NSW GOVERNMENT | Department of Primary Industries

Australian Hamburgers

Technology Mandatory

Area of Study - Agriculture and Food Technologies

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Lesson sequence - Teacher and parent guide

Supporting document

NSW DPI Schools Program

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The Australian Hamburger Unit teacher and parent guide

Background

The Australian Hamburgers unit investigates our main agricultural industries (wheat, beef, dairy, sheep, pork, poultry and horticulture) from paddock to plate. The unit of work consists of three resources: a workbook, an answer guide, and a design folio.

- Workbook - contains learning material and activities that students complete
- Answer guide - provides suggested answers to the workbook activities
- Design folio - students record their designs

The unit includes guides for practical activities, in-class extension investigations and mini design projects, which will challenge student understanding and prepare them to complete the major project: to design and prepare a nutritious food product: a hamburger using raw materials from Australian agricultural production.

Additional activities suggested in conjunction with this unit involve students designing, growing, managing and making observations on a vegetable or herb garden to grow fresh produce to use in their burger and learning food preparation and cooking techniques.

The unit is designed to cover outcomes from the NSW Technology Mandatory Stage 4 (Year 7 and 8) Syllabus context areas: Agricultural technologies and Food technologies. However, it is an achievable unit for students from years 6-9.

The NSW DPI have developed the lesson sequence in this guide, to assist teachers, parents and students to complete the unit while undertaking remote learning and home-schooling.

Students will either need a digital or physical copy of the Australian Hamburger Workbook and the Design Folio and access to the internet. These documents can be downloaded along with other DPI Schools Program Primary and Secondary resources at:

https://www.dpi.nsw.gov.au/education-and-training/school-resources/secondary-schools

Planning for practical activities at home

Each week includes suggested practical activities, such as, growing plant ingredients (herbs or vegetables) for their final hamburger product or cooking activities using products from each of the industries studied.

All practical activities are only suggestions and must be supervised. Use your own discretion and resources available to decide what to do in the practical lessons and for the major design. For example, you do not need land or a backyard to successfully grow plants. An inventive container on a windowsill with adequate light and moisture will grow most herbs etc. Please be creative and use the internet for ideas.

If students are on farm, they are encouraged to participate in supervised activities related to agricultural production, e.g., mustering, weighing, preparing animals for sale, collecting produce etc. Through conversation about what they've learnt, encourage students to link their practical learning to the theoretical learning in the different industries.

Read the proposed lesson plans for the week in preparation to plan what you will do for activities and the resources you might need.

Most lessons should be a minimum of one hour's work. It is up to parents to judge how much their children can handle and the pace that they intend to complete the unit.

The following lesson sequences are a guide and should be used as such.

If you decide to conduct the suggested practical activities at home with your children, please first complete the following activity to ensure safe and ethical work practices

Learning activity - Safe and ethical work practices

Throughout this unit you will have the opportunity to work both inside and outside such as in a kitchen and the garden. Complete the table below to outline workplace health and safety elements at your garden and kitchen.

Garden	Kitchen
List at least 5 specific tools or equipment	List at least 5 specific tools or equipment
Identify 5 risks	Identify 5 risks
Identify 5 garden rules to minimise risk	Identify 5 kitchen rules to minimise risk

Verbs and Key Words

Throughout the booklet, questions may use the following NSW Education Standards Authority (NESA) key terms and verbs when asking questions. The following glossary developed by the NSW Education Standards Authority is provided to assist with the answering of activities throughout the booklet.

Key Word	Definition
Account	Account for: state reasons for, report on Give an account of; narrate a series of events or transactions
Analyse	Identify components and the relationship between them; draw out and relate implications
Apply	Use, utilise, employ in a particular situation
Appreciate	Make a judgement about the value of
Assess	Make a judgement of value, quality, outcomes, results or size
Calculate	Ascertain/determine from given facts, figures or information
Clarify	Make clear or plain
Classify	Arrange or include in classes/categories
Compare	Show how things are similar or different
Construct	Make; build; put together items or arguments
Contrast	Show how things are different or opposite
Critically (analyse/ evaluate)	Add a degree or level of accuracy depth, knowledge and understanding, logic, questioning, reflection and quality to (analyse/evaluate)
Deduce	Draw conclusions
Define	State meaning and identify essential qualities
Demonstrate	Show by example
Describe	Provide characteristics and features
Discuss	Identify issues and provide points for and/or against
Distinguish	Recognise or note/indicate as being distinct or different from; to note differences between
Evaluate	Make a judgement based on criteria; determine the value of
Examine	Inquire into
Explain	Relate cause and effect; make the relationships between things evident; provide why and/or how
Extract	Choose relevant and/or appropriate details
Extrapolate	Infer from what is known
Identify	Recognise and name
Interpret	Draw meaning from
Investigate	Plan, inquire into and draw conclusions about
Justify	Support an argument or conclusion
Outline	Sketch in general terms; indicate the main features of
Predict	Suggest what may happen based on available information
Propose	Put forward (for example a point of view, idea, argument, suggestion) for consideration or action
Recall	Present remembered ideas, facts or experiences
Recommend	Provide reasons in favour
Recount	Retell a series of events
Summarise	Express, concisely, the relevant details

Source: NSW Education Standards Authority, 2018

WEEK 1			
Lesson	**Resources**	**Pages**	**Description**
1 What is agriculture?	• Internet access • Digital or physical copy of workbook	P5-8 workbook	• Students to read Glossary to discover words that may be used throughout the unit p5 Agriculture in Australia- students to read with assistance 'What is agriculture' and 'The history of agriculture in Australia' p6-7**.** Then follow link to CSIRO's 'Growing the Future' (https://www.youtube.com/watch?v=KGWZK6kq5mw&feature=youtu.be) *Activities:* • Complete activities 1-4 p7-8 • Check student answers
2 The value of agriculture	• Internet access • Digital or physical copy of workbook	P9-11 workbook	• Students to read 'The value of agriculture' p9-10 • Complete activities 1-4 p10-11 *Discussion:* • Ask students about the what they see as being the possible implications of COVID-19 to our domestic and export markets. Encourage them to make predictions of how this may impact Australian agricultural production currently and in the future.
3 Investigating vegetables to grow at home	• Internet access • Digital or physical copy of design folio • workbook	• P6 -7 and 13 design folio • P41 workbook	• Students and parents read p6-7 of design folio document. This section introduces students to the major design project associated with this unit to design and cook a hamburger using at least two homegrown ingredients and, an ingredient from each of the industries that they will continue to study. • Discuss with students and make them aware that they will need to grow at least TWO ingredients for their burger. Students and parents brainstorm how this could be achieved, e.g., in the garden, seedlings in a container at a window in the house/apartment etc. • Read p41 of Support document (workbook) and then p13 of design folio. *Activities:* • Investigate your local climate at the Australian Bureau of Meteorology (http://www.bom.gov.au/) • Investigate the Yates website (https://www.yates.com.au/product/seeds) to determine the best plants for your local conditions and create a calendar of events to include sowing and harvesting times write your answers in p13 of Design folio • Use the internet or the Yates site to research how to prepare your garden bed for planting • Investigate the Yates website to build your own 'Virtual garden' and play online gardening quizzes • Student homework: Obtain seeds and any other resources needed for their garden.

4 Design your garden layout	Digital or physical copy of Design folio	P14-15 design folio	• After consulting with parents about the resources available to grow plant ingredients for the burger, it is now time for students to plan their garden layout. • p14-15 of the design folio describes how to construct drawings to scale and includes a map template for students to complete.
5 Practical activity- herb/vegetable gardening	Seeds, gardening tools, water, soil/growing medium etc.	• P41 workbook • p15 design folio for reference	• Students to start preparing and sowing vegetable garden seedlings using their own garden design (p15 design folio). Germination will usually occur within 5-14 days, however, check the species you have sown. Check your species for water, light and spacing requirements.

WEEK 2			
Lesson	**Resources**	**Pages**	**Description**
1 Wheat production in Australia	• Internet access • Digital or physical copy of workbook	P12-14 workbook	Students will learn about wheat production in Australia plus nutritional importance of cereal grains to a balanced diet. • Read workbook p12-13 and then review the links below: ✓ wheat growth stages: 'Beautiful time-lapse of growing wheat' (https://www.youtube.com/watch?v=CXaloLJ5m6o&feature=youtu.be) ✓ Wheat harvest at Ungarie 'Harvest 2017- Australia' (https://www.youtube.com/watch?v=iNnTho3vYbA&feature=youtu.be) ✓ Go to the AgriFutures Wheat factsheet to learn more about wheat production in Australia (https://www.agrifutures.com.au/farm-diversity/wheat/) ✓ Watch "Eating whole grains" to learn more about the nutritional difference between whole grains and refined cereals (https://youtu.be/I6ro_kUKNOI) ✓ Go to Eatforhealth.gov.au to find out more about cereal nutritional information (https://www.eatforhealth.gov.au/food-essentials/five-food-groups/grain-cereal-foods-mostly-wholegrain-and-or-high-cereal-fibre) *Activities:* • Complete questions 1-6 on p14 • Check student answers
2 Practical food preparation-cereals	• Kitchen • Internet access • Cereal grain product to cook or prepare	P36 workbook	Throughout the unit students should investigate and practise a variety of cooking and food preparation techniques. As they are investigating and trialling the different techniques, prompt students to think about the impact of the cooking technique on the nutrient value of the food and the paddock to plate journey of the product. *Activities:* • Read p 36 workbook. • Cook a cereal based recipe. Ideas could include pancakes, pikelets, bread, scones, muffins, biscuits, damper, noodles, pasta, rice, popcorn, preparing toast or a sandwich etc. • Use the internet for ingredients and instructions if required • Use Australian produced and grown products.
3 Beef production in Australia	• Internet access • Digital or physical copy of workbook document	P15-17 workbook	Students will learn about beef production in Australia plus the nutritional importance of red meat to a balanced diet. • Read workbook p15-17 and then review the links below: ✓ "Innovative cattle stations in Australia" (https://youtu.be/pdISOUfd4fo)

			✓ Investigate Elders Limited 20,000 head feedlot "Elders Killara" (https://youtu.be/mvdFTp3W6qQ) ✓ Follow the link to Australia's beef industry Fast Facts to learn more about beef cattle production in Australia (https://www.mla.com.au/globalassets/mla-corporate/prices--markets/documents/trends--analysis/fast-facts--maps/mla_beef-fast-facts-2017_final.pdf) ✓ Go to Eatforhealth.gov.au to find out more about red meat nutritional information (https://www.eatforhealth.gov.au/food-essentials/five-food-groups/lean-meat-and-poultry-fish-eggs-tofu-nuts-and-seeds-and) *Activities:* • Complete questions 1-10 on p17 • Check student answers
4 Practical food preparation-Beef	• Kitchen • Internet access • Beef product to cook or prepare	P36 workbook	Throughout the unit students should investigate and practise a variety of cooking and food preparation techniques. As they are investigating and trialling the different techniques, prompt students to think about the impact of the cooking technique on the nutrient value of the food and the paddock to plate journey of the product. *Activities:* • Read p 36 workbook. • Cook a beef-based recipe, such as, steak, beef sausages, beef stroganoff, beef skewers, beef casserole, roast beef, silverside etc. • Use the internet for ingredients and instructions if required. • Use Australian produced and grown products.
5 Practical activity-herb/vegetable gardening	Seeds, gardening tools, water, soil/growing medium etc.	• P41 workbook • p15 design folio for reference	• Students to work on vegetable garden. • After sowing, practical activities include watering, fertilising, weeding, pest/disease surveillance and harvesting. • Other ideas could include students keeping a diary or digital log of plant growth (p21 design folio).
6 Design folio work	• Digital or physical copy of design folio	P8 design folio	Students to begin first stage 'identifying and defining' of design process. • Students to complete all activities on p8 • For any group brainstorm activities, do this with parents or siblings.

WEEK 3			
Lesson	**Resources**	**Pages**	**Description**
1 Dairy production in Australia	• Internet access • Digital or physical copy of workbook	P19-20 workbook	Students will learn about dairy production in Australia plus the nutritional importance of dairy products to a balanced diet. • Read workbook p19-20 and then review the links below: ✓ 'Gala- The world's first commercial Automatic Milking Robots (AMR)' (https://youtu.be/pu1Z2Kk2uig) ✓ further investigate the Australian Dairy industry, at the AgriFutures Dairy page (https://www.agrifutures.com.au/farm-diversity/dairy-cows/) ✓ Go to Eatforhealth.gov.au to find out more about dairy nutritional information (https://www.eatforhealth.gov.au/food-essentials/five-food-groups/milk-yoghurt-cheese-andor-their-alternatives-mostly-reduced-fat) *Activities:* • Complete questions 1-6 on p 20-21 • Check student answers *Extension activities:* • Investigate the processes of homogenisation and pasteurisation and explain how they are used in milk processing. • Watch video clips on how different value-added dairy products are processed, including hard cheese, soft cheese, yoghurt and cream.
2 Practical food preparation-dairy	• Kitchen and internet • Dairy product to cook or prepare	P36 workbook	Throughout the unit students should investigate and practise a variety of cooking and food preparation techniques. As they are investigating and trialling the different techniques, prompt students to think about the impact of the cooking technique on the nutrient value of the food and the paddock to plate journey of the product. *Activities:* • Read p36 workbook. • Cook a dairy based foodstuff, such as, yoghurt, ice cream, hot chocolate, cheese, fondue etc. • Use the internet for ingredients and instructions if required • Use Australian produced and grown products. *Practical alternative:* • A practical alternative could be to let students taste a variety of dairy products while blind folded and get them to guess what the product is or compare flavour and nutritional information from a range of dairy products e.g. different types of milk, full cream, low fat, goat, etc.

3 Pork production in Australia	• Internet access • Digital or physical copy of workbook	P22-25 workbook	Students will learn about pork production in Australia plus the nutritional importance of red meat products to a balanced diet. • Read workbook p19-20 and then review the links below: ✓ Different types of pig housing in Australia at Housing pigs- current approaches. (https://youtu.be/D9DdEildTWg) ✓ Investigate the Australian pork industry, at Australian Pork Limited (http://australianpork.com.au/) *Activities:* • Complete questions 1-10 on p 23-25 • Check student answers
4 Practical food preparation- pork	• Kitchen and internet • Pork product to cook or prepare	P36 workbook	Throughout the unit students should investigate and practise a variety of cooking and food preparation techniques. As they are investigating and trialling the different techniques, prompt students to think about the impact of the cooking technique on the nutrient value of the food and the paddock to plate journey of the product. *Activities:* • Read p 36 workbook. • Cook a pork-based foodstuff. Ideas could include mince, pork steaks, pork sausages, pork dumplings, pork roast, ham toasties, bacon etc. • Use Australian pork products- look for the pork label. • Use the internet for ingredients and instructions if required
5 Practical activity- herb/vegetable gardening	Seeds, gardening tools, water, soil/growing medium etc.	• P41 workbook • p15 design folio for reference	Students to work on vegetable garden. • After sowing, practical activities include watering, fertilising, weeding, pest/disease surveillance and harvesting. • Other ideas could include students keeping a diary or digital log of plant growth (p21 design folio).

WEEK 4			
Lesson	**Resources**	**Pages**	**Description**
1 Sheep production in Australia	• Internet access • Digital or physical copy of workbook document	P26-28 workbook	Students will learn about sheep meat production in Australia and animal welfare in Australia. • Read workbook p26-28 and then review the following links: ✓ Watch MLA feedback TV's 'The making of Modern Day Lamb' to investigate the development of the Australian lamb industry (https://youtu.be/eUTvWmx1Rac) ✓ Watch 'The source- Episode 2: Roseville Park, The science of sheep" to research Australian wool production on the Coddington family farm. (https://youtu.be/rnYhZ-0eHCs) ✓ Watch "Robotic assisted shearing scoping study" to learn about emerging technology in the Australian sheep industry. (https://youtu.be/zM7imoJz5yc) *Extension activity:* • Use the internet to investigate sheep flystrike. • Students brainstorm with your family or class via email the advantages and disadvantages of the process. • Students consider if mulesing has overall positive or negative animal welfare impacts. *Activities:* • Complete questions 1-4 on p29 • Check student answers
2 Practical food preparation- sheep meat	• Kitchen and internet • Sheep meat (lamb or mutton) product to cook or prepare	P36 workbook	Throughout the unit students should investigate and practise a variety of cooking and food preparation techniques. As they are investigating and trialling the different techniques, prompt students to think about the impact of the cooking technique on the nutrient value of the food and the paddock to plate journey of the product. *Activities:* • Read p 36 workbook. • Cook a sheep meat-based recipe. Ideas could include mince, lamb skewers, lamb chops, lambs fry, lamb roast etc. • Use Australian sheep meat products. Look for the Australian grown label. • Use the internet for ingredients and instructions if required
3 Poultry production in Australia	• Internet access • Digital or physical copy of workbook document	P30-35 workbook	Students will learn about poultry production in Australia in the broiler and layer industries plus the animal welfare in Australia. • Read workbook p30- 32 and then review the links below: ✓ Watch Australian Eggs' 'Danyel Ahmed: an Australian cage egg farmer' to investigate caged layer systems. (https://youtu.be/4eYeGgblfRA) ✓ Watch Australian Eggs' 'Rob Peffer: an Australian barn egg farmer' to research barn systems

			and watch egg grading and packaging. (https://youtu.be/RTi-adUrYKg) ✓ Watch Australian Eggs' 'Meet free-range egg farmer Lachlan Green' to explore a free-range system, niche marketing, animal welfare and grading and packaging systems. (https://youtu.be/QQ_xCZGH7Q8) ✓ Watch RSPCA Australia's 'What happens on an RSPCA approved meat chicken farm?' to investigate RSPCA branded broiler production. (https://youtu.be/mtTLm9LF5Ns) ✓ Explore Eatforhealth.gov.au Lean meat to find out more regarding poultry serving sizes and daily requirements (https://www.eatforhealth.gov.au/food-essentials/five-food-groups/lean-meat-and-poultry-fish-eggs-tofu-nuts-and-seeds-and) ✓ Go to the Australian Chicken Meat Federation Nutritional Database and explore the interactive online tool to compare meat cuts and their nutritional qualities (https://www.chicken.org.au/health-and-nutrition/) *Activities:* • Complete questions 1-15 on p33-35 • Check student answers
4 Practical food preparation-poultry and eggs	• Kitchen and internet • Poultry product or eggs to cook or prepare	P36 workbook	Throughout the unit students should investigate and practise a variety of cooking and food preparation techniques. As they are investigating and trialling the different techniques, prompt students to think about the impact of the cooking technique on the nutrient value of the food and the paddock to plate journey of the product. *Activities:* • Read p 36 workbook. • Cook a poultry-based product. (Eggs or poultry meat) Ideas could include omelettes, boiled, fried, scrambled or poached eggs, roast chicken, drumsticks, chicken breast mince, chicken skewers, etc. • Poultry isn't only chicken it can include turkey, geese, duck, quail etc. • Use Australian poultry products. Look for the Australian grown label. • Use the internet for ingredients and instructions if required
5 Practical activity-herb/vegetable gardening	Seeds, gardening tools, water, soil/growing medium etc.	• P41 workbook • p15 design folio for reference	• Students to work on vegetable garden. • After sowing, practical activities include watering, fertilising, weeding, pest/disease surveillance and harvesting. • Other ideas could include students keeping a diary or digital log of plant growth (p21 design folio).

WEEK 5			
Lesson	**Resources**	**Pages**	**Description**
1 Horticultural production in Australia	• Internet access • Digital or physical copy of workbook	P37-40 workbook	Students will learn about horticultural production in Australia and the nutritional importance of plant products to a balanced diet. • Read workbook p37-38 and then review the following links: ✓ 'South Australian Horticulture' produced by Primary Industries and Regions SA. Watch this clip to investigate the South Australian horticulture sector and explore the production areas, products, technologies and environmental sustainability. (https://youtu.be/pU_0EWrF5Sg) ✓ 'Paddock to Plate: How do your potatoes grow?' produced by Regional development. Watch this clip to investigate the South Australian potato production industry from the paddock to the plate. It also investigates the health benefits and runs through a potato-based recipe (https://youtu.be/Jyj-F7w5VcU) ✓ Follow this link to investigate technology and watch the RIPPA the autonomous robot at 'RIPPA Robot Functionality and Industry Update 2018'. RIPPA has been developed by the University of Sydney's Australian Centre for Field Robotics. The clip provides an update on RIPPA's current use and future potential (https://youtu.be/klTGHCTmCoY) ✓ Follow the links to the Eatforhealth.gov.au Vegetables and Legumes/beans page (https://www.eatforhealth.gov.au/food-essentials/five-food-groups/vegetables-and-legumes-beans) and the Fruit page (https://www.eatforhealth.gov.au/food-essentials/five-food-groups/fruit) to find out how much you should consume each day *Activities:* • Complete q1-7 p39-40 • Check student answers *Extension activity:* • Use the internet to investigate specific horticultural plants and products grown in the major growing areas of NSW.
2 Practical food preparation-horticultural products	• Kitchen • Internet access • Horticultural products to cook or prepare	P36 workbook	Throughout the unit students should investigate and practise a variety of cooking and food preparation techniques. As they are investigating and trialling the different techniques, prompt students to think about the impact of the cooking technique on the nutrient value of the food and the paddock to plate journey of the product. *Activities:* • Read p 36 workbook.

			• Cook or prepare a horticultural product (vegetables, pulses, fruits, nuts etc). Ideas could include fruit salad, vegetarian based dish, roast boiled stir-fried or steamed vegetables, fruit skewers, vegetable-based soups etc. • Use Australian products. Look for the Australian grown label. • Use the internet for ingredients and instructions if required
3 Design folio research and planning	Digital or physical copy of design folio	P9-10 design folio	Students now to use their learning from workbook activities to design a hamburger *Activity:* • Conduct research to complete p9-10 design folio
4 Design folio research and planning	Digital or physical copy of design folio	P11-12 design folio	Students now to use their learning from workbook activities to design a hamburger *Activity:* • Conduct research to complete p11-12 design folio
5 Practical activity- herb/vegetable gardening	Seeds, gardening tools, water, soil/growing medium etc.	• P41 workbook • p15 design folio for reference	• Students to work on vegetable garden. • After sowing, practical activities include watering, fertilising, weeding, pest/disease surveillance and harvesting. • Other ideas could include students keeping a diary or digital log of plant growth (p21 design folio).

WEEK 6			
Lesson	**Resources**	**Pages**	**Description**
1 Design folio research and planning	Digital or physical copy of design folio	P16-18 design folio	Students are now to use their learning from workbook activities to undertake hamburger design activity. *Activity:* • Conduct research to complete p16-18 design folio
2 Design folio Producing and implementing	Digital or physical copy of design folio	P16-18 design folio	Students have now come up with a design for their Australian hamburger. *Activities:* • Complete action plan on p19 design folio • Complete recipe and ingredients list on p22 design folio • Students to discuss with parents' resources available to prepared and cook their burger. • Students to show parents their action plan, ingredients list and recipe instructions in order to obtain ingredients and plan for cooking.
3 Practical activity-herb/vegetable gardening	Seeds, gardening tools, water, soil/growing medium etc.	• P41 workbook • p15 design folio for reference	• Students to work on vegetable garden. • After sowing, practical activities include watering, fertilising, weeding, pest/disease surveillance and harvesting. • Other ideas could include students keeping a diary or digital log of plant growth P21 design folio.
4 Practical food preparation-prepare your Australian hamburger	• Kitchen • Design folio	P22 design folio	Students use their designed recipe (p22 folio) to cook and prepare their Australian hamburger • Use Australian or home-grown products. Look for the Australian grown label.
5 Testing and evaluation	Design folio	P23 design folio	Students carry out an evaluation of their final product by completing the Activities on p23.

WEEK 7

Extension activities and mini design projects can be found on page 42 of the workbook including:

- Creating an agricultural careers factsheet
- Breed and species investigation
- Design a package for the hamburger

For more NSW DPI Schools Program resources for secondary and primary go to https://www.dpi.nsw.gov.au/education-and-training/school-resources