

Taste & Learn™

CSIRO's vegetable education program
for Australian primary schools

Teacher resource manual

Unit 3: Year 5 – Year 6



USE OF TASTE & LEARN™ MATERIALS

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**Hort
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Contents

Objectives	ii
Lesson plan	1
Lesson 1: How our senses interact	2
Lesson 2: A science experiment on taste of vegetables	6
Lesson 3: Vegetables from farm to plate	17
Lesson 4: Vegetables and cultural diversity	21
Lesson 5: The vegetable dip challenge	26
Appendix A: Unit 3 PowerPoint slides	36
Image credits	48

Objectives

The specific objectives of Unit 3 are for students to:

- Increase knowledge and familiarity with vegetable products and processing.
- Understand how the senses interact in the perception of vegetables.
- Learn how cultural background and exposure shape food preferences.
- Build a vocabulary about how processing affects vegetable sensory characteristics.
- Conduct an experiment about vegetables using a scientific approach.
- Become more open to experiencing a broad variety of vegetable forms.

Lesson plan

LESSON	TITLE	LESSON OUTLINE
1	How our senses interact	Students: <ul style="list-style-type: none">• Discover how our senses interact when we eat foods.• Investigate how appearance influences perception and consumption. <p>Extension</p> Students explore colour variety in vegetables and graph results.
2	A science experiment on taste of vegetables	Students: <ul style="list-style-type: none">• Learn to identify, plan and apply the elements of scientific investigations such as hypothesis, variables, constant.• Participate in a scientific experiment about the taste of vegetables.• Plan a scientific experiment about the taste of vegetables. <p>Homework</p> Students observe, measure and record data for a scientific investigation about the taste of vegetables.
	Extension	Students suggest improvements to the scientific methods used in their experiment.
3	Vegetables from farm to plate	Students: <ul style="list-style-type: none">• Investigate the role of food technology in producing vegetable products available all year round.• Compare the taste and texture of two fresh vegetables and their processed variant. <p>Extension</p> Students describe how a vegetable gets from farm to plate.
4	Vegetables and cultural diversity	Students: <ul style="list-style-type: none">• Understand how cultural background shapes food preferences from an early age by evaluating culturally diverse vegetables and preparation.• Compare data from the students' investigations about the taste of vegetables. <p>Extension</p> Students enhance understanding of multicultural diversity by exploring dishes and vegetables from their chosen culture.
5	The vegetable dip challenge	Students: <ul style="list-style-type: none">• Create a recipe for a dip that is tasty and looks good.• Taste and evaluate different vegetable dips.• Realise that dips can be a fun way to add vegetables to your diet. <p>Extension</p> Students 'pitch' their dip to other students.

Lesson 1: How our senses interact

Lesson outline

STUDENTS

- Discover how our senses interact when we eat foods.
- Investigate how appearance influences perception and consumption.

EXTENSION ACTIVITIES

- Explore colour variety in vegetables and graph results.

Materials

FOR THE CLASS

- PowerPoint slides, lesson 1, slides 1–6.
- Two different green vegetables (one piece of each for each student).
- Knife, cutting board, containers with lids.
- Six A4 Carousel Brainstorm station sheets– see ‘Preparation’.
- Class record.

FOR EACH GROUP/STUDENT

- Science journal.

VEGETABLES

Description

Two green vegetables – one that your students are likely to like and one that your students may not like.

Suggestions

Avocado (liked)

Green capsicum (may not like)

Alternatives

Liked: snow peas, peas, cucumber

May not like: cabbage, broccoli



Preparation



PREPARATION OF THE VEGETABLES

- Source two vegetables of the same (preferably green) colour. Choose one that your students will like and one that they may not like. Vegetables will need to be different in taste, smell and feel.
- Wash/cut up/store the vegetables (see 5.2 How to safely prepare vegetables, Taste & Learn™, general information for teachers and schools, page 18). Prepare at least one piece of each vegetable per student.
- If you have chosen avocado, cube it just before the lesson or, if more practical, prepare it in advance and sprinkle with lemon juice to prevent browning.
- Prepare six A4 sheets of paper for a ‘Carousel Brainstorm’ (see Teacher’s background notes). Prepare two sheets with the question, ‘What do you know about your five senses in relation to eating food?’ (Stations 1 and 4); two sheets with the question, ‘What do you know about individual food preferences?’ (Stations 2 and 5); and two sheets with the question ‘What do you know about processing of vegetables?’ (Stations 3 and 6). Write the station numbers on the top of the sheet.

Teacher's background notes

- This lesson engages students with the program and begins exploring the various topics of the Unit (senses, preferences, vegetables and processing). For generic background information on these topics, see Chapter 4, 'Theory around the vegetable education' in 'Taste & Learn™', general information for teachers and schools, page 9 -15.
- In the second part of the lesson, students will learn how their senses interact with one another when eating and drinking.
- We want to teach students to use all their senses (vision, hearing, smell, taste, feel) when they consume a food. For background information on the senses see, 4.1, 'The five senses', 'Taste & Learn™', general information for teachers and schools, page 9.
- The taste of food is determined by four key basic tastes: salty, sweet, sour and bitter. Taste is perceived through the tongue only via the papillae. With a blocked nose (by pinching or a cold), you can only perceive the taste of food but not its flavour characteristic (e.g. floral, fruity, caramel etc).
- Smell is perceived through the nose but also while we swallow food.
- Flavour is a combination of the taste and smell that we encounter when eating a food.
- Texture corresponds to geometrical characteristics that you can feel with your hands (e.g. rough, smooth, grainy, sharp, etc.) or with the soft parts inside your mouth while eating (e.g. smooth, thick, grainy, gluey, slimy, etc.), and to mechanical properties perceived during eating (e.g. hard, chewy).
- Appearance corresponds to the product characteristics that you can see (colour, colour intensity, shape, size). Appearance characteristics are the first things you perceive when about to eat a food. Together they contribute to the identification of the food and provide clues based on previous experience on how it might taste.
- Our senses interact with each other. Appearance can interact with taste/flavour, for example, a pink yoghurt might lead us to think the product tastes like strawberry. We are usually not aware of the way our senses interact and how this influences our judgments.
- We want students to realise that they should not base their judgment only on the appearance of a food as this could be misleading and incomplete. Instead, they need to try a food before they decide if they like it or not.
- Some children dislike all green vegetables because they have negative associations with the colour green in vegetables and they do not even pay attention to the taste and texture. We would like students not to over generalise based on colour. In reality, green vegetables differ a lot in their tastes and textures. We would like students to understand this. Hopefully, this would lead them to really taste the vegetables and not discard a whole category just because of its colour.
- 'Carousel Brainstorm' – students rotate around the 'stations' in small groups, stopping at various 'stations' for a designated amount of time to record what they know on the prepared A4 question sheets. The Carousel Brainstorm is used in this lesson to elicit prior knowledge of the lesson components.

Suggested activities / Lesson steps



ENGAGE – THE SENSES, PREFERENCES AND VEGETABLE PROCESSING

- Explain to the students that you want to find out what they already know about their senses, food preferences and food processing. They are going to participate in a 'Carousel Brainstorm', where they will visit three 'stations' in groups of four or five and address the question they find at each station. Explain that there are six stations but they will only visit three, consecutively. Form six groups of students and direct them to a 'station'. Explain that they need to select a scribe and that the group has three minutes to record as many things as they can at each station. At your signal, they will move to the next station, read what the previous group has written and add anything more that they know. At your signal, they will move to their third station for their last question.

Suggested set up

Class discussion, groups

Additional resources

A4 Carousel Brainstorm 'station' question sheets.

**Suggested set up**

Class discussion

Additional resources

PowerPoint slides, lesson 1, slides 2 – 6

Two green vegetables

Science journal

The questions for each station are:

- Stations 1 and 4: 'What do you know about your five senses in relation to eating food?'
- Stations 2 and 5: 'What do you know about individual food preferences?'
- Stations 3 and 6: 'What do you know about processing of vegetables?'

- Set the groups to work, allowing three minutes at each station. When the students have completed three stations, collect the question sheets and read them to the class. Check that they have included information covering:
 - Senses. How the senses are involved in experiencing vegetables. Do the senses affect each other?
 - Individual preferences. What factors determine liking or disliking of foods (check whether the sensory properties and cultural background are mentioned). Can disliking of vegetables change? E.g. have you had a vegetable that you did not like before and do like now? How did that happen?
 - Processing of vegetables. Does the form in which you eat a vegetable affect how much you like it. Can the students give examples?

If these aspects are not covered after you have read the six 'station' sheets to the students, cover the information in guided discussion.

ELABORATE – TASTING VEGETABLES OF THE SAME COLOUR

- Introduce sensory interactions by showing PowerPoint slide 3 with two differently coloured yoghurts (pink and white).
 - Ask the students what flavours they think these yoghurts may be and how they think they would taste – (presumably they will answer strawberry or similar for the pink one, and vanilla or sour for the white one)
 - Ask if they think the yoghurts could actually taste the same. Activate the additional picture on slide 3 by pushing the 'Enter' key and discuss how food colouring can be added to give an impression of a certain taste without actually changing the taste.
- Present PowerPoint slides 4–6 with examples of vegetables where aspects of senses influence perceptions (e.g. pictures of differently coloured carrots, celery in different colours but same shape). Discuss how the senses are involved in eating food, including vegetables.
- Note that appearance (colour, shape) can guide the expectation of what something will taste like.

Then ask:

- What associations do you have with orange vegetables?
- What associations do you have with green vegetables?

- Explain that the students will be invited to eat and evaluate the taste of two green vegetables and that they need to use all their senses when evaluating. Remind them of food safety and ask them to wash their hands.

Present the first vegetable, uncut, and ask the students to:

- Describe the appearance.
- Describe its hand feel.

- Repeat with the second vegetable.

Give students a piece of the first vegetable and direct them to look at it. Ask students to:

- Name the vegetable.
 - Describe the appearance.
 - Describe the smells.
 - Put the vegetable into their mouth, feel the piece with the tongue and describe how it feels (slimy, dry, rough, grainy, etc.)
 - Start chewing and describe the taste, flavour and texture.
- Start a list of descriptors on a flipchart or use a class record (keep two pages available for descriptors). This list will expand throughout the program and students will be able to refer to it when they wish to.
 - Repeat the two steps above with the second vegetable.
 - Ask the students to compare the two vegetables regarding their sensory properties. Discuss what they have in common (green colour) and what differentiates them (taste, flavour and texture, shape).
 - Discuss:
 - How the senses can interact with each other and note that it can be misleading if we decide on the taste of something when we only see its appearance.
 - The fact that the appearance of a vegetable or a food can give you an idea of how it is going to taste, but it is only through tasting that you can be sure if you like a vegetable or not.
 - The tasting protocol (look, smell, taste/feel, hear) as a means of taking all senses into account.
 - The difference between taste and flavour, and what texture is.
 - Conclude the lesson by re-emphasising the importance of tasting and not overgeneralising on the basis of colour of vegetables.

EXTENSION ACTIVITIES

- Ask students to create a table that lists as many vegetables in a variety of colours as they can think of. They can also indicate how many of these vegetables they have tasted and how many they like.
- Discuss and/or graph group responses.

Lesson 2: A science experiment on taste of vegetables

Lesson outline

STUDENTS

- Learn to identify, plan and apply the elements of scientific investigations, such as hypothesis, variables, constant.
- Participate in a scientific experiment about the taste of vegetables.
- Plan a scientific experiment about the taste of vegetables.

HOMEWORK ACTIVITY

- Observe, measure and record data for a scientific investigation about the taste of vegetables.

EXTENSION ACTIVITY

- Suggest improvements to the scientific methods used in their first experiment.

Materials

FOR THE CLASS

- PowerPoint slides, lesson 2, slides 7–10.
- Six celery stalks with leaves (enough for two pieces for each student).
- Two clear plastic jugs or tall containers (1L).
- Blue food colouring.
- Knife.
- Class record.

FOR EACH GROUP/STUDENT

- Student worksheet 1, 'How colour affects food choice'.
- Student worksheet 2, 'Suggested experiments'.
- Student worksheet 3, 'Investigation planner'.
- Science journal.

VEGETABLES

Description

One vegetable that can be presented in two conditions (e.g. prepared in two different ways, different colours)

Suggestion

Celery (natural colour and with blue colouring added)

Alternatives

Different preparations:

Broccoli, cauliflower, beans (raw and cooked OR cooked for two different amounts of time OR boiled and steamed)

Pumpkin/sweet potato/potato (boiled and baked)

Carrot (cubed/sliced and grated)

Different natural colours:

French beans (green and yellow), cauliflower (white and green), carrot (orange and purple/white/yellow), capsicum (red and yellow/orange)



Preparation



PREPARATION OF CELERY FOR FIRST EXPERIMENT

- Prepare the celery one day in advance.
- You can buy half a bunch of celery and separate six stalks with leaves.
- Using a knife, cut the end of the stalk attached to the roots to ensure it is flat and regular. Wash the stalks.
- Fill two plastic jugs each with approx. 1L of tap water.
- Add 16 drops of blue food colourant to one of the plastic jugs and stir with a spoon.
- Place three stalks in the jug with blue water and the remaining three stalks in the jug filled with uncoloured tap water. Cover with cling wrap and store in the refrigerator.
- The next day, before the lesson, remove and discard the leaves attached to the stalks. Cut the stalks into 1cm pieces, cross ways. Place the two types of celery (dyed and undyed) in separate containers and store as described in 5.2 How to safely prepare vegetables, Taste & Learn™, general information for teachers and schools, page 18.

PREPARATION FOR INVESTIGATION SECOND EXPERIMENT

- Make copies of student worksheet 1, 'How colour affects food choice'; student worksheet 2, 'Suggested experiments'; student worksheet 3, 'Investigation planner'; and the 'Information note for parents and carers', for each student.

Teacher's background notes

- In this lesson, students will work in groups and participate in an experiment about the taste of vegetables. Students are the subjects in the experiment. This experiment will encourage students to think about the role of food appearance in eating.
- To develop an understanding of experimental parameters, the experiment further explains the role that food appearance has in eating. Appearance provides us with expectations about how the food will taste. However, we need to eat the food to confirm our opinion. Therefore, we need to taste lots of foods so that we can build our experience. We might be surprised by the texture or the taste of food and actually come to enjoy foods more for those characteristics than for their appearance.
- Students will use the experiment as an example to understand the elements of a scientific investigation. They will work in groups to determine the hypothesis, the variable and the parameters of the experiment.
- Once students have worked with the basic concepts of a science investigation, they will conduct their own experiment, partly as a homework activity, over the next two weeks. They will select an investigation to conduct and may work in groups to plan their chosen investigation. The experiment will then be conducted at home.
- The final part and results of this second investigation will be conducted in lesson 4 of this Unit.
- A science planner is included as student worksheet 3 'Investigation Planner'. Alternatively, CSIRO has developed a program to conduct independent science investigations, the CREST program (<https://www.csiro.au/en/Education/Programs/CREST>). If you are already working with this program, you can use the CREST science planner for the investigation.



Suggested set up

Groups

Additional resources

PowerPoint slide, lesson 2, slide 8

Two 1cm celery pieces per student (one green, one blue)

Student worksheet 1 'How colour affects food choice'

Science journal

Suggested activities / Lesson steps

EXPLORE – A SCIENTIFIC EXPERIMENT WITH CELERY

- Introduce PowerPoint slide 8, a green and a blue stalk of celery. Explain that you, the teacher, will conduct a science experiment with celery. The students will be the participants in the experiment.
- Direct the students to wash their hands. Divide the students into small groups and distribute a bowl of green celery and a bowl of blue celery to each group.

Ask students to answer the following questions in their science journal:

- What is the same about the two celery stalks?
- What is different?

Ask the students to:

- Take a piece of the green celery and taste it.
- Take a piece of the blue celery and taste it.
- Record in their science journal if the pieces tasted the same or different and in what way/s.
- Ask for a show of hands of students who thought the pieces tasted the same. Ask for a show of hands for those who thought the pieces tasted different. Record the results in the class record.
- Introduce student worksheet 1, 'How colour affects food choice'. This worksheet requires the students to engage with the elements of a scientific investigation. Ask the groups to discuss the missing information but instruct students to individually complete their worksheet and paste it into their science journals.
- To conclude the activity, share the students' recorded work and discuss the meaning of the different parts of a scientific investigation:
 - Investigative question.
 - Hypothesis.
 - The variables
 - What one thing the investigator will change?
 - What things the investigator will keep the same?
 - What the investigator will observe/measure?
 - Equipment.
 - Procedure.
 - Safety precautions.
 - Results.
 - Conclusion/s.



Suggested set up

Whole class, groups

Additional materials

PowerPoint slides, lesson 2, slides 9–10

Student worksheet 2 'Suggested experiments'

Student worksheet 3 'Investigative planner'

Information note to parents/carers

EXPLAIN – PLANNING YOUR OWN EXPERIMENT

- Explain that the students are going to plan an experiment to conduct at home, or in class if time allows.
- Distribute student worksheet 2, 'Suggested experiments'. Introduce the suggested investigations.
 - Can you change how much a person likes a vegetable through repeated exposure?
 - How do the sensory properties of a vegetable (appearance, taste, texture, smell) change when you vary the preparation method/cooking method?
 - Does the ripeness of 'vegetable/fruit' affect its taste?
- Discuss the suggestions on the worksheet and how they could conduct the experiments. Consider the viability of other experiments the students may suggest. Ask the students to choose the investigation that they will do.
- Using PowerPoint slides 9 and 10, revisit the elements of an investigation. Distribute worksheet 3, 'Investigation Planner'. If you are working with the CSIRO CREST program, you may choose to use the CREST science planner for the investigation. Ask the students to fill in the first box of the Investigation Planner with the title of the investigation that they have chosen (suggestions 1–4 from worksheet 2 'Suggested Experiments'). Students who have chosen the same investigation may choose to work together. Assist them in writing their investigative question and ask them to fill in the Investigative Planner up to and including the 'Procedure' box. Move around the class, offering assistance as it is needed.
- Conclude the lesson with answers to queries the students may have. Explain that they should carry out their investigation at home and complete worksheet 3, 'Investigation Planner' up to, and including 'The results. What happened?' section and return the worksheet to school in two weeks' time. Explain that in lesson 4 in two weeks, the students will complete the worksheet. Distribute and go through 'Information note for parents and carers' and ask the students to strike out on the sheet, the three investigations that they have not chosen.

Note: If it is unlikely that students will have the opportunity to complete the homework activity, it may be possible to provide the experience in class.

EXTENSION ACTIVITY

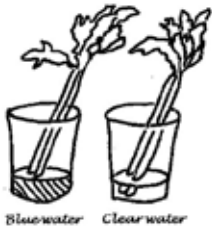
Students open their science journals to the completed worksheet 1, 'How colour affects food choice'. Ask the students to suggest improvements to the scientific methods used in the experiment. Discussion/ideas may include:

- Evaluating the investigative question – could it have been more focussed or expressed in a different way?
– Could it have been better related to the variables?
- What went well in the investigation?
- What did not go well in the investigation?
- What they could have done to make the investigation results more reliable/true?
 - Repeat the experiment a few times?
 - Could something else have caused the result?
- What they could have done to make the experiment more valid/fair?
 - Accurately changed only one variable?
 - Included more variables?
- The measurements/observations:
 - How accurate were they?
 - Could the measurement/observation have been done in a more accurate way?
 - Could more people tasting, giving an opinion and comparing results make a difference?
- Could the results be presented in a more convincing way?
 - Graph?
 - Table?
 - Photographic evidence?

Student worksheet 1

How colour affects food choice

Name: _____ Date: _____



Fresh celery stalks were placed in water, one in uncoloured, clear water and one into blue water. Not long after, the celery stick in the blue coloured water began to turn blue due to capillary action. These stalks were used in the taste experiment.

Fill in the missing information in the Investigation Planner.

Investigation planner

Title of the investigation: Taste tricked by appearance

The experiment. In this experiment, I wanted to see if the colour of the celery would have an effect on my students' perception of its taste. All students were offered a piece of green and a piece of blue celery to taste and they were asked if one tasted different to the other. The number of responses was counted for comparison.

The investigative question.

What I am going to investigate? Is a person's perception of taste affected by the appearance of the food?

My hypothesis (educated guess, theory). What I think will happen.

I think some students will think that the blue celery tastes different to the green.

Why I think this will happen.

I think that the appearance of food influences how people think it will taste.

Student worksheet 1 continued

The variables – things in the experiment that can be **changed**, kept the **same** and **measured** or **observed**.

What one thing am I **going to change** during the experiment?

What thing/s am I going to **keep the same** during the experiment?

What will I **observe/measure**?

How am I going to **observe/measure**?

Safety precautions I need to take.

Equipment.

Blue and green celery pieces in containers.

Procedure. What our group will do.

Hands will be washed.

All students will be offered naturally green and dyed blue celery to taste.

Students will be asked to record if they think there is a taste difference or not.

I will count all the 'yes, they taste different' and 'no, they have the same taste' scores to see if some people, and how many people, thought the taste was different.

The result. What happened?

Why do you think this happened?

If this experiment was done again, what could be changed to make it better?

Conclusions:

Student worksheet 2

Suggested experiments

- Can you change how much a person likes a vegetable through repeated exposure?
- How do the sensory properties of a vegetable (appearance, taste, texture, smell) change when the preparation method/cooking method is varied?
- Does the ripeness of a 'vegetable/fruit' affect its taste?

Suggestions on how you could conduct the experiments

<p>Can you change how much a person likes a vegetable through repeated exposure?</p>	<p>Pick a vegetable that you know the person does not like very much. Do the experiment with more than one person if possible.</p> <ul style="list-style-type: none">- Ask the person/people to rate their liking of the vegetable. You could use a smiley face scale.- Ask the person/people to eat a piece of the vegetable every day for minimum eight days.- After those eight days, ask the person/people how much the vegetable is now liked to see if their liking has shifted.
<p>How do the sensory properties of a vegetable (appearance, taste, texture, smell) change when you vary the preparation method/cooking method?</p>	<p>Pick a vegetable. Choose different preparation methods or cooking methods that you want to compare, such as:</p> <ul style="list-style-type: none">- Compare fresh with juiced vegetables- Compare diced with shredded or sliced vegetables and/or other preparation methods- Compare vegetable (e.g. beans, broccoli) prepared with different cooking methods (steaming, boiling, baking, frying, etc.)
<p>Does the ripeness of 'vegetable/fruit' affect its taste?</p>	<ul style="list-style-type: none">- Store a bag of bananas/avocados, etc., in a cool place outside the refrigerator for a maximum of four days. Record how the vegetable tastes and feels each day. <p><i>Make sure that an adult checks each day that your chosen vegetable/fruit is of good quality to eat.</i></p>

Student worksheet 3

Investigation Planner

Name: _____ Date: _____

Title of the investigation:

The investigative question. What I am going to investigate.

My hypothesis (educated guess, theory). What I think will happen.

Why I think this will happen.

The variables – things in the experiment that can be **changed**, kept the **same** and **measured** or **observed**.

What one thing am I **going to change** during the experiment?

What thing/s am I going to **keep the same** during the experiment?

What will I **observe/measure**?

How am I going to **observe/measure**?

Student worksheet 3 continued

Safety precautions I need to take.

Equipment.

Procedure. What I will do.

The results. What happened?

Why I think this happened.

If this experiment was done again, what could be changed to make it better?

Conclusions:

Information note for parents and carers

Date _____

Taste & Learn™

The objectives of our unit of study about vegetables are to increase students' knowledge and awareness of vegetables and to increase their enjoyment of them.

We are undertaking a science experiment about the taste of vegetables. We want to find out what happens when we conduct a vegetable tasting investigation.

Your child has chosen to investigate:

Can you change how much a person likes a vegetable through repeated exposure?

or

How do the sensory properties of a vegetable (appearance, taste, texture, smell) change when you vary the preparation method/cooking method?

or

Does the ripeness of a 'vegetable/fruit' affect its taste?

You can help with the completion of the 'Procedure' and 'The results' sections of the Investigation planner.

I ask that you source and supervise preparation of the vegetables and remind your child to check on their experiment and record results.

The completed 'Investigation planner' is due back at school by _____ so that your child can complete the final aspects of the investigation in class.

We thank you for your assistance in this educational activity.

Please let me know if it is not convenient for your family to be involved.

Class Teacher.



Lesson 3: Vegetables from farm to plate

3

Lesson outline

STUDENTS

- Investigate the role of food technology in producing vegetable products available all year round.
- Compare the taste and texture of two fresh vegetables and their processed variant.

EXTENSION ACTIVITY

- Describe how vegetables get from farm to plate.

Materials

FOR THE CLASS

- PowerPoint slides, lesson 3, slides 11–15.
- Two vegetables – one fresh and one industrially processed (one piece of each for each student).
- Knife, cutting board, containers with lids.
- Class record.

FOR EACH GROUP/STUDENT

- Science journal.

EXTENSION ACTIVITY

- Student worksheet 4, 'The movement of food from farm to plate'.

VEGETABLES

Description

Two vegetables that can be consumed in their fresh and processed forms.

Suggestions

Corn (fresh: cooked from cob, processed: popcorn, canned or creamed)

Peas (fresh: fresh or frozen; processed: canned)

Alternatives

Tomato: fresh and canned/sundried/sauce

Eggplant: freshly grilled and roasted in oil

Mushroom: fresh and canned

Spinach: fresh and canned

Carrot: fresh and canned/frozen

Kale: fresh and chips



Preparation



PREPARATION OF THE VEGETABLES

- Source two vegetables that you can find both in the fresh state and in the processed state, using suggestions above.
- Wash/cut up/store the vegetables (see 5.2 How to safely prepare vegetables, Taste & Learn™, general information for teachers and schools, page 18).
- Prepare the processed vegetable as indicated on the package/container. Prepare at least one piece of each vegetable per student.

Teacher's background notes

The aim of this lesson is to increase the students' knowledge about where their food comes from and what is involved in getting it to the consumer. The PowerPoint supports the lesson.

- Fresh vegetables are either consumed raw or cooked and this could be done using different methods.
- Vegetables are available not only in their fresh form, but also in processed form
- There are different ways to process vegetables: freezing, canning, fermenting, drying, etc.
- Usually, vegetables are processed to extend their shelf life so that they can be available all year round. They are also processed for the taste. Processing usually changes the taste, appearance and texture of the vegetable. After processing, vegetables may become easier to use in a recipe, quicker to prepare, more appealing to the consumer and/or, sometimes healthier.

Suggested activities / Lesson steps



Suggested set up

Class discussion, group work, class tasting

Additional materials

PowerPoint slides, lesson 3, slides 11 – 15

Two vegetables of the same type (one natural, one processed)

Video 'From paddock to plate'

Student journal

EXPLORE – THE PROCESSING OF VEGETABLES

- Introduce the lesson with the video, 'From paddock to plate' – ABC Gippsland Vic – Australian Broadcasting at <http://www.abc.net.au/local/videos/2010/09/09/3007147.htm>. Briefly discuss the processes involved in the transformation of the raw vegetable to its processed form (canning, freezing, frying, heating, mixing, drying, chopping, pureeing, juicing, etc).
- Display PowerPoint slide 12. Challenge the students to think of at least four ways we can enjoy corn in a processed state. Activate the pictures under the heading, 'Processed products' by pushing the enter or forward arrow key.
- Repeat this process with PowerPoint slide 13, tomatoes.

Pose the two questions:

- 'Can you think of reasons to process vegetables?'
- 'What are the different ways to preserve vegetables?'

- Form groups of three to four students, allocate groups to work on either of the two questions above, and give them five minutes to list in their science journal as many reasons/different ways as their group can think of.
- Ask a group who answered the first question to read their list and invite other groups who answered the first question to add any different reasons they have listed. Display PowerPoint slide 14 to compare the students' reasons with those listed on the slide.

Ask:

- Why are there fresh vegetables and processed vegetables?

- Repeat with the second question. Use PowerPoint slide 15 to compare student ideas with those listed on the slide.

Ask:

- Do you prefer fresh or processed vegetables? Why? Is that true of all vegetables?

- Present the first of the two vegetables you have chosen to use, both in their fresh and processed form. Ask the students to wash their hands and prepare to taste and evaluate the vegetables. Provide each student with one piece of the first fresh vegetable and its processed counterpart. Ask the students to use the process for tasting evaluation; look, smell, taste/mouth feel and hear.

Direct students to:

- Look at the pieces and describe their appearance (colour, shape) and feel.
 - Smell the pieces and describe their smell.
 - Taste the pieces and discuss their taste and texture.
 - Mouth feel – mushy, hard, etc.
 - Hear, listen to the sound when you bite.
- Repeat with the second chosen vegetable pair.
 - Conclude the lesson with a class discussion on the differences between the two products fresh and processed (softer, less stringy, less chewy, more acidic, sweeter, more metallic, etc) and discuss what process or combination of processes was used to produce one of them. All new terms discussed can be added to the list of descriptors in the Class record.

Additional materials

Student worksheet 4 'The movement of food from farm to plate'

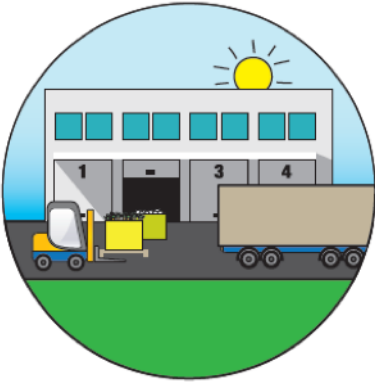
EXTENSION ACTIVITY

Provide students with a black and white copy of student worksheet 4 'The movement of food from farm to plate'. Ask them to cut out the pictures and write a story in their science journal about the process of how their chosen vegetable travelled from the farmer to the plate.

Student worksheet 4

The movement of food from farm to plate

Cut out the pictures and write a story about the movement of food from farm to plate.



Lesson 4: Vegetables and cultural diversity

Lesson outline

STUDENTS

- Understand how cultural background shapes food preferences from an early age by evaluating culturally diverse vegetables and preparations.
- Compare data from the students' investigations about the taste of vegetables.

EXTENSION ACTIVITY

- Enhance understanding of multicultural diversity by exploring dishes and vegetables from their chosen culture.

Materials

FOR THE CLASS

- PowerPoint slides, lesson 4, slides 16–21.
- Three vegetables that differ in how commonly they are consumed (one piece of each for each student).
- Knife, cutting board, containers with lids.

FOR EACH STUDENT

- Completed student worksheet 3, 'Investigation Planner' from lesson 2.
- Science journal.

VEGETABLES

Description

Three vegetables that differ in how commonly they are consumed. One vegetable needs to be common to most, one common to some and one uncommon to most students.

Suggestions

Cucumber (common to most)
Zucchini (quickly steamed or boiled: common to some)
Fennel (uncommon to most)

Alternatives

Common to most: carrot, cauliflower, beetroot
Common to some: mushroom, Chinese cabbage, bean sprouts
Uncommon to most: silverbeet, witlof, celeriac, watercress, artichoke (jar)



Preparation



PREPARATION OF VEGETABLES

- Source three vegetables – one that is common to most: one that is common to some; and one that is almost unknown to your students, using the suggestions above.
- Wash/cut up/store the vegetables (see 5.2 How to safely prepare vegetables, Taste & Learn™, general information for teachers and schools, page 18).

Teacher's background notes

- In this lesson, students learn about two important factors that determine how much we like vegetables: cultural background and the amount of experience in eating the vegetable.
- Different cultures have different cuisines that partly determine which foods are consumed, when and where they are consumed and in what combinations.
- In general, we learn to like foods that we are familiar with by being exposed to them and eating them.
- When vegetables are typically consumed in a particular cuisine, or prepared in a particular way, it is likely that children from that cultural background will have been exposed to that vegetable prepared in the particular way through family meals. As a result, they are more likely to like that vegetable or dish.
- In contrast, children who are not familiar with a vegetable or dish are more likely not to like it, particularly if they are not open to trying new foods.
- Thus, cultural background helps shape food preferences.
- However, even if vegetables or a specific preparation technique are not common in your students' cultural groups, people can learn to like the vegetable or dish by trying them whenever they are offered.
- In multi-cultural societies like Australia, many different vegetables and vegetable dishes are available for purchase in shops and restaurants or might be encountered at a friend's house. Many adults like to explore new foods and vegetables from different cultures.
- By trying vegetables when they are offered, we can learn to like a broader range of vegetables. The more vegetables you already like to eat, the easier it is to learn to like new ones.
- These effects are observed at a group level and do not necessarily hold true for each and every student.
- In this lesson, students will taste and evaluate three vegetables that differ in how commonly they are consumed – one commonly consumed by most, one commonly consumed by some and one never or rarely consumed by some students. They will discuss whether the relationship between how common the vegetable is and how liked it is holds true for their class.
- As an evaluation activity about the taste of vegetables, the students will analyse the data from the homework experiment from lesson 2. They will work in groups to discuss whether their hypotheses were correct. They will compare the results with their predictions and will be asked to offer explanations from the results based on their learning from previous lessons.

Suggested activities / Lesson steps



ELABORATE

- Briefly discuss the cultural diversity in your student group to ensure students understand the term. Display PowerPoint slide 17, tzatziki, and discuss answers to the two questions posed on the slide. Activate the answers by pushing the enter or the forward arrow key. Brainstorm to identify other possible ingredients. Invite student comment on the ways they eat cucumber.
- Repeat the process with PowerPoint slide 18, kimchi, which has cabbage as an ingredient.
- Using the teacher notes as a reference, discuss the relationship between cultural background, the vegetables or vegetable dishes that are consumed and liking for those vegetables or dishes.

Ask questions such as:

- Can you think of a factor that determines how much we like a vegetable? (cultural background, early experiences in eating)
- How do you think that we came to like the foods we are familiar with?

Suggested set up

Whole class participation

Additional materials

PowerPoint slides, lesson 4, slides 16–21

Vegetables

- Present the three vegetables you have selected to use in the lesson and explain that the students will be given the opportunity to taste and evaluate the different vegetables. After the tasting evaluation, students will be able to indicate their familiarity with the vegetables and whether they like them or not.
- Ask the students to wash their hands. Present them with the first vegetable, a vegetable that is common to most students (e.g. cucumber). After using the protocol for tasting evaluation (look, smell, taste/ mouth feel and hear), ask the students to use objective descriptive words to describe the appearance, smell, taste and texture of the vegetables. Students may record these in their science journals.
- Designate two areas, e.g. front and back of the room.
 - Invite the students who **commonly consume** the vegetable to move to the **back** of the classroom. **(Group A).**
 - Invite the students who **do not commonly consume** the vegetable to move to the **front**. **(Group B).**
- Explain that you would now like all students who:
 - Commonly consume the vegetable (Group A) but did not like it much, to move to the **left** hand side of the classroom and become **Group C.**
 - Do not commonly consume the vegetable (Group B), but liked it, to move to the **right** hand side of the classroom and become **Group D.**
- Display PowerPoint slide 19. Count the students now in:
 - Group A, the vegetable is commonly consumed and is liked. Record the count in the top left section of the grid.
 - Group B, the vegetable is not common to them and they do not like it. Record the count in the bottom, right section of the grid.
 - Group C, commonly consume, but do not like. Record the count in the bottom, left section of the grid.
 - Group D, do not commonly consume, but like. Record the count in the top, right hand section of the grid.

Group A – commonly consumed, liked	Group D – not commonly consumed, liked
Group C – commonly consumed, not liked	Group B – not commonly consumed, not liked

- Present the second vegetable, one commonly consumed by some students (e.g: zucchini). Using PowerPoint slide 20 repeat the procedure above with the second vegetable.
- Present the third vegetable, one never, or rarely consumed by some students (e.g. fennel). Using PowerPoint slide 21 repeat the procedure above with the third vegetable.
- Discuss the results using questions such as:
 - Do we see that the common vegetable is liked by most students?
 - Is the least common vegetable the least liked?
 - Is there a pattern showing between how common the vegetable is and how much it is liked? (It is likely that there are more students recorded in the dark coloured cells than in the lighter coloured cells.)
- Ask the students to offer possible explanations for the results of the tasting of commonly consumed, sometimes consumed and rarely consumed vegetables.



Suggested set up

Whole class participation, individual work

Additional materials

Completed homework from lesson 2 – student worksheet 3 ‘Investigation planner’

Class record

Science journal

4

EVALUATION – RESULTS OF YOUR OWN EXPERIMENT

- Ask the students to paste their homework (worksheet 3 from lesson 2) into their science journal.
- Explain that the students are going to briefly report on their science investigation that began two weeks ago and was worked on at home. Ask the students who selected to investigate ‘Can you change how much a person likes a vegetable through repeated exposure?’ to briefly discuss (two to three sentences) their results. Compare the data.
- Ask students from each of the other investigation groups ‘How do the sensory properties of a vegetable (appearance, taste, texture, smell) change when you vary the preparation method/cooking method?’ and ‘Does the ripeness of ‘vegetable/fruit’ affect its taste?’ to briefly discuss (two to three sentences) their results to the class. Compare the data for each.

Conduct a discussion:

- Were the student’s hypotheses confirmed by the results?
- Why do they think this happened?
- If the experiment was done again, what could be changed to make it better?
- Could the investigative question have been more focussed or expressed in a different way?

- Direct the students to complete the final sections of student worksheet 3: ‘Investigation Planner’ from lesson 2 (or the CREST science planner, if used).
- Conclude the lesson with a discussion about the vegetables that students used during the investigations. Note the variety of vegetables used.

List them in the class record and ask for a show of hands to count and record:

- The number of students who worked with each of the vegetables.
- The number of students who currently like each of the vegetables.

EXTENSION ACTIVITIES

Activity 1 – Multicultural foods

- Discuss how people from different cultural backgrounds have traditional recipes and dishes. The ingredients, preparation methods and types of vegetables eaten differ from culture to culture.
- Choose a culture. Choose some common vegetable ingredients of that culture. Promote the vegetables of your choice in a PowerPoint presentation or a poster. You might include:
 - Common vegetable ingredients of the culture.
 - The name of a popular dish or two.
 - A description of the appearance, taste and smell of the dish.
- Design a poster or create a PowerPoint to promote your favourite multicultural dish. Feature the vegetables used in the recipe and describe the dish.
- Research vegetable recipes from different cultures that they would like to try at home or at a special cooking day at school.

Activity 2 – Canteen food

- Find a recipe that includes vegetables (e.g. chicken burgers with salad, baked potato wedges and coleslaw), that you believe would be suitable to sell at the school canteen. Develop a PowerPoint presentation or make a poster to promote the recipe to canteen users.

Lesson 5: The vegetable dip challenge

Lesson outline

STUDENTS

- Create a recipe for a dip that is tasty and looks good.
- Taste and evaluate different vegetable dips.
- Realise that dips can be a fun way to add vegetables to your diet.

EXTENSION ACTIVITY

- Pitch their dip to other students.

5

Materials

FOR THE CLASS

- PowerPoint slides, lesson 5, slides 22–23.
- A selection of three vegetables suitable for creating dips.
- Other dip ingredients, e.g. yoghurt, oil, herbs, garlic, spices, lemon juice.
- Other vegetables cut into sticks and/or crackers for dipping.
- Chopping boards, knives, containers.
- Kitchen scales.
- Class record.
- Serving bowls.
- Optional – garlic press.
- Optional – cheese grater.

FOR EACH GROUP

- Chopping board, knife, fork, teaspoon, table spoon.
- Bowl.
- Student worksheet 5, 'Will you create the ultimate dip?'
- Student worksheet 6, 'Record sheet'.
- Student worksheet 7, 'Dip score card'.

EXTENSION ACTIVITY

- Veggycation® web resource.

VEGETABLES AND OTHER INGREDIENTS

Description vegetables

Three vegetables that can be used to create a dip. Choose vegetables that together have a variety in colours, shapes/forms, flavours and textures.

Extra vegetables for dipping

Suggestions

Cucumber
Pumpkin (boiled)
Avocado (ripe)

Alternatives

Beetroot (canned)
Eggplant/red capsicum combination (from jar)
Sweet potato (baked or boiled), carrot (boiled or baked), olives

Vegetables/crackers for dipping

Carrot (cut in sticks)
Water crackers

Celery, cucumber, cauliflower
Breadsticks

Suggested additional ingredients

Greek style yoghurt
Garlic
Red onion
Tomato (ripe)
Different herbs (fresh or dried), e.g. dill, coriander, parsley, mint

Olive oil
Lemon juice (bottle or freshly squeezed)
Lime juice (bottle or freshly squeezed)
Ground cumin (spice jar)
Ground coriander (spice jar)
Salt and pepper



This lesson is hands-on. You may like to ask for help from parents and/or some teachers' assistants.

Preparation



PREPARATION OF DIP INGREDIENTS

- Choose the vegetable dips that students will make. Students will work in groups to create the dips.
- We suggest to create three dips (each one created by two groups) but you can modify this if you think that it will work better for your classroom. The suggested dips do not require the use of a blender.
- Dips will be made from at least one vegetable and two other ingredients (see above).
- Source ingredients for the dips and for dipping (carrots, crackers).
- Suggested quantities are provided in 6.5 'Shopping list for each Unit/lesson – Unit 3', Taste & Learn™, general information for teachers and schools, page 23. These quantities are based on making the three suggested dips, each by two groups.
- Wash/cut/cook if needed/store the vegetables (see 5.2 How to safely prepare vegetables, Taste & Learn™, general information for teachers and schools, page 18).
- Suggested preparation method for vegetables prior to bringing them to students to make dips:
 - Pumpkin: cut in cubes (2cm). Place chopped pumpkin into a small saucepan and cover with cold water. Bring to the boil, then allow to boil for a further 15 minutes. The pumpkin should be very soft. Once cooked, place pumpkin in a bowl in the refrigerator until cold.
 - Cucumber, avocado and tomato: wash and serve whole for students to further prepare.
 - Onion and garlic: serve whole for students to further prepare.
 - Fresh herbs: wash and store in bowls/containers in the refrigerator.
- Put other ingredients in bowls where needed.
- Decide where to hold the tasting, whether in the classroom or different eating space. There needs to be enough space for the students to move around to prepare the dips and to accommodate a table for the dips and dipping vegetables/crackers.

Teacher's background notes

- This lesson is an evaluation activity that allows teachers to assess class progress in:
 - Increased willingness to try vegetables and
 - Increased student enjoyment of vegetables.
- The lesson is designed to demonstrate to students that vegetables can be eaten in more ways than they may be used to and to encourage them to try different combinations of vegetables.
- Students may realise that creating dips is a fun way to add vegetables to their diet because they can experiment with the flavour/colour combinations to suit their liking and access different health benefits.
- The competitive aspect of the lesson encourages students to try to create the tastiest and most appealing looking dip and (optionally) to present the taste and health benefits of their dip.
- Students will taste and rate the dips in a 'MasterChef®' style challenge with the aim of increasing participation in and enjoyment of the lesson.
- Students are expected to create an appealing dip in terms of appearance, taste and texture.
 - The taste/flavour should be balanced. Ideally, people will be able to taste the flavour of different ingredients rather than one dominant flavour. Ideally, the taste will be balanced: not too sweet, not too acidic.
 - Students should be encouraged to create a dip that has some 'complexity' to make it interesting. They can do so by adding different ingredients with different tastes/textures that complement each other.
 - Texture/mouth feel is also important. A smooth texture can be created for a dip. The feel can be soft or hard, mushy or crunchy, or smooth or lumpy.
- Students will first make their dip, taste it and then optimise their recipe for the whole class to taste. Consequently each group will create their dip twice. Quantities in the shopping list are based on creating their first recipe from 125g vegetable and their improved recipe from 250g vegetable.
- A 'Teacher sheet' with recipes is provided. They are listed to give you an idea of ingredients that work well together and their relative quantities. Students will prepare their own recipes but you might use this sheet to check they are on the right track and help them improve the taste of their dip.

SAFETY – KNIFE USE BY STUDENTS

- Insist that students 'respect the knife'.
- Knives can only be used with adult permission and supervision.
- Choose a knife that is safe and suitable for the job. It may be a wooden, disposable plastic or plastic lettuce knife.
- If knives are to be carried to a working area, they must be carried by the handle, at the side of the leg and with the sharp edge facing the back.
- If a knife needs to be passed to someone else, lie it flat on a table with the edge of the blade facing away from the other person so they can pick it up safely.
- Always use a chopping board.
- Hold the knife in the dominant hand and firmly hold the item that is being cut with the other hand. Make sure the fingers are tucked in/curl them under, so the fingers are not sticking out where they could be cut.
- Always angle the blade away from the user.
- Make sure the user can clearly see what they are going to cut.
- If a knife falls, do not try to catch it. Quickly step back and let it fall.
- Be alert and pay attention when using a knife. Do not get distracted or take the eyes off the job.

Suggested activities / Lesson steps



Suggested set up

Whole class, groups

Additional resources

PowerPoint slides, lesson 5, slide 22 – 23

Vegetables and other dip ingredients

Student worksheet 5 'Will you create the ultimate dip?'

Student worksheet 6 'Record sheet'

Student worksheet 7 'Dip score card'

EVALUATE – THE CHALLENGE

- Present students with their challenge: “to create the ultimate vegetable dip”. Students will work in teams and will be judging their own and each other team’s dips.
- Explain the criteria for judging a good dip – the dip has to be tasty and appealing.
- Present the vegetables and other ingredients that each team may choose from. They need to choose one of the vegetables and at least two other ingredients. Present the dipping items – other vegetables, crackers or breads, then place them on the ‘tasting table’. Indicate where students will collect ingredients, chopping boards, knives, forks and preparation/serving bowls and access kitchen scales.
- Revise the importance of safe food and implement handling. Clean hands, clean utensils. Read the ‘**Safety – Knife use by students**’ section of Teacher’s background notes to the students. Indicate the blender operation stations if blenders are available and needed. Impress upon the students that ONLY ADULTS will operate the blenders.
- Discuss the concept of a balanced dish in terms of taste/flavour properties and colour (as the judges in MasterChef® do). Judges use the formal protocol for tasting evaluation and look for:
 - The appearance – size and shape of ingredients, colour, surface texture.
 - The smell – the aromas the nose perceives, sweet, ripe, spicy, minty etc.
 - The taste – what they perceive in their mouth – taste, flavour, temperature, texture, spiciness etc.
 - The sound – listen to the sound when one bite.
 - The mouth feel – mushy, hard.
- Discuss the predominant taste(s) of each vegetable using PowerPoint slide 23.
- Divide students into teams and provide them with a copy of worksheet 5, ‘Will you create the ultimate dip?’ The worksheet lists the procedures they will carry out as they prepare their dip.
- Distribute worksheet 6, ‘Record sheet’, and explain that they will record ingredients and quantities for each dip they trial. Initially they just make a smaller quantity, starting with 125g of vegetable, that only their own group will taste. Draw their attention to safe tasting – clean spoons, no double dipping.
- Ask teams to move to a workspace, decide on and collect their ingredients and create their ‘ultimate dip’. They may cut/process/mix their ingredients. Encourage groups to taste (safely) and evaluate their dip and record the sensory aspects of their dip in the ‘Taste’ column of worksheet 6, ‘Record sheet’.
- Explain that they need to decide if the dip needs improving and to reflect and write down in their science journal how this might be achieved. They can then have a second attempt at creating the ultimate dip, making the adjustments they think are necessary. This time they should make a larger quantity, enough for their class mates to taste. They should start with 250g of vegetable. After safely tasting their second dip, the teams need to evaluate and record on worksheet 6, ‘Record sheet’ whether the modifications have improved the taste or texture of the dip.
- Allow sufficient time for creating, evaluating and recreating dips.
- Remind the groups to write a name for their dip on their worksheet and to place their dip on top of their worksheet 6 ‘Record sheet’ on the tasting table.
- Distribute student worksheet 7, ‘Dip score card’, to each group. Ask the groups to SAFELY taste (using the dipping vegetables and crackers) and evaluate four visually appealing dips and rate them on the worksheet.

- Collect the worksheets and write the name of the dips that received votes in the class record. Tally, then score the votes and announce the group that has created 'the ultimate vegetable dip'! (Maybe with a bit of 'announcement' music or a drum roll!). Read the judgements in the 'taste' columns of worksheet 7 that describe why the 'judges' found the dip to be a tasty and appealing dip.
- Conclude the lesson by inviting the students to enjoy any remaining dip.

Additional resources

Veggycation web resource

EXTENSION ACTIVITIES

Vegetables contain a wide range of nutrients and have many health benefits. Extensive information on nutrients and the proven health benefits of vegetables sold in Australia is available on the website Veggycation®: <http://www.veggycation.com.au> (© Hort Innovation). Consuming a variety of vegetables daily will help support your body's optimum health.

Students use the Veggycation website (© Hort Innovation) to find out about the exact health benefits of different vegetables either before or after they decide on the recipe for their dip: <http://www.veggycation.com.au>

Ask the students to promote their dip to the class by describing the ingredients, appearance, taste and mouth feel and health benefits. They may choose how they wish to present the promotion (promo) – poster? PowerPoint presentation? When they present their promo to the class, ask the other students to decide if it convincingly presents the taste and health benefits of the dip.

Student worksheet 5

Will you create the ultimate dip?

1. Decide on a team name.
2. Write your team name on worksheet 6, 'Record sheet'.
3. As a team, decide on the vegetable/s (at least one) you want to use as the main ingredient/s for your dip and decide on at least two 'other ingredients'. Consider the available dipping items (vegetables, crackers or breads) when making your decisions.
4. Wash your hands – all of you!
5. Send one team member to collect 125g of your chosen vegetable, one to collect your chosen 'other' ingredients, one to collect the preparation/ serving bowl and cutting board and one to collect the utensils.
6. Decide on the mixing method and prepare the dip.
7. Taste (safely) your dip and evaluate it, recording the sensory aspects of your dip in the 'Taste' column of worksheet 6.
8. TASTING – USE ONLY CLEAN DIPPING ITEMS, NO DOUBLE DIPS.
9. Decide if the dip needs improving and reflect and write down in your science journal how this might be achieved.
10. Make any adjustments the team thinks is necessary as you modify or make another dip, this time making it at a quantity enough for your class to taste (starting with 250g of your vegetable).
11. Evaluate and record as a group whether the modifications have improved the taste or texture of your dip.
12. Write the name of your dip on your worksheet and place it on top of your worksheet 6, on the tasting table.

Student worksheet 6

Record sheet

Ultimate dip challenge		
Team name:		
Dip name:		
Ingredient	Amount	Taste <small>ONLY USE CLEAN DIPPING ITEMS IN THE DIP. NO DOUBLE DIPPING.</small>

Describe how this dip tasted.

This is how we could improve our recipe.

Student worksheet 7

Dip score card

Dip name	Appearance	Smell	Taste and mouth feel	Overall
Dip name	Appearance	Smell	Taste and mouth feel	Overall
Dip name	Appearance	Smell	Taste and mouth feel	Overall
Dip name	Appearance	Smell	Taste and mouth feel	Sound

Teacher sheet – dip recipes

Avocado dip (makes approximately 250g dip)

Ingredients

- 2 large ripe avocados, chopped roughly (1 avocado is approximately 250g including seed)
- 1 small garlic clove crushed
- ¼ cup lime juice (you will probably need about 3 fresh limes for this much juice, or can use bottled lime juice)
- ¼ small red onion, finely chopped
- ¼ bunch chopped fresh coriander
- Salt and pepper to taste (approximately ¼ tsp each)

Other ingredients for consideration

- 1 small tomato deseeded and finely chopped, and/or ½ a small cucumber deseeded and finely chopped
- 1 tsp ground cumin
- ½ cup Greek style yogurt or sour cream

Method

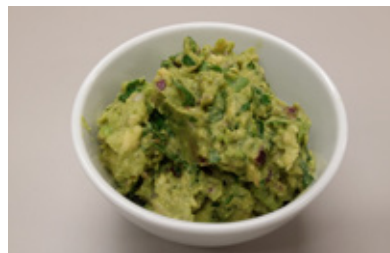
Cut open avocado and remove seed. Using a spoon, scoop out the flesh and roughly break it up with the spoon. For a chunky dip, add remaining ingredients and stir to combine. For a smoother dip, use a fork to mash the avocado then add remaining ingredients and stir to combine.

Tips for preparation

- Safe preparation of avocados: using a knife, cut the avocado open. Carefully remove the seed. Using a spoon, place the flesh of the avocado in a bowl and use a fork to mash.
- If no acidity is added, the dip will start browning quickly. A few drops of lemon or lime juice will help prevent browning.



Avocado dip ingredients



Avocado dip

Cucumber dip (makes approximately 260g dip)

Ingredients

- ½ large telegraph cucumber (this is approximately 160g and 14cm)
- ½ small clove garlic, finely chopped
- 3 tbs olive oil
- 200g Greek style yogurt
- ¼ bunch fresh dill, chopped roughly
- 1 tbs lemon juice (can use fresh lemon or juice from bottle)
- Salt and pepper to taste (approximately ¼ tsp each)

Method

Cucumber can be prepared in different ways, e.g. by cutting or grating, with or without skin, with or without removal of the seeds.

Note leaving the seeds in will add moisture to the dip, which can make it too runny.

- To remove seeds: Slice the cucumber in half lengthways and scrape out the seeds.

- To grate, use a cheese grater (note, this can be quite messy).
- To chop, cut each cucumber half into 4 strips and then finely chop.

Place grated or chopped cucumber onto some paper towel. Bring the corners of the paper towel together and squeeze any leftover liquid out of the cucumbers and discard.

Add cucumber and other ingredients to a bowl and stir to combine.



Cucumber dip ingredients

Pumpkin dip (makes approximately 270g dip)

Ingredients

- 250g boiled butternut pumpkin (seeded, peeled, cut into 2cm cubes)
- 2 tsp olive oil
- 1 tsp ground cumin
- 1 garlic clove, finely chopped
- 2 tbs Greek style yogurt
- ¼ bunch chopped fresh coriander
- Salt and pepper to taste (approximately ¼ tsp each)

Other ingredients to consider

- Add ¼ – ½ an avocado at the processing stage and leave out the Greek yogurt.
- Use parsley instead of coriander

Method

Mash pumpkin puree with a fork and add remaining ingredients. Stir to combine.



Pumpkin dip ingredients

Alternatives

Alternative suggestions for dips. These dips do not require upfront preparation.

However use of a hand stick blender is recommended in order to create a smooth texture.

- Perhaps parents can lend a blender to the school for the lesson. Recruit parent and teacher assistant help to operate the blenders.
- Blenders may only be used under adult supervision and when safety precautions are taken into consideration e.g. never use fingers in blenders and be aware of electrical safety.

NOTE the school's electrical goods regulations. In some states and territories, all electrical items used in schools **MUST BE tested and tagged** by a school approved electrician.

Beetroot

Ingredients

- 250g canned beetroot, drained well, coarsely chopped
- 125g (½ cup) Greek style yogurt
- 1 tbs fresh lemon juice
- ½ tsp ground cumin
- ½ tsp ground coriander seeds
- Salt and pepper to season

Other ingredients to consider

- Stir in 40g crumbled feta cheese after the processing step
- Finely chop some parsley and stir in after the processing step

Eggplant/Capsicum

Ingredients

- ½ jar of grilled eggplant slices, drained (approximately 110g)
- ½ jar of whole roasted capsicum, drained (approximately 80–100g)
- ½ garlic clove, roughly chopped
- 3 tbs lemon juice (can use fresh lemon or juice from a bottle)
- ¼ cup Greek yogurt (can leave out to make a dairy free dip)

- 2 tbs tbs olive oil
- ¼ bunch of parsley
- Salt and pepper to taste (approximately ¼ tsp each)

Other ingredients to consider

- Use 1 jar of grilled eggplant slices for an eggplant only dip
- Replace roasted peppers with half a jar of artichoke hearts in jar.

Appendix A:

Unit 3 PowerPoint slides



The slide features a background pattern of light blue line-art illustrations of various fruits and vegetables, including lemons, carrots, and leafy greens. The main title 'Taste & Learn™' is prominently displayed in a large, bold, black font. Below it, the text 'Teacher resource: Electronic whiteboard support' and 'Unit 3: Year 5 – Year 6' is presented in a smaller, black font. A blue horizontal bar at the bottom left contains the text 'AGRICULTURE AND FOOD' and the website 'www.csiro.au'. The Hort Innovation logo is positioned at the bottom left, and the CSIRO logo is at the bottom right.

Taste & Learn™

Teacher resource:
Electronic whiteboard support
Unit 3: Year 5 – Year 6

AGRICULTURE AND FOOD
www.csiro.au

**Hort
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Slide 1

Lesson 1: How the senses interact

Slide 2

What flavour are these yoghurts?
Do you think they taste the same?



Slide 3

**Which vegetable is this?
Do you think they taste the same?**



Slide 4

**Which vegetable is this?
Do you think they taste the same?**



Slide 5

**Which vegetable is this?
Do you think they taste the same?**



Slide 6

**Lesson 2:
A science experiment on
taste of vegetables.
Planning your own experiment.**

Slide 7



Slide 8

Investigation planner (part 1)

Title of the investigation:

Date.....

The investigative question.
What I am going to investigate?

My hypothesis (educated guess, theory). What I think will happen.

Why I think this will happen.

The variables – things in the experiment that can be **changed**, kept the **same** and **measured** or **observed**.
What one thing am I going to change during the experiment?

What thing/s am I going to keep the same during the experiment?

What will I observe/measure?

How am I going to observe/measure?

Slide 9

Investigation planner (part 2)

Safety precautions I need to take.

Equipment.

Procedure. What I will do.

The results. What happened?

Why I think this happened.

If this experiment was done again, what could be changed to make it better?

Conclusions:

Slide 10

Lesson 3: Vegetables from farm to plate

Slide 11

Corn

Fresh produce



Processed products



Slide 12

Tomato

Fresh produce



Processed products



Slide 13

Can you think of reasons to process vegetables?

- Convenience/practicality
- Extended shelf life
- Availability all year round
- Availability everywhere
- Facilitated transport
- Different taste and texture
- ...

Slide 14

What are the different ways to preserve vegetables?

- Canning/bottling
- Drying
- Pickling/fermenting
- Freezing
- Addition of preservatives

Slide 15

Lesson 4: Vegetables and cultural diversity

Slide 16

What is this dish?
What is the vegetable used in this dish?



- Tzatziki
- Is a dip from **Greece**



Cucumber

Slide 17

What is this dish?

What is the vegetable used in this dish?



- Kimchi
- Is a hot dish from **Korea**

Cabbage



Slide 18

Cucumber: How common is it to you?
Do you like it?

		Common	
		Yes	No
Like	Yes	[number of students]	[number of students]
	No	[number of students]	[number of students]

Slide 19

Zucchini: How common is it to you? Do you like it?

		Common	
		Yes	No
Like	Yes	[number of students]	[number of students]
	No	[number of students]	[number of students]

Slide 20

Fennel: How common is it to you? Do you like it?

		Common	
		Yes	No
Like	Yes	[number of students]	[number of students]
	No	[number of students]	[number of students]

Slide 21

Lesson 5: The Vegetable Dip Challenge

Slide 22

Key flavour / taste character



Eggplant

Mild, can be slightly bitter or nutty



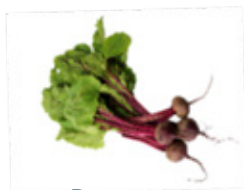
Cucumber

Mild, green, fresh



Pumpkin

Sweet



Beetroot

Earthy, sweet



Avocado

Mild, nutty

Slide 23

Image credits

Screencraft – cover image

Copperplate Design – page 20

Rob Palmer – pages 38 (image on slide 4), 39, 42 (images of fresh corn and tomato), 44-45 (vegetable images), 47

Maeva Broch – page 11, 38 and 40 (celery)

Jessica Heffernan – page 34 and 35, 37 (yoghurts)

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