Traditional Cooking Methods – Example Teaching Sequence (Year 5)

Chemical sciences

Students explore traditional cooking methods used by Aboriginal and/or Torres Strait Islander Peoples to develop their understanding of states of matter. Aboriginal and/or Torres Strait Islander People's Knowledge of chemical sciences informed food preparation and cooking techniques, using the link between heat and changes in state to generate steam from water to cook food and enhance its flavour and texture.

Students will develop and exhibit a range of **science inquiry** skills, such **as questioning and predicting**, **planning and conducting, processing, modelling and analysing, evaluating** and **communicating**. Students recognise that Aboriginal and/or Torres Strait Islander Peoples have applied these scientific principles for thousands of years across diverse regions of Australia.

Before you start:

1. All documents and resources are available via our website: Traditional Cooking Methods education resources.
2. Review the following teacher documents:
    - *Context PPT (Traditional cooking methods)* and *Classroom Activities Guide (Traditional cooking methods)*
    - *Experiment PPT (Traditional cooking methods)*, *Teacher Experiment Procedures (Traditional cooking methods)* and *Equipment List and Hazard Management (Traditional cooking methods)*
    - *Curriculum (Traditional cooking methods).*
3. The classroom activities have been designed to break information into manageable sections and provide opportunities to check understanding.
4. Familiarise yourself with the experiment: does adding water affect the texture and moisture of a potato cooked in a model ground oven?
5. Review the example teaching sequence below and adjust based on the needs of your class. This example assumes sixty-minute lessons.

Lesson	Lesson objectives	Resources	Australian curriculum
1	• Recognise the three main states of matter (solid, liquid and gas). • Recognise the effect of heating and cooling (energy added or removed) on matter. • Explain the observable properties of matter using the particle model. • Use practical experiments and representations to illustrate the changes of states of matter • Employ safe work practices and manage risks using work health and safety (WHS) practices. • Assemble and use appropriate equipment and resources to perform an experiment.	• *Traditional Cooking Methods Context PowerPoint .* • *Classroom Activities: Activity 1 – States of Matter Chalk Talk.* • *Classroom Activities: Activity 2 – Being the States of Matter.* • *Classroom Activities: Activity 3 – Change in States: Water.* • *Classroom Activities: Activity 4 – Liquid to Solid: Making Ice Cream; OR* • *Classroom Activities 5 And 6: Identifying States: Tea Demonstration or Liquid to Gas: Cooking Damper Over Hot Coals.*	*AC9S5U04*
2	• Identify states of matter in traditional Aboriginal and/or Torres Strait Islander cooking techniques. • Identify changes in state occurring to water in traditional cooking techniques. • Recognise that heat energy changes water in food into steam through evaporation during cooking.	• *Traditional Cooking Methods Context PowerPoint .* • *Lemon Mrytle Tea – States of Matter with Errol Clarke (video). Located in the context PowerPoint.*	*AC9S5U04* *AC9S5H01* *AC9S5H02*
3	• Identify the question to be tested: does adding water affect the texture and moisture of a potato cooked in a model ground oven? • Make a reasoned hypothesis. • Identify variables to be measured, changed and controlled • Conduct a repeatable test.	• *Traditional Cooking Methods Experiment Procedure.* • *Traditional Cooking Methods PowerPoint.* • *Traditional Cooking Methods Planner (Student).* • *Traditional Cooking Methods Experiment Planner (Teacher).* • *Traditional Cooking Methods Equipment List and Hazard Management Document.*	*AC9S5U04* *AC9S5101* *AC9S5102* *AC9S5I03* *AC9S5I04* *AC9S5I05* *AC9S5I06*

4	• Conduct a repeatable test. • Make a series of observations and measurements that are appropriate to answer the question. • Draw reasoned conclusions. • Communicate ideas and findings.	• *Traditional Cooking Methods Experiment Procedure.* • *Traditional Cooking Methods PowerPoint.* • *Traditional Cooking Methods Planner (Student).* • *Traditional Cooking Methods Experiment Planner (Teacher).* • *Traditional Cooking Methods Equipment List and Hazard Management Document.*	*AC9S5U04* *AC9S5102* *AC9S5103* *AC9S5104* *AC9S5105* *AC9S5106*

Lesson 1

Prior knowledge: Introduction to states of matter.

Learning intentions: (select 3 – 4)

- Identify the three main states of matter (solid, liquid and gas).
- Understand the effect of heating and cooling (energy added or removed) on matter.
- Explain the observable properties of matter using the particle model.
- Use practical experiments and representations to illustrate the changes of states of matter.

Success criteria:

- Can describe each state of matter using the particle model (solid, liquid, gas).
- Can explain how adding or removing heat energy affects the state of matter.
- Can safely participate in experiments.

Resources: See example teaching sequence above on page 2.

Classroom activities

1. Share learning intentions and Success criteria: Traditional Cooking Methods Context PowerPoint slide 2.
2. Recap matter: Traditional Cooking Methods Context PowerPoint slide 3:
    a. What is matter?
    b. What are the states of matter?
3. Classroom Activity 1: States of matter chalk talk:
    a. What are examples of each state of matter?
    b. What do you know about each state of matter?
4. Classroom discussion based on chalk talk notes, and note-taking, Traditional Cooking Methods Context PowerPoint slides 4 – 6.
5. Classroom activity 2: Being the states of matter:
    a. How do the particles in each state of matter behave?
6. Discussion and note-taking – What changes states of matter? Traditional Cooking Methods Context PowerPoint slides 7-12:
    a. What does temperature do to change the state of matter?
    b. Compare and contrast the effect of cooking and heating on matter.
    c. What are examples of the heating effect on matter? (Ice melting in heat, puddle drying in the sun).
    d. What are examples of cooling effect on matter? (water freezing to ice, melted chocolate hardening).
7. Classroom activity 3: Changing in states: Water. Traditional Cooking Methods Context PowerPoint slides 13-18.
    a. What are the three states of matter?
    b. What happens to matter when heat and or cooling/freezing is applied?
    c. What changes are occurring?

d. Knowledge check slide 19:
    i. Describe how the particles act in a solid, liquid and gas.
    ii. Can students give examples of a solid, liquid and gas in everyday life?
    iii. Can students identify freezing, condensation, melting and evaporation?

8. *Optional*: Water in a Ziplock bag activity.
9. Classroom activity 4: Liquid to solid: making ice cream OR
10. Classroom activities 5 and 6: Identifying states: Tea demonstration or Liquid to gas: Cooking damper over hot coals.
11. End of lesson knowledge check: Traditional Cooking Methods Context PowerPoint Slide 20.

Next lesson – Traditional cooking techniques.

Lesson 2

Prior knowledge: Introduction to energy transfer and energy transformations at the appropriate stage level.

Learning intentions:

- Identify states of matter in traditional Aboriginal and/or Torres Strait Islander cooking techniques.
- Identify changes in state occurring to water in traditional cooking techniques.
- Recognise that heat energy changes water in food into steam through evaporation during cooking.

Success criteria:

- Describe cooking methods used by Aboriginal and/or Torres Strait Islander Peoples.
- Correctly identify the states of matter in traditional cooking processes.
- Describe how water changes state in traditional cooking methods.

Resources: See example teaching sequence above on page 2.

Classroom activities

1. Recap states of matter and changes of state.
2. Share learning intentions and success criteria.
3. Watch Lemon Mrytle Tea – States of Matter with Errol Clarke (video). Located in the context PowerPoint slide 28.
    a. Discuss states of matter.
    b. Discuss the traditional cooking methods are present in the videos.
4. Discussion and note-taking: Traditional Cooking Methods Context PowerPoint slides 21 - 27.
5. Check your understanding – Multiple choice questions: Traditional Cooking Methods Context PowerPoint slides 29 - 32.
6. End of lesson knowledge check: Think – Pair – Share: cooking in an underground oven, Traditional Cooking Methods Context PowerPoint slide 33-34.

Next lesson – Traditional cooking methods experiment.

Lesson 3

Prior knowledge: Introduction to states of matter and changes of state, introduction to Aboriginal and Torres Strait Islander traditional cooking methods.

Learning intentions:

- Identify the question to be tested: Does adding water affect the texture and moisture of a potato cooked in a model ground oven?
- Make a reasoned hypothesis.
- Identify variables to be measured, changed and controlled.
- Conduct a repeatable test.

Success criteria:

- Can identify variables to be changed, measured and controlled.
- Can conduct a fair test based on the question.
- Can safely conduct an experiment.

Resources: See example teaching sequence above on page 2.

Safety

- This experiment involves cooking using a hot plate or electric frying pan.
- Use appropriate PPE (heat proof gloves, tongs, safety goggles, lab coats).
- Have fire bucket, fire extinguisher and/or fire blanket ready.

Classroom activities

1. Review: states of matter and state changes using the particle model, Aboriginal and/or Torres Strait Islander context – traditional cooking methods.
2. Share learning intentions and success criteria.
3. Introduce the question to be tested: does adding water affect the texture and moisture of a potato cooked in a model ground oven?
4. Develop experiment question and prediction:
    a. What is this question asking you to find out?
    b. What are we comparing?
    c. How could the type of food we choose affect the result?
    d. What do you think the result could be?
    e. What does predict mean?
    f. What is another word we could use?
5. Class activity: allocate one side of the room to ‘added water will have an effect’, and one side of the room to ‘added water will not have an effect’. Ask students to go to the side of the room that represents their prediction.
    a. Pose question to each group: why do you think added water will/will

not change the moisture or texture of the potato?

6. Hand out the *Traditional Cooking Methods Experiment Planner*, ask students to record their questions and predictions.
7. Discuss strategies to observe and measure their results:
    a. What would you need to do to find out whether cooking with added water changes the texture and moisture of the potato?
    b. What would you look for to decide if the potato has more moisture or a different texture?
    c. What can the texture of the potato tell us about the cooking method?
    d. How could we measure the texture of the potato (its hardness or softness)?
    e. What data and observations could you keep track of?
8. Discuss fair testing:
    a. What do we need to do to make sure this is a fair test?
    b. How could these things affect the experiment?
        i. Size of the piece of potato.
        ii. Position of the potato in the pan.
        iii. Amount of water added to the potato.
        iv. Temperature of the pan.
        v. Type of wrapping.
        vi. Amount of wrapping.
        vii. Cooking time.
    c. What is being changed in this experiment?
    d. What needs to be kept the same?
    e. How will you collect data?
    f. How many times should you repeat the experiment?
    g. Why would you repeat the trials?
9. Discuss and record safety considerations.
10. Conduct first test of the experiment in groups of two or three. Monitor groups and provide feedback as required.
11. Record initial results.
12. Pack away all equipment.
13. Facilitate class discussion sharing initial findings.

Next lesson – Aboriginal and Torres Strait Islander traditional cooking methods.

Lesson 4

Prior knowledge: Introduction to energy systems, introduction to Aboriginal and Torres Strait Islander traditional cooking methods.

Learning intentions:

- Conduct a repeatable test.
- Make a series of observations and measurements that are appropriate to answer the question.
- Draw reasoned conclusions.
- Communicate ideas and findings.

Success criteria:

- Can conduct a fair test based on the question.
- Can safely conduct an experiment.
- Can make and record observations.
- Can represent findings.
- Can explain conclusions using appropriate scientific language.

Resources: See example teaching sequence above on page 2.

Safety

- This experiment involves cooking using a hot plate or electric frying pan.
- Use appropriate PPE (heat proof gloves, tongs, safety goggles, lab coats).
- Have fire bucket, fire extinguisher and/or fire blanket ready.

Classroom activities

1. Review the experiment question: Does adding water affect the texture and moisture of a potato cooked in a model ground oven?
2. Discuss any findings and changes as a result of the initial test last lesson.
3. Discuss and record safety considerations.
4. Conduct remaining experiment tests in groups of two or three. Monitor groups and provide feedback as required.
5. Discuss and record results:
    a. How well were the pieces of potato cooked?
    b. What effect did the water have on the potato pieces?
    c. How do your results compare to your prediction?
6. Connect results to the scientific and traditional cooking methods contexts, ask students to record their responses using full sentences or diagrams. Support with including scientific language.
    a. What happened to the water added to the potato? Draw a diagram using the particle model to explain your understanding.

b. How does adding water to an underground oven help the food to cook?

c. In a traditional underground oven, the food is often wrapped in leaves or paper bark. What role do they play in the cooking process? What did we use to model their role?

Take it further – Consider the teacher experiment procedure document for suggestion.