

Agriculture in Education Initiative  
**An Educational Unit for Secondary Schools**

Agriculture in Education / Current Unit

# Nuts

Level

7-8

Curriculum Area

# Technologies

[Print Resource](#)

## Resource Description

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In Year 7 and 8 students investigate and select from a range of technologies – materials, systems, components, tools and equipment. They consider the ways characteristics and properties of technologies can be combined to design and produce sustainable solutions to problems for individuals and the community, considering society and ethics, and economic, environmental and social sustainability factors. Students use creativity, innovation and enterprise skills with increasing independence and collaboration.

This unit of study will investigate the nutritional benefits of eating  nuts, a fact reported widely in literature. It will provide students with the opportunity to investigate a nutrition challenge and use design and technology to produce an innovative solution, using nuts as a main component. Students will create designed solutions, based on an evaluation of needs or opportunities, for a nutritional challenge. They develop criteria for success, including sustainability considerations, and

use these to judge the suitability of their ideas and designed solutions and processes. They create and adapt design ideas, make considered decisions and communicate to different audiences using appropriate technical terms and a range of technologies and graphical representation techniques. Students apply project management skills to document and use project plans to manage production processes. They independently and safely produce effective designed solutions for the intended purpose. To do this, students will analyse how characteristics and properties of food determine preparation techniques and presentation when designing solutions for healthy eating (ACTDEK033) by planning and making quality, safe and nutritious food items, using a range of food preparation tools, equipment and techniques (elaboration).

Students will select and justify choices of materials, components, tools, equipment and techniques to effectively and safely make designed solutions (ACTDEP037) by identifying and managing risks in the development of various projects, working safely, responsibly, cooperatively and ethically on design projects, assessing uncertainty and risk in relation to long-term health and environmental impacts, developing technical production skills and safe working practices with independence to produce quality solutions designed for sustainability and practising techniques to improve expertise (elaborations).

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## Rationale

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This resource material aims to help teachers and students in secondary schools investigate and understand more about primary industries in Australia.

The objectives of the educational resources are to:

- Support Primary Industries Education Foundation Australia and its members in expanding awareness about primary industries in Australia by engaging and informing teachers and students about the role and importance of primary industries in the Australian economy, environment and wider community.
- Provide resources, which help build leadership skills amongst teachers and students in communicating about Food Specialisations and primary industries in Australia.
- Develop educational resources that can be used across Australia to provide encouragement, information and practical teaching advice that will support efforts to teach about Food Specialisations and the primary industries sector.
- Demonstrate to students that everyone can consider careers in primary industries and along the supply chain of Food Specialisation products.

- Develop engaging learning programs using an inquiry process aligned with the Australian Curriculum.
- Develop in school communities, an integrated primary industries education program that emphasises the relationship between food and fibre industries, individuals, communities, the environment and our economy.

These educational resources are an effort to provide practical support to teachers and students learning about Food Specialisations and primary industries in schools.

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## About the approach

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Several key principles underpin the theoretical and practical application to this unit. Students are guided to develop knowledge and understanding of:

- factors that influence the design of products, services and environments to meet present and future needs, and
- the contribution of design and technology innovations and enterprise to society.

Students are guided to develop process and production skills by:

- investigating and defining needs or opportunities
- generating, designing and communicating ideas for solutions
- Producing and implementing solutions
- Evaluating to judge success, and
- Collaborating and managing the project.

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## Curriculum strands

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### **Technologies: Knowledge and Understanding**

Analyse how characteristics and properties of food determine preparation techniques and presentation when designing solutions for healthy eating (**ACTDEK033**)

- planning and making quality, safe and nutritious food items, using a range of food preparation tools, equipment and techniques

## Skills and Processes

Select and justify choices of materials, components, tools, equipment and techniques to effectively and safely make designed solutions (**ACTDEP037**)

- developing technical production skills and safe working practices with independence to produce quality solutions designed for sustainability

## Health and Physical Education

Contributing to healthy and active communities Plan and use health practices, behaviours and resources to enhance health, safety and wellbeing of their communities (**ACPPS077**)

- investigating food-serving recommendations from The Australian Guide to Healthy Eating to help students make healthy choices
- examining ways nuts contribute to good health (e.g. fibre, healthy fats, protein, antioxidant vitamins, minerals, phytosterols, etc) and the ways nuts can be incorporated into daily diet
- analysing the benefits of regular nut consumption (e.g. heart health, type 2 diabetes, weight management, brain health)

## Other capabilities and priorities

- Literacy
- Numeracy
- Information and communication technology capability
- Critical and creative thinking
- Personal and social capability
- Ethical understanding
- Intercultural understanding.

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## Using the unit

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This unit can be used in a number of ways. It will be of most benefit to teachers who wish to implement the sustained sequence of activities that follow the learning experiences around the content descriptors in Year 7 Technologies in the Australian Curriculum.

You may add to or complement the suggested activities with ideas of your own activities or investigations.

The resources have been designed as a hyperlinked unit. This is to provide you with a digital format for your class's use on a website or wiki or provide them on your interactive whiteboard.

We encourage you to explore ways in which the content can be adjusted to the context in which you are working.

Resource sheets are provided for some activities. Most are for photocopying and distribution to students.

The resource sheets are designed to assist teachers to facilitate learning without having to access a range of other resources.

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## **Resourcing the unit**

The resources suggested are on the whole, general rather than specific. Schools and the contexts in which they exist vary widely as does the availability of some resources – particularly in remote areas. There is a strong emphasis in the unit on gathering information and data; research and observations also feature strongly as these methods develop important skills and ensure that the exploration of the topics are grounded in a relevant context.

Some YouTube and online videos in addition to Internet based resources are suggested in the unit. You will need to investigate what is available in your school.

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## **Industry Contacts**

Nuts for Life <https://www.nutsforlife.com.au/> (<https://www.nutsforlife.com.au/>)

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## **Assessment**

The unit provides an opportunity for a range of skills and understandings to be observed.

There is a Project based Assessment

Rather than being a task carried out at the end of the unit, assessment is viewed as integral to the entire unit sequence. Each activity should be regarded as a context for assessment of student learning. When planning and implementing the unit of work make clear decisions on what you will

focus on in assessing learning. The unit provides an opportunity for a range of skills and understandings to be observed. We encourage you to devise an assessment plan or assessment rubric that features areas to be assessed over subsequent lessons. In planning for assessment, student learning in the following areas can be considered:

- Understandings about the topic.
- Development of skills.
- Exploration and clarification of values.
- Use of language in relation to content.
- Ability to use and critically analyse a range of texts.
- Ability to analyse and solve problems.
- Ability to interpret information, perceive its meaning and significance, and use it to complete real-world tasks.
- Ability to work cooperatively with others.
- Approach to learning (independence, confidence, participation and enthusiasm).

For this unit, the following understandings are provided to assist teachers in planning for assessment. Assessment strategies  Each stage in the inquiry sequence provides information about student learning. This unit contains a 'Student Task' which is well suited for assessment as it is the summation of the work undertaken by the students in the unit. Work samples should be retained for this purpose.

### **Length of Unit**

4 - 6 lessons depending on whether practical production is included on campus.

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### **Learning Sequence**

Learning Experience	Activities  Students will:	Summary
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<p>1 1x60min lesson</p>	<ul style="list-style-type: none"><li>- respond to a quick class survey on  Nut consumption to determine consumption patterns of nuts by Australians and brainstorm reasons for these consumption rates</li><li>- examine the Assessment Project and booklet to be worked on progressively</li><li>- develop knowledge of the Australian nut industry by examining the variety of  Nuts available on the Australian market, where grown and the importance to Australia's agricultural industry</li><li>- establish the importance of nuts for a healthy diet by identifying where nuts are included in the ADG, the recommended serves and serving size for nuts, different ways nuts can be incorporated into daily diet</li></ul> <p><b>Homework:</b> Complete Background Information page in booklet.</p>	<p>Develop knowledge of Australian  Nut industry</p> <p>Gain an overview of the importance of nuts for a healthy diet</p>
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<p>2 1x60min lesson</p>	<ul style="list-style-type: none"> <li>- gain understanding of how the factors (social and sustainable factors) influence decisions made by consumers</li> <li>- examine how the features of technologies (aesthetics, cost, time, ingredients, equipment and tools, techniques and processes) influence the design of products when creating a healthy lunch snack to meet the needs of adolescents.</li> </ul> <p><b>Homework:</b> Complete Part 1 of Task</p>	<p>Understand factors that influence the design of products, services and environments to meet present and future needs</p> <p>Examine features of technologies impact on designed solutions and influence design decisions</p>
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<p>3 1x60min lesson</p>	<ul style="list-style-type: none"><li>- examine in detail the nutritional value of Nuts, including ways nuts contribute to good health and identifying the future health benefits of regular nut consumption.</li><li>- gain knowledge of preventive health practices to design and implement a health promotion activity using nuts (handful of nuts a day)</li><li>- evaluate the opportunity for food specialisation using nuts to promote healthy eating and develop a list of criteria for success</li><li>- research recipes for healthy Snacks using nuts</li><li>- evaluate suitability of items to solve the Design problem by analysing the characteristics and properties of Nuts that affect preparation techniques and presentation when designing solutions for healthy eating</li></ul> <p><b>Homework:</b> Complete Part 2(a) (b) (c) of project task</p>	<p>Plan and use health practices, behaviours and resources to enhance health and wellbeing of their communities</p> <p>Evaluate needs or opportunities for food specialisation</p> <p>Analyse how characteristics and properties of food determine preparation techniques and presentation when designing solutions for healthy eating</p>
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<p>4 1x60min lesson</p>	<ul style="list-style-type: none"> <li>- discuss the criteria needed to for the product to be successful – technological features, production processes and sensory features of the finished product</li> <li>- develop a Criteria for success table for a healthy snack for this adolescent. Refer to the factors you have investigated to develop this table.</li> <li>- individually choose a product to solve the Design problem</li> </ul> <p><b>Homework:</b> Complete part 2(d) and 3 of project task</p>	<p>Develop criteria for success in solving the problem</p> <p>Identify and manage risks in the development of various projects</p> <p>Make decisions and justify</p>
<p>5 1x60min lesson</p>	<ul style="list-style-type: none"> <li>- work in a small group to decide on the best solution to the problem by examining the chosen recipes using  Nuts</li> <li>- revise WHS guidelines required for production</li> <li>- identify the impact of the food preparation technique on the nutritional value of the N </li> <li>- evaluate the sensory properties of the product that includes  Nuts</li> <li>- suggest improvements.</li> </ul> <p><b>Homework:</b> Complete part 4 of project task</p>	<p>Collaborate and manage the process to solve the Design problem</p>

<p>6 1x60min lesson</p>	<p>Produce the product at home or school</p> <p>evaluate the process and product using the Criteria for success.</p> <p><b>Homework:</b> Complete parts 5 and 6 of project task</p>	<p>Produce the product using nuts</p> <p>Evaluate the success of the process and product, referring to the criteria for success</p>
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## Teacher Background Information

With nearly two thirds of adults and a quarter of Australian children overweight or obese  - a condition fundamentally linked to poor food choice and a lack of exercise, it is essential that we encourage Australians to base their food choices on nutrient-rich, whole foods. It's these foods that should be eaten more often - fruits, vegetables, mushrooms, wholegrains, legumes, seeds and nuts.

According to 2016 Consumer Insights research commissioned by Nuts for Life, 95% of Australians do not eat a handful of nuts a day and the number one health-related reason is because they are concerned about nuts' fat and kilojoule content and their potential to cause weight gain. In 2015, Nuts for Life researchers found that regular nut consumption as part of a healthy, balanced diet contributes to heart health without causing weight gain.

The Heart Foundation states that nuts are an important part of a heart-healthy eating pattern. They're a good source of healthier fats and regular consumption of nuts is linked to lower levels of bad (LDL) and total blood cholesterol . So, include a handful (30g) every day! Add them to salads, yoghurt or your morning cereal.

Nuts are a nutrient-dense, whole food that plays an important role in healthy diets to help protect against chronic disease and manage body weight. Compared with non-nut eaters, those who eat nuts:

- tend to have a lower body mass index (BMI)
- Are less likely to gain weight over time
- tend to have better diet quality
- have less incidence of chronic disease and
- have reduced cardiovascular disease and all cause mortality. 

## Why dietitians are nuts about nuts?

- Nuts have high levels of the healthy fats (mono and polyunsaturated fats (<https://daa.asn.au/smart-eating-for-you/smart-eating-fast-facts/nourishing-nutrients/the-ins-and-outs-of-unsaturated-fats/>)) and low levels of the unhealthy fats (saturated fats (<https://daa.asn.au/smart-eating-for-you/smart-eating-fast-facts/nourishing-nutrients/where-do-i-find-saturated-fats-in-food/>)).
- Nuts are a good source of antioxidants and a range of vitamins and minerals.
- Nuts are also a good source of fibre (<https://daa.asn.au/smart-eating-for-you/smart-eating-fast-facts/nourishing-nutrients/dietary-fibre-a-key-ingredient-in-gut-happiness/>) and have a low Glycaemic Index (<https://daa.asn.au/smart-eating-for-you/smart-eating-fast-facts/food-labels/making-sense-of-the-glycaemic-index/>) (GI) which means they will help keep you fuller for longer.
- Nuts contain around 10 to 20% protein, a similar amount to that found in eggs. They sit alongside meat and eggs in the Australian Guide to Healthy Eating (<https://www.eatforhealth.gov.au/>) as they share similar nutrient profiles. So, nuts can be a good source of protein for vegetarians and vegans.

## ~~Which nuts are the healthiest?~~

~~Plain, unsalted nuts are the best choices. Nuts are delicious and tasty on their own, but if you want to try something different, dry roast your nuts at home with a light dusting of turmeric or a sprinkling of rosemary or add to meals.~~

## ~~How many nuts should I eat?~~

~~Because nuts are naturally high in healthy fats, they will add to your energy intake. So, for good health you should eat nuts in moderation. This means about one serve of nuts per day as part of a healthy diet.~~

~~A serve of nuts is about 1/3 of a cup or 30g, which is equal to:~~

- ~~20 almonds~~
- ~~10 Brazil nuts~~
- ~~15 cashews~~
- ~~4 chestnuts~~
- ~~20 hazelnuts~~
- ~~15 macadamias~~
- ~~15 pecans~~
- ~~2 tablespoons pine nuts~~
- ~~60 pistachios in shells for 30g of kernels~~



- 10 whole walnuts or 20 walnut halves
- A small handful of mixed nuts.

References:

 <https://www.nutsforlife.com.au/> (<https://www.nutsforlife.com.au/>) 

<https://daa.asn.au/smart-eating-for-you/smart-eating-fast-facts/food-and-food-products/why-dietitians-are-nuts-about-nuts/> (<https://daa.asn.au/smart-eating-for-you/smart-eating-fast-facts/food-and-food-products/why-dietitians-are-nuts-about-nuts/>) 

<https://www.heartfoundation.org.au/healthy-eating/food-and-nutrition/fats-and-cholesterol/monounsaturated-and-polyunsaturated-omega-3-and-omega-6-fats> (<https://www.heartfoundation.org.au/healthy-eating/food-and-nutrition/fats-and-cholesterol/monounsaturated-and-polyunsaturated-omega-3-and-omega-6-fats>) 

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## Learning Experience 1

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### Lesson overview

This learning experience will allow students to gain an understanding of the consumer consumption of nuts, gain knowledge related to learning in Design and Technologies and gain an overview of the Assessment project to be undertaken in this unit.

### Lesson Outcomes

Students will:

- revisit the concept of healthy eating
- recap on the goals of the learning area of Design and Technologies
- contribute to a survey on consumption of nuts and discuss the results
- examine the current trend for consumer consumption of nuts
- identify the types of tree nuts available
- read the assessment task to understand the goals for this unit of work
- gain a background knowledge of nuts.

### Teacher background

The behavioural patterns of adolescents (ages 10 to 17) established during this developmental period helps determine young people's current health status and their risk for developing chronic

diseases during adulthood. Although adolescence is generally a healthy time of life, some important health and social problems, such as nutrition and weight conditions and corresponding mental health, either start or peak during these years.

<https://www.healthypeople.gov/2020/topics-objectives/topic/Adolescent-Health>

(<https://www.healthypeople.gov/2020/topics-objectives/topic/Adolescent-Health>)

### **Nuts and General Health**

Almonds, Brazil nuts, cashews, chestnuts, hazelnuts, macadamias, pecans, pine nuts, pistachios and walnuts are all nuts that are packed full of beneficial nutrients for good health. Enjoying nuts regularly as part of a healthy diet has been shown to contribute to heart health, reduce overall mortality, and may reduce the risk of developing type 2 diabetes and help with weight management. Nuts naturally contain a broad range of important vitamins, minerals, antioxidants and other phytochemicals helping you achieve a balanced diet.

### **Nuts and Brain Health**

Tree nuts, such as almonds, Brazil nuts, cashews, chestnuts, hazelnuts, macadamias, pecans, pine nuts, pistachios and walnuts are rich in a wide range of nutrients that are important for brain health and optimal cognitive performance. These include healthy fats (monounsaturated and polyunsaturated fats) and proteins plus antioxidant compounds (flavonoids and resveratrol). Nuts also contain essential vitamins including several B group vitamins (for example folate), vitamin E and minerals such as calcium, iron, zinc, potassium and magnesium, selenium, manganese and copper.

Following a healthy dietary pattern, which limits the intake of added sugars and processed foods, while maximising intakes of fish, fruits, vegetables, nuts, and seeds is promoted as one strategy to help slow down signs of aging including cognitive decline. There is evidence to support healthy dietary patterns benefiting cognitive performance in younger populations with nuts being a key part of these diets. Based on current available evidence, eating nuts regularly is good for your brain. So, ensure you enjoy a healthy handful, every day.

<https://www.nutsforlife.com.au/health-fact-sheets/nuts-and-brain-health/>

(<https://www.nutsforlife.com.au/health-fact-sheets/nuts-and-brain-health/>)

### **GOOD FOOD FOR LIFE**

Healthy eating is good idea regardless of how old you are and what else you do. It helps reduce the risk of lifestyle-related health conditions and boosts energy levels, helping you get the most out of each day. To meet your daily nutrient requirements, it's important to include a variety of foods from the key food groups. You should also be active, take time out to enjoy life and make sure you get enough sleep.

## Design and Technologies

Learning in Design and Technologies builds on concepts, skills and processes developed in earlier years, and teachers will revisit, strengthen and extend these as needed.

By the end of Year 8 students will have had the opportunity to create designed solutions at least once in the following four technologies contexts: Engineering principles and systems, Food and fibre production, Food specialisations and Materials and technologies specialisations. Students should have opportunities to design and produce products, services and environments.

In Year 7 and 8 students investigate and select from a range of technologies — materials, systems, components, tools and equipment. They consider the ways characteristics and properties of technologies can be combined to design and produce sustainable designed solutions to problems for individuals and the community, considering society and ethics, and economic, environmental and social sustainability factors. Students use creativity, innovation and enterprise skills with increasing independence and collaboration.

Students respond to feedback from others and evaluate design processes used and designed solutions for preferred futures. They investigate design and technology professions and the contributions that each makes to society locally, regionally and globally through creativity, innovation and enterprise. Students evaluate the advantages and disadvantages of design ideas and technologies.

Using a range of technologies including a variety of graphical representation techniques to communicate, students generate and clarify ideas through sketching, modelling, perspective and orthogonal drawings. They use a range of symbols and technical terms in a range of contexts to produce patterns, annotated concept sketches and drawings, using scale, pictorial and aerial views to draw environments.

With greater autonomy, students identify the sequences and steps involved in design tasks. They develop plans to manage design tasks, including safe and responsible use of materials and tools, and apply management plans to successfully complete design tasks. Students establish safety procedures that minimise risk and manage a project with safety and efficiency in mind when making designed solutions.

Go to Australian Curriculum - Yr 7/8 Design and Technologies Description

(<https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/design-and-technologies/?>

year=12976&strand=Design+and+Technologies+Knowledge+and+Understanding&strand=Design+and+Technologies+Processes+and+Production+Skills&capability=ignore&capability=Literacy&capability=Numeracy&capability=Information+and+Communication+Technology+%28ICT%29+Capability&capability=Critical+and+Creative+Thinking&capability=Personal+and+Social+Capability&capability=Ethical+Understanding&capability=Intercultural+Understanding&priority=ignore&priority=

Aboriginal+and+Torres+Strait+Islander+Histories+and+Cultures&priority=Asia+and+Australia%E2%80%99s+Engagement+with+Asia&priority=Sustainability&elaborations=true&elaborations=false&scotterms=false&isFirstPageLoad=false)

## Videos

Design and Technologies overview (7min14) Teaching and Learning in South Australia

[https://www.bing.com/videos/search?](https://www.bing.com/videos/search?q=design+and+technologies+curriculum&&view=detail&mid=8F1AAACEDE7C38F4DD92E8F1AAAEDE7C38F4DD92E&&FORM=VRDGAR)

[q=design+and+technologies+curriculum&&view=detail&mid=8F1AAACEDE7C38F4DD92E8F1AAAEDE7C38F4DD92E&&FORM=VRDGAR](https://www.bing.com/videos/search?q=design+and+technologies+curriculum&&view=detail&mid=8F1AAACEDE7C38F4DD92E8F1AAAEDE7C38F4DD92E&&FORM=VRDGAR) (https://www.bing.com/videos/search?

[q=design+and+technologies+curriculum&&view=detail&mid=8F1AAACEDE7C38F4DD92E8F1AAAEDE7C38F4DD92E&&FORM=VRDGAR](https://www.bing.com/videos/search?q=design+and+technologies+curriculum&&view=detail&mid=8F1AAACEDE7C38F4DD92E8F1AAAEDE7C38F4DD92E&&FORM=VRDGAR))

Design and Technologies – an introduction ACARA 6mins13

[https://www.bing.com/videos/search?](https://www.bing.com/videos/search?q=design+and+technologies+curriculum&&view=detail&mid=84FA82F7E6B93587440984FA82F7E6B935874409&&FORM=VRDGAR)

[q=design+and+technologies+curriculum&&view=detail&mid=84FA82F7E6B93587440984FA82F7E6B935874409&&FORM=VRDGAR](https://www.bing.com/videos/search?q=design+and+technologies+curriculum&&view=detail&mid=84FA82F7E6B93587440984FA82F7E6B935874409&&FORM=VRDGAR) (https://www.bing.com/videos/search?

[q=design+and+technologies+curriculum&&view=detail&mid=84FA82F7E6B93587440984FA82F7E6B935874409&&FORM=VRDGAR](https://www.bing.com/videos/search?q=design+and+technologies+curriculum&&view=detail&mid=84FA82F7E6B93587440984FA82F7E6B935874409&&FORM=VRDGAR))

PowerPoint 1 (pdf/Nuts/PP1 Yr 7-8 Learning Experience 1 Introduction.pptx)

Student Project Task Booklets (pdf/Nuts/Yr 7-8 NUT STUDENT WORKBOOK ASSESSMENT TASK PROJECT.pdf)

## Equipment

- Set up data projector for Powerpoint 1
- Print Student Project Task booklets
- Access to <https://www.nutsforlife.com.au/health-fact-sheets/nuts-and-general-health/> (<https://www.nutsforlife.com.au/health-fact-sheets/nuts-and-general-health/>)

## Lesson steps

1. Revisit the concept of healthy eating by brainstorming the links between quality food and health.
2. Conduct an informal survey with the class to establish their knowledge of nuts and nutrition. Collate the answers from the class. Assess if the class answers correlate with the research. Examine the current trend for consumer consumption of nuts.
3. Distribute Student Project Task booklets. Read the Project Task requirements and the Standards elaborations.

4. Explain the steps involved in the Design Process.
5. Develop background student knowledge of nuts by defining nuts, researching where nuts are grown and why nuts are important to Australia's agricultural industry. Identify the types of tree nuts available. Students are to record this information in their Project booklet.
6. Refer to graphic of the Healthy diet pyramid (Powerpoint). Pose a question for students: Where are nuts situated? What does this imply?
7. Establish the recommended daily serve and size for nuts and ways nuts can be included in the daily eating plan. Students are to record this information in their Project booklet.

## Supporting resources

### Websites

Nuts for Life <https://www.nutsforlife.com.au/> (<https://www.nutsforlife.com.au/>)

Australian Curriculum Year 7/8 Design and Technologies description

(<https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/design-and-technologies/?>

[year=12976&strand=Design+and+Technologies+Knowledge+and+Understanding&strand=Design+and+Technologies+Processes+and+Production+Skills&capability=ignore&capability=Literacy&capability=Numeracy&capability=Information+and+Communication+Technology+%28ICT%29+Capability&capability=Critical+and+Creative+Thinking&capability=Personal+and+Social+Capability&capability=Ethical+Understanding&capability=Intercultural+Understanding&priority=ignore&priority=Aboriginal+and+Torres+Strait+Islander+Histories+and+Cultures&priority=Asia+and+Australia%E2%80%99s+Engagement+with+Asia&priority=Sustainability&elaborations=true&elaborations=false&scotterms=false&isFirstPageLoad=false](https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/design-and-technologies/?year=12976&strand=Design+and+Technologies+Knowledge+and+Understanding&strand=Design+and+Technologies+Processes+and+Production+Skills&capability=ignore&capability=Literacy&capability=Numeracy&capability=Information+and+Communication+Technology+%28ICT%29+Capability&capability=Critical+and+Creative+Thinking&capability=Personal+and+Social+Capability&capability=Ethical+Understanding&capability=Intercultural+Understanding&priority=ignore&priority=Aboriginal+and+Torres+Strait+Islander+Histories+and+Cultures&priority=Asia+and+Australia%E2%80%99s+Engagement+with+Asia&priority=Sustainability&elaborations=true&elaborations=false&scotterms=false&isFirstPageLoad=false))

Nutrition Australia: <http://www.nutritionaustralia.org/national/resource/healthy-eating-pyramid>

(<http://www.nutritionaustralia.org/national/resource/healthy-eating-pyramid>)

<http://www.nutritionaustralia.org/national/frequently-asked-questions/general-nutrition/nuts-and-health> (<http://www.nutritionaustralia.org/national/frequently-asked-questions/general-nutrition/nuts-and-health>)

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## Learning Experience 2

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### Lesson Overview

This learning experience will allow students to gain an understanding of the factors that influence the design of products, services and environments to meet present and future needs and examine features of technologies impact on designed solutions and influence design decisions.

## Lesson Outcomes

Students will:

- gain understanding of how the factors (social and sustainable factors) influence decisions made by consumers
- examine how the features of technologies (aesthetics, cost, time, ingredients, equipment and tools, techniques and processes) influence the design of products when creating a healthy lunch snack to meet the needs of adolescents.

## Teacher background

Design and Technologies

In Year 7 and 8 students investigate and select from a range of technologies — materials, systems, components, tools and equipment. They consider the ways characteristics and properties of technologies can be combined to design and produce sustainable designed solutions to problems for individuals and the community, considering society and ethics, and economic, environmental and social sustainability factors. Students use creativity, innovation and enterprise skills with increasing independence and collaboration. Go to Australian Curriculum Yr 7-8 Design and Technologies Band Description ([https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/design-and-technologies/?](https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/design-and-technologies/?year=12976&strand=Design+and+Technologies+Knowledge+and+Understanding&strand=Design+and+Technologies+Processes+and+Production+Skills&capability=ignore&capability=Literacy&capability=Numeracy&capability=Information+and+Communication+Technology+%28ICT%29+Capability&capability=Critical+and+Creative+Thinking&capability=Personal+and+Social+Capability&capability=Ethical+Understanding&capability=Intercultural+Understanding&priority=ignore&priority=Aboriginal+and+Torres+Strait+Islander+Histories+and+Cultures&priority=Asia+and+Australia%E2%80%99s+Engagement+with+Asia&priority=Sustainability&elaborations=true&elaborations=false&scotterms=false&isFirstPageLoad=false)

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Videos

Design and Technologies overview (7min14) Teaching and Learning in South Australia

[https://www.bing.com/videos/search?](https://www.bing.com/videos/search?q=design+and+technologies+curriculum&&view=detail&mid=8F1AAACEDE7C38F4DD92E8F1AAE7C38F4DD92E&&FORM=VRDGAR)

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Design and Technologies – an introduction ACARA 6mins13

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PowerPoint 2 (pdf/Nuts/PP2 Yr 7-8 Learning Experience 2 Project Part 1.pptx)

## Equipment

- Set up data projector for Powerpoint 2
- Student Project Task booklets (from previous Lesson)

## Lesson steps

1. Review Part 1 of the task in student booklet, page 4. Students to summarise the task by completing the first four responses in the Design summary.
2. Powerpoint 2 - Watch the film clip 'Factors affecting food choices' (1min44) to establish that before a food product is designed, there are factors, that influence the design, to be considered. Refer to the Powerpoint 2 to explain the social and sustainability factors.
3. Refer to Powerpoint 2 to explain how the features of technology may impact on design decisions
4. Students are to use the information discussed to complete the Design summary, explaining how these social and sustainable factors will impact on their design.

## Supporting resources

Websites

Australian Curriculum - Year 7-8 Design and Technologies

(<https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/design-and-technologies/?>

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## Learning Experience 3

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### Lesson Overview

This learning experience will allow students to plan and use resources to enhance health and wellbeing, evaluate opportunities for food specialisation using nuts, analyse how characteristics and properties of food determine preparation techniques and presentation when designing solutions for healthy eating.

### Lesson Outcomes

Students will:

- examine in detail the nutritional value of nuts, including ways nuts contribute to good health and identifying the future health benefits of regular nut consumption.
- gain knowledge of preventive health practices to design and implement a health promotion activity using nuts
- evaluate the opportunity for food specialisation using nuts to promote healthy eating and develop a list of criteria for success
- evaluate suitability of items to solve the Design problem

### Teacher background

Nuts are like nature's  own vitamin pill – a unique nutritional powerhouse. Nuts contain a combination of at least 28 different essential nutrients and bioactive substances. A healthy, well balanced diet should include a variety of different foods, including nuts to ensure all essential nutrients are obtained.

Nuts are vital for heart health - Nuts are an excellent source of healthy fats – polyunsaturated and monounsaturated, as well as containing Vitamin E, antioxidants, folate, arginine and plant sterols – all of which contribute to better heart health. Studies show enjoying a handful of nuts (30g) at least five times a week can significantly reduce the risk of developing heart disease by 30–50%. A recent review of 61 controlled intervention trials concluded that tree nut intake lowers total and LDL cholesterol with stronger effects observed at amounts of 60g or more a day.

Nuts help control body weight- Eating nuts regularly can actually help you maintain a healthy body weight and not cause weight gain. The fibre and protein help to satisfy hunger and reduce appetite, whilst the healthy fats in the nuts help release satiety hormones in the digestive system which help to tell you when you're full. Nut eaters also excrete more fat in their stools. A review of 82 blood lipid studies found that eating nuts improves indicators of heart health, without causing weight gain. This is supported by a meta-analysis that found that nut consumption was associated with non-significant decreases in body weight, BMI and waist circumference.

Nuts add fibre to your diet - All nuts contribute fibre to the diet – around 8g per 100g on average, and eating foods rich in fibre, particularly soluble fibre, helps satisfy hunger for longer. Dietary fibre also helps to lower blood cholesterol and is essential for healthy bowel function.

Nuts may reduce the risk of diabetes - Nuts contain nutrients and bioactive substances such as fat, fibre and polyphenols that can help improve insulin function, as well as reducing the rise in blood glucose after eating. They also contain magnesium, and a diet high in magnesium has been linked to a reduced risk of developing type 2 diabetes. Studies have shown that eating a 30g handful of nuts at least four times a week reduces the risk of type 2 diabetes by 13–27%.

Regular nut consumption has also been linked to a host of other health benefits including: gut health, brain health, reducing the risk of cancer, and living longer.

Here's some tips on getting more nuts into your daily diet:

- Add nuts to your bread and muffin recipe
- Blend nuts into fruit smoothies – e.g. milk, yoghurt, fruit and almonds
- Use roasted chestnuts in place of potato or add to a stuffing mix
- Crumbles always taste better when you add chopped nuts
- Throw nuts into a salad – they add great texture and flavour
- Make your own nut butters and pastes
- Toss nuts through your veggies with some olive oil and garlic
- Add nuts to homemade muesli, blended into smoothies, topped over cereal, or sprinkled over avo-toast
- Make your own pesto – try walnuts, almonds and pine nuts
- Make your own energy boosting trail mixes – a selection of your favourite nuts, dried fruit and some chocolate
- Add nuts to jazz up your stir-fries, pastas and risottos • Simply enjoy a handful as an afternoon, or any time snack <https://www.nutsforlife.com.au/>

Videos A range of videos are available at <https://www.nutsforlife.com.au/media/videos-about-nuts/> (<https://www.nutsforlife.com.au/media/videos-about-nuts/>)

PowerPoint 3 (pdf/Nuts/PP3 Yr 7-8 Learning Experience 3 Project Part 2 (a) (b) (c).pptx)

## Equipment

- Set up data projector and Powerpoint 3.
- Student Project Task booklets (from Lesson 1)
- Access to <https://www.nutsforlife.com.au/health-fact-sheets/nuts-and-general-health/> (<https://www.nutsforlife.com.au/health-fact-sheets/nuts-and-general-health/>)

## Lesson steps

1. Review requirements for Project Task Part 2 (Student booklet page 5).
2. Brainstorm the current and future health needs of an adolescent. Watch the film clip 'Nuts your perfect training partner' to gain an overview of how nuts can contribute to health; Powerpoint 3; slide 3. Students to record the needs of the adolescent in Project booklet.
3. Revise the position of nuts in the ADG, serving size and recommended daily serves and develop a list of tips for healthy product design; Powerpoint 3; slides 4,5.
4. Brainstorm ways to include nuts into food products. Powerpoint 3; slide 14.
5. Students to summarise the nutritional value of nuts on page 5.
6. Refer to Powerpoint 3 Slides 6 – 9 to discuss the how nuts contribute to general health and healthy body weight.
7. Watch the video 'Nuts - how do they reduce heart disease' (0.37sec) Powerpoint 3 Slide 10.
8. Powerpoint 3 slide 11 – discuss how nuts can promote brain function.
9. Watch the video 'Nuts how do they reduce diabetes'(0.43secs) Powerpoint 3 Slide 12.
10. Investigate other factors that must be considered when designing products – aesthetics, cost, ingredients, equipment and tools, techniques and processes, time.
11. Students are to use the information discussed to complete the Design summary, explaining how these features of technologies will impact on their design.
12. **HOMEWORK:**  
Complete page 6 of Project Booklet. Access Nuts for Life website for further information.  
Complete page 7 of Project Booklet. Research recipes for healthy snacks using nuts by accessing the Nuts for Life website <https://www.nutsforlife.com.au/> (<https://www.nutsforlife.com.au/>)

## Supporting resources

### Websites

Nuts for Life <https://www.nutsforlife.com.au/> (<https://www.nutsforlife.com.au/>) Australian

Curriculum - Year 7-8 Design and Technologies (<https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/design-and-technologies/?>

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Eat for Health <https://www.eatforhealth.gov.au/guidelines/australian-guide-healthy-eating> (<https://www.eatforhealth.gov.au/guidelines/australian-guide-healthy-eating> )

Nutrition Australia <http://www.nutritionaustralia.org/national/frequently-asked-questions/general-nutrition/nuts-and-health> (<http://www.nutritionaustralia.org/national/frequently-asked-questions/general-nutrition/nuts-and-health>)

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## Learning Experience 4

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### Lesson Overview

This learning experience will allow students to develop criteria for success to meet the needs of the design challenge, identify and manage risks associated and make decisions with justification.

### Lesson Outcomes

Students will:

- discuss the criteria needed to for the product to be successful – technological features, production processes and sensory features of the finished product
- develop a Criteria for success table for a healthy snack for this adolescent. Refer to the factors you have investigated to develop this table.
- individually choose a product to meet the needs of the Design Challenge.

## **Teacher Background**

Design and Technologies

In Year 7 and 8 students consider the ways characteristics and properties of technologies can be combined to design and produce sustainable designed solutions to problems for individuals and the community, considering society and ethics, and economic, environmental and social sustainability factors. Students use creativity, innovation and enterprise skills with increasing independence and collaboration.

Students respond to feedback from others and evaluate design processes used and designed solutions for preferred futures. Students evaluate the advantages and disadvantages of design ideas and technologies.

Using a range of technologies including a variety of graphical representation techniques to communicate, students generate and clarify ideas through sketching, modelling, perspective and orthogonal drawings. They use a range of symbols and technical terms in a range of contexts to produce patterns, annotated concept sketches and drawings, using scale, pictorial and aerial views to draw environments.

With greater autonomy, students identify the sequences and steps involved in design tasks. They develop plans to manage design tasks, including safe and responsible use of materials and tools, and apply management plans to successfully complete design tasks. Students establish safety procedures that minimise risk and manage a project with safety and efficiency in mind when making designed solutions.

Australian Curriculum - Go to Yr 7/8 Design and Technologies Band Description

(<https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/design-and-technologies/?>

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## **Equipment**

Student Project Task booklet

Access to website 'Nuts for Life' <https://www.nutsforlife.com.au/>

## Lesson steps

1. Students need to identify the factors and features that will determine if their product is a successful solution? Using the knowledge gained in previous lessons, students complete the table on page 8.
2. Students are to draw and annotate 2 of their design ideas on page 9 of the booklet. Provide feedback on their ideas and direct students to refer to the criteria for success table to decide which design will be the most successful.
3. Individually, students choose a product to meet the needs of the Design Challenge.
4. Students produce a production plan for their chosen product – page 10.

## Supporting resources

### Websites

Nuts for Life <https://www.nutsforlife.com.au/> (<https://www.nutsforlife.com.au/>)

Australian Curriculum - Go to Yr 7/8 Design and Technologies Band Description

(<https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/design-and-technologies/?>

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# Learning Experience 5

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## Lesson Overview

This learning experience will allow students to collaborate and manage the process to make decisions to meet the needs of the Design Challenge.

## Lesson Outcomes

Students will:

- work in a team to decide on the best solution to meet the needs of the Design Challenge by examining the chosen recipes using  notes
- revise WHS guidelines required for production.

## Teacher Background

Design and Technologies

In Year 7 and 8 students consider the ways characteristics and properties of technologies can be combined to design and produce sustainable designed solutions to problems for individuals and the community, considering society and ethics, and economic, environmental and social sustainability factors. Students use creativity, innovation and enterprise skills with increasing independence and collaboration.

Students respond to feedback from others and evaluate design processes used and designed solutions for preferred futures. Students evaluate the advantages and disadvantages of design ideas and technologies.

Using a range of technologies including a variety of graphical representation techniques to communicate, students generate and clarify ideas through sketching, modelling, perspective and orthogonal drawings. They use a range of symbols and technical terms in a range of contexts to produce patterns, annotated concept sketches and drawings, using scale, pictorial and aerial views to draw environments.

With greater autonomy, students identify the sequences and steps involved in design tasks. They develop plans to manage design tasks, including safe and responsible use of materials and tools, and apply management plans to successfully complete design tasks. Students establish safety procedures that minimise risk and manage a project with safety and efficiency in mind when making designed solutions.

Australian Curriculum - Go to Yr 7/8 Design and Technologies Band Description

(<https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/design-and-technologies/?>

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Aboriginal+and+Torres+Strait+Islander+Histories+and+Cultures&priority=Asia+and+Australia%E2%80%99s+Engagement+with+Asia&priority=Sustainability&elaborations=true&elaborations=false&scotterms=false&isFirstPageLoad=false)

## Equipment

Worksheet 1 (pdf/Nuts/Yr 7-8 Learning Experience 5 Worksheet 1 SAW.pdf)

Student

Project Task booklet

Print worksheet 1

Access to website 'Nuts for Life' <https://www.nutsforlife.com.au/>

(<https://www.nutsforlife.com.au/>)

## Lesson Steps

1. Students will present the design idea to their team and decide which idea best solves the design challenge by using a Strengths and Weaknesses table to examine the chosen recipes using  ts – worksheet 1.
2. Suggest improvements.
3. Revise WHS guidelines required for production.
4. Redevelop the Production plan for team use.

## Supporting resources

### Websites

Australian Curriculum - Go to Yr 7/8 Design and Technologies Band Description

(<https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/design-and-technologies/?>

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Nuts for Life <https://www.nutsforlife.com.au/> (<https://www.nutsforlife.com.au/>)

# Learning Experience 6

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## Lesson Overview

This learning experience will allow students to develop technical production skills and safe working practices to produce solutions for a design challenge, while working safely and cooperatively.

## Lesson Outcomes

Students will:

- Follow workplace health and safety guidelines
- Produce healthy product including nuts as an ingredient
- Evaluate the suitability of each to provide a solution for the design challenge.

## Teacher background

Teachers must meet the minimum qualifications for supervisors; e.g. an adult with competence (knowledge and skills) in medium-risk cooking and food hygiene procedures; the use of medium-risk equipment; and maintaining a safe kitchen in a school setting as per their employing authority such as <http://education.qld.gov.au/curriculum/carmg/pdf/maintaining-safe-kitchen.pdf> (<http://education.qld.gov.au/curriculum/carmg/pdf/maintaining-safe-kitchen.pdf>)

## Equipment

[Worksheet 2 \(pdf/Nuts/Yr 7-8 Learning Experience 6 Worksheet 2.pdf\)](#)

[Worksheet 3 \(pdf/Nuts/Yr 7-8 Learning Experience 6 Worksheet 3 TERMINOLOGY.pdf\)](#)

Print Worksheet 2 and Worksheet 3

- Kitchen with adequate space to ensure that safety rules and procedures can be followed
- Work stations that are the appropriate height
- Sufficient light and ventilation
- Level floor surfaces with non-slip coverings; no damage or cracks which can pose potential hygiene risks; and no tripping hazards.
- Work areas that have easy access to exits in case evacuation is required because of fire and/or gas leakage.
- Appropriate facilities available on site to enable a satisfactory standard of hygiene (including hand washing facilities, laundry and garbage disposal).
- Washing-up facilities (including adequate supply of hot water and cleaning agents).

- Adequate facilities for food storage (cold and dry) to ensure there is no risk of food contamination.
- Adequate and easily accessible power outlets.
- Appropriate safety aids for safe handling, lifting and carrying.
- Electrical cords that are inspected regularly for damage and stored in such a way to prevent curling and stress on wires.
- Preparation surfaces on benches or tables have been cleaned and sanitised with commercial cleaning agents.
- Appropriate personal protective equipment (including covered, non-porous footwear; clean apron; and gloves).
- Ready access to appropriate safety equipment (including fire extinguishers and fire blankets).
- Clean up equipment (including a broom, dustpan, breakages bin, and spill kit).
- Equipment that is clean, in good condition and regularly maintained.

### Lesson steps

1. Students will follow school's procedure for entering kitchen and setting up.
2. In a small team, produce and present the selected recipes, using the production plan.
3. Taste the food produced and complete a sensory evaluation - **Worksheet 2**, using sensory analysis terminology - **Worksheet 3**.
4. Decide which products meet the needs of the Design Challenge.
5. Clean the production area.
6. Evaluate the process and product using the Criteria for success.
7. Homework: Complete parts 5 and 6 in Student Project Task booklet.

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