

# Creating a savoury breakfast muffin

Levels 7 and 8,  
Home Economics,  
sample unit of work

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# Introduction to the unit of work

## Overview

<b>Title:</b>	Creating a savoury breakfast muffin
<b>Timing (approximate):</b>	5 × 1-hour sessions
<b>Description:</b>	Students explore the characteristics and properties of vegetables, as well as ways to consume vegetables at most meals. Using a design brief, they design and produce a savoury breakfast muffin that could be exhibited in the Royal Melbourne Show Art, Craft & Cookery Competition and gather feedback to determine if any modifications should be made to the muffin.

## Links to the Victorian Curriculum F–10

<b>Curriculum area and levels:</b>	Design and Technologies, Levels 7 and 8
<b>Strand:</b>	Technologies Contexts
<b>Sub-strand and content description:</b>	Food specialisations Analyse how characteristics and properties of food determine preparation techniques and presentation when creating solutions for healthy eating ( <a href="#">VCDSTC047</a> )
<b>Strand:</b>	Technologies Contexts
<b>Sub strands and content descriptions:</b>	Creating Designed Solutions Investigating Critique needs or opportunities for designing and investigate, analyse and select from a range of materials, components, tools, equipment and processes to develop design ideas ( <a href="#">VCDSCD049</a> ) Generating Generate, develop and test design ideas, plans and processes using appropriate technical terms and technologies including graphical representation techniques ( <a href="#">VCDSCD050</a> ) Producing Effectively and safely use a broad range of materials, components, tools, equipment and techniques to produce designed solutions ( <a href="#">VCDSCD051</a> )
<b>Achievement standard:</b>	By the end of Level 8, students ... 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. ... They independently and safely produce effective designed solutions for the intended purpose.

<b>Curriculum area and levels:</b>	Health and Physical Education, Levels 7 and 8
<b>Strand:</b>	Personal, Social and Community Health
<b>Sub-strand and content description:</b>	Being healthy, safe and active  Investigate and select strategies to promote health, safety and wellbeing ( <a href="#">VCHPEP126</a> )
<b>Achievement standard:</b>	By the end of Level 8, students ... investigate strategies that enhance their own and others' health, safety and wellbeing.

## Additional links

This unit of work could be adapted to link to the Design and Technologies sub-strand Planning and managing.

## Advice and teaching considerations

### Equipment and resources

- tool to design an infographic, such as PowerPoint or Canva
- [Australian Guide to Healthy Eating](#)
- seasonal vegetables, both raw and cooked
- processed vegetables, both raw and cooked
- taste-testing template ([Appendix 1](#))
- Padlet or sticky notes
- design brief for breakfast muffin ([Appendix 2](#))
- ingredients for a basic savoury muffin batter ([Appendix 3](#))
- SCAMPER thinking techniques for designing a breakfast muffin ([Appendix 4](#))
- evaluating breakfast muffins – individual feedback and feedback from classmates ([Appendix 5](#))

### Preparation

Before starting the unit of work:

- source ingredients for the muffins
- identify and source seasonal vegetables and processed vegetables.

### Occupational Health and Safety

Teachers should be familiar with the Victorian Department of Education and Training [Risk Management](#) policy and references that provide resources to assist in identifying and mitigating against risk in schools.

In this activity, particular consideration should be given to:

- supervision of students using food preparation equipment
- risk of injury due to cuts from equipment used.

### Key concepts and vocabulary

**Characteristic:**

An attribute of a material or object, usually detected using human senses, such as its texture, colour or taste (for example, mealiness, redness, sweetness)

**Sensory properties:**

The characteristics of food that can be detected by the human senses, such the food's texture, appearance, flavour and aroma

# Learning sequence

## Session 1

### Learning intentions:

We will understand the importance of consuming vegetables at most meals every day.

We will understand various ways vegetables can be processed for purchase and the ways they can be consumed at most meals every day.

### Success criteria:

I can identify the importance of consuming vegetables every day.

I can identify the advantages of the different ways vegetables are sold (for example, fresh, frozen, canned).

I can identify similarities and differences between different types of vegetables.

## Learning activity

- Discuss with students why it is important to try to incorporate vegetables at each meal. Remind students that all types of fresh and processed (for example, frozen, canned and dried) vegetables are an important part of the diet every day. Refer to images of vegetables in the Australian Guide to Healthy Eating to support this discussion. Explore the advantages of consuming both seasonal and processed vegetables as part of our diet. Link discussion to nutritional benefits, costs, accessibility, freshness, flavour, etc.
- Conduct a class survey to investigate the consumption of vegetables at breakfast, lunch, dinner and snack times. Remind students that legumes such as chickpeas, kidney beans and black beans can be classified as vegetables. Collate and discuss the findings of this survey. What were the similarities in the types of vegetables that were eaten at each meal? What were the differences? What vegetables were consumed? Were there any vegetables that were unusual or new to some students? Discuss if the vegetables are fresh or processed. Students could create an infographic using PowerPoint or Canva to present their findings.

## Session 2

### Learning intentions:

We will understand the seasonality of vegetables.

We will understand ways to incorporate seasonal and processed vegetables into a muffin we could eat for breakfast.

### Success criteria:

I can identify vegetables that are in season.

I can identify vegetables that are processed.

I can discuss sensory properties of different types of vegetables.

## Learning activity

- Bring in a variety of different vegetables for students to explore. Include both fresh and processed vegetables, and some that would be unfamiliar to students. Provide an opportunity for students to taste the vegetables in their raw and cooked states. Students discuss which ones they would like to explore to determine if they could be used as part of a savoury breakfast muffin. Possible activities include the following:
  - Conduct a taste-testing of their selected vegetables in raw and cooked states using the taste-testing vegetables template ([Appendix 1](#)).
  - Discuss which vegetables would most likely need to be precooked if used as an ingredient in a muffin and which could be included in their raw state. Encourage students to think creatively about various ways to cook vegetables and various ways to prepare raw vegetables (for example, make the vegetable into flour, grate it, chop it or use it whole), and how these methods would contribute to the sensory properties of the muffin. Encourage them to think about the importance of a variety of colours, tastes, textures and/or aromas, and complementary colours, tastes, textures and/or aromas.
  - Investigate how the characteristics of vegetables change when cooked. Student could determine which vegetables they think taste better cooked and which taste better raw and discuss why some vegetables taste better cooked and some better raw.
  - Explore the different shapes and sizes that vegetables could be chopped into.
- Explore which vegetables were unfamiliar to students, including any uncommon vegetables, and what students think about the characteristics and sensory properties of these vegetables.

## Session 3

### Learning intentions:

We will understand how the characteristics of vegetables can be used to produce a healthy savoury breakfast muffin.

We will understand how to investigate and generate design ideas.

### Success criteria:

I can identify ways to include vegetables in a muffin as part of breakfast.

I can generate design ideas to meet the requirements of a design brief.

I can use annotations to communicate design ideas that meet a brief.

I can write an original recipe for a muffin that meets the requirements of a design brief.

## Learning activity

- Review Sessions 1 and 2 by recapping why it is important to consume vegetables at most meals. Reflect on what students learnt about the sensory properties of the vegetables they examined.
- Ask students to brainstorm 'vegetables that could be incorporated into a muffin' and share their ideas using a collaborative tool such as Padlet or using sticky notes. Discuss which vegetables would complement one another and provide reasons. Remind students about sensory properties. Students could refer to the taste-testing template. Encourage students to consider:
  - a variety of vegetables, including those that are uncommon or unfamiliar to them
  - various ways vegetables can be purchased (for example, fresh, canned, frozen, dried) and if the fresh vegetables are in season
  - various ways to prepare vegetables, for example, grating, chopping, making into flour.
- Unpack the requirements of the design brief ([Appendix 2](#)) and provide time for students to individually design a healthy savoury breakfast muffin that meets the requirement of the brief. Discuss with students what criteria could be used to determine success according to the requirements of the design brief. Ask them to develop at least four criteria for success that can be used to judge the suitability of their design ideas and muffins.
- Allow time for students to research and explore the requirements of the design brief. Remind them that each muffin must be unique. Get them thinking about ways to be creative with their muffin design. Assist students by:
  - providing them with guiding information about types and amounts of ingredients required to make a basic muffin batter ([Appendix 3](#))
  - providing them with SCAMPER thinking techniques for designing a breakfast muffin ([Appendix 4](#)) to support them to think creatively when coming up with design ideas for their muffin
  - discussing which combinations of vegetables would go well together; for example, ask students to come up with ideas for two seasonal vegetables that go well together
  - discussing as a class why it is important for students to consider how much of each vegetable to include in the muffin recipe and whether the amount of added vegetables would contribute a lot or not much moisture
  - discussing different types of whole grains that could be incorporated

- exploring different types of seeds; for example, encourage students to explore if seeds from the vegetables could be used, for example, pumpkin seeds or cucumber seeds.
- Ask students to write out the ingredient list and method for their original savoury breakfast muffin, considering the ratio of liquid and dry ingredients. Also ask students what strategies they will use to evaluate their breakfast muffin, such as using hedonic scales ([Appendix 5](#)).

## Session 4

### Learning intentions:

We can produce a recipe that meets the requirements of a design brief for a healthy muffin.

We can safely use ingredients, equipment and techniques to produce a healthy savoury breakfast muffin that meets the requirements of a design brief.

### Success criteria:

I can follow a recipe and produce a muffin prototype that meets the requirements of a design brief.

I can gather feedback on a muffin prototype and suggest areas for improvement.

I can use criteria for success to judge the suitability of my design ideas.

## Learning activity

- Ask students to produce their breakfast muffin recipe, annotating any changes to their original recipe as they make the muffins.
- Get students to obtain feedback about their muffins. Students could evaluate their muffins individually or get feedback from peers using a hedonic scale ([Appendix 5](#)). Questions to consider include:
  - Did the muffins work?
  - What needs to change?
  - Did the ingredients complement one another?
  - Was the mixture the right consistency or was it too dry or too moist?
  - Did the muffins taste okay?
  - Were all ingredients cooked?
  - Did the muffin look attractive?
  - Is the muffin appealing?
  - What needs to be refined or added?
- Based on the evaluation feedback, determine what modifications need to be made to the muffin recipe.

## Session 5

**Learning intention:**

We can safely use ingredients, equipment and techniques to produce a healthy savoury breakfast muffin that meets the requirements of a design brief.

**Success criteria:**

I can follow a recipe for a designed solution and use the required materials to make a healthy savoury breakfast muffin.

I can use criteria for success to judge the suitability of my designed savoury breakfast muffin.

### Learning activity

- Ask students to make their final version of the breakfast muffin, addressing evaluation feedback.
- Refer students to the four criteria for success that they developed to determine the success of their savoury breakfast muffin. Ask them to assess whether they have met the success criteria.

# Appendices

## Appendix 1: Taste-testing vegetables template

Vegetable 1: \_\_\_\_\_

Repeat table for 4 or 5 vegetables.

	Raw	Cooked
Appearance <i>Insert descriptions of appearance or photos</i>		
Flavour		
Texture		
Aroma		
Other characteristics (e.g. colour)		
Comments (e.g. preference)		

## Appendix 2: Design brief for a breakfast muffin

Australians need to consume vegetables at every meal in order to meet the Australian Dietary Guidelines recommendations. The design problem to solve is finding a way that Australians can consume vegetables at breakfast.

Your brief is to create a batch of healthy savoury muffins\* that can be consumed for breakfast and are also suitable to be placed in a child's lunchbox.

The muffins must contain:

- two vegetables
- one type of seed (can be toasted, crushed, whole, etc.)
- one wholegrain product.

A healthy muffin is high in fibre and low in salt, added sugars and fat. Remember, the Australian Guide to Healthy Eating recommends consuming small amounts of unsaturated (polyunsaturated and monounsaturated) fats, spreads and/or oils daily, such as nut butters and spreads; olive, canola and sunflower oils; and avocado.

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\*Please note, the name of the designed product (for example, 'muffin') is not typically included in a design brief but in this instance, it is listed to ensure compliance with the requirements of the [Royal Agricultural Show Victoria Schedule for categories JNR128, JNR141, JNR142, and JNR143](#).

## Appendix 3: Ingredients for a basic savoury muffin batter

*Makes 4–6 muffins*

1 cup self-raising flour

½ cup milk

1 egg

1½ tablespoons olive oil

major flavouring, e.g. vegetables

complementary flavourings, e.g. herbs, cheese, mustards

## Appendix 4: SCAMPER thinking techniques for designing a breakfast muffin

<b>Substitute</b>	<ul style="list-style-type: none"> <li>• What if I replace this ingredient with ...?</li> <li>• What ingredients could I substitute instead of flour, milk or oil?</li> <li>• Can I use another process instead of ...?</li> </ul>
<b>Combine</b>	<ul style="list-style-type: none"> <li>• What if I combine this ingredient with ...?</li> <li>• What ingredients can I combine?</li> </ul>
<b>Adapt</b>	<ul style="list-style-type: none"> <li>• What if I applied this ingredient on ...?</li> <li>• Can I change the sensory properties or characteristics of one or more ingredients, for example, make the muffin batter red?</li> </ul>
<b>Modify, magnify or 'minify'</b>	<ul style="list-style-type: none"> <li>• What if I magnify the shape/size/colour/texture of an ingredient?</li> <li>• What if I 'minify' the shape/size/colour/texture of an ingredient?</li> <li>• What can I modify to increase fibre in the muffin?</li> <li>• What can I modify to increase the nutrition of the muffin?</li> <li>• Can I change the sensory properties or characteristics of a vegetables, for example, its shape, colour, texture or smell?</li> <li>• Which part of the vegetable can I change?</li> <li>• Which ingredient/s can I magnify to highlight or emphasise it/them?</li> <li>• Which ingredient/s can I remove or reduce?</li> <li>• Can I add extra flavourings?</li> <li>• Can I add value to the muffin?</li> <li>• Can I change the shape, look or feel of the muffin?</li> </ul>
<b>Put to another use</b>	<ul style="list-style-type: none"> <li>• What if I use this ingredient as a ...?</li> <li>• What else may an ingredient be used for?</li> <li>• How can an ingredient/s be used in a different way?</li> </ul>
<b>Eliminate</b>	<ul style="list-style-type: none"> <li>• What if I remove this ingredient?</li> <li>• What ingredient can I eliminate to simplify or streamline the muffin recipe?</li> <li>• What ingredients can I eliminate to suit a dietary requirement, for example, coeliac or vegan?</li> </ul>
<b>Reverse</b>	<ul style="list-style-type: none"> <li>• What if I reordered the steps to make the muffin?</li> <li>• What parts of the recipe can I rearrange in some way?</li> <li>• What would happen if I reversed a process or sequenced things differently?</li> <li>• How could I reorganise the muffin?</li> </ul>

## Appendix 5: Evaluating savoury breakfast muffins

### Individual feedback

Appearance					
Flavour					
Texture					
Aroma					
Overall rating					

## Feedback from classmates

	Person 1	Person 2	Person 3	Person 4	Person 5
<b>Appearance</b>	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊
<b>Flavour</b>	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊
<b>Texture</b>	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊
<b>Aroma</b>	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊
<b>Overall rating</b>	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊	☹️☹️☹️😊😊