

FARM TO FORK GAME IN THE CLASSROOM

Teacher Resource Guide





Funded by Healthway and Edith Cowan University

Acknowledgements

The 'Farm to Fork' game and learning materials were developed collaboratively with school students and teachers by ECU staff from across the Schools of Medical and Health Sciences (SMHS), Science (SOS), Education (SOE), and Arts and Humanities (SAH).

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Young people and staff from the following schools and community organisations contributed ideas and/or feedback on the game during the development and testing stages:

Anchors Joondalup Youth Centre, Ashdale Secondary College, Bayswater Soccer Club, Bindoon Catholic Agricultural College, Butler College, Cockburn Youth Centre, John Curtin Community College, Methodist Ladies College, Servite College

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Frequently Asked Questions



How can I download the 'Farm to Fork' game?

Farm to Fork ECU by Edith Cowan University is available to download from the Apple AppStore. <u>https://apps.apple.com/au/app/farm-to-fork-ecu/id1513353482</u>

Which devices are suitable to play the 'Farm to Fork' game?

Farm to Fork ECU is available to use on an Apple iPad.

Which student cohorts is the 'Farm to Fork' game best suited to?

Farm to Fork ECU has been designed for and tested with students in Years 7, 8 and 9. It may also be suitable in some Year 6 classrooms.

Which learning areas is the 'Farm to Fork' game best suited to?

Farm to Fork ECU is aligned to the WA and Australian Curriculum in Science, Design and Technologies, Humanities and Social Sciences and Health and Physical Education.

The game and learning activities address the **sustainability** cross curriculum priority and five of the seven general capabilities which extend across all learning areas.



Background

Food Systems Education

The food system is a complex web of activities involving the primary production of foods, their processing, distribution, access, consumption and waste management.

Food systems education intends to create an increased awareness of the entire farm to fork process. It includes how our food is grown/produced, the resources used to grow, process and distribute it, the processing involved and its impact on nutrition, safety, shelf-life and marketing, the distribution to market entities, where to access our food and how it is consumed. The learning is extended to understanding the people involved in every step of the food system and the management of resources and waste throughout the process from farm to fork.

A sustainable food system is a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised¹.

This means that:

- It is profitable throughout (economic sustainability);
- It has broad-based benefits for society (social sustainability); and
- It has a positive or neutral impact on the natural environment (environmental sustainability).

Transformational Games

Transformational games are digital games used as a teaching tool to engage students in the classroom. They are designed to deliver specific learning goals, outcomes and experiences in a virtual world but related to real world situations.



'Farm to Fork' Game

'Farm to Fork' is a transformational game designed for students in the school years 6 to 9.

The 'Farm to Fork' game creates a virtual world in which the player manages the potato supply chain, starting with on-farm production, through processing to create different products, marketing and advertising to increase distribution and sales, and methods of preparing potatoes for consumption. Throughout these four game levels, the player is provided with key information and is challenged to make decisions which will affect the health of consumers, amount of waste generated and profitability of the potato industry. These decisions are registered by inbuilt Waste, Health and Wealth (\$) meters, so players can see the consequences of their decisions and quiz answers. At the end, the player receives a score and feedback on how to receive a better score for each of these indicators.

¹ <u>http://www.fao.org/3/ca2079en/CA2079EN.pdf</u>



Using 'Farm to Fork' Game in the Classroom

This interactive digital learning resource comprising the '*Farm to Fork*' game app and associated learning activities has been specifically designed for Australian teachers/home schoolers for exploring food systems and developing food and nutrition literacy of early adolescent students.

Targeted at upper primary/lower secondary students, the '*Farm to Fork*' game is available as an engaging and immersive digital app that compliments a range of WA and Australian Curriculum learning areas, including Science, Health and Physical Education, Design and Technologies and Humanities and Social Sciences.

By playing 'Farm to Fork', the student manages the potato food system from farm to fork, thus increasing students' awareness of the food system and sustainable food production, distribution and marketing. Information provided in the game and challenge quizzes are designed to increase nutrition knowledge and ultimately to encourage students to make healthier and more sustainable food choices.

The associated learning activities, available in this Guide, have been developed to specifically target content from WA and Australian Curriculum learning areas - many of the activities are linked to multiple learning areas. The activities can be taught within a single learning area or as a cross curricular enquiry-based project. They have been designed to address a range of health, technology, economic and science concepts, skills and processes.

Accessing 'Farm to Fork' Game

Farm to Fork ECU by Edith Cowan University is available to download from the AppStore for use on an iPad. <u>https://apps.apple.com/au/app/farm-to-fork-ecu/id1513353482</u>

Students will enjoy playing the game individually on an iPad. Alternatively, teachers can project the game to a screen and facilitate playing the game with a group or the class.

A Power-point presentation for explaining to a class how to play the game is also available online.

Game Goals

Main Game Goal:

The main goal of the game player is to manage the potato food system. This requires attention to the following subgame goals.

Sub Game Goals:

- 1. Ensure adequate supply of potatoes
- 2. Create demand for healthy potato products
- 3. Keep the business profitable produce and sell potato products based on demand
- 4. Manage waste and environmental sustainability





Educational Goals

There are four levels within the 'Farm to Fork' game and each level addresses educational goals as outlined below:

Educa	tional goals per game level	
1. PRO	DUCTION	
~	Knowledge of natural resource requirements for plants to grow e.g. soils, water, sunlight, air	
~	Understanding of agricultural practices, equipment, technology, financial and market pressures	
~	Understanding of economic and environmental sustainability of food production	
2. PRO	CESSING AND DISTRIBUTION	
\checkmark	Knowledge of potential food end products	
~	Understanding of processing and distribution practices, technology, financial and market pressures	
~	Understanding of the health, economic, and environmental issues related to food processing and distribution	
3. WAS	TE MANAGEMENT	8 530
~	Knowledge of waste management and environmental sustainability	
✓	Understanding what processes in the food system produce waste and how to reduce waste throughout the system	
✓	Understanding of how to sustainably dispose of waste	
4. MAF	KETING, ACCESS AND CONSUMPTION	§ 543
√	Knowledge of potential food distribution and access points for food products	MARKET
~	Understanding of supply and demand principles and the impacts of marketing on consumption	
~	Understanding of the health, economic, societal and environmental issues related to food marketing, access and consumption	
OVERA	LL GAME	S 643
~	Awareness of job roles in each stage of food production.	



Curriculum Links

'*Farm to Fork*' educational goals can be linked per level to learning outcomes for various learning areas of the WA and Australian Curriculum. Table 1 shows the potential links for Years 6 - 9 for the following learning areas:

- Science
- Technologies
- Health and Physical Education
- Humanities and Social Sciences

More details of links with specific learning area strands are available in Table 2.

Much of the deeper educational content associated with these links is included in the learning tasks included in the teaching and learning resources designed to accompany the game (follow links in Table 3)

Table 1: Learning Area Connections to 'Farm to Fork' Game Level Educational Goals and Year Level

Edu	ucational Goals per Game Level	Science	Technologies	Health and Physical Education	Humanities and Social Sciences
1. P √	RODUCTION Knowledge of natural resource requirements for		Year 6		
✓	plants to grow eg soils, water, sunlight, air Understanding of agricultural practices,	Year 7	Year 7		Year 7
	equipment, technology, financial and market pressures	Year 8	Year 8		
~	Understanding of economic and environmental sustainability of food production	Year 9	Year 9		Year 9
2. P √	ROCESSING AND DISTRIBUTION Knowledge of potential food end products		Year 6		
✓	 Understanding of processing and distribution practices, technology, financial and market pressures Understanding of the health, economic, and 	Year 7	Year 7	Year 7	
~		Year 8	Year 8	Year 8	
	environmental issues related to food processing and distribution		Year 9		Year 9
3. V √	VASTE MANAGEMENT Knowledge of waste management and		Year 6		
~	environmental sustainability Understanding what processes in the food system	Year 7	Year 7		
	produce waste and how to reduce waste throughout the system	Year 8	Year 8		
~	Understanding of how to sustainably dispose of waste		Year 9		
4. N √	ARKETING, ACCESS AND CONSUMPTION Knowledge of potential food distribution and		Year 6	Year 6	
~	access points for food products✓ Understanding of supply and demand principles	Year 7	Year 7	Year 7	Year 7
~	and the impacts of marketing on consumption Understanding of the health, economic, societal	Year 8	Year 8	Year 8	Year 8
	and environmental issues related to food marketing, access and consumption		Year 9		Year 9



Table 2: B Game Level Educational Goal Connections to Learning Area Strands

Game Level Goals	Science	Technologies	Health and Physical	Humanities and Social
			Education	Sciences
1. PRODUCTION	Science Understanding	Design and Technologies		Knowledge and
✓ Knowledge of natural resource requirements for plants		Knowledge and		Understanding -
to grow eg soils, water, sunlight, air	Science as a Human	Understanding		Economics and Business
 Understanding of agricultural practices, equipment, 	Endeavour			
technology, financial and market pressures		Design and Technologies		Inquiry and Skills
 Understanding of economic and environmental 	Science Inquiry Skills	Processes and Production		
sustainability of food production		Skills		
2. PROCESSING AND DISTRIBUTION	Science as a Human	Design and Technologies	Personal, Social and	Knowledge and
 Knowledge of potential food end products 	Endeavour	Knowledge and	Community Health	Understanding -
 Understanding of processing and distribution practices, 		Understanding		Economics and Business
technology, financial and market pressures	Science Inquiry Skills			
 Understanding of the health, economic, and 		Design and Technologies		Inquiry and Skills
environmental issues related to food processing and		Processes and Production		
distribution		Skills		
3. WASTE MANAGEMENT	Science as a Human	Design and Technologies		Knowledge and
 Knowledge of waste management and environmental 	Endeavour	Knowledge and		Understanding -
sustainability		Understanding		Economics and Business
 Understanding what processes in the food system 	Science Inquiry Skills			
produce waste and how to reduce waste throughout		Design and Technologies		Inquiry and Skills
the system		Processes and Production		
$\sqrt{100}$		Skills		
	Science as a Human	Design and Technologies	Personal Social and	Economics and Rusinoss
4. MARKETING, ACCESS AND CONSOLVETION	Endowour	Knowledge and	Community Health	Economics and Business
 Knowledge of potential food distribution and access points for food products 	Endeavour			Inquiry and Skills
Understanding of supply and domand principles and the	Science Inquiry Skills	Onderstanding		
impacts of marketing on consumption	Science inquiry skins	Design and Technologies		
\checkmark Understanding of the health economic societal and		Processes and Production		
environmental issues related to food marketing access		Skills		
and consumption		SKIIS		



Cross Curriculum Priorities

The 'Farm to Fork' game and learning activities address the **sustainability** cross curriculum priority² by encouraging students to think about current and future food production techniques and the ongoing capacity of Earth to maintain all life and meet the needs of the present without compromising the needs of future generations.

General Capabilities

The Australian Curriculum describes seven general capabilities which extend across each learning area. The 'Farm to Fork' game learning activities have been developed to assist teachers to address the following shaded capabilities.

	Literacy	Numeracy	ICT capability	Critical and creative thinking	Ethical understanding	Personal and social capability	Intercultural understanding
<i>'Farm to Fork'</i> Game Learning Activities							

Teaching and Learning Activities

The 'Farm to Fork' teaching and learning activities are provided to address each of the four levels in the game as well as the overall food system. These are suitable for a range of WA and Australian Curriculum learning areas including Science, Design and Technologies, Health and Physical Education and Humanities and Social Sciences.

Some of the activities are linked to multiple learning areas, either in a major or minor way. The activities can therefore be taught within a single learning area or as a cross curricular enquiry-based project.

² <u>https://www.acara.edu.au/curriculum/foundation-year-10/cross-curriculum-priorities/sustainability-ccp</u>



FARM TO FORK TEACHING AND LEARNING ACTIVITY RESOURCES

This section provides teaching and learning activities related to the overall food system Food System and the four levels of the *'Farm to Fork'* game: 1. Production, 2. Processing and Distribution, 3. Waste Management 4. Marketing, Access and Consumption.

These teaching and learning activities are suitable for a range of WA and Australian Curriculum learning areas including Science, Design and Technologies, Health and Physical Education and Humanities and Social Sciences

Some of the activities are linked to multiple learning areas, either in a major (large tick) or minor way (small tick) (Table 3). The activities can be taught within a single learning area or as a cross curricular enquiry-based project.

Click on the teaching and learning activity title in Table 3 for direct access to the activity documents.

Game level	Teaching and learning activity	Science	Design and Technologies	Health and Physical Education	Humanities and Social Sciences
1. Production	<u>Healthy Soils</u>	\checkmark			~
2. Processing and distribution	<u>Food Processing,</u> Nutrition and Health	✓	\checkmark	\checkmark	
3. Waste management	Food Waste	✓	\checkmark		\checkmark
4. Marketing, access, consumption	<u>Off to Market</u>			\checkmark	\checkmark
	<u>How Food Advertising</u> <u>Works</u>		\checkmark	\checkmark	✓
	Hot Potato Makeover		\checkmark	\checkmark	
5. Overall food system	What is a Food System?	~	\checkmark		\checkmark
	What Job is That?	\checkmark	\checkmark		\checkmark

Table 3: Learning Area Connections to Farm to Fork Teaching and Learning Activities and Game Levels



WHAT IS A FOOD SYSTEM?

Design and Technologies

Learning Task Intention:

At the end of this activity students should be able to

- Represent the journey of a food item through the food system.
- Understand the relationships between food, technology, health and the environment in the food system.



Background Information:

Our food system is complex, and each part of the system is critical to healthy food reaching us. After playing the game students will be able to identify the basic steps of the potato food system and begin to understand the factors that influence a healthy food supply.

Teaching Recommendation:

This learning task relates to all levels of the game and could be delivered across 2-3 lessons in a Design & Technologies – Food and fibre context.

It can be used as an introduction task for food production systems with the scope to extend the task to include an assessment for Food and fibre, by allowing students to research other food production systems and the key features of their design.

Equipment/Materials Required:

- *Refresh.ED* Food supply image cards 1 set per 4 students
- iPad for individual or partner use
- Farm to Fork ECU by Edith Cowan University https://apps.apple.com/au/app/farm-to-fork-ecu/id1513353482
- 'Farm to Fork' Individual Review sheet
- Group Discussion Questions

Key Words:

Food supply chain, food system, food and fibre, food production, primary production, waste, consumption, distribution



Lesson Sequence Overview:

STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
<i>Lesson 1</i>	Begin the class with an open discussion.
INTRODUCTION	Write FOOD on the board.
Identifying prior knowledge	ASK - What is food?
Class discussion to introduce the topic of food and	- Where does it come from?
where it comes from.	- How does it get to our plate?
ACTIVITY 1 Students are to work in groups of 4. They should review the image cards and discuss what each image symbolises with in a food system. Students should then group like images into different categories they believe are part of the food system. When the categories are finalised students will then try to place them in a logical order that might demonstrate the food system from farm to fork.	 Explain that students are going to look at the food system (the processes food goes through from farm to fork). Hand out <i>Refresh.ED</i> Image Cards – 1 set/4 students. https://www.refreshedschools.health.wa.gov.au/wp-content/uploads/2020/05/Food-Supply-Chain-Parts-Activity-Cards.pdf ASK What do these images symbolise? Can you group these items in to 5 "like" categories? ASK Can you now place those categories into a logical order, which might symbolise the process food goes through from farm to fork. At the end discuss and review the food system each group has produced. You might like to get each group to present the way they organised their system. You can then display the <i>Refresh.ED Food System</i> to the class and discuss the differences or similarities the students had with this model. EXTENSION – Elaborate on the explanation of the <i>Refresh.ED Food System</i>, such as economy, environment, society and technology. (Refer to <i>How to Teach the Food System – Teacher Information Sheet</i> for more information on this.
ACTIVITY 2	Facilitate and assist students as needed.
Students play 'Farm to Fork' individually. (Approx.	Facilitate class discussion to review the game once all
15min)	students have played it.



STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
Lesson 2 ACTIVITY 3 Replay 'Farm to Fork' game if required. Individually complete the 'Farm to Fork' review worksheet.	Review last lesson and highlight the key points outlined in the <i>'Farm to Fork'</i> game. Hand out <i>'Farm to Fork'</i> review worksheet.
ACTIVITY 4 In small groups, discuss and review one of the reflection questions. Prepare to report back your findings to the class.	Divide the class into 5 groups, hand out 1 discussion question to each group, and allow students to discuss the question. Some research may be required if internet access is available. Monitor small group discussions. Facilitate class discussion for each group to report back to the rest of the class and summarise their discussion question.

Links to Other Resources

Food Supply Chain – Activity Cards

https://www.refreshedschools.health.wa.gov.au/wp-content/uploads/2020/05/Food-Supply-Chain-Parts-Activity-Cards.pdf

Food System Model

http://www.refreshedschools.health.wa.gov.au/wp-content/uploads/2019/09/Refresh.ED-Food-System.pdf

How to Teach the Food System – Teacher Information Sheet

http://www.refreshedschools.health.wa.gov.au/wp-content/uploads/2019/09/How-to-Teach-Food-Systems-Teacher-Information-Sheet.pdf

Food Systems Additional Resources – Teacher Information Sheet

http://www.refreshedschools.health.wa.gov.au/wp-content/uploads/2019/09/Food-Systems-Additionalresources-Teacher-Information-1.pdf



Teacher Information Activity 1

Useful information and resources to deliver this activity

1. You will need to print and prepare the Food supply chain parts image cards for each group.

Refresh.ED food supply chain cards:

https://www.refreshedschools.health.wa.gov.au/wp-content/uploads/2020/05/Food-Supply-Chain-Parts-Activity-Cards.pdf



This is a basic example of a food supply chain.

2. Use this guide to teach the food supply system to students.

How to Teach the Food System – Teacher Information Sheet

https://www.refreshedschools.health.wa.gov.au/professional-learning/professionalknowledge/teacher-information-sheets/

3. Use this as an example of a food system diagram to show the class at the end of the lesson and in future lessons.

Refresh.ED Food System – Teacher Resource

https://www.refreshedschools.health.wa.gov.au/wp-content/uploads/2019/09/Refresh.ED-Food-System.pdf

'Farm to Fork' Review

Student Work Sheet

After playing the 'Farm to Fork' game.
 Identify the 4 stages of the 'Farm to Fork' game and describe what happens in each stage.



2. Using the *Refresh.ED Food System* model as a guide, what other processes/steps would be involved in the potato food system which are not identified in the game?



3. Using the knowledge you have learnt about food systems and the production of potatoes, draw a diagram that best represents the potato food system.

Potato Food System Diagram



Group Discussion Questions Activity 4

A. How do the potato producers need to respond to the demands of the customers once the Healthy Eating Advertising campaigns are implemented?

B. Which potato product/s resulted in the least amount of waste and why do you think this has happened? What could be done to further reduce waste when producing potato products?

C. When supply of potatoes is reduced or slower due to production conditions or supply problems (e.g. Bad weather results in a crop failing), what impact does that have on the marketplace?

D. What factors need to be considered for a product to be sustainable? What potato product/s from the game are the most sustainable to produce and why?

E. How do you think technology has changed the production of potatoes and potato products over the past 100 years? What impact has this had on our environment?

HEALTHY SOILS



Science

Learning Task Intention:

At the end of this activity students should be able to:

- Describe the importance of soil in agriculture of food crops.
- Identify properties needed for a healthy soil • and link quality soil types for food production.
- Explore soil types through task investigation. •
- Produce a written science report on soil analysis experiment.



Background Information:

Soil plays a vital role in primary production of food, carbon and water cycles and biodiversity. Nutrient deficient, poor irrigation and weeds can decrease the yield size and increase the waste. Through playing the game, students experiment with various healthy soil properties and solutions to improve soil quality, necessary for producing quality food crops. Improving the soil quality will work toward a more sustainable future as the soil is maintained and looked after for future harvests.

Potatoes prefer cool-warm temperatures with daytime temperatures of 15-20°C, they will not grow well in extreme heat. Potatoes are moderately sensitive to soil salinity and alkalinity. Potatoes grow in soils that are loamy and sandy loam soils that are rich in organic matter, with good drainage and aeration but not dry.

Teaching Recommendation:

This learning task focuses on the Production level of the game and can be completed across 3 lessons in a Science context. Students play 'Farm to Fork' game – approximately 15min. After playing 'Farm to Fork' students will watch video by NCRS on soil health and discuss. Students will then conduct their own soil analysis experiment, identifying the properties of healthy soil. Basic science investigation skills to be developed through a written scientific report. Students to be guided through class discussion, following group presentation of findings from experiment.

Equipment/Materials Required:

- iPad for individual or partner use
- Farm to Fork ECU by Edith Cowan University https://apps.apple.com/au/app/farm-to-fork-ecu/id1513353482
- Internet access for student research •
- Soil samples
- Experiment materials as listed in below experiments (3)

Key Words:

Soil, soil qualities, agriculture, food crop, investigation skills



Lesson Sequence Overview

STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
Lesson 1 INTRODUCTION	What do plants need to grow? Facilitate a class discussion about what plants need to grow and introduce the topic of healthy soils.
ACTIVITY 1 Play <i>'Farm to Fork'</i> game.	Facilitate students to play 'Farm to Fork' After playing the game, ask students what impact better/ poorer quality soil had on their potato harvest, and discuss the importance of soil in agriculture of food crons
ACTIVITY 2	Show video on YouTube by NCRS: Soil Health
 Watch video by NCRS: Soil Health <u>https://www.youtube.com/watch?v=_qM2fv6v3-I</u> In small groups students to identify and discuss Healthy soil and building practices to develop soil quality Soil types for food production Food waste for future crop harvests 	 From YouTube clip by NCRS: Can you identify at least four (4) healthy soil building practices? What are some benefits of rotating crops for the environment? How can cover-crops be important to increase productivity of future harvests? How can food waste and decaying matter be used to grow crops?
Lesson 2 INTRODUCTION	Explain that today students are going to do some soils analysis experiments.
ACTIVITY 1 Soil Analysis group experiments, as per <u>http://www.fao.org/3/a-i7957e.pdf</u> 1. Water Retention in Soil (pg.9) 2. Air in the Soils (pg. 11) 3. Separating Soil & Estimating Soil Texture (pg. 13)	Divide students into 3 groups and allocate one of the three FAO experiments to each group. Facilitate class experiments.
In small groups, students to discuss design and observations they will make.	
ACTIVITY 2	
 Write a scientific report on soil analysis experiment. Complete the following headings: Aim Materials Risk Assessment Method 	 Guide students to complete the following headings of their scientific report Aim Materials Risk Assessment Method



STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
Lesson 3 INTRODUCTION	Students to return to their experiment small group;
ACTIVITY 1 Complete scientific report headings: • Results • Discussion	Guide students to complete the following headings of their scientific report Results Discussion
ACTIVITY 2 Students (in small group) to present and provide feedback on their experiment observations/ findings.	Facilitate class discussion, following group presentations of findings from experiment.

Recommended Extension Activities

GROWING POTATOES

In this experiment students will plant potato seeds and observe how they grow under varying conditions <u>https://todatoes.com.au/wp-content/uploads/2019/05/Activity-pages-Growing-experiment_LR.pdf</u>

Links to Other Resources:

Examples of potential farming practices to improve crop yield and decrease waste **Information on testometers** as an irrigation practice for optimal soil level to ensure water crop demand is met <u>https://www.agric.wa.gov.au/water-management/scheduling-irrigation-potatoes-using-tensiometers-south-west-</u> <u>soils</u>

Potato Cultivation – Soil, Climate, Water <u>http://www.fao.org/potato-2008/en/potato/cultivation.html</u> <u>https://cipotato.org/crops/potato/potato-facts-and-figures/</u> <u>http://www.fao.org/land-water/databases-and-software/crop-information/potato/en/</u> <u>https://spudsmart.com/managing-soil-health-potatoes/</u>



Soil Analysis

Student Activity Sheet

- 1. In small groups students to download one of the experiments titled below from FAO http://www.fao.org/3/a-i7957e.pdf
 - a. Water Retention in Soil (pg.9)
 - b. Air in the Soils (pg. 11)
 - c. Separating Soil & Estimating Soil Texture (pg. 13)
- 2. In small groups, students to discuss design and observations they will make.
- 3. Students conduct chosen group experiment 1-3.





Soil Analysis Written Report

Student Activity Sheet

In this task you will write a scientific report on your soil analysis.

What to do:

- 1. Collect all the data you have recorded during the experiment and follow the steps below to write your report.
- 2. Your report should be written under the following headings:
 - **Aim**: A single sentence stating clearly what the experiment is designed to investigate.
 - **Materials**: Make a list of the equipment that you used.
 - **Risk assessment**: Identify and assess any risks; give precautions taken.
 - **Method:** This is a record of the steps and procedures during the experiment. It is usually written in report style (third person, past tense) and should include a diagram of the experimental set-up.
 - **Results**: Record observations and measurements in a table where possible. You may also have some photographs or drawings. A **graph** of results should be included here.
 - Discussion:
 - Describe any trends that you observed. Refer to your graph and any other observations you recorded.
 - Explain your results.
 - Are your results similar to those of other class members? How can you be more certain of reliability?
 - Describe any problems in your experiment and suggest improvements.
 - **Conclusion:** Refer back to the aim of the experiment and summarise it in a sentence.



FOOD PROCESSING, NUTRITION AND HEALTH

Health and Physical Education Design and Technologies

Learning Task Intention:

At the end of this activity students should be able to:

- Identify common food processing techniques
- Analyse the positive and negative impacts of different food processing techniques on the nutritional value of food products.
- Analyse the positive and negative impacts of different food processing techniques on the health of consumers.



Background Information:

We use technology every day to process our food. Food is altered or changed through both simple/primary (e.g. washing, chopping) and complex/secondary and tertiary (dehydrating) processing methods.

Food processing has both positive and negative effects on the nutritional value of food products and the health or individuals who consume them.

It is recommended teachers use the additional *Teacher Information* pages for further information on food processing techniques and classifications of processing that link to health.

Students will need to have some prior knowledge on reading food labels to assist them to complete this task, or alternatively there are support documents provided to assist with teaching food labelling during this learning experience.

Teaching Recommendation:

This learning task focuses on two levels of the game; Processing and Distribution; and Marketing, Access and Consumption levels. It can be completed across 2-3 lessons in a Design and Technology-Food or a Health and PE context.

The 'Farm to Fork' game takes approximately 15 minutes to play and can be used to introduce students to the processes used to manufacture food products.

In the game, during the processing stage, players are responsible for turning the potato into products including fries, crisps, salad and table potatoes for selling at the market via food processing techniques. Here, washing, drying and cutting of all potatoes occurs. Fries and crisps are in addition, put through frying machine which create additional waste and alter their nutritional value.

The aim for the player is to increase sales of whole food options (salad and whole potatoes) and decrease sales of the more processed options (fries and crisps). It is recommended students play the game as an introduction to this topic and again after completing their learning tasks with the aim to improve their game results.

Equipment/Materials Required:

- iPad for individual or partner use
- Farm to Fork ECU by Edith Cowan University https://apps.apple.com/au/app/farm-to-fork-ecu/id1513353482
- Internet access for student research

Key Words:

Food processing techniques, nutritional value, food labels, health, unprocessed, minimally processed, ultra-processed



Lesson Sequence Overview:

STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
Lesson 1 INTRODUCTION	Begin with a class discussion: What is a processed food? Do processed food products have the same nutritional value as unprocessed/raw foods?
Play the game and see what potato products can be produced and sold.	Explain that students are going to play 'Farm to Fork' and explore what potato products can be made.
Students complete question 2.	Hand out the Student Activity Sheet
Students to complete question 3 and 4.	Guide students through a discussion to think about how food is processed into different products. Use the Teacher Information page to assist students to understand the different types of processing techniques and the 3 levels of processing (unprocessed, minimally processed and ultra-processed).
Students complete question 5 by watching the videos.	
How to make potato chips - Factory Production <u>https://www.youtube.com/watch?v=REqhl-s97LE</u> BetaSpuds – Fresh Potato Processing <u>https://youtu.be/i65ffhhq0fU</u> How Its Made - 323 Frozen French Fries <u>https://www.youtube.com/watch?v=vjs1LLaxXrA&featu</u> <u>re=youtu.be</u> How It's Made Potato Salad <u>https://www.youtube.com/watch?v=GBzi1da11774</u>	



STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
Lesson 2 INTRODUCTION Using online grocery shopping websites research one of the four (4) potato products per person. Record your finding on the worksheet.	Review the previous lesson. Divide the class into groups of 4 and distribute the Product Information worksheets. Prepare 4 continuums on the board for students to see and later record their findings. Healthy food choice → Unhealthy food choice Minimally processed → Ultra-processed Minimal waste → A lot of waste Cost \$1/kg → \$10/kg Encourage students to place their potato product on display indicating where it fits best on the continuum.
Take your completed information card and place it on the continuum indicating where you think your potato product fits on the line.	Discuss the class findings. How healthy is the product? (Encourage students to use the Understanding Food Labels document to compare the salt, fat, sugar and dietary fibre values to those that are recommended). How processed is the product? How much waste is produced during production? What is the cost of the product?
Students independently complete the final questions 3- 6 in section 2.	
Replay <i>'Farm to Fork'</i>	Encourage students to replay with the aim to increase sales of whole food options (salad and table potatoes) and decrease sales of the more processed options (fries and crisps).

Links to Other Resources:

Understanding food labels – Eat for Health https://www.eatforhealth.gov.au/eating-well/how-understand-food-labels



Food Processing Teacher Information

What is food processing?

Most food we consume undergoes a level of processing at some point from farm to fork. Food processing is the process of taking raw products and turning them into consumable foods. These processes are used to make food safer and more palatable for human consumption. Some foods can be consumed with very minimal processing however others are not able to be safely digested unless some level of processing occurs. For example, milk must be pasteurised, and potatoes and other starch products must be cooked to aid digestion.

Food processing can occur in the home when consumers wash, chop, peel, and cook food items. It also occurs at industry levels and takes place at various stages in the food supply chain, it could be the washing and packaging of raw food items, such as fruit and vegetables, in on-farm processing sheds. It also includes the industrialised processing of food items in factories where foods are prepared, modified and packaged.

Food processing grades

There are different grades of processing which can be described as -

Primary Food Processing	Secondary Food Processing	Tertiary Food Processing
Primary food processing is the	Secondary food processing is the	Tertiary food processing is the large-
process of turning raw products into	process of using ingredients	scale manufacture of ready-to-eat
foods that can be consumed. In	produced through primary food	foods using multiple types of
some cases, the food is ready to be	processing to create ready-to-eat	processing to reach their final,
consumed once primary processing	foods. An example of this is using	consumable forms. For example,
is finished. An example is jerky made	flour to make dough and then	tortilla chips. Corn is grown, then
from smoked meat. In other cases,	baking the dough to create bread.	harvested and soaked in an alkaline
primary processing turns the	Other examples include fermenting	solution – before being made into
product into an ingredient that can	grape juice with wine yeast to create	dough. Then, the dough is used to
then be made into a consumable	wine and using ground meat to	create tortillas, which are then cut
food, such as milling grain to create	make sausages.	and either baked or fried into chips.
flour.		
		The term "processed food" typically
		refers to products manufactured
		through tertiary food processing.

For further information on methods of food processing read -

Methods of Food Processing https://bizfluent.com/info-8111635-methods-food-processing.html

To explore more examples of food processing techniques and the purpose of food processing read this article.

Processed Food: What Is the Purpose of Food Processing? <u>https://www.eufic.org/en/food-production/article/processed-food-qa</u>

Food processing: The Advantages of Processed Foods <u>https://www.eufic.org/en/food-production/article/the-greatest-thing-since-sliced-bread-a-review-of-the-benefits-of-processed</u>



Processed food, nutrition and health

As indicated above most foods as purchased and consumed are processed to some extent. For this reason, popular criticisms of 'processed food' are not useful, particularly with reference to the nutritional value and health consequences of consumption. The <u>NOVA classification of foods</u>, now used internationally by WHO and FAO, helps to bridge this gap.

NOVA classifies all foods and food products into four groups as shown in the table below according to the nature, extent and purposes of the industrial processes they undergo.

NOVA group	Description	Examples
GROUP 1:	Edible parts of plants and animals after	Edible parts of plants (fruit, stems, leaves,
Unprocessed	separation from nature or modified/	seeds, roots) or animals (muscle, offal, eggs,
and minimally	preserved by minimal processes with no	milk) as well as fungi, algae and water
processed foods	substances added (eg freezing,	
	pasteurisation, fermenting, drying,	
	bottling, packaging)	
GROUP 2:	Substances extracted from group 1 foods	Salt, sugar, flour, oils or fats traditionally used
Processed	or else from nature by processes such as	to prepare, cook and season groups 1 & 2 foods
culinary	pressing, refining, grinding, milling, and	but rarely consumed by themselves. Now used
ingredients	drying.	at industrial levels as a dominant ingredient in
		ultra-processed foods
GROUP 3:	Group 1 foods modified with the addition	Canned or bottled vegetables or legumes
Processed foods	of salt, sugar, oils, fats to preserve and	(pulses) preserved in brine; whole fruit
	enhance their sensory qualities.	preserved in syrup; tinned fish preserved in oil;
	Most have two or three ingredients and	some types of processed animal foods such as
	usually retain the basic identity of the	ham, bacon, pastrami, and smoked fish; most
	original food.	freshly baked breads; and simple cheeses to
		which salt is added
GROUP 4 Ultra-	Formulations resulting from a sequence	Carbonated soft drinks; sweet, fatty or salty
processed foods	of processes that include fractioning	packaged snacks; candles; mass produced
	whole foods into substances,	packaged breads and buns, cookies (biscuits),
	modification and recombination of these	pastries, cakes and cake mixes; margarine and
	substances, use of cosmetic additives and	other spreads; sweetened breakfast cereals
	sophisticated packaging , all aiming to	and fruit yognurt and 'energy' drinks; pre-
	optain durable, ready-to-consume, hyper-	prepared meat, cneese, pasta and pizza dishes;
	palatable and profitable products with	poultry and fish inuggets' and isticks'; sausages,
	potential to replace all other food groups	burgers, not dogs and other reconstituted meat
	with toods of low nutritional value.	products; powdered and packaged 'instant'
		soups, noodles and desserts; baby formula

NOVA food classification

Ultra-processed foods are the group most associated with poor nutritional intake and the occurrence of several noncommunicable diseases, including obesity and obesity-related outcomes, cardiovascular and metabolic diseases, breast and all cancers, depression, gastrointestinal disorders, frailty in the elderly, and also premature mortality.

The high or excessive content of added sugar, saturated and trans fats, and sodium, and also high dietary energy density; and low content of protein, fibre and potassium certainly contribute, but there is also growing evidence the extensive processing per se is part of the problem, affecting the way food is digested and metabolised in the body.



The convenience and attractiveness of ultra-processed foods as defined by NOVA and their aggressive marketing, are among the reasons why they now amount to about half of the total dietary energy consumed in high-income countries including Australia

Group 1 Minimally processed	Group 3 Processed	Group 4 Ultra-processed
Corn	Canned corn	Corn chips
Apple	Apple juice	Apple flavoured do-nut
Potato	Baked potato	French fries
Beef	Minced beef	Beef sausage
Wheat	Flour	Cookies

Forms of common foods classified by level of processing using NOVA

Ultra-processed foods and environment

Ultra-processing of foods also contributes significantly to total food-related environmental effects. In Australia, this amounts to 35 percent of water use, 39 percent of energy use, 33 percent of carbon dioxide equivalents, and 35 percent of land use. If dietary trends continue, per-capita greenhouse-gas emissions from empty calories are estimated to nearly double by 2050. Therefore, reduction of ultra-processed food consumption is a priority for reducing the environmental effects of the food system.

For further information on ultra-processed foods and NOVA classification read -

Ultra-processed food-What it is and how to avoid it. <u>https://www.abc.net.au/news/health/2019-06-</u>19/ultraprocessed-food-what-is-it-and-how-do-i-avoid-it/11216306

Ultra-processed foods, diet quality, and health using the NOVA classification system. http://www.fao.org/3/ca5644en/ca5644en.pdf

For further information about how potatoes can be processed refer to -

Potato Processing and Uses

https://cipotato.org/potato/potato-processing-uses/



Food Processing and Nutrition Student Activity Sheet

The 'Farm to Fork' game requires you as the player to grow, process, manage the waste and market potatoes from the farm to the fork.

Section 1:

Let's play

1. Play the game and see what potato products you can produce and sell.

After playing the game answer the following questions and write your responses on paper or a workbook.

2. What were the 4 potato products you had to produce in the game?

Let's do some research on food processing

As a class discuss food processing techniques.
 There are different grades of processing techniques, provide examples for each grade

Primary	Secondary	Tertiary

- 4. Define the following terms and give an example of a food product for each
 - Minimally processed
 - Processed
 - Ultra-processed
- 5. What techniques do you think were used to produce the 4 potato products in the game? Record your findings in your workbook.

Watch these videos to assist you.

How to Make Potato Chips - Factory Production https://www.youtube.com/watch?v=REqhl-s97LE

BetaSpuds – Fresh Potato Processing https://youtu.be/i65ffhhq0fU

How It's Made - 323 Frozen French Fries https://www.youtube.com/watch?v=vjs1LLaxXrA&feature=youtu.be

How It's Made Potato Salad https://www.youtube.com/watch?v=GBzi1daU774



Section 2:

Let's explore the nutritional value of potato products:

Use online shopping websites to find samples of the 4 potato products you made in the game, these sites should include pictures of the packaging and food labelling information.

- 1. In a group of 4 select one of these products per person and research
 - a) the ingredients in the product
 - b) the nutritional value Energy (KJ)
 - Fat (g)
 - Sugar (g)
 - Salt/Sodium (g)
 - c) write a nutritional label for this product using the template attached
 - d) list the food processing techniques you think where used to produce this item, is it unprocessed, minimally processed or ultra-processed?
 - e) consider how much waste you think was created when producing this product and where the waste come from.

You can record all this information on the Product Information worksheet provided.

Let's share:

- 2. As a class you are going to place your food item on 4 continuums provided by your teacher on the board.
 - a) Healthy food choice
 b) Minimally processed
 c) Minimal waste
 Not so healthy food choice
 Ultra-processed
 A lot of waste
 - d) Cost \$1/kg \$10/kg

Based in the ingredients and the nutritional value, where on the continuum a) would you place your food item?

Let's review:

- 3. Looking at the continuums which potato product is the 'best choice' to purchase if you were given an option as a consumer? What factors would influence your purchasing decision?
- 4. Do food processing techniques have an impact on the nutritional value of potatoes? Explain.
- 5. If processed products are higher in fat, salt and sugar and lower in dietary fibre what health impacts does this have on the consumer?
- 6. According to the nutritional values of each potato product which is the healthiest way to prepare potato?
- 7. Does the level of processing a product goes through, have an impact on the amount of waste produced during production? Explain.
- 8. What impact can this have on our environment and what as consumers can we do to reduce waste from food production?

Let's play again:

Play 'Farm to Fork' again. This time aim to produce food products that are minimally processed and have better nutritional value and to see what impact that has on the amount of waste produced during processing and the Waste Meter.

Also consider what health benefits there are for the consumers if there are healthier options available in the store.



Product Information

Worksheet

Potato Crisps		
Ingredients:	Food processing techniques used:	Cost/KG:
Nutritional Value /100g		
Energy		Waste produced in
Fat		production:
Sodium		
Sugar		
Dietary Fibre		

Potato Fries		
Ingredients:	Food processing techniques used:	Cost/KG:
Nutritional Value /100g		
Energy		Waste produced in
Fat		production:
Sodium		
Sugar		
Dietary Fibre		



	Potato Salad	
Ingredients:	Food processing techniques used:	Cost/KG:
Nutritional Value /100g		
Energy		Waste produced in
Fat		production:
Sodium		
Sugar		
Dietary Fibre		
``````````````````````````````````````		
·/		
Ingredients:	Whole Potato Food processing techniques used:	Cost/KG:
Ingredients:	Whole Potato Food processing techniques used:	Cost/KG:
Ingredients: Nutritional Value /100g	Whole Potato Food processing techniques used:	Cost/KG:
Ingredients: Nutritional Value /100g Energy	Whole Potato Food processing techniques used:	Cost/KG: Waste produced in
Ingredients: Nutritional Value /100g Energy Fat	Whole Potato Food processing techniques used:	Cost/KG: Waste produced in production:
Ingredients: Nutritional Value /100g Energy Fat Sodium	Whole Potato Food processing techniques used:	Cost/KG: Waste produced in production:
Ingredients: Nutritional Value /100g Energy Fat Sodium Sugar	Whole Potato Food processing techniques used:	Cost/KG: Waste produced in production:



# FOOD WASTE

## Design and Technologies Humanities and Social Sciences

# Learning Task Intention:

#### At the end of this activity students should be able to:

- Understand how food wastage can occur in the food production system
- Understand the impact food waste has on the environment
- Explore strategies to reduce food waste at different points of the food production chain



# Background Information:

In Australia:

- The Government estimates food waste costs the Australian economy \$20 billion each year.
- Over 5 million tonnes of food end up as landfill from households and the commercial sector.
- One in five shopping bags full end up in the bin = \$1,050 worth of groceries for the average household each year.
- 35% of the average household bin is food waste.

https://www.ozharvest.org/fight-food-waste/food-waste-facts/

Conventional food systems are based on maximising efficiency and rely heavily on the use of fossil fuels like coal, gas and diesel and the use of fertilizers to maintain food production; this can also cause problems with greenhouse gas emissions and other pollution.

In the game 'Farm to Fork', the potato food chain produces food waste at each stage of the game and as a result the waste metre increases. For example, when potatoes are left in the ground too long the crop spoils, making these potatoes go to waste and the waste meter to increase. This type of waste in production is referred to as food loss. Waste is also generated in the game via food processing.

There are many ways to help reduce food waste and there are many current initiatives regarding food waste or food/energy conversion.

Ways to reduce food waste can include:

- Excess donated to soup kitchens.
- By products fed to livestock
- Manufacture of biofuels and by-products such as building materials
- Composting
- Reducing at the source-individuals can avoid purchasing food they will not use, purchase locally grown

# Teaching Recommendation:

This learning task focuses on the Waste Management level of the game and can be completed across 2-3 lessons in a Design and Technology-Food or a Humanities and Social Sciences context. Teachers can use the 'Farm to Fork' game to develop students understanding of food waste and its impact on the environment.

It is recommended that students play the game once, then discuss their observations about waste in the game before playing the game again with the specific target of keeping the Waste Meter low.

The Waste Meter is in the bar at the top of the game screen.



# Equipment/Materials Required:

- iPad for individual or partner use
- The app Farm to Fork ECU by Edith Cowan University
   <u>https://apps.apple.com/au/app/farm-to-fork-ecu/id1513353482</u>
- Internet access for student research.

# Key Words:

Food waste, compost, biofuels, food system, environment



# Lesson Sequence Overview:

STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
Lesson 1 INTRODUCTION	<ul> <li>What is food waste? <ul> <li>Discuss examples food waste.</li> </ul> </li> <li>Why is food wasted?</li> <li>What happens when organic waste goes into landfill?</li> <li>What gas is produced?</li> <li>Review Australia's Food Waste statistics. Display this infographic for students to read and discuss.</li> <li>https://www.foodwise.com.au/foodwaste/food-waste-fast-facts/</li> <li>Additional information:</li> <li>https://www.foodbank.org.au/food-waste-facts-in-australia/?state=wa</li> </ul>
ACTIVITY 1 Review the Food System Model and as a class discuss how and where waste is produced in the food production process.	Explain that all food comes on a journey before we eat it. Display the Food System Model <u>http://www.refreshedschools.health.wa.gov.au/wp-</u> <u>content/uploads/2019/09/Refresh.ED-Food-System.pdf</u>
	When in the food supply process does waste occur?
Play <i>'Farm to Fork'</i> Game	Guide students to access and play 'Farm to Fork'. 10 minutes into game, stop students and ask them to locate the Waste Meter. Ask students - where they have seen waste being produced. How much have they produced? Allow students to finish the game by successfully selling 20 Potato Salads and 30 bags of whole potatoes
<ul> <li>ACTIVITY 3</li> <li>After playing the game. <ul> <li>List the 4 stages of the game</li> <li>Identify what waste is produced in each stage of the game.</li> <li>What impact can the potato waste have on the environment?</li> <li>What alternative products can be produced from potato waste?</li> </ul> </li> </ul>	Guide students through a reflection on what they learnt about potato waste while playing the game. Environmental hazards – food scraps in landfill create methane Alternate uses include – biofuel – ethanol used for energy, animal feed Discussion questions - What can we do to reduce the amount of food being sent to landfill? What are the advantages of composting organic waste? Additional information: https://cipotato.org/potato/potato-processing-uses/



STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
Lesson 2 INTRODUCTION	Review the previous lesson and summarise what they learnt about food waste.
ACTIVITY 1 Replay <i>'Farm to Fork'</i> with the aim to keep the waste meter as low as possible.	<ul> <li>Discuss what strategies players must take to keep waste at a minimum.</li> <li>e.g. Add water and soil improver to limit spoilt crops.</li> <li>Produce whole potatoes and salad, not chips and crisps</li> <li>Don't allow waste to go to landfill</li> <li>Sell more whole potatoes and salad by advertising healthier alternatives at the market</li> </ul>
ACTIVITY 2 Research food waste in Australia.	Ask the class
<ul> <li>Create a flyer/poster/infographic which outlines food waste.</li> <li>Include <ul> <li>A definition/description of food waste</li> <li>Statistics</li> <li>What impacts food waste has on our environment.</li> <li>Suggested ways in which we can reduce food waste at home.</li> <li>Suggested ways in which we can reduce food waste in the food system.</li> <li>Find a local organisation what is helping to fight the war on food waste. Promote this</li> </ul> </li> </ul>	year?
organisation in your flyer/poster/infographic.	Ask students to report their findings back to the class

# Links to Other Resources:

Additional Australian food waste information https://www.lovefoodhatewaste.nsw.gov.au/

https://www.foodbank.org.au/food-waste-facts-in-australia/?state=wa

https://sustainabletable.org.au/wp-content/uploads/infographic-food-waste-facts-big.png



# OFF TO MARKET Humanities and Social Sciences

# Learning Task Intention:

At the end of this activity students should be able to:

 Identify how businesses respond to demand of consumers



# Background Information:

This lesson sequence explores how businesses respond to, and influence, the changing demands of consumers in contemporary Australia. The '*Farm to Fork*' game is employed as a springboard to examine the relationship between consumers and producers. During these lessons, students will conduct independent research, collaborate with peers and participate in whole-class activities to explore the concept of business-consumer interdependence. Students will also explore how consumers' preferences change and the ways in which businesses respond to this, from marketing to environmental awareness. Finally, students will engage with the concept of sustainable food production and begin to explore how businesses set prices for their products.

# Teaching Recommendation:

This learning task focuses on the Marketing, Access and Consumption level of the game and could be taught over 4 lessons as part of an Economics and Business unit following an investigation of how consumers rely on businesses to meet their needs and wants. The focus is primarily on how businesses respond to the changing demands of consumers but could extend (given sufficient time) into product pricing strategies.

# Equipment/Materials Required:

- iPad for individual or partner use
- Farm to Fork ECU by Edith Cowan University https://apps.apple.com/au/app/farm-to-fork-ecu/id1513353482
- Internet for research

# Key Words:

Consumer, demand, market, producer, good, service, economy

# Acknowledgement:

This learning activity was created for '*Farm to Fork*' by ECU School of Arts and School of Education alumnus Dr Benjamin Alexander Hale.



# Lesson Sequence Overview:

STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
Lesson 1	
<ol> <li>Review of prior learning – How consumers rely on businesses.</li> </ol>	<ul><li>What is a producer?</li><li>What is the difference between a good and a</li></ul>
<ol> <li>Introduce this week's learning goals:</li> <li>To identify how businesses, respond to the</li> </ol>	service? What is the difference between a need and a want?
different demands of consumers.	<ul> <li>How do consumers rely on businesses?</li> </ul>
ii) To explain the different ways businesses and	
producers are <u>interdependent.</u>	Can anyone explain what interdependence
<ol> <li>Introduce the concept of interdependence between consumers and producers.</li> </ol>	means? What does it mean in this context?
4. Class discussion to review students' prior	<ul> <li>How do businesses respond to the demands of</li> </ul>
understandings	consumers?
<ol> <li>Activity – 'Farm to Fork'</li> <li>Provide a (very) brief walktbrough of how</li> </ol>	
the <i>'Farm to Fork'</i> game works and expectations of conduct.	
<li>b. Allow students to play through the game – making a note of any participant questions.</li>	
<ol> <li>Plenary discussion</li> </ol>	• How did everyone do? Who got the highest score?
a. Ask about their performance and draw	What choices did you make?
attention to the producer consumer relationship in the game.	<ul> <li>What did you do that we could learn from - i.e. did you buy any upgrades early on or advertise</li> </ul>
7. Exit Ticket - Answer the following question:	specific products?
How are consumers and producers interdependent?	<ul> <li>Did this change? How? Why do you think this is?</li> <li>How does this relate to the concent of</li> </ul>
<u></u>	interdependence?



STUDENT AC	TIVITY	TEACHER FOCUS QUESTIONS
Lesson 2 1. Review of previous lesso 2. Define 'market research' relevance to the topic.	n. and explain its	What is the relationship between consumers and producers?
<ol> <li>Think-Pair-Share: If you v in your pair and sell a goo would you sell and why?</li> <li>a. Students make a list a that you would consid owner when deciding to sell.</li> </ol>	od or service, what as a class of the factors der as a business what good or service	<ul> <li>Which of these factors did you consider when deciding what potato products to make in the game? Why?</li> </ul>
4. Students explore the Aus Health and Welfare web nutrition in Australia (All-	tralian Institute for bage on food and HW) Food & Nutrition	<ul> <li>Was anyone surprised by anything they found out? Why was that surprising?</li> <li>It states that Australians of all ages have a poor diet – why might this be the case? What does the</li> </ul>
<ol> <li>Summary of Australian e traditional Australian foc a. Students list 2-3 food frequently eat/drink a alternatives.</li> <li>Conduct a class discust</li> </ol>	ating habits – Top ten ods (Resource Sheet1) s/drinks they and research healthier ssion	<ul> <li>website say?</li> <li>Why is that a healthier alternative? What else could you eat instead? What other factors might affect what (or where) we choose to eat? i.e. ethics of the business; environmental impact; community and charity involvement.</li> <li>What factors affect how we spend money on food/drinks? How do businesses respond to the changing preferences of Australian consumers?</li> </ul>
<ol> <li>Students read about Austhabits and answer computed written handout Austhabits Student Activity Shot C. Conduct a plenary disting a structure of the structure of th</li></ol>	tralia's changing food rehension questions on tralia's Changing Food neet cussion	



STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
<ul> <li>Lesson 3</li> <li>1. Review of previous lesson</li> <li>2. Think-Pair-Share: What makes a business "environmentally friendly"?</li> <li>3. Environmental Sustainability</li> <li>4. Watch the World Wildlife Fund (WWF) video Change the Way You Think About Food <ul> <li>a. and ask comprehension questions</li> <li>b. Students read through the webpage on food production' answer questions i-iii.</li> <li>i. How does food production affect the environment?</li> <li>ii. What is sustainable food production?</li> <li>iii. How can we make food production more sustainable?</li> </ul> </li> <li>c. Discuss examples of environmentally friendly changes to Australian products</li> <li>d. Short class discussion about Woolworths'</li> </ul>	<ul> <li>What are Australia's most popular traditional foods? What factors might you consider when selling a product/service?</li> <li>Is there a problem with how we use land? What about water? How can we fix this?</li> <li>What are some examples of environmentally friendly changes to Australian products?</li> <li>Is this environmentally responsible? How? Could this be applied elsewhere?</li> </ul>
<ul> <li>5. Shaping consumer decisions <ul> <li>a. Class Discussion: Do consumers always know what they want or can producers shape their preferences? How?</li> <li>b. Explain how companies use advertising to shape consumer behaviour – For examples use advertisements for [video] <u>Kia Nero Eco</u> and [video] <u>Old Spice Danger Zone</u></li> </ul> </li> <li>6. Conduct a plenary discussion</li> </ul>	<ul> <li>How does marketing affect what we buy? i.e. brand identification, aspirational lifestyle, aligned values.</li> <li>What food products have you seen advertised on TV recently? Are they shown to be healthy/environmentally friendly/nutritious? Why do you think this is (or isn't) the case?</li> <li>What makes an environmentally sustainable business? How do producers shape consumers preferences?</li> </ul>

STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
Lesson 4	
<ol> <li>Review of previous lesson</li> <li>In groups students reattempt the 'Farm to Fork' Game with different objectives         <ul> <li>a. In each group two students are selected to attempt each of the following: i) positively affect the health of the town (nutrition); ii) produce as little waste as possible; or, iii) make as much money as possible. Scores are calculated from the average of each</li> </ul> </li> </ol>	<ul> <li>What is an environmentally friendly business? How does marketing affect what we buy?</li> </ul>
<ul> <li>group.</li> <li>b. Class discussion – establish the reasons for success (or failure)</li> <li>c. Think-Pair-Share: Are these objectives totally independent or is there a link between them?</li> </ul>	<ul> <li>Which groups did the best? Why do you think that is?</li> <li>What did you find the most challenging about this activity? Why was that difficult?</li> <li>How does this relate to customer preferences?</li> </ul>
<ul> <li>3. Pricing Strategies <ul> <li>a. Establish how businesses set prices for goods and services.</li> <li>b. Using the handout (Different Pricing Strategy <i>Student Activity Sheet</i>) explain and discuss different pricing strategies.</li> <li>c. Earlier this week I asked you "If you were to start a business in your pair and sell a good or service, what would you sell and why?",</li> </ul> </li> </ul>	<ul> <li>How do businesses set a certain price for a product?</li> <li>What factors might affect how much a potato product costs? i.e. demand, competition, prestige.</li> </ul>
<ul> <li>now I want you to write a short response outlining which pricing strategy you would use and why.</li> <li>d. Conduct a class discussion to clarify any misunderstandings among students.</li> </ul>	<ul> <li>Who believes they have achieved goal a/b?</li> <li>So, how do businesses respond to consumers preferences? What are some of these preferences?</li> <li>How are businesses and producers interdependent? Explain.</li> </ul>

# Links to Other Resources:

[webpage] (AIHW) Food & Nutrition [webpage] What the changing food habits of Australians tell us [video] WWF -Change the Way You Think About Food [webpage] Food Production: A sustainable food supply [video] Woolworths' Zero Waste Trial [video] Kia Nero Eco [video] Old Spice Danger Zone

#### Created Resources*

Australia's top ten traditional foods (Resource 1) [Handout] Australia's changing food habits (Resource 2) [Handout] Different pricing strategies (Resource 3) *Created by Dr Benjamin Alexander Hale



# Australia's top ten most popular 'traditional' foods Resource Sheet



#### #1 Chicken Parmigiana

#3 Lamingtons

# #2 Barbequed snags (Sausages)



#4 Anzac Biscuits



#5 Pavlova





#6 Meat Pies





# Australia's top ten most popular 'traditional' foods

### #7 Fish & Chips



#8 Vegemite on Toast



# #9 Cadbury Cherry Ripe



#10 Fairy Bread





# Australia's Changing Food Habits

Student Activity Sheet

Read the following article <u>What the changing food habits of Australians tell us</u> and answer the questions below:

1. What are the four major trends in Australian eating/drinking habits?

2. Are Australians eating enough fruit and vegetables? Yes / No

3. What percentage of Australians are eating their lunches at their desks?

- 4. Sourdough producers are more trustworthy than other bread producers? True / False
- 5. What is an example of retailers attempting to reduce food waste?

6. Which of the four food trends identified in the article is related to environmental issues?



# **Different Pricing Strategies**

# Student Activity Sheet

There is a link between the price charged for an item or service and the quantity bought. For example, if a *Cherry Ripe* was to rise from \$1 to \$2 per bar and the size did not change then many customers would stop buying them. Instead, they would purchase a different chocolate bar. To generalise, a rise in price (in most cases) = drop in demand for the product.

However, this is not always the case! Some necessary commodities will not fall in demand despite rising prices. An example of this is petrol - most motorists will purchase the same amount of petrol regardless of an increase or decrease in price.

Businesses have to decide what price they want to charge for their goods or services. They know if the price they set is too high then the demand will be low. There are, however other factors that need to be considered when setting prices.

- Competition based pricing businesses must charge around the same price as their competitors or consumers will go elsewhere.
- Prestige pricing charging a higher price because of the reputation of a product e.g. Apple iPhones, Tesla Cars, or Margaret River chocolate.
- Discrimination pricing charging different prices for different people e.g. student discount or senior citizen specials.
- Penetration pricing cheaper prices to get noticed in a new market. You start off with a low price to get people interested, then increase it as time goes on.
- Price Skimming setting a high price for a new product before other competitors come into the market, i.e. iPhone 11, Samsung Galaxy S20, Nintendo Switch.

### TASK:

Write a short response outlining and **explaining** which pricing strategy you would use for the business you made up earlier in the week.



# HOW FOOD ADVERTISING WORKS

Health and Physical Education Design and Technologies

# Learning Task Intention:

#### At the end of this activity students should be able to:

- Examine persuasive advertising techniques and how these can be used to promote food options.
- Describe how food marketing influences food choices.
- Plan and develop an information resource to promote healthy food options to students in the school



# Background Information:

In the game, the player puts together a range of food advertisement posters to promote healthy, sustainable options of potatoes to the people of Potato town. These posters help change the food choices of the town's people and increase the wellbeing of the population, improve the food supply chain and reduce waste. Students learn to:

Choose foods in season, locally grown, healthier side dishes when dining out, choosing minimally processed foods without added sugar, salt and fat.

# Teaching Recommendation:

This learning task focuses on the Market level of the game. It aims to highlight the influences advertising has on our food choices. The task is designed to be taught over 2-3 lessons but can be extended with an individual/small group project task at the end.

The game 'Farm to Fork' is used to introduce the topic of food marketing/advertising and the influences it has on our food choices.

# Equipment/Materials Required:

- iPad for individual or partner use
- Farm to Fork ECU by Edith Cowan University https://apps.apple.com/au/app/farm-to-fork-ecu/id1513353482
- Internet access
- Printed handouts of food advertisements from 'Farm to Fork'.

# Key Words:

Marketing, influences on our food choices, healthy eating

# Lesson Sequence Overview:



STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
Lesson 1 INTRODUCTION <ul> <li>Class brainstorm/discussion</li> </ul>	What are the benefits of eating nutritious foods for our health/our environment and our budget? What do we consider a healthy/nutritious food? Discuss the Australian Guide to Healthy Eating and 5 Food Groups. <u>https://www.eatforhealth.gov.au/food- essentials/five-food-groups</u>
ACTIVITY 1 PLAY – 'Farm to Fork'	Introduce the game 'Farm to Fork'. Potato Town are in a Junk Food (ultra-processed food) Crisis and it is impacting the health of its community. Tell students they are to play this game from start to finish and try to improve the eating habits of the people.
Discuss their success in playing the game.	Start by playing the game once just to get used to playing it. This will take approximately 15 minutes. Stop students after 15 minutes and see who successfully completed the game. Facilitate a discussion about what students had to do Facilitate a discussion about what students had to do FARM Havest 6 plots Buy water drops FARM Havest 6 plots Buy soil improver PRODUCTION PLANT (Name 4 gruestions Remove 2 bunches of peel Wash 30 dirty potates WASTE MANAGEMENT (Name - Name 4 gruestions Bump 5 drunks into the bio bum MARKET (Name - Name 4 gruest for the Come from 4 gruest of the start
	bags of potatoes? What do you have to do to change the consumers' choices in the market?



# STUDENT ACTIVITY

### Lesson 1 cont'd

# PLAY 'Farm to Fork' again.

### Focus on –



Market demand and poster advertisements to successfully complete the game.

# TEACHER FOCUS QUESTIONS

Highlight to students the Market Demand Board in the market and how to access it.

Highlight the need to buy the poster advertisements to change the Market Demand to successfully sell 20 salads and 30 bags whole potatoes.

Highlight the nutrition panel at the top of the screen. To Win – Fill the nutrition bar to 100% by selling health products.



Lesson 2 INTRODUCTION • Class discussion/review of game	Class brainstorm/discussion to review the game. Focus on how advertising influenced the market demand (what customers wanted to buy).
Consider the learnings from playing the game that promoted selling a healthy product (foods in season, locally grown, healthier side dishes, choose minimally processed food without added salt, sugar and fat).	
ACTIVITY 1 Advertising techniques*	
In groups, students discuss and list strategies and examples they have seen advertising companies use to grab viewer attention on TV or other advertising media to buy their food or drink products.	Explain advertising companies use a variety of strategies to encourage consumers to buy their food and drink products. Often, they try to sell a lifestyle or an image, rather than their product (See <i>How Food</i> <i>Advertising Works</i> Resource Sheet 1)
Students report back to class. List common strategies from group discussions on the board.	
*Adapted from Refresh.ED Influences on our Choices	



STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
Lesson 2 cont'd ACTIVITY 2 As a class watch a few food advertisements.	View examples of television food commercials targeting children (some links provided below in Links to Other Resources).
Class discussion.	<ul> <li>Ask:</li> <li>What strategies did each advertisement use to grab your attention or make you want to buy this product?</li> <li>How do these strategies make you feel about the products advertised?</li> <li>Do they make you feel you must buy the products?</li> <li>Why is it good for food companies if their advertisements make you want to buy their product?</li> <li>Do you think these advertisements might make it harder for parents to give their children a healthy diet?</li> <li>Do you think there are more advertisements for unhealthy food than healthy foods on TV or in magazines and newspapers? Why?</li> <li>Show the Australian Guide to Healthy Eating poster on the whiteboard or distribute a copy to each student. Students identify where the foods from the advertisements for 'every day' foods identified on the poster.</li> <li>Explain regulations in Australia prevent any advertisements (for food or otherwise) during TV shows for children in the morning and just afterschool. However, the peak viewing period for children under 14 years old is 5–9pm, when unhealthy food and drink ads are also most frequent.</li> <li>OPTIONAL: View the YouTube clip on <i>If Fast Food Commercials Were Honest</i> : https://www.youtube.com/watch?v=- q78QXpSL2M&amp;feature=youtu.be</li> </ul>
Lesson 3 & 4 ACTIVITY 1 Students are to review the game advertisements and think about how these ads influenced the choices the towns people made in the market. Then consider how the healthier food choices would have improved the towns people's health.	Provide students with the 4 printed handouts of food advertisements from the game (See <i>How Food</i> <i>Advertising Works</i> Resource Sheet 2).



STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
ACTIVITY 2	
Create an ad of your own.	Facilitate students to use the understanding of
1. Consider the Australian Guide to Healthy Eating.	advertisings and healthy food product that they have
<ol><li>Create or find a healthy potato recipe that would be suitable to sell in the school canteen.</li></ol>	gained throughout this learning task.
<ol> <li>Using suitable advertising techniques create a food advertising campaign/information resource which will promote the sale of your healthy recipe to the students in your school.</li> </ol>	They are then required to create their own advertisements for a healthy potato product that could be sold at the school canteen.
<ol> <li>Present the final product in a form such as written document, multimedia production, poster, pamphlet, fact sheet. With the aim to "Sell" their product.</li> </ol>	<ul> <li>Things to consider:</li> <li>What advertising techniques can you use to promote this product to the students in your school?</li> <li>How can this food be prepared in a healthy way?</li> <li>What might the nutrition information panel look like for your product?</li> </ul>

# Links to Other Resources:

Links to other resources:

- Refresh.ED Food and Drink CHOICE section encompasses promoting skills, knowledge and understanding
  of concepts relating to food selection and influences, finding and interpreting nutrition information
  including food labels, shopping and budgeting.
  - Within this focus area, we recommend Influences on our Choices (Year 5) to compliment this learning activity. <u>https://www.refreshedschools.health.wa.gov.au/k-10-curriculum-materials/</u>

Example Advertisements for Lesson 2 Activity 1

- <u>https://www.youtube.com/watch?v=z-hT5xALpDY</u> Kellogg's Froot Loops
- <u>http://www.youtube.com/watch?v=QdRW3djK6pA</u> Cottee's Cordial
- <u>https://www.youtube.com/watch?v=lhsHBjFcc-Q</u> McDonald's Happy Meal
- <u>https://www.facebook.com/WCEofficial/videos/10155806199322224/</u> Hungry Jacks endorsed by West Coast Eagles
- <u>https://www.youtube.com/watch?v=Dsatt18rxvk</u> Kellogg's LCMs

#### Healthy foods

https://www.eatforhealth.gov.au/food-essentials/five-food-groups

Food Labelling

- Calculate the NIP of your food: <u>http://www.foodstandards.gov.au/industry/npc/Pages/Nutrition-Panel-Calculator-introduction.aspx</u>
- Label reading: <u>https://www.baker.edu.au/health-hub/fact-sheets/label-reading</u>
- Understanding food labels <u>https://www.eatforhealth.gov.au/eating-well/how-understand-food-labels</u>



# How Food Advertising Works Resource Sheet1

Advertisers use lots of tricks to make us want to buy their food and drink products. For example:

#### Ideal kids and families -

who have big happy smiles and care for each other.

#### Family fun -

where dinner turns into a party because everyone is eating this product.

#### Excitement –

where one bite of a snack bar makes your life more exciting or you become a more 'cool' person.

#### Star power –

where a popular sports star is telling you what to eat.

#### Bandwagon –

where if you don't eat this product you will be made to feel left out.

#### Scale and appearance -

where the product looks bigger or smaller than it actually is and looks more appealing than it does in real life.

#### Animated characters -

where a character is used to increase children's interest

#### **Repetition** –

where you hear the same message or ad over and over.

#### Music and jingles -

where sound effects add to the excitement and make you remember the product.

#### Freebies -

where free give-aways, prizes or tokens to collect are on offer.

Adapted from *Refresh.ED* – Influences on Our Choices Learning Unit.



# How Food Advertising Works Resource Sheet 2



How Advertising Works teaching and learning activity





# How Food Advertising Works



#### Easy Healthy Recipes Advertisement AIM: Create a poster that informs customers about healthy, low waste ways to cook and prepare table potatoes. FACTS: 1. Potatoes are a whole food low in fat and salt. 2. Recipes can add variety and taste but vary in nutritional value and amount of waste. TASK: DRAG & DROP from options in the 2 columns to create your poster. Drag the most nutritious, tasty and least wasteful jacket potato filling option onto the poster **RECIPES!** Ingredients: Ingredients: Ingredients: 2 bacon rashers, chopped 2 garlic cloves, chopped 1/2 small onion, chopped 1 tbsp vegetable oil 1 tsp vegetable oil 1 tbsp vegetable oil 3 tomatoes, chopped 1/4 cup sour cream 1 small clove garlic, chopped 2 tbsp fresh basil, chopped 1 tbsp chopped chives 1/2 tsp chilli powder PUT 1 tbsp pine nuts, toasted 1/4 cup grated cheese 220g tin baked beans RECIPE Method: Method: Method: HERE **Basic Jacket Potato** 1. Heat oil, fry garlic 1-2min, or 1. Heat oil, fry bacon until Ingredients: • 2 large baking potatoes 1. Heat oil, fry onion and garlic browned. Drain until soft. 2-3 min, or until soft. 1 tsp olive oil 2. Add other ingredients 2. Add tomatoes. Cook, stirring, 2. Add chilli powder and fry 1 2 tbsp filing eg beans, bacon, tomato reducing to thick sauce. Mix with 2 tbsp scooped min. Method: 3. Stir in basil and pine nuts. potato. 3. Add baked beans and heat 1. Wash the potatoes and prick the skins all over with a fork. through. 2. Bake at 2200C for 60-80 minutes. 3. Cool, then rub the skins all over with the olive oil. 4. Bake for 10-15 mins or until the skins are starting to orisp. 5. Split open and add favourite filling Choose one statement to support your advertisement ADVERTISING STATEMENT #1 Save time and effort by cooking with Eating healthier is easy and convenient packet ingredients. rewarding. You'll satisfy everyone's tastes with Try a simple, tasty recipe with fresh this creamy, flavoursome recipe local ingredients.

How Advertising Works teaching and learning activity

# How Food Advertising Works





# HOT POTATO MAKEOVER Design and Technologies



# Learning Task Intention:

#### At the end of this activity students should be able to:

- Identify common food preparation techniques.
- Analyse the positive and negative impacts different food processing techniques have on the nutritional value of potatoes.
- Design a range of healthy potato recipes suitable for adolescents.



# Background Information:

Prior to the task, students should have knowledge of the Australian Dietary Guidelines and be familiar with the Australian Guide to Healthy Eating.

Students will need to be introduced to the production of potatoes within Australian growing regions, including their closest region. Students will be given the opportunity to play the '*Farm to Fork*' game and gain knowledge of the potato production process.

# Teaching Recommendation:

This learning task relates to all levels of the game and could be delivered across 4-6 lessons in a Design & Technologies – Food specialisations context.

The activities would be completed after playing the 'Farm to Fork' game.

This task can be provided electronically or in a booklet form, with the teacher to monitor work completed, appropriateness of actual food order for potato recipe and content.

# Equipment/Materials Required:

- iPad for individual or partner use
- Farm to Fork ECU by Edith Cowan University <u>https://apps.apple.com/au/app/farm-to-fork-ecu/id1513353482</u>
- Internet access for student research

# Key Words:

Food preparation, Healthy eating, Nutrition, Physical properties, Preparation techniques, Australian Dietary Guidelines, Potatoes,

# Lesson Sequence Overview:



STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
Lesson 1 INTRODUCTION Explore potatoes as a staple food. Investigating – could taste test different types of potatoes as an introduction, as well as exploring different ways they are cooked.	<ul> <li>Class discussion to introduce potatoes –</li> <li>What is a staple food?</li> <li>Explore potatoes as an example.</li> <li>Where did potatoes originate from?</li> <li>What are potatoes used for?</li> <li>Where do potatoes fit in to a balanced diet according to the Australian Guide to Healthy Eating?</li> </ul>
ACTIVITY 1 Play <i>'Farm to Fork'</i> game.	Facilitate students as they play ' <i>Farm to Fork'</i> .
	Class discussion about the game – what key concepts does the game cover.
Lesson 2 ACTIVITY 1 Discuss what you have learnt about potatoes from the game.	Review the game and facilitate a class discussion about potatoes. Consider the following points. What conditions do potatoes need to grow? Where are potatoes grown in Australia? What varieties are available in Australia? (Potato varieties in Australia –Sequoia, Sebago, Kennebec, Red Pontiac, Exton, Katahdin, Coliban, Toolangi Delight, Russet Burbank, Patrones, Denali, Desiree, Bison, Bintje, Atlantic)
ACTIVITY 2 Allow students to play the game again. This time focus on the factory and the market and consider the types of potato products that are made and the nutritional value of these.	What products were made from potatoes in the game? What preparation techniques would have been used to make these products? How did the different preparation techniques of each potato product influence the nutritional value of the potato?
Lesson 3 - 6 INTRODUCTION Hot Potato Design Task	Introduce the Hot Potato Design Task and explain the task requirements and expectations. Facilitate and guide students to complete the task. For younger year levels the Jacket Potato recipe included in the game could be used for students to design their own healthy jacket potato recipe.



# Links to Other Resources:

Refer to '*Farm to Fork'*- Food Processing and Nutritional Value Learning Task for additional materials on food processing and nutritional value of food.

Some additional resources:

Health

https://www.potatopro.com/australia/potato-statistics_Agricultural Statistics Australia https://www.healthline.com/nutrition/foods/potatoes http://agriculture.vic.gov.au/agriculture/horticulture/vegetables/vegetables-a-z/potatoes http://agriculture.vic.gov.au/agriculture/horticulture/vegetables/vegetables-a-z/potatoes/potato-varieties https://www.potatopro.com/ Potato pro.com Global potato industry https://www.livescience.com/45838-potato-nutrition.html Livescience Potatoes: Health benefits, risks and Nutrition facts Accessed 28/1/2020 https://www.eatforhealth.gov.au/guidelines/australian-guide-healthy-eatingAustralian Guide to Healthy Eating https://www.eatforhealth.gov.au/eating-well/how-understand-food-labels Understanding food labels – Eat for

How to prepare food in healthy ways:

- o Recipes: <u>https://livelighter.com.au/Recipe</u>, <u>http://www.taste.com.au/healthy</u>
- Fact sheets: <u>https://www.betterhealth.vic.gov.au/healthyliving/healthy-eating</u>,



# Hot Potato Makeover Design Task

### Student Activity

In pairs, investigate, design, produce and evaluate one healthy potato recipe suitable for adolescents.

### Investigating and defining

- In pairs, list different types of potatoes
- As a class, discuss these, and identify the most common types in Australia
- What are common characteristics and properties of potatoes?
- In pairs, brainstorm eight different methods of preparing and presenting potatoes, where they are the feature ingredient

#### Designing

- In pairs, students investigate and design three healthy potato recipes suitable for adolescents.
- Select one recipe to prepare, produce and present to the class (take photos to show your product)

#### Producing and Implementing

- In pairs, prepare and produce your potato recipe.
- Present to the class.
- Take a photo of your completed product and upload photo to your booklet or School linked website

### Evaluating

- Individually evaluate the process you followed, and the product you and your partner produced
- Did your actual product meet the specifications set?

### Collaborating and Managing

• Review and answer the following – how well did you work with your partner? Meet set deadlines? Timelines for food order and production?

### Extension Task:

Design and produce a recipe card for your potato meal (including a photo of your actual meal), that could be used in a fruit and vegetable market as a recommended recipe idea for potatoes.

# Jacket Potato Recipe





Hot Potato Makeover teaching and learning activity



# WHAT JOB IS THAT? Careers in Agriculture and Food Science

# Learning Task Intention:

#### At the end of this activity student should be able to:

- Identity a range of roles humans have in the food supply chain that have an influence on technological change and innovation in agriculture and food production.
- Understand that people use science understanding and skills in their occupations.



# Background Information:

Agriculture is not just about working on a farm; there are lots of different kinds of occupations within the food and fibre supply chain. The *Department of Agriculture and Food*, Western Australia supports the growth of Western Australia's agrifood sector in four key areas: markets, productivity, profitability and people.

In the game, students come across a range of workers in fields related to Agriculture who successfully produce potatoes and ensure the food supply chain works seamlessly.

# Teaching Recommendation:

This learning task focuses on all 4 levels of the game and can be completed across 2-3 lessons in a Science context. Students play '*Farm to Fork*' game which should take approximately 15min.

After playing '*Farm to Fork*' game students will identify the role humans play in the production of potato products. Students will be guided to identify the occupations within each stage of the game (1. Production 2. Processing and Distribution 3. Waste Management 4. Marketing, access and consumption).

Then students will research the occupations involved in each stage and identify the science understanding and skills each of these occupations entail.

Students will also explore the role science plays in the development of our food production system over time and how technology has influenced the food supply chain.

# Equipment/Materials Required:

- iPad for individual or partner use
- Farm to Fork ECU by Edith Cowan University https://apps.apple.com/au/app/farm-to-fork-ecu/id1513353482
- Internet access for student research

# Key Words:

Agriculture, food supply chain, occupations, science skills



# Lesson Sequence Overview:

STUDENT ACTIVITY	TEACHER FOCUS QUESTIONS
Lesson 1 INTRODUCTION	What does the word 'Agriculture' mean to you? What type of occupations/careers do you know about within the food and agricultural sector?
ACTIVITY 1 Play <i>'Farm to Fork</i> ' game.	Facilitate students to play ' <i>Farm to Fork</i> ' and encourage them to consider the roles humans play in the potato production process.
	After the game – Ask students did they see a range of roles humans play in the production process?
ACTIVITY 2	Distribute – What Job is That? Student Activity
What Job is That? – Student Activity Student to work though this activity either individually of in small groups.	<ul> <li>Guide students to think of the stages in the game,</li> <li>1. Production</li> <li>2. Processing and Distribution</li> <li>3. Waste Management</li> <li>4. Marketing, access and consumption</li> </ul>
	What human roles are involved in the production of potatoes in each stage of the game?
	What occupations/professions can you identify that are involved in the food production process?
	Guide students to use internet research to assist in identifying agriculture and food careers.
Lesson 2 INTRODUCTION	Review the ' <i>Farm to Fork'</i> game and the occupations/professions identified last lesson.
	Guide students to complete the second section of <i>What Job is That?</i> Student Activity by selecting one of the occupations/professions they identified in the game that is of interest to them and research it further.
ACTIVITY 3	Facilitate student research.
Students select one occupation/profession of interest to research. Use internet research and prior knowledge to complete a report on your chosen occupation.	Each student shares with the class their chosen profession, skills required which match their own interests, and how this career can be achieved, and how this can positively influence Australian Agriculture and the environment for sustainable food production.



# Links to Other Resources:

• Year 7 *Refresh.ED* Food and Drink: Source Food in Australia Over Time (Food and Drink Source). Students explore how food production and processing technologies have changed since before European settlement to now and what influence this has had one food availability and cooking methods. Download from the *Refresh.ED* website <a href="http://www.refreshedschools.health.wa.gov.au/">http://www.refreshedschools.health.wa.gov.au/</a>

Occupations/professions in Agriculture:

https://www.agric.wa.gov.au/biosecurity-quarantine/careers-food-and-fibre https://myfuture.edu.au/ https://www.careerharvest.com.au/



# What Job is That?

### Student Activity

#### Section 1:

1. In the game '*Farm to Fork*' there are 4 main stages involved in the production of the potato products. Recall the four (4) stages and list each of these as a title in the boxes below.

Stage 1.	Stage 2.
500BC 1.	Stuge 2.
Stage 3:	Stage 4:

- Throughout the game people play important roles in each stage of the game/potato production process. Some of these people you might have physically seen as characters in the game others might be jobs/roles you know go on in the background of the game.
   Discuss this with your partner. Remember to consider the following growing, research, making, managing, changing, trading, marketing, and selling
- 3. Use the internet to research occupations/professions within the agriculture and food industry and identify the occupations/professions that would be involved in the potato production process. Useful websites could be: <u>https://www.agric.wa.gov.au/biosecurity-quarantine/careers-food-and-fibre</u> <u>https://myfuture.edu.au/</u> <u>https://www.careerharvest.com.au/</u>

List the occupations/professions you identify:



#### Section 2:

- 1. Select one occupation/profession within the agriculture and food industry that is of interest to you and research it in more detail.
  - a. What is the occupation/profession?
  - b. What skills, attributes and knowledge are required for this profession?
  - c. What study/training is required for this profession?
  - d. What science understandings or skills are required for this occupation?
  - e. How can a career in this occupation make a positive impact to Australian agriculture and the environment for sustainable food production?
  - f. How does this occupation influence technological change and innovation in agriculture and food production?
- 2. Prepare a report on this occupation to present back to your peers.



# ADDITIONAL TEACHER INFORMATION LINKS

This section provides links to additional content to inform teaching activities related to the four levels of the 'Farm to Fork' game: 1. Production, 2. Processing and Distribution, 3. Waste Management 4. Marketing, Access and Consumption.

# 1. PRODUCTION

#### The Food and Agriculture Organisation of the United Nations

International Year of the Potato expands understanding of the potato's role in agriculture, economy and global food security. A collection of factsheets on key issues in potato development, including cultivation nutrition, biodiversity and economy.

http://www.fao.org/potato-2008/en/potato/pdf.html

#### **International Potato Centre**

Potato crop origin, facts and figures, nutrition, varieties and utilisation.

http://www.CIPotato.org

#### **Potatoes South Australia**

A national and global snapshot of the potato, imports/ export figures, harvesting periods.

https://www.potatoessa.com.au/industry.html

#### Discovery Agriculture – Potato Farming | How to Grow Potatoes YouTube clip

Useful potato farming in Australia educational video for students https://youtu.be/FBfuyRL5XaA

The Department of Agriculture and Food

Conditions for growing potatoes, managing temperature and soil temperatures in potatoes to improve quality https://www.agric.wa.gov.au/potatoes/managing-temperature-potatoes-improve-quality

#### **WA Potatoes**

Growing regions of potatoes in Western Australia. https://www.todatoes.com.au/potato-growing/

Fresh For Kids | Potato

Growing regions of potatoes in Australia, seasonal availability of potatoes.

https://freshforkids.com.au/vegetables/potato.html



#### The Department of Agriculture and Food - Local Food Map Produce

Map of local food trail through Western Australia.

https://www.agric.wa.gov.au/sites/gateway/files/Western%20Australia%20Food%20Map.pdf

#### **Career Harvest | Careers in Agriculture**

An agriculture job is any position that is involved with the production of food, feed or fibre at some level. Career Harvest provides an overview of agricultural industries and the variety of career opportunities available in agriculture and agribusiness.

https://www.careerharvest.com.au

#### The Department of Agriculture and Food | Careers in Food and Fibre

Western Australia's agrifood sector four key areas of growth: markets, productivity, profitability and people. Career opportunities that exist in the food and fibre supply chain, such as producing crops and farming animals, manufacturing and processing, marketing, trade and media.

https://www.agric.wa.gov.au/biosecurity-quarantine/careers-food-and-fibre

# 2. PROCESSING AND DISTRIBUTION

#### **Processing Potato Production Snapshot**

The Australian processing potato industry including On-farm production; Processing such as French fry related products, fresh potato and potato snacks/ crisps, and Market: frozen food service and retail, exports and crisping retail.

<u>https://www.horticulture.com.au/globalassets/hort-innovation/levy-fund-financial-and-management-</u> documents/sip-pdfs-new/hortinnovation-sip-potato-processing-2017-2021.pdf

#### Potato Agri-Food Systems Program

The International Potato Centre response to agricultural development challenges and the need for more nutritious and resilient food crops in developing countries.

https://cipotato.org/programs/potato-agri-food-systems-program/

#### FOODmap: An analysis of the Australian food supply chain

FOODmap is a comprehensive analysis of food distribution channels for major categories within the Australian food industry from producer to consumer.

http://www.agriculture.gov.au/ag-farm-food/food/publications/foodmap-a-comparative-analysis

#### SBS Australia | Food Miles

Food Miles is the idea that food shipped or flown internationally produces greater CO2 emissions than locally produced food. SBS Australia article considering the arguments for and against 'food miles'.

https://www.sbs.com.au/shows/foodinvestigators/listings/detail/i/1/article/2941/Food-Miles



# 3. WASTE MANAGEMENT

#### **OZHarvest Food Waste Infographic**

In Australia, food waste is estimated to cost the economy \$20 billion per year. OZHarvest is a leading food rescue organisation in Australia, picking up excess food form commercial outlets and delivering to charities supporting those in need. Four pillars of OZHarvest to prevent waste, eliminate hunger, and educate people are: *Rescue, Educate, Engage, Innovate.* Infographic addresses the global issue of food waste and provides tips for eliminating food waste at home/ at school.

https://www.ozharvest.org/fight-food-waste/foodwasteinfographic/

#### **FOODWISE Household Food Waste**

Infographic addresses household food waste in Australia.

https://www.foodwise.com.au/foodwaste/household-food-waste-landing-page/

#### **Transforming Potato Food Waste**

Australian large potato producers investing in research and development to convert 100% of potato waste, approximately 100,000 tonnes, for commercial benefit and sustainability.

https://www.adelaide.edu.au/agrifood-wine/news/list/2020/03/06/transforming-potato-waste-into-a-new-industry-for-australia

#### National Food Waste Strategy: Halving Australia's Food Waste by 2030

Food waste is a global challenge with substantial environmental, social and economic impacts. This strategy outlines initiatives to manage the problem of food waste in Australia.

http://www.environment.gov.au/system/files/resources/4683826b-5d9f-4e65-9344-a900060915b1/files/national-food-waste-strategy.pdf

# 4. MARKETING, ACCESS AND CONSUMPTION

#### Food Standards Australia New Zealand – Australian Food Composition Database | Potatoes

Search by name for *description* and *nutrient content* of potato or potato product. For example raw food (potatoes peeled/ unpeeled), dishes (boiled, baked, fried) and snack foods (crisps, French fries)

https://www.foodstandards.gov.au/science/monitoringnutrients/afcd/Pages/foodsearch.aspx

#### **Techniques for cooking potatoes**

Potatoes are the foundation ingredient for many different meals and cuisines. A detailed guide of tips for storing, peeling and the different techniques for cooking potatoes. Including how to make mashed potatoes, roast potatoes, jacket potatoes, boiled and fried potatoes.

https://www.lovepotatoes.co.uk/hints-and-tips/



#### **Beta Spuds Recipes**

A variety of nutritious and tasty recipes and ways to cook potatoes.

https://www.betaspuds.com.au/recipes

#### WA Potato Consumption

Production and consumption of potatoes globally compared to Western Australia. Potato consumer market in WA; factors that influence the purchase decision of fresh potatoes.

https://wmgroup.org.au/sites/default/files/docs/NVAP%20%20Case%20Study%20Market%20Analysis%20for%20Pot atoes.pdf

#### **Potato Nutrition**

https://healthy-kids.com.au/potatoes/

#### Visual Literacy – Marketing for Health

https://www.education.vic.gov.au/school/teachers/teachingresources/discipline/english/literacy/readingviewing/Pages/litfocusvisual.aspx#link75