Sample Unit – Technology Mandatory

Sample for implementation from 2019

Technology context	Project
Agriculture and Food Technologies	Delicious Dairy

Overview

Delicious Dairy integrates content from Agriculture and Food Technologies. It includes practical food preparation lessons using dairy products and opportunities to grow herbs or vegetables. It focuses on the investigation of managed environments, such as farms and managed gardens. Students will learn about the dairy industry and the range of food products that can be manufactured from milk. Students develop knowledge and understanding about dairy products through designing and producing solutions. They consider the sustainable supply of agriculturally produced raw materials. Students will investigate features of sustainable agriculture and design a solution for food wastage.

Practical food preparation activities will allow students to explore the characteristics and properties of food as they use and manufacture a variety of milk products. Students are provided with opportunities to develop knowledge and understanding about food selection and preparation, food safety and Work Health and Safety (WHS) requirements. They develop skills to make informed choices when experimenting with and preparing nutritious food.

SAFETY: Schools need to ensure all student allergies, intolerances and other dietary requirements are known and considered when participating in practical tasks. Schools should consult the NSW Government guide for minimising the risk of exposure to allergens – https://education.nsw.gov.au/student-wellbeing/health-and-physical-care/media/documents/anaphylaxis-procedures/anacurric.pdf
Students with disability may require adjustments to safely engage in practical tasks.

The glossary in the *Technology Mandatory Years 7–8 Syllabus* has definitions for terms used in the Agriculture and Food Technologies context.

Length of unit	Assessment opportunity	Evidence of learning
10 Weeks	Delicious Dairy eRecipe book	Throughout the unit the content marked with an * indicates opportunities for informal assessment. A summary of activities is at the end of the unit.

Outcomes

A student:

TE4-1DP designs, communicates and evaluates innovative ideas and creative solutions to authentic problems or opportunities
TE4-2DP plans and manages the production of designed solutions
TE4-3DP selects and safely applies a broad range of tools, materials and processes in the production of quality projects
TE4-5AG investigates how food and fibre are produced in managed environments
TE4-6FO explains how the characteristics and properties of food determine preparation techniques for healthy eating
TE4-10TS explains how people in technology related professions contribute to society now and into the future

Related Life Skills outcomes: TELS-1DP, TELS-2DP, TELS-3DP, TELS-4DP, TELS-6AG, TELS-7FO, TELS-11TS

Content	Suggested teaching, learning and assessment

Producing and implementing Students: • select, justify and use a range of appropriate tools and techniques in an agricultural project and/or food preparation • identify and apply safe and ethical work practices, for example: DT – correct use of tools and equipment – food safety and hygiene practices	**Introduction and WHS** Students are introduced to safe kitchen practices and investigate 'paddock to plate' dairy products. **Activities** ▪ Students brainstorm safety procedures in the Food Technology kitchen and identify kitchen hazards. ▪ Students produce a kitchen safety infographic. * – https://www.canva.com/create/infographics/ ▪ The teacher outlines the requirements for safe handling of organic materials and soil. ▪ Students create a list of rules and responsibilities for the safe handling, storage and usage of potting mix and fertilisers. – https://assist.asta.edu.au/sites/assist.asta.edu.au/files/AIS%20Safe%20handling%20and%20use%20of%20potting%20mix_2.pdf – www.health.nsw.gov.au/environment/Publications/legionnaires-disease.pdf ▪ Class discussion – Where does cheese come from? ▪ Students create a flowchart from cow to consumer (minimum six steps). * ▪ Optional excursion – students visit a local supermarket to investigate the range of products made from dairy ingredients. Alternatively, students view online supermarket websites and create a dairy products word cloud. – https://www.wordclouds.com/ **Suggested resources** ▪ ClickView video 'Farm to Fork' ▪ A day in the life of a dairy farmer www.youtube.com/watch?v=VUTEdj6A9ZU **Practical tasks** ▪ Cheese tasting. Students taste a variety of cheeses (soft, hard, blue/mould, processed, specialty cheese) comparing and contrasting the tastes, textures, smell and appearance of the different cheese. – www.ikonet.com/en/visualdictionary/static/us/classification_cheeses ▪ Students prepare three-cheese muffins. * – www.taste.com.au/recipes/three-cheese-muffins/8d0accf0-1ec8-4609-9d06-6ab7d2f6c250 – www.taste.com.au/recipes/three-cheese-mini-muffins/b872c16f-0d56-47fb-a595-60134f7a855d – www.bbcgoodfood.com/recipes/2249654/triple-cheese-and-onion-muffins

Researching and planning
Students:

- design and plan a product associated with agricultural production (ACTDEP036) DT ST
- investigate ideal conditions for growth and development of an agricultural plant or animal (ACTDEK032) ST
- develop a schedule or calendar for ongoing care of a plant or animal species associated with an agricultural project (ACTDEP039) ST
- acquire and interpret data, for example: (ACTDIP025, ACTDIP026) CT ST
  - local environmental and/or physical conditions, eg rainfall, temperature
  - nutritional information panels, eg saturated fat, sugar content

Producing and implementing
Students:

- produce and implement an agricultural project and/or produce nutritious food (ACTDEP039) DT

Agricultural environments
Students plan gardens, prepare soil, and plant herbs and/or vegetables. Gardens could be prepared in beds, raised beds, pots or vertical gardens as appropriate to the space available. Students grow plants from seeds or established seedlings.
Suggested herbs: basil, chives, coriander, dill, mint, oregano, parsley, rosemary, thyme.
Suggested vegetables: baby spinach, cherry tomatoes, cucumbers, kale, mixed lettuce, pigface, rocket, silverbeet, warrigal greens.
Sprouts such as alfalfa, mung bean and sunflower are suggested where space is limited.

- www.abc.net.au/gardening/stories/s1857237.htm
- greenharvest.com.au/SproutingAndMicrogreens/SproutsGrowingInformation.html

Activities

- As a group, students discuss the WHS practices needed for outside garden and farm environments.
- Students compare similarities and differences from WHS practices used in the kitchen during the previous lesson, eg enclosed shoes, safety equipment, washing hands.
- Students research essential garden requirements and conditions for growing plants: climate, moisture and fertiliser. Students consider how climate conditions can be recreated using technology to optimise plant growth, such as the use of hydroponic equipment and greenhouses.
- Using researched information, students design their own herb or vegetable garden. *
- Students identify plants that are seasonal and adaptable to the local climate.
- Students investigate local rainfall charts and daily temperatures, and consider how this may impact on plant production and growth.
  - www.bom.gov.au/watl/rainfall/observations/index.shtml
  - www.weatherzone.com.au/climate/station.jsp
  - www.eldersweather.com.au/nsw/sydney/sydney

Practical tasks

- Students design, prepare and plant a herb or vegetable garden.
- Students design and create a schedule for watering and fertilising plants. *

Design and production folio

- Students document the following:
  - design ideas and sketches for herb or vegetable garden

Identifying and defining
Students:

- develop criteria to evaluate design ideas, processes and solutions, the functionality, aesthetics and a range of constraints, eg accessibility, cultural, economic, resources, safety, social, sustainability, technical (ACTDEP038, ACTDIP027, ACTDIP031) DT ST

Researching and planning
Students:

- investigate ideal conditions for growth and development of an agricultural plant or animal (ACTDEK032) ST
- acquire and interpret data, for example: (ACTDIP025, ACTDIP026) CT ST
  - local environmental and/or physical conditions, eg rainfall, temperature
  - nutritional information panels, eg saturated fat, sugar content

Producing and implementing
Students:

- produce and implement an agricultural project and/or produce nutritious food

Australian dairy and dairy produce
Students investigate the Australian dairy industry and prepare foods using dairy products.
The teacher introduces the **Delicious Dairy eRecipe book** task.
Students work independently to develop an eRecipe book which contains six nutritious recipes that include dairy as an important ingredient.

Activities

- Students investigate weather conditions and regions in Australia suitable for dairy farming.

Suggested resources

- ClickView video 'New Australian food technology: our dairy industry'.
- Cheesemaking www.youtube.com/watch?v=buKFUZugky4

Practical tasks

- Manufacture butter – students use full-fat cream to manufacture butter and buttermilk (waste product).
  Students compare and evaluate two differing technologies used in the manufacture of butter in the kitchen such as a jar versus a stand mixer. Students identify the key features of each technology and discuss the advantages and disadvantages of each method. *
  - allrecipes.com/recipe/234299/how-to-make-homemade-butter/
  - https://www.epicurious.com/recipes/food/views/homemade-butter-and-buttermilk-242047
- Refrigerate or freeze the butter and buttermilk for the next practical tasks.
- Bake savoury scones (using the manufactured butter). *
  - http://www.taste.com.au/recipes/savoury-scones/4fb86f5d-6a1e-4031-8803-6bac9ddc92d9
- Make buttermilk pancakes (using the buttermilk from the manufactured butter) with fresh fruit and yoghurt.
  - www.taste.com.au/recipes/buttermilk-pancakes/a4df0350-a1e1-4052-8120-6a70a34a4189
  - allrecipes.com.au/recipe/9468/buttermilk-pancakes.aspx

Design and production folio

- Students document the following:
  - eRecipe book ideas
  - criteria for their Delicious Dairy eRecipe book

Identifying and defining Students: • investigate how food and fibre production is managed in environments as a system and how sustainability can be improved, for example: (ACTDEK032) ST – plants and/or animal species grown in managed environments – land management by Aboriginal and/or Torres Strait Islander Peoples – boundaries, inputs, outputs, processes and feedback occurring in a managed environment **Identifying and defining** Students: • evaluate environments that have been designed in consultation with community groups, for example: – a bush tucker garden – a school or community garden	**Sustainable agriculture** Students explore the availability of food within Australia and around the world. They investigate the importance of sustainable agricultural practices. **Activities** ▪ Students investigate the history of agriculture in Australia and the changing attitudes towards sustainable agricultural practices. ▪ Students research ways in which Aboriginal and/or Torres Strait Islander Peoples sourced and obtained staple food using ecologically sustainable agricultural practices and land management. – https://soundcloud.com/abc_rn/rethinking-indigenous-australias-agricultural-past ▪ The teacher outlines the worldwide distribution of food by comparing countries with surplus food and countries with inadequate food supplies. ▪ Class discussion – 'If there is enough food produced in the world why are millions of people still starving?' ▪ As a group, define the term 'ecologically sustainable'. ▪ Students identify five sustainable agricultural methods in Australia. ▪ Students identify and examine examples of kitchen waste at school and home. Students consider how waste can be reduced. ▪ Students investigate organisations such as Ozharvest that aim to reduce food waste. – www.ozharvest.org/ **Suggested resources** ▪ Australia's food waste problem www.youtube.com/watch?v=GMZYwJkxWbs ▪ https://sites.google.com/site/group6bihst/resources/what-is-food-security/unequal-distribution-of-food ▪ online videos by the 'River Cottage' or 'Stephanie Alexander', which further explore the concept of sustainable agriculture. **Practical task** ▪ Students design a solution for food wastage, such as a worm farm, a compost bin or a chicken coop. * **Design and production folio** ▪ Students document the following: – brainstorm examples of food waste

Researching and planning Students: • research legal and ethical requirements associated with agricultural production, eg keeping animals	**Ethical food production** Students explore legal and ethical issues related to food production and manufacture. **Activities** ▪ Students research legal and ethical issues associated with chicken farming, including the concerns surrounding caged versus free-range egg production. ▪ Students evaluate one method of chicken farming. * ▪ Students brainstorm to create a mind map about the changing attitudes of consumers towards ethical food production. They consider ways in which consumer demands impact on agricultural practices. **Suggested resources** ▪ Cage eggs or free range? www.youtube.com/watch?v=jsJzU3-q0VM ▪ Pastured Egg Farming Landline Australia www.youtube.com/watch?v=can8xFpZKRs **Practical tasks** ▪ Students compare the weight, size, colour and smell of free-range and caged eggs, tabulating their findings. * ▪ Prepare a herb and cheese omelette. * – www.taste.com.au/recipes/basic-herb-cheese-omelette/c5b7276e-dff0-46d9-b064-c6a4a45ddb59 **Design and production folio** ▪ Students document the following: – their chicken farming evaluation – creating an ethical food production mind map – preparing a herb and cheese omelette.

Identifying and defining Students: • investigate the importance of food and fibre production to Australia's food security and economy including Asia's imports and exports (ACTDEK029) • investigate how food and fibre production is managed in environments as a system and how sustainability can be improved, for example: (ACTDEK032) ST – plants and/or animal species grown in managed environments – land management by Aboriginal and/or Torres Strait Islander Peoples – boundaries, inputs, outputs, processes and feedback occurring in a managed environment	**Globalisation and sustainable agriculture** Students investigate the role of globalisation and its effect on Australian agricultural processes. **Activities** ▪ Students brainstorm definitions of globalisation. ▪ As a group, they discuss how globalisation has impacted on the foods available to Australians today. ▪ The teacher leads a discussion on Australian free trade agreements. ▪ Questions for investigation – What foods and produce is Australia well known for? – What kind of foods and produce does Australia export? – Where in the world does Australia send its food and produce to? – What food and produce does Australia import? ▪ Students investigate Australian exports (where possible focus on local products), in particular exports to Asian countries, and create a one page infographic. * **Suggested resources** ▪ The Australian livestock export industry: The facts www.youtube.com/watch?v=eQRZeiOQvaw **Practical tasks** ▪ Make labne cheese (strained yoghurt). This is stored in infused olive oil and herbs. – www.taste.com.au/recipes/labne-marinated-yoghurt-cheese-balls/4de12ed4-4eaf-4dd5-9815-1256c20726e7 ▪ Use labne in a roasted vegetable salad (from garden produce) with yoghurt dressing. – www.bbcgoodfood.com/recipes/1940688/quinoa-and-feta-salad-with-roasted-vegetables – www.taste.com.au/recipes/roasted-vegetable-salad-rocket-hummus/fe1e5524-f20d-4aec-8102-0c12e920b6ae – www.bbcgoodfood.com/recipes/iceberg-yogurt-dressing **Design and production folio** ▪ Students document the following: – the labne recipe – a recipe for roast vegetable salad with yoghurt dressing.

Identifying and defining
Students:
• investigate the characteristics and properties of a variety of nutritious foods, for example: CT
  – high in fibre, such as fruits and vegetables
  – high in protein, such as meat and meat alternatives
• explore the nutritional needs of a group of people, eg adolescents, toddlers CT
	Nutritional value of dairy products
	Students develop an understanding of the nutritional value of foods, especially dairy products. They focus on healthy eating for adolescents.
	
	Activities
	Students:
	▪ investigate the nutritional value of a range of fresh and processed foods
	▪ explore the Australian Guide to Healthy Eating and the importance of a balanced diet
	  – www.eatforhealth.gov.au/guidelines/australian-guide-healthy-eating
	▪ research the nutritional value of dairy products, especially the importance of calcium in the diet for both young children and the aged
	▪ explore alternatives for people who do not eat dairy, eg lactose intolerant or vegan
	▪ investigate how adolescents can develop healthy eating habits, helping to prevent diet-related diseases such as obesity, diabetes, osteoporosis and dental caries, to create an information pamphlet *
	  – www.heartfoundation.org.au/
	▪ read and interpret the nutrition information on food labels and compare the nutritional value of a variety of dairy food products, eg low-fat dairy versus full-fat dairy.
	
	Suggested resources
	▪ ClickView video 'Trends in the Australian diet'
	▪ Overview of the Australian Guide to Healthy Eating www.youtube.com/watch?v=QKWa3bRa4aM
	▪ Life. Be in it. www.youtube.com/watch?v=GNjEge3Awl8
	
	Practical tasks
	▪ If a yoghurt maker is available, make natural yoghurt. Refrigerate the yoghurt for the next practical task.
	  – www.taste.com.au/recipes/natural-yoghurt/38c01c92-3ac8-4947-b56c-2d3992c1249b
	▪ Students use yoghurt (homemade or commercial) to make tzatziki dip, and may use herbs planted earlier in the unit.
	  – www.taste.com.au/recipes/tzatziki/b8a41754-182e-4f92-ab80-59d298a322a8
	  – www.bbcgoodfood.com/recipes/383616/tzatziki
	▪ Serve the tzatziki dip with carrot and celery sticks, and wholemeal pita crisps.
	  – http://allrecipes.com.au/recipe/854/baked-pita-triangles.aspx

Researching and planning Students: • acquire and interpret data, for example: (ACTDIP025, ACTDIP026) CT ST – local environmental and/or physical conditions, eg rainfall, temperature – nutrition information panels, eg saturated fat, sugar content • plan nutritious dish(es) to suit a group within society, for example: DT – high calcium and iron for adolescents – food for cultural celebrations • identify a range of food preparation techniques and analyse the impact on nutrient value (ACTDEK033) CT	**Recipe development** Students explore nutritional data from prepackaged food labels. **Activities** ▪ Students explore a variety of prepackaged food products and compare the fat, sugar and salt content. Students tabulate their findings. ▪ Students investigate how to modify recipes to include more fibre, more fruit and vegetables, and less saturated fat, added sugars and salt. **Suggested resources** – https://www.eatforhealth.gov.au/eating-well/healthy-recipes/recipe-modification-tips – http://eatwellnutrition.com.au/2015/08/25/healthy-cooking-recipe-modification/ **Practical tasks** ▪ Watch an ice cream and frozen yoghurt demonstration. – www.taste.com.au/quick-easy/articles/how-to-make-homemade-ice-cream-without-an-ice-cream-maker/9nlnUG6l – www.taste.com.au/recipes/strawberry-frozen-yoghurt-2/50730e79-5d0f-4957-ba2a-fa88a2958d61 – allrecipes.com/recipe/233928/how-to-make-vanilla-ice-cream/ – Gubinge (Kakadu plum) jam ice cream www.sbs.com.au/food/recipes/gubinge-jam-ice-cream – Wattle seed ice cream https://www.bushtuckershop.com/blogs/kurrajong-native-food-recipes/18052189-wattleseed-ice-cream ▪ Make panir (similar to ricotta). Refrigerate some cheese for the next practical task, spinach and ricotta triangles. – www.wikihow.com/Make-Ricotta-Cheese – Prepare spinach and ricotta triangles, using the panir and any baby spinach or herbs from the garden. www.taste.com.au/recipes/spinach-ricotta-filo-triangles-2/deae727d-2359-452c-b35b-92304e2b65ad **Design and production folio** ▪ Students document the following: – their prepackaged foods comparison table – their recipe modification investigation – a frozen yoghurt recipe

Research and planning Students: • investigate and communicate how a recipe can be improved to enhance nutritional value, and justify the recipe adjustment, for example: (ACTDEP039) DT – using wholemeal flour instead of white flour for increased dietary fibre **Testing and evaluating** Students: • evaluate the effectiveness and suitability of choices made during the development and production of the solution • assess the solution against the predetermined criteria	**Delicious Dairy eRecipe book** Students continue to develop their eRecipe book. **Practical tasks** ▪ Dry herbs – students will dehydrate excess herbs and vegetables (eg tomatoes) from the garden. – www.wifemamafoodie.com/dry-fresh-herbs-oven/ – www.taste.com.au/recipes/semi-dried-tomatoes-2/a932bf44-714a-45dd-9b18-51a86ced8f0b ▪ Make cream cheese. – www.culturesforhealth.com/learn/cheese/homemade-cream-cheese/ ▪ Prepare sweet potato wedges served with cream cheese rolled in fresh herbs and cherry tomatoes. * – www.taste.com.au/recipes/roasted-sweet-potato-wedges/0fd119f9-baee-4953-be6a-949d4064968f **Design and production folio** ▪ Students document the following: – a cream cheese and sweet potato wedges recipe – their Delicious Dairy eRecipe book evaluation against predetermined criteria.

Evidence of learning

Throughout the unit the content marked with an * indicates opportunities for informal assessment:

- kitchen safety infographic
- cow to consumer flowchart
- practical garden development and maintenance:
  - herb or vegetable garden design – annotated design
  - schedule for watering and fertilising plants
- butter manufacturing comparison
- food wastage solution – annotated design ideas
- chicken farming evaluation
- eggs comparison table
- Australian exports infographic
- adolescent healthy eating habits information pamphlet
- practical food preparation:
  - three-cheese muffins – correctly measuring ingredients, safely using the oven
  - savoury scones – rubbing in method, baked scones
  - herb and cheese omelette – mise en place, time management
  - sweet potato wedges served with cream cheese rolled in fresh herbs and cherry tomatoes – time management, plating.