

# Science and Technology sample unit: Paddock to plate

Early Stage 1

Duration: 10 weeks

Term 4

Booragul Public School



## Unit context

Living things need food to stay alive and healthy. What do we know about where our food comes from and how it gets to us from farms and factories?

## Target outcomes

**Early Stage 1**      **A student:**

**STe-3VA** develops informed attitudes about the current and future use and influence of science and technology based on reason

**STe-4WS** explores their immediate surroundings by questioning, observing using their senses and communicating to share their observations and ideas

**STe-5WT** uses a simple design process to produce solutions with identified purposes

**STe-8NE** identifies the basic needs of living things

**STe-9ME** identifies that objects are made of materials that have observable properties

**STe-10ME** recognises how familiar products, places and spaces are made to suit their purpose

## Unit overview

In this unit, students are introduced to and begin to practise the science skills of observing, questioning, predicting and communicating. Students observe a range of farm animals and farm produce, and explore ways farm produce is packaged before being moved from the farm to places where the food is sold or made into other products for sale. They represent their ideas in a model to illustrate the path of one everyday food, eg milk, to show the journey of one product from paddock to plate and explore some criteria for packaging a dairy product. Students participate in activities to view some past and present methods of processing some foods and carry out simple investigations about the properties of materials used to package food. In this unit, students will be in contact with foods.

*Teachers should be aware that students may have food and other allergies that can result in serious medical consequences. This is an important consideration in selecting foods to be handled and potentially consumed.*



Content	Teaching and learning	Eval/ Reg
<p>STe-8NE identify the needs of a variety of living things in a range of situations, eg pets at home, plants in the garden or plants and animals in bushland and/or on farms</p> <p>STe-4WS working in groups to reflect on what they found interesting, liked or disliked about what they did, what was or was not expected and what they would do differently</p> <p>responding to questions about familiar objects and events they are curious about in the natural and made environments</p>	<p><b>FOOD FROM FARMS</b></p> <p><b>1-2 Lessons</b></p> <p><b>Learning Objective-</b> <i>for students to observe first-hand the growing and husbandry of plants and animals that provide our food, specifically to observe ways that farmers meet the needs of living things on a dairy farm.</i></p> <ul style="list-style-type: none"> <li>- Students participate in an activity demonstrating aspects of a dairy farm that make it suitable for large numbers of cows.</li> <li>- Following the activity, students observe and respond to teacher questions to identify important facts about dairy farms, the dairy farm routine and its link with the way milk is processed in a factory. The teacher models ways to represent sequencing of information gathered, such as a storyboard.</li> </ul> <p><b>Pair activity</b></p> <ul style="list-style-type: none"> <li>- Students create a display of a collection of pictures of a particular food, eg dairy foods, from catalogues or magazines and predict where the foods come from. They could also discuss which dairy foods they like/dislike.</li> <li>- Students name several items from the provided samples and/or from their own prior knowledge that they think are milk or milk-based and predict where the foods come from (farm or factory). The pictures are placed in appropriate groups or recorded using a simple table.</li> <li>- Students use the information to individually record as a drawing or simple text to: <ul style="list-style-type: none"> <li>• develop a simple chain of events from growing grass and leading to collection of milk from cows on a farm and its transport to a factory/shop</li> <li>• collect their ideas on what farmers need to do to care for cattle.</li> </ul> </li> </ul>	



<p>STe-8NE describe what plants and animals, including humans, need to stay alive and healthy, eg food, water and air.</p> <p>STe-4WS responding to questions about familiar objects and events they are curious about in the natural and made environments working in groups to reflect on what they found interesting, liked or disliked about what they did, what was or was not expected and what they would do differently</p> <p>Students process and analyse data and information by: organising objects or images of objects to display data and/or information engaging in discussions about observations and using drawings to represent ideas</p>	<p><b>WHAT LIVING THINGS NEED TO STAY ALIVE</b></p> <p><b>1 Lesson</b></p> <p><b>Learning Objective-</b> <i>for students to identify some familiar living things and record their suggestions. In allocated groups, students will talk about and share their ideas about what living things need to stay alive.</i></p> <ul style="list-style-type: none"> <li>- With teacher guided questioning in a class discussion, students provide suggestions that air, water and food are needed by all living things (including humans) to stay alive.</li> <li>- The teacher poses the question 'Why do we need food?'. In a guided class discussion, the students suggest ways that humans use food, eg milk gives us strong teeth and bones, and fuel/energy to do things, grow and keep us healthy. The teacher uses a healthy food pyramid to identify some foods that are used for energy and growth.</li> </ul> <p><b>Additional activities</b></p> <ol style="list-style-type: none"> <li>1. Class with teacher and parent helpers or Year 6 buddies make a class 'fruit salad' as an example of healthy food to choose. Students and teacher jointly construct a description of the process used.</li> <li>2. Students identify some fruits they like and collate class results to create a picture graph.</li> </ol>	
<p>STe-4WS making predictions resulting from their questions organising objects or images of objects to display data and/or information</p> <p>STe-5WT identifying the purpose and use of existing products, places and spaces describing their likes and dislikes of existing products, places and spaces</p>	<p><b>OBSERVING AND EXPLORING FOODS WE EAT</b></p> <p><b>1-2 Lessons</b></p> <p><b>Learning Objective-</b> <i>Students will use their observation skills to identify similarities and differences and explore how they might sort and organise objects and images to record and display information.</i></p> <ul style="list-style-type: none"> <li>- The teacher sets up a display of a variety of packaging from familiar foods that the students have brought to school. These would include breakfast food packaging wrappers, cereal and biscuit boxes, empty milk cartons, cans, plastic juice bottles. The display also contains images of a variety of fresh foods from advertising catalogues and some fresh foods, eg fruit, bread, eggs. Alternatively, students may participate in a planned visit to the school canteen.</li> <li>- They could: <ul style="list-style-type: none"> <li>• identify a range of healthy foods</li> <li>• identify foods as 'natural'(directly from the farm) or 'made'(processed)</li> </ul> </li> </ul>	



<p>STe-10ME</p> <p>explore a range of existing products, places and spaces, and discuss their likes and dislikes</p> <p>communicate their ideas about how familiar products</p>	<ul style="list-style-type: none"> <li>• examine the variety of packaging used to store foods</li> <li>• consider how the food arrived at the canteen or at shops.</li> </ul> <ul style="list-style-type: none"> <li>- Through asking and modelling questioning, the teacher engages the students in sharing what they know and are curious about the foods investigated. By grouping foods and communicating where foods come from, the teacher introduces and models the way an organiser (eg a visual collage/mind map) could be used as a class display and could be built through the unit.</li> </ul> <p><b>What do we eat for breakfast?</b></p> <ul style="list-style-type: none"> <li>- The students observe the displayed collection of familiar foods, and the teacher responds to, asks and models questions that engage the students in identifying which of the foods would be eaten for breakfast.</li> <li>- Using the students' responses, the teacher models how objects can be grouped by: <ul style="list-style-type: none"> <li>• re-organising the displayed foods/packages/images</li> <li>• guiding students to place the breakfast food objects or images inside a large hoop to separate them from others.</li> </ul> </li> <li>- With teacher guidance, the students use a camera to create their individual record of the breakfast foods they have identified. They add the images to the class visual collage/mind map.</li> </ul>	
<p>STe-10ME</p> <p>sketch or model ideas for a product, place or space and recount how their ideas suit their purpose</p> <p>STe-9ME</p> <p>identify a variety of materials that are used in a range of existing familiar products, places and spaces</p> <p>STe-8NE</p> <p>describe what plants and animals, including humans, need to stay alive and healthy, eg food, water and air</p>	<p><b>IDENTIFYING NATURAL AND MAN MADE PRODUCTS</b></p> <p><b>1-2 Lessons</b></p> <p><b>Learning Objective-</b> <i>Students will develop their skills in sorting, organising and representing information collected during their investigations using drawings.</i></p> <ul style="list-style-type: none"> <li>- The teacher introduces the idea of animals and plants as source of food and other materials people need/want and to develop an understanding about the difference between 'natural' materials and 'made' materials, eg using a website such as 'Australian Year of the Farmer'.</li> <li>- Using objects in the classroom, students use stickers to identify a range of materials using groupings such as plant or animal, or if they come directly from a farm (natural) or from a factory (made). The students share their reasons for the way they have grouped the materials.</li> </ul> <p><b>Where does our favourite food come from?</b></p> <ul style="list-style-type: none"> <li>- Using the displayed collection of foods, the teacher reviews the visit to the canteen and/or storyboard, and asks students to think about where these foods might come from.</li> </ul>	



<p>identify the needs of a variety of living things in a range of situations, eg pets at home, plants in the garden or plants and animals in bushland and/or on farms</p> <p>STe-3VA develops informed attitudes about the current and future use and influence of science and technology based on reason</p>	<ul style="list-style-type: none"> <li>- The teacher models the sorting and organising of images from a variety of teacher-provided resources to show some of the steps in how food gets from the farm to the shop. Examples could include fresh fruit, vegetables, eggs simply packed, some grains milled to flour then packaged, milk packaged or processed into yoghurt/cheese. Through guided discussion and using a series of images, the teacher models, for one food, some steps in the chain of events that must occur to get the food to them from the farm/factory. The students record the example on a teacher-provided worksheet.</li> <li>- Individually, students identify a favourite food, and they find and select images from some steps in the chain the food moves through to get to them from farm/factory. In small groups they share and revise their ideas with others before placing the images into the spaces on the teacher-provided worksheet.</li> </ul> <p><b>Reflection:</b> Students compare their worksheets and discuss the questions: Where does the shop/supermarket get foods from? How does the food get to you from the farm/factory? Students discuss what might happen if food cannot get from the farm to the shop/supermarket. The students explore some scenarios such as what happens if plants do not get enough water to grow, there are not enough farms to grow/produce the food we need, or trucks cannot pick up the milk/vegetables.</p>	
---	--	--



## STe-4WS

responding to questions about familiar objects and events they are curious about in the natural and made environments (AC SIS014)

making predictions resulting from their questions

exploring and making observations by using their senses to gather information about objects and events in their immediate surroundings (AC SIS011, ACSHE013)

using a range of methods to share observations and ideas, such as drawing, informal and guided discussion, role-play, contributing to joint construction of short texts and/or using digital technologies (AC SIS012)

working in groups to reflect on what they found interesting, liked or disliked about what they did, what was or was not expected and what they would do differently

## INVESTIGATIONS- OBSERVING THE PROPERTIES OF FAMILIAR PRODUCTS

### 1-2 Lessons

**Learning Objective-** *students will conduct scientific investigations requiring them to follow planned procedures that include keeping some aspects the same and making observations using their senses to gather information. Students are guided towards identifying similarities and differences between objects.*

*In this activity, time should be allowed for the yoghurt and cottage cheese to be produced and made in advance for students to observe the product.*

- The teacher introduces the activity by posing the question: How are some dairy products made from milk?
- The class reviews the collected pictures of dairy foods to identify some examples of dairy products made from milk.
- Students observe teacher demonstration of:
  - making yoghurt, eg stirring some natural yoghurt into some warmed milk and allowing this mixture to stand in a thermos overnight
  - cottage cheese, eg making junket with warmed milk and junket tablets, stirring the set junket, then draining through cheesecloth.
- The students examine one batch of each of the above prepared earlier.
- Students observe and describe the observable properties of milk, yoghurt and cottage cheese (eg colour, texture, ability to flow) and compare what is similar and what is different.
- The students follow the teacher-described steps that make butter and/or ice cream, identifying the information to be collected by the students, and emphasising safe practices including allergy awareness.
- In pairs or small groups with their Year 6 buddies, students undertake first-hand activities to make:
  - butter, eg by shaking pure cream with marbles in a sealed plastic container
  - ice cream, eg by shaking flavoured milk sealed in a small zip-lock bag inside a larger zip-lock bag containing crushed ice and salt.
- Students observe the properties of the starting materials and finished product. They share their findings with another group, and describe to each what they did to make the observed changes.



- |  |   |  |
|--|---|--|
|  | <ul style="list-style-type: none"><li>- Teacher poses the question: How did students know when butter and/or ice cream was produced? How would butter/cheese be produced in a factory? Have people always made these products in this way?</li><li>- Students observe how butter/ice cream was made in the past by watching a video or listening to a visiting guest speaker on old-fashioned butter churns, or examining a sample of one. (This could be related to a previous museum visit.)</li><li>- The students review and annotate the class visual collage/mind map to include their findings and ideas from the investigation.</li></ul> |  |
|--|---|--|



STe-4WS

responding to questions about familiar objects and events they are curious about in the natural and made environments

exploring and making observations by using their senses to gather information about objects and events in their immediate surroundings (AC SIS011, ACSHE013)

STe-9ME

observe, using their senses, a range of materials used to make specific objects, products, places and spaces

group a range of materials on the basis of observable properties, eg flexibility, texture, strength and colour  
explore a range of existing products, places and spaces, and discuss their likes and dislikes

identify a variety of materials that are used in a range of existing familiar products, places and spaces

communicate their ideas about how familiar products, places and spaces work and have features that help them to be useful

sketch or model ideas for a product, place or space and recount how their ideas suit their purpose

## CONDUCTING INVESTIGATIONS

### 1-2 Lessons

**Learning Objective-** *To select materials most appropriate for a particular purpose, students need to have some knowledge of the properties of those materials. Students identify some features of containers that hold liquids, then investigate the containers they have collected to see which ones have these properties.*

*In this activity, time should be allowed for cheese slices to be placed in the refrigerator for a week.*

### Testing the suitability of packaging materials for dairy products

- Through teacher questioning, students review their observations of materials used in the packaging of everyday foods, eg breakfast foods and foods sold in the school canteen.
- The teacher and students plan an investigation. The students observe the collected packaging and make predictions about suitable packaging for dairy products.
- In small groups, students follow a guided plan to test how well different types of packaging hold wet or dry materials.
- Students carry out a 'wet' test to identify the materials that would be best for some dairy products by:
  - pouring the same volume of water into similar sized containers/packaging
  - observing if the water is contained securely, or measuring how long it takes for the water to drip through.
- Students carry out a 'dry' test to identify the materials that would be best for some dairy products by:
  - placing unwrapped processed cheese slices in different packaging in the fridge for a week
  - comparing the cheese slice from each package with a fresh piece of cheese at the end of the week.
- With teacher guided questioning, the students suggest which types of packaging would be best for different dairy products.



<p>STe-4WS</p> <p>using a range of methods to share observations and ideas, such as drawing, informal and guided discussion, role-play, contributing to joint construction of short texts and/or using digital technologies (AC SIS012)</p> <p>working in groups to reflect on what they found interesting, liked or disliked about what they did, what was or was not expected and what they would do differently</p>	<p><b>COMMUNICATING IDEAS</b></p> <p><b>1 Lesson</b></p> <p><b>Learning Objective-</b> <i>Students consider the needs of an audience before deciding how to present their findings.</i></p> <p><b>Preparing a class display</b></p> <ul style="list-style-type: none"> <li>- With teacher-guided questioning, students share their knowledge about foods from farms and factories.</li> <li>- Students observe information products such as a poster or other multimedia display in their learning space and/or other places in the school. They identify the ways information has been presented, eg size of letters, amount of text, use of pictures</li> <li>- Students use these features to design a class display of the journey of favourite food products from the farm to shop/home/school. In groups of 3-4, students select and produce a different section of the display, using pictures, models, and/or own text, then assemble the display.</li> <li>- As a class activity, students use a peer evaluation strategy to provide feedback on how well each group included the identified characteristics of an effective display.</li> </ul>	
	<p><b>EVALUATION AND REFLECTION</b></p> <p><b>1 Lesson</b></p> <p>Students reflect on their learning by:</p> <ul style="list-style-type: none"> <li>- participating in a discussion about the information recorded in the class display, and identifying new learning arising from the ideas they were curious about</li> <li>- comparing the similarities and differences in the class presentations</li> <li>- peer assessment of the class presentations, identifying what they liked about them and why</li> <li>- individually reflecting on their learning by identifying one thing they already knew, one thing they learned and one question they would like to ask</li> <li>- identifying what they learned from working with others in a group.</li> </ul>	



Resources	Assessment overview
<p><b>Lesson 1:</b></p> <ul style="list-style-type: none"> <li>- Collection of samples of breakfast/dairy foods,</li> <li>- Assorted pictures of foods from supermarket catalogues</li> </ul> <p><b>Lesson 2:</b> Fruit to make fruit salad.</p> <p><b>Lesson 3:</b> Food packaging - individual sizes where possible</p> <p><b>Lesson 4:</b></p> <ul style="list-style-type: none"> <li>- Stickers</li> <li>- Images of how food gets from farm to plate</li> </ul> <p><b>Lesson 5:</b></p> <ul style="list-style-type: none"> <li>- Ingredients for ice cream, yoghurt, cottage cheese and butter</li> </ul> <p><b>Lesson 6:</b></p> <ul style="list-style-type: none"> <li>- Water</li> <li>- Containers</li> <li>- Processed cheese slices</li> </ul> <p><b>Lesson 7:</b></p> <ul style="list-style-type: none"> <li>- Posters, multimedia displays of food products</li> <li>• English books, eg <i>Don't Forget the Bacon</i> by Pat Hutchins, <i>The Very Hungry Caterpillar</i> by Eric Carle, <i>For All Creatures</i> by Glenda Millard</li> </ul> <p><b>Websites</b></p> <ul style="list-style-type: none"> <li>• <a href="http://www.landlearn.nsw.org.au/production-chains/video-case.../milk">www.landlearn.nsw.org.au/production-chains/video-case.../milk</a></li> <li>• <a href="http://www.primezone.edu.au/school-resources/f-2-home.html">www.primezone.edu.au/school-resources/f-2-home.html</a></li> <li>• <a href="http://www.activityvillage.co.uk/farm-animals-printables.htm">www.activityvillage.co.uk/farm-animals-printables.htm</a></li> <li>• <a href="http://www.dairy.edu.au/discoverdairy">www.dairy.edu.au/discoverdairy</a></li> <li>• <a href="http://splash.abc.net.au/early-primary/science">http://splash.abc.net.au/early-primary/science</a></li> </ul>	<p><b>Assessment task</b></p> <p>Using knowledge and understanding developed in the previous lessons, students produce a flowchart from a series of picture outlines they colour or decorate, before placing them in the correct order on a proforma.</p> <p><b>ES1 or students working at ES1 level:</b> Assemble an information product of pictures with text to show the production of a food product such as milk and milk products from farm to shop.</p>



# How Milk Gets to The Shop




The milk is taken to the factory



Milk is pasteurized



Milk is put into cartons



Milk is put on shelves in shops



Cows eat grass and drink water to



The farmer milks the cows



# How is my favourite food made?

