Identifying Mushrooms Using and Designing Dichotomous Keys

TEACHER GUIDE

LESSON 3

YEAR 7–8

This resource has been developed by:

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LESSON 3

Identifying Mushrooms Using and Designing Dichotomous Keys

LEARNING AREA/ YEAR LEVEL

Science (Year 7–8)

AUSTRALIAN CURRICULUM CONTENT

Investigate the role of classification in ordering and organising the diversity of life on Earth and use and develop classification tools including dichotomous keys (**AC9S7U01**)

Develop investigable questions, reasoned predictions and hypotheses to explore scientific models, identify patterns and test relationships (**AC9S7I01**, **AC9S8I01**)

Select and construct appropriate representations, including tables, graphs, models and mathematical relationships, to organise and process data and information (**AC9S7I04**, **AC9S8I04**)

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Contents

LESSON OBJECTIVE

Students will learn about:

- Features of different types of mushrooms.
- How mushrooms can be identified.
- Creating and using dichotomous keys.

ATTRIBUTION, CREDIT & SHARING

Primary Industries Education Foundation Australia's resources support and facilitate effective teaching and learning about Australia's food and food industries. We are grateful for the support of our industry and member organisations for assisting in our research efforts and providing industry-specific information and imagery to benefit the development and accuracy of this educational resource.

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Resources and Equipment

1. Access to laptop/digital devices
2. Scissors and glue
3. **Worksheets 3.1a – Mysterious Mushrooms**
4. **Worksheets 3.1b – Mysterious Mushrooms**
5. **Worksheets 3.1c – Mysterious Mushrooms**
6. **Stimulus 1 – Teacher Bingo Calling Cards**
7. **Stimulus 2 – Student Bingo Cards**
8. **Worksheet 3.2a – Fantastic Fungi Cards**
9. **Worksheet 3.2b – Fantastic Fungi Answer Grid**
10. **Stimulus 3 – Fantastic Fungi Dichotomous Key**
11. **Stimulus 4 – Edible Mushrooms Classification**
12. **Stimulus 5 – Edible Mushrooms Classification**
13. **Worksheet 3.3 – Edible Mushrooms Dichotomous Key – Cut Out**
14. **Stimulus 6 – Edible Mushroom Dichotomous Key Example**

Additional Reading/Resources

Aboriginal use of fungi
https://www.anbg.gov.au/fungi/aboriginal.html

NOTE: RISK ASSESSMENT

NEVER FORAGE, OR EAT WILD MUSHROOMS WITHOUT EXPERT ADVICE.

Background Information

Wikihow instructions on how to make a dichotomous key: Make-a-Dichotomous-Key

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Lesson Guide

Students will:

- Complete a comprehension activity focused on the characteristics and features of different types of mushrooms.
- Participate in a hands-on activity (with supplied images) to create a dichotomous key showing the differences between different types of mushrooms that they may find for consumption within Australia.

STARTER:

1. Recap where fungi are located in the kingdom classification. *N.B. they belong in their own kingdom*. Defining features are that fungi reproduce with spores and have cell walls made of chitin. Students draw a Venn diagram with three circles and then add features of plants, animals, and fungi into each of the three circles. Discuss with students what features overlap/are shared.photosynthesis).
    - See Lesson 1, **Worksheet 1.2 – Animal, Plant and Fungi Kingdoms** for answers.
2. Conduct a class discussion with students about where mushrooms might grow and list the names of any types of mushrooms they are familiar with. Suggested questions:
    - What is a mushroom?
    - Where can you purchase mushrooms?
        - What types of mushrooms can you purchase?
    - Can you name some different types of mushrooms?
    - Have you seen mushrooms growing in the wild?
        - If so, what were some features you noticed?
        - Where do mushrooms grow in the wild?
    - Are all mushrooms edible?

NOTE: RISK ASSESSMENT

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MAIN:

a) Features of wild mushrooms

1. **Worksheets 3.1a**, **3.1b** and **3.1c – Mysterious Mushrooms**.
2. Students become familiar with the different types of mushrooms that can be found in the wild and some of their unique features.
3. **Remind students to never forage, or eat mushrooms in the wild without the guide of an expert.**
4. Distribute **Worksheet 3.1a – Mysterious Mushrooms**. Conduct a quick discussion focused on the mushrooms. For example:
   - What do you notice about the mushrooms?
   - How are they different?
5. Distribute **Worksheet 3.1b – Mysterious Mushrooms**. Students conduct research to complete the table. The following website is a reliable source of information: farsouthfungi.
   - As students are conducting research, circulate the class to ask them questions about how they have been classified and their features. For example:
     - What is unique about that type of mushroom?
     - Do all mushrooms have those features?
     - How does this mushroom obtain its nutrition?
6. Once students have completed the table, distribute **Worksheet 3.1c – Mysterious Mushrooms**. Information from their research can then be summarised into the mushroom identity cards. These summary cards can then be pasted into their science journals/notebooks.

   Answers

b) Mysterious Mushroom Bingo

1. **Stimulus 1 – Teacher Bingo Calling Cards** and **Stimulus 2 – Student Bingo Cards**.
2. To consolidate understanding about how organisms have unique features, there is the option to play bingo with students. Game instructions, caller cards, and player cards are detailed on **Stimulus 1 – Teacher Bingo Calling Cards** and **Stimulus 2 – Student Bingo Cards**.

c) Fungi Classification

1. **Worksheet 3.2a – Fantastic Fungi** and **Worksheet 3.2b – Fantastic Fungi Answer Grid**.
2. Students learn how to use and then make a dichotomous key. For guidance/revision on dichotomous keys, please refer to the **Background Information** on page 4.
3. Distribute **Worksheet 3.2a – Fantastic Fungi**, **Worksheet 3.2b – Fantastic Fungi Answer Grid** and **Stimulus 3 – Fantastic Fungi Dichotomous Key**. Students use the dichotomous key (Stimulus 3) to classify the 14 types of wild mushrooms. Once they have identified a mushroom using the key, they then write the name of the type of mushroom into **Worksheet 3.2b – Fantastic Fungi Answer Grid**.

   Answers

d) Edible Mushroom Classification

1. **Stimulus 4 – Edible Mushrooms Classification** and **Stimulus 5 – Edible Mushrooms Classification**.
2. Students create their own dichotomous key based on features of edible mushrooms. For more information about each mushroom variety, direct students to the following website: Australian Grown Mushroom Varieties.
3. There are two stimuli available to students for this activity, **Stimulus 4 – Edible Mushrooms Classification** or **Stimulus 5 – Edible Mushrooms Classification**.
4. Visible features of mushrooms are clearer in **Stimulus 4 – Edible Mushrooms Classification** than in **Stimulus 5 – Edible Mushrooms Classification**, making Stimulus 4 an easier entry point for this classification exercise.
5. To further support students in designing a dichotomous key, students could use **Worksheet 3.3 – Edible Mushrooms Dichotomous Key – Cut Out** and then add the images on to **Stimulus 6 – Edible Mushroom Dichotomous Key Example**.
6. Mushroom features in **Stimulus 5 – Edible Mushrooms Classification** are visually harder to distinguish and could therefore be used to extend students who have demonstrated the ability to use and design dichotomous keys.

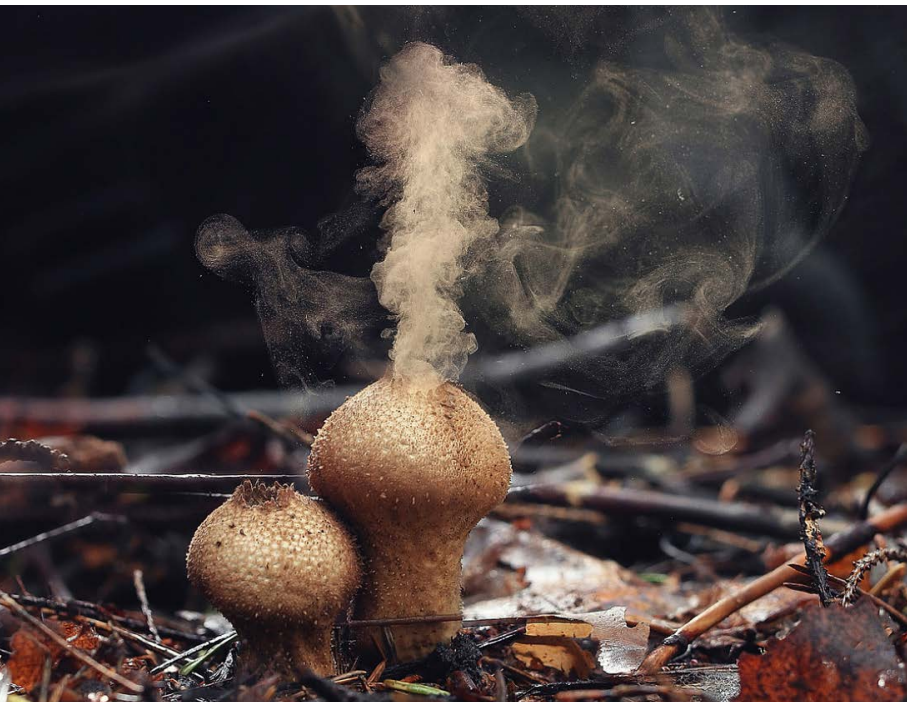
PLENARY:

e) 'Classy Classification'

1. A suggested activity is to use some of the student's dichotomous keys to play a 'Class Classification' game.
2. Display **Stimulus 4 – Edible Mushrooms Classification** on a screen or provide students with digital access to the stimulus.
3. Pick a student volunteer to use their dichotomous key.
4. Without telling their peers, the rest of the students pick a type of edible mushroom and keep it in their heads.
5. Ask all students to stand up.
6. The student volunteer (step 3) then reads out statements from their dichotomous key. If the students who are playing the game fall under the 'NO' category, then they are 'out' and sit down.
7. As there are only 10 mushrooms to classify, the chances are that there will be more than one student with the same choice. These 'winners' then select another mushroom and do not tell other students.
8. Pick another volunteer to use their dichotomous key and then repeat steps 6 and 7 if necessary.

Student Resources

1. **Worksheets 3.1a – Mysterious Mushrooms**
2. **Worksheets 3.1b – Mysterious Mushrooms**
3. **Worksheets 3.1c – Mysterious Mushrooms**
4. **Stimulus 1 – Teacher Bingo Calling Cards**
5. **Stimulus 2 – Student Bingo Cards**
6. **Worksheet 3.2a – Fantastic Fungi Fungi Cards**
7. **Worksheet 3.2b – Fantastic Fungi Answer Grid**
8. **Stimulus 3 – Fantastic Fungi Dichotomous Key**
9. **Stimulus 4 – Edible Mushrooms Classification**
10. **Stimulus 5 – Edible Mushrooms Classification**
11. **Worksheet 3.3 – Edible Mushrooms Dichotomous Key – Cut Out**
12. **Stimulus 6 – Edible Mushroom Dichotomous Key Example**



Answers

WORKSHEET 3.1c – Mysterious Mushrooms

Fly Agaric

- **Where is it found (eg. Country)** Northern hemisphere
- **Is it edible?** No – poisonous
- **Mode of nutrition:** Mycorrhizal

Penny Bun

- **Where is it found (eg. Country)** Native to Europe and North America
- **Is it edible?** Yes
- **Mode of nutrition:** Mycorrhizal

Lion's Mane

- **Where is it found (eg. Country)** Asia, Europe, and parts of Northern America
- **Is it edible?** Yes
- **Mode of nutrition:** Saprotrophic

Black Truffle

- **Where is it found (eg. Country)** Native to southern Europe
- **Is it edible?** Yes
- **Mode of nutrition:** Mycorrhizal

Ghost Mushroom

- **Where is it found (eg. Country)** Tasmania and Southern Australia
- **Is it edible?** No – poisonous
- **Mode of nutrition:** Saprotrophic

Orange Jelly Fungi

- **Where is it found (eg. Country)** Worldwide
- **Is it edible?** Reported as edible and non-edible
- **Mode of nutrition:** Saprotrophic

Warted Puffball

- **Where is it found (eg. Country)** Worldwide
- **Is it edible?** Young fruiting body is edible
- **Mode of nutrition:** Mycorrhizal

White Coral Fungi

- **Where is it found (eg. Country)** The Americas and Europe
- **Is it edible?** Yes
- **Mode of nutrition:** Saprotrophic and Mycorrhizal

Golden Chanterelle

- **Where is it found (eg. Country)** Worldwide
- **Is it edible?** Yes
- **Mode of nutrition:** Mycorrhizal

(Answers for Worksheet 3.1c continued following page...)

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Answers (continued)

Common Stinkhorn

- **Where is it found (eg. Country)** Worldwide
- **Is it edible?** No
- **Mode of nutrition:** Saprotrophic

Black Morel

- **Where is it found (eg. Country)** Northern Hemisphere/ unclear
- **Is it edible?** Yes
- **Mode of nutrition:** Saprotrophic and Mycorrhizal

Scarlet Cup

- **Where is it found (eg. Country)** Worldwide
- **Is it edible?** Yes
- **Mode of nutrition:** Saprotrophic

WORKSHEET 3.2b – Fantastic Fungi Answer Grid

1. Earth's Tongue **2.** Truffle **3.** Bolete **4.** Chanterelle **5.** Agaric
6. Jelly Fungi **7.** Black Morel **8.** Tooth Fungi **9.** Basket Stinkhorn **10.** Coral Fungi
11. Polypores **12.** Cup Fungi **13.** Puffball **14.** Birds Nest Fungi

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