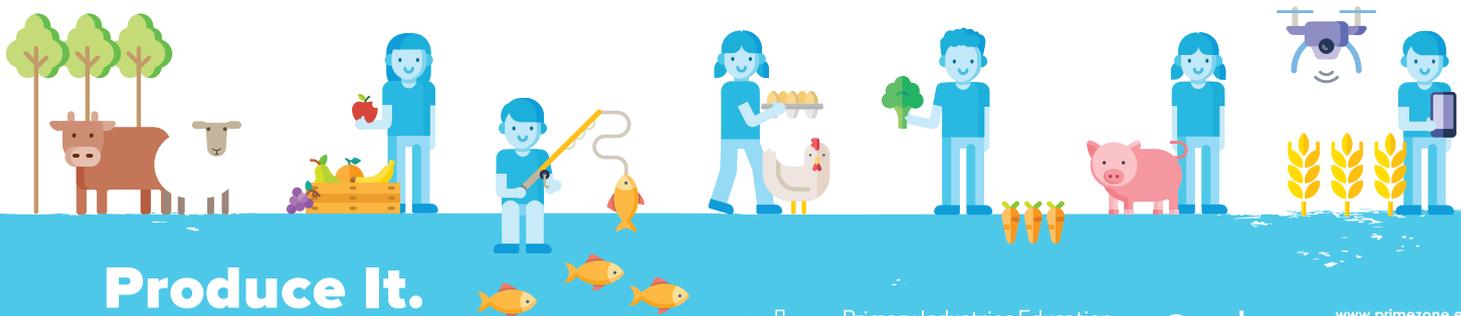
Learning Tasks

ACTIVITY ONE

Zoom In. Zoom Out. (5 mins)

This activity is designed to evoke curiosity amongst students and encourage thinking about technology in agriculture.

- The teacher will display the first picture from the [Zoom In. Zoom Out. Presentation \(1.1\)](#). Zoom in as far as possible on the projector or interactive whiteboard so that only the grain is visible in the image.
- The teacher will ask students to guess what they think they are seeing take place in the picture, providing reasons for their guess.
- The teacher will slowly zoom out of the image, pausing at each step so that the students can observe how the image changes and new features are revealed.
- The teacher will encourage students to continue to share their thoughts and wonderings about what the image might be, listening to other class members' justifications as they share their ideas and why their ideas may be changing.
- When the image is zoomed out completely and the content of the image is revealed, the teacher will give students the opportunity to guess what the piece of technology pictured is and what it is used for, before revealing the answer (eg. Picture 1 is a 'Header' which is used to cut off a specific part (grain) of the plant (crop) and leave behind most of the stalk/stem).
- The teacher will repeat these steps for each of the [Zoom In. Zoom Out.](#) images.



ANSWERS:

- Image Two is an 'Air Seeder' which is used to plant crops by pushing seeds and fertiliser into the ground using air pressure.
- Image Three is a 'Pivot Irrigation System' which is used to water crops using large sprinklers.

ACTIVITY AT A GLANCE:



ACTIVITY TWO

VIC Farmer Time – Changes Over Time

(10 mins)

Students will watch a short video of two producers who have worked on farms for over 40 years. Students will have the opportunity to hear first-hand about the ways technology has impacted food and fibre production over time.

- a) The teacher will ask students to consider the following questions:
 - What do people use computers for?
 - What would we do if there were no computers to help us with tasks?
 - Why do people use technology?
 - How has technology changed the way people do things over time
- b) After a class discussion about these questions, the teacher will explain that technology is designed to solve problems or make tasks more efficient/easier, for example calculators are designed to solve large calculations quickly, rather than people having to solve these problems mentally.
- c) The teacher will show students the [VIC Farmer Time – Changes Over Time video](#).
- d) The teacher will ask students to turn and talk to the person seated next to them to share one technological innovation that they heard about in the video, and how it impacted food and fibre production for that farmer.
- e) The teacher will select some students to share their ideas with the rest of the class.



ACTIVITY THREE

Technology in Agriculture Sorting Cards

(15 mins)

This activity is designed to allow students to explore the different purposes of technology in agriculture and the way technology in agriculture has advanced over time.

- a) The teacher will place students in pairs and provide each pair with a copy of the [Technology in Agriculture, sorting cards \(3.1\)](#).
- b) The teacher will explain that during this task, students will be sorting these cards by grouping them into four categories:
 - **Category 1:** Tools and Technologies that make farm work safer.
 - **Category 2:** Tools and Technologies that make farm work easier/more efficient.
 - **Category 3:** Tools and Technologies that solve problems (e.g., pests, weeds, environmental issues).
 - **Category 4:** Tools and Technologies that help farmers collect information and data about their production (e.g. soil moisture).
- c) Students will work with their partner to sort the cards into categories, based on their main purpose.

(Some technology cards can be placed in more than one category, eg. mechanical shears make shearing safer and more efficient).
- d) When students have completed their sorting, the teacher will ask several student pairs to share one piece of technology/card they grouped in each category, and what they think it is used for in food and fibre production.
- e) After class discussion about student ideas, the teacher will use a projector or interactive white board to display the [Technology in Agriculture presentation \(3.2\)](#) showing the purpose of each piece of technology and the categories it belongs to.



ACTIVITY FOUR

VIC Farmer Time – Technology in Agriculture (10 mins)

During this activity, students will have the opportunity to hear from a Victorian producer who collects and restores Australian ‘headers’ (machines used to strip crops for harvest). Farmer Hugh will provide students with an explanation of the ways innovations in technology have changed food and fibre production in Australia over time.

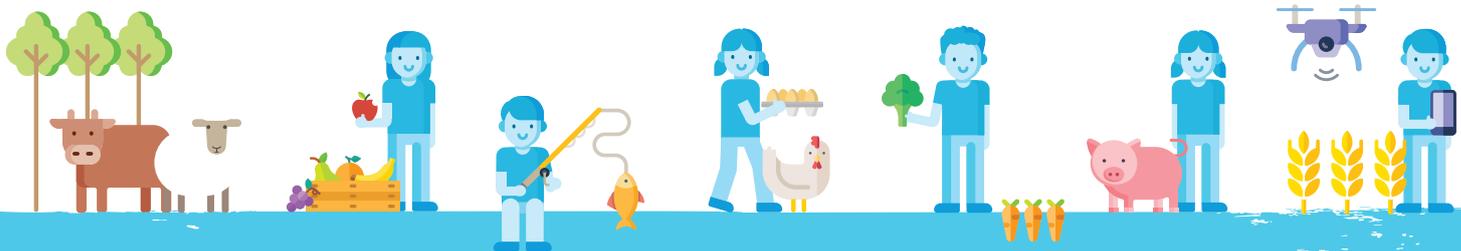
i FOR INFORMATION: If teachers would like to engage in a one-on-one zoom call with a farmer for a question-and-answer session, they can contact the Victorian Education Officer:

Victorian Education Officer: Jayne Johns

Email: Jayne.johns@piefa.edu.au

Mobile: 0483 870 277

- The teacher will explain that students will be watching a short video showing a Victorian Farmer featuring ‘headers’ he has collected and restored from the past. The teacher will show students the [Map of Victoria \(4.1\)](#), highlighting where Farmer Hugh’s farm is located and who the traditional owners of this land are.
- The teacher will record the following question on the white board or on an anchor chart:
 - What stuck with you?
- The teacher will explain that students will be answering this question at the end of the video and students should listen for any new or interesting information that they hear during the session.
- The teacher will play the recording of the [VIC Farmer Time – Technology Over Time \(Farmer Hugh\)](#).
- The teacher will record notes and key words on the board or an anchor chart during the session as a prompt for students when recalling their own ideas. (*Keys words: Header, harvest, tonnes, bales, straw, thrash, auger, sieve, grain tank*).



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- f) At the end of the video, the teacher will ask students to turn and talk to the student next to them to share one thing that stuck with them from the video.
- g) Students will be encouraged to consider any information they found interesting or any questions they have after watching the recording.
- h) The teacher will provide each student with a sticky note to record their answer to the question.
- i) The teacher will ask students to share some of their ideas before moving to their desks to record their responses.
- j) When students have finished recording their answers, students will display their sticky notes on the whiteboard or anchor chart around the question.

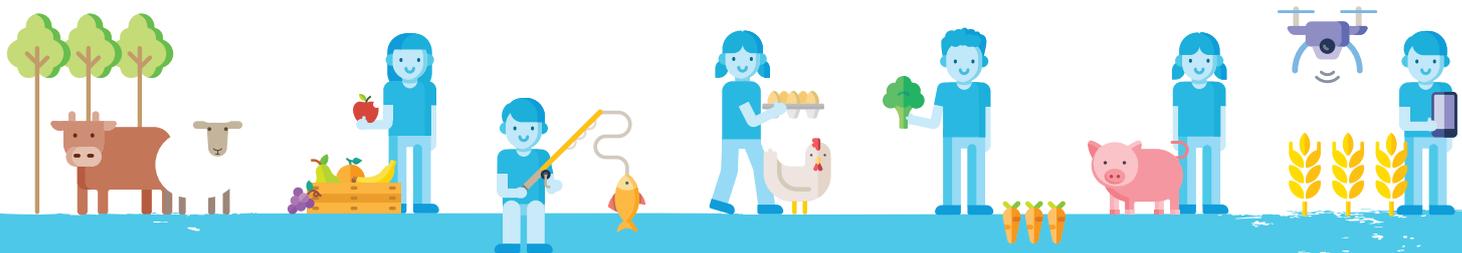


ACTIVITY FIVE

Rain Gauges on Farms (30 mins)

During this activity, students will have the opportunity to explore the use of rain gauges on farms and the way technology has improved the information collected by rain gauges to inform decision making by producers. Students will apply their design skills to make a rain gauge using recycled materials.

- The teacher will display the first slide of the [Rain Gauges on Farms presentation \(5.1\)](#) on the projector or an interactive whiteboard.
- The teacher will ask students to guess how each of these pieces of technology is used by farmers.
- The teacher will reveal both images of rain gauges. Rain gauges are used to measure the amount of rain that has fallen in a particular area. It is important for farmers to gather information about the weather and rainfall so that they can make important decisions, such as when to plant crops, when to harvest and when to spray their crops (if spray is applied before rain, it can wash away, wasting the chemical and requiring reapplication). The weather plays a vital role in determining how well things grow on a farm, and how much food and fibre is produced. It is critical that farmers plant crops at the correct time of year to ensure we have enough food and fibre.
- The teacher will explain that the first image is of a traditional rain gauge, which is hung on a fence post and checked at the same time each day by farmers, to collect data about the amount of rainfall. Farmers record this information each day to keep track of weather patterns and help inform their decisions about when to perform particular tasks on the farm. The second image is of a modern, digital rain gauge. This device has special sensors that not only measure rainfall more accurately, but also detects the amount of moisture in the air (knowing how much moisture is in the air helps farmers to determine the best time to harvest their crops) providing farmers with more accurate data about the weather. These rain gauges have Bluetooth connectivity and send information directly to a farmer's phone or computer where it is stored and can be converted into data automatically.
- The teacher will explain that students will be making their own rain gauge and collecting data about weather patterns like farmers do.



- f) The teacher will provide each student with the materials needed to create their rain gauge (plastic bottle, ruler, permanent marker, sticky tape, paper (or ForestLearning ruler)).
- g) The teacher will display each slide of the [Rain Gauges on Farms presentation \(5.1\)](#) as students follow the steps to create their own rain gauge.
- h) When students have completed these steps, they will find an unsheltered location outside to place their rain gauge.
- i) Students will return to the classroom and record a table (see example below) in their books to monitor the rain collected in their rain gauge each day for a month. Students should check their rain gauge at the same time each day, recording their measurements in the table. At the end of the month, students should represent the data they have collected about rainfall over the course of a month, in a column graph.

Example of table used to record rainfall over a month:

Date					
Rainfall (mm)					



ACTIVITY SIX

Collecting Data on Farms (15 mins)

During this activity, students will be required to interpret and represent data relating to monthly rainfall patterns.

- a) The teacher will explain that students are going to observe data that has been collected by the Bureau of Meteorology to track the monthly rainfall in Rochester, Victoria (the location of Farmer Hugh's property).
- b) The teacher will provide each student with a copy of the [Data on Farms, worksheet \(6.1\)](#).
- c) The teacher will ask students to look at the table on the Interpreting Data on Farms side of the worksheet, eliciting student understanding by asking the following questions:
 - Which month had the most rainfall? (April 2020)
 - Which month had the least rainfall? (February and July 2021)
 - Which season had the most rainfall? (Autumn 2020)
 - How is the data being represented? (A table)
 - What is another way this data could be represented? (eg. bar chart, line graph, dot plot, etc.)
- d) The teacher will ask students to work independently to record their answers to the questions on the Interpreting Data on Farms side of the worksheet.
- e) Before the students complete the column graphing task on the back side of the worksheet, the teacher will model completing how to represent a column graph by showing the video on column graphs.



SOURCE: Year 3 Lesson: *Column Graphs*, YouTube, MathsOnline, 2021, (1.27)

URL: <https://www.youtube.com/watch?v=gl3LGJqQziQ>

- f) Upon completion of the column graphing task, the teacher will ask some students to share their answers to the questions on the worksheet.



ACTIVITY AT A GLANCE:

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Interpreting data on farms

The following table shows the monthly rainfall in Rochester, Victoria (the location of Farmer Hugh's farm). Interpret the data to answer the questions below.

Monthly rainfall in Rochester (in millimetres)

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2020	34.4	21.7	67.5	104.6	42.6	23.7	29.2	55.9	25.4	44.4	18.4	22.0
2021	32.6	0.0	80.8	5.4	8.4	15.4	0.0	8.4				

What was the total amount of rainfall in 2020 in Rochester? Give your answer in millilitres.

Which month had the greatest rainfall between January 2020 and August 2021?

Record another question that could be answered by this data display.

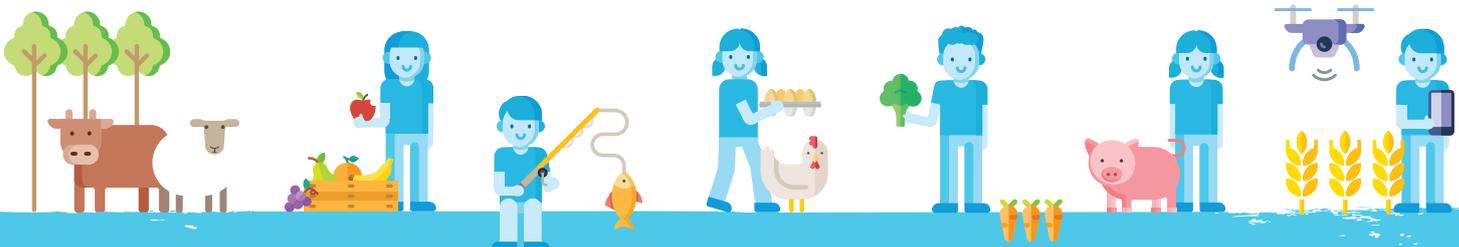
What are some other ways this data could be displayed?

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Representing data on farms

Create a column graph plotting the amount of monthly rainfall (in millimetres) in Rochester, Victoria from January 2020-August 2021.

Monthly Rainfall in Rochester (in millimetres)



ACTIVITY SEVEN

Snowball Fight (5 mins)

This activity is designed to prompt student reflection about the information they have explored throughout the lesson. Students will record one key thing they learnt or found interesting before engaging in a short game to share their reflection with others.

- The teacher will provide each student with a piece of paper large enough for students to record one sentence (scrap paper is ideal for this activity).
- The teacher will explain that students have one minute to write or draw one key thing they learnt or found interesting from this lesson.
- When students have recorded their sentence or drawing, the teacher will ask half of the class to stand on one side of the classroom and half of the class to stand on the other side of the classroom.
- The teacher will ask the students to scrunch up their paper and throw it to the students on the other side of the room as if they were having a snowball fight.
- When all the 'snowballs' have been thrown, the teacher will ask students to find a snowball, un-scrunch it and read it to themselves.
- The teacher will ask some students to share what the snowball they collected says.

