



Overview

The discovery of a strange object on the beach sets three friends off on an investigation that involves their whole class. Using questions from the class as a catalyst, the article recounts information they find about bracket fungi from their own observations, research, and experiments. The second part of the article records answers to four of their questions.

This article models how a scientific investigation can be carried out – direct observation and questioning that is followed by trial and research.

Texts related by theme

“The Good, the Bad, and the Ugly” Connected 2 2007 | “Killer Plants” SJ 2.1.10 | “A Bowl of Rice” SJ 1.1.2009

Text characteristics from the year 4 reading standard

figurative language, such as metaphors, similes, or personification

a straightforward text structure, such as a structure that follows a recognisable and clear text form

some abstract ideas that are clearly supported by concrete examples in the text or easily linked to the students’ prior knowledge

some words and phrases that are ambiguous or unfamiliar to the students, the meaning of which is supported by the context or clarified by photographs, illustrations, diagrams, and/or written explanations

What do bracket fungi feed on?
Bracket fungi are not plants. They belong to the same kingdom of living things as mushrooms and toadstools, the kingdom of fungi.
Plants are able to make their own food using a process called photosynthesis*. Fungi cannot do this. Instead, they absorb food from other living things or from dead plants or animals. Bracket fungi absorb their food from rotting wood.

How do new bracket fungi grow?
New bracket fungi grow from spores*. These spores are spread through tiny, tube-like pores on the underside of the fungi.

Where do bracket fungi grow?
Usually they grow on tree stumps or on the trunks of dead or rotting trees. You will hardly ever find bracket fungi on a healthy tree.
The fungi that the boys had found on the beach were black and rubbery. This was because they had been preserved in salt water for a long time.

* See “Killer Plants” in School Journal, Part 2 Number 1, 2010, page 9.

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some places where information and ideas are implicit and where students need to make inferences based on information that is easy to find because it is nearby in the text and there is little or no competing information

other visual language features that support the ideas and information, for example, text boxes or maps

Possible curriculum contexts

SCIENCE (Nature of Science)

LEVEL 2 – Investigating in science: Extend their experiences and personal explanations of the natural world through exploration, play, asking questions, and discussing simple models.

ENGLISH (Reading)

LEVEL 2 – Language features: Show some understanding of how language features are used for effect within and across texts.

ENGLISH (Writing)

LEVEL 2 – Language features: Use language features appropriately, showing some understanding of their effects.

Possible reading purposes

- To learn about some characteristics of bracket fungi
- To identify the process a group of students used to learn more about bracket fungi
- To learn how to carry out a science investigation when you find something interesting.

See [Instructional focus – Reading](#) for illustrations of some of these reading purposes.

Possible writing purposes

- To report on a science investigation
- To recount finding an unusual item
- To describe the characteristics of a particular plant or animal.

See [Instructional focus – Writing](#) for illustrations of some of these writing purposes.

Text and language challenges

VOCABULARY:

- Possible unfamiliar words, phrases, and concepts, including “driftwood”, “discs”, “back and forth”, “bracket”, “neighbourhood”, “tree stumps”, “sprouted”, “support his weight”, “mushrooms”, “toadstools”, “kingdom”, “photosynthesis”, “absorb”, “spores”, “tube-like pores”, “underside”, “rubbery”, “preserved”, “recyclers”, “seedlings”, “pūriri moth caterpillars”
- The negative construction “hardly ever find”.

Possible supporting strategies

Ask the students to share their experiences of finding unusual things washed up on the beach. Discuss the title and the photographs on pages 26 and 27 and introduce the words “disc” and “fungi”.

Support the students to select the words that are most important for them to learn. Provide opportunities for them to encounter and use the vocabulary over time and in a range of contexts.

The English Language Learning Progressions: Introduction, pages 39–46, has useful information about learning vocabulary.

SPECIFIC KNOWLEDGE REQUIRED:

- Familiarity with finding things on a beach
- Knowledge of common fungi, such as mushrooms, toadstools, and yeasts
- Knowledge of the use of observation, research, and questioning in an investigation
- Knowledge of life in the bush, including the life cycles of trees and insects.

Possible supporting strategies

Take the class for a nature walk, ideally in a bush area or on a beach. Discuss the kinds of things found in the area. Prompt the students to ask useful questions about what they find. Discuss ways they could find out more about items they see or collect.

Photograph key items and use these photos to build a shared picture dictionary for students who need support with building vocabulary.

Some students may not be familiar with mushrooms or other fungi. Share pictures and real-life examples to initiate discussion of their features, where they are found, and how they are used. Ask the students to share stories about poisonous fungi or the use of fungi in cooking. Introduce and record key vocabulary and concepts during these discussions.

Review the students’ past scientific explorations and remind them of the steps they took and the questions they asked to guide their investigations.

TEXT FEATURES AND STRUCTURE:

- The two-part structure of recount and factual question-and-answer
- The questions and answers that shape both parts of the text
- The way the last sentence reinforces the metaphor used on page 27
- The use of metaphors in science: “bracket fungi”, “the kingdom of fungi”
- The simile “like forest recyclers”.

Possible supporting strategies

Support the students to identify the structure of the text, using the headings (questions) in the second part of the article as a guide to the content. Prompt them to examine the photographs as well as the text.

During and after reading, check the students’ understanding of the way that the class’s questions in the article lead the investigation. Begin with the opening paragraph. Read this together and, based on the information in this paragraph, ask students to make predictions about what will follow in the text, including what kind of text they think it will be and what kind of features they expect to find.

Prompt the students to make connections with other information reports they have read and with scientific processes they know about or have experienced. Record their comments and predictions and refer to them during reading and writing tasks.

For information about language for recounting and explaining, and for ideas on how to support students, see *Supporting English Language Learning in Primary Schools: A Guide for Teachers of Years 3 and 4*, pages 14–19 and 32–37.

Instructional focus – Reading

Science (Nature of Science, level 2 – Investigating in science: Extend their experiences and personal explanations of the natural world through exploration, play, asking questions, and discussing simple models.)

English (Level 2 – Language features: Show some understanding of how language features are used for effect within and across texts.)

Text excerpts from “Flying Fungi”	Students (what they might do)	Teacher (possible deliberate acts of teaching)
<p>“Why are they called bracket fungi?” asked Jasper.</p> <p>“A bracket is something that supports a shelf,” said his grandma. “And these fungi look a bit like shelves sticking straight out from the tree trunk.”</p>	<p><i>Students make connections with their own experiences of finding unusual objects on a beach.</i></p> <p><i>Students make connections between their knowledge of figurative language and their knowledge of shelves to understand that the name of the fungi is a metaphor that describes the way they look.</i></p>	<p>PROMPT the students to use the photographs to support their understanding of the text.</p> <ul style="list-style-type: none">• Turn to a partner to discuss the photos. Talk about what you know about fungi and what you can see in the photos.• How does the metaphor help you understand what the fungi are like?
<p>Were they a kind of mushroom? The bracket fungi smelt a bit like mushrooms. But mushrooms and toadstools are soft, and the bracket fungi were tough and hard.</p> <p>Were they plants?</p>	<p><i>The students locate and evaluate information in the text about the characteristics of the bracket fungi, and make connections with their own knowledge of fungi.</i></p> <p><i>They ask questions and search for answers about bracket fungi.</i></p>	<p>EXPLAIN that a useful strategy is to ask questions in your head as you read. The questions you ask help you to find information.</p> <p>MODEL how to ask useful questions.</p> <ul style="list-style-type: none">• What information about bracket fungi can we get from the text?• What doesn't the text tell you?• What do you want to know about the bracket fungi?
<p>What do bracket fungi feed on?</p> <p>Bracket fungi are not plants. They belong to the same kingdom of living things as mushrooms and toadstools: the kingdom of fungi. Plants are able to make their own food using a process called photosynthesis. Fungi cannot do this. Instead, they absorb food from other living things or from dead plants or animals. Bracket fungi absorb their food from rotting wood.</p>	<p><i>The students make connections between their own questions and those posed in the text. They combine their prior knowledge about plants with the comparison made about food sources and integrate the information to understand why fungi are not plants.</i></p> <p><i>They use their knowledge of text features to identify the footnote. They infer that photosynthesis is a defining feature of plants.</i></p> <p><i>Students use the information in the text and their knowledge of what “absorb” means in other contexts to understand how fungi feed.</i></p>	<p>ASK QUESTIONS to support the students to make connections between their own knowledge of fungi and the text.</p> <ul style="list-style-type: none">• What senses do the students in the article use to make these comparisons?• How do they help you make connections with your own experience of mushrooms or other fungi? <p>EXPLAIN that all living things are classified into kingdoms. Scientists today think there are at least five kingdoms – animals, plants, fungi, protists (simple single-celled organisms such as amoeba), and monerans (bacteria and others).</p> <p>MODEL your thinking as you work out how fungi feed:</p> <ul style="list-style-type: none">• “Absorb” has connotations of bath towels and sponges for me. I inferred that to be absorbed, the food would have to be in a liquid form, so the fungi must live in damp places.• Then I wondered what kind of food they would get in this way. I know from observation that when plants and animals die in the bush, they get quite gooey, so I inferred that this gooeyness contains nutrients for the fungi.• My next question is: How do they absorb liquids? Do they have fibres or tiny holes, like towels and sponges? I need to find out more.
<p>So bracket fungi give support to a whole lot of other living things. Rather like brackets supporting a shelf, in fact.</p>	<p><i>Students draw on their vocabulary knowledge to understand the wider meaning of “support” and infer that bracket fungi are an important part of a forest ecosystem.</i></p> <p><i>Students evaluate the effectiveness of the article as a way of recording a science investigation.</i></p>	<p>To support students who don't know the word “absorb”, bring in a sponge and some water. Show the process of the sponge absorbing the water. Draw and label a diagram. Write the sentence “A sponge absorbs water.”</p> <p>DIRECT the students to the list of questions and answers they compiled.</p> <ul style="list-style-type: none">• Were all your questions answered?• What more do you want to know? How could you find answers? <p>PROMPT the students to make connections between the article and their own science investigations.</p> <ul style="list-style-type: none">• How is this similar to the investigations you've carried out? How is it different?• Do you think the article was an effective way of recording this investigation?
<p>METACOGNITION</p> <ul style="list-style-type: none">• How did making comparisons help you understand what bracket fungi are?• What helped you work out what spores are? How did you use the labelled photograph to help you?		<p>GIVE FEEDBACK</p> <ul style="list-style-type: none">• You've asked some very useful questions that took you more deeply into this topic. And you kept asking more questions – that often happens in science.• I noticed you stopped to check some ideas with others. That's a good way to confirm your understanding and add to your knowledge of a topic.

Instructional focus – Writing

Science (Nature of Science, level 2 – Investigating in science: Extend their experiences and personal explanations of the natural world through exploration, play, asking questions, and discussing simple models.)

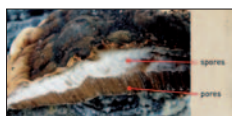
English (Level 2 – Language features: Use language features appropriately, showing some understanding of their effects.)

Text excerpts from “Flying Fungi”

Jackson tested one of the bracket fungi to see how strong it was. He was surprised to find that it could support his weight without breaking off. He used two of the fungi as steps to climb to the top of a tree stump.

How do new bracket fungi grow?

New bracket fungi grow from spores. These spores are spread through tiny, tube-like pores on the underside of the fungi.



How useful are bracket fungi?

Bracket fungi are like forest recyclers. They help to break down the wood of fallen trees to make room for new seedlings.

Examples of text characteristics

RECORDING OBSERVATIONS

Scientific investigations usually include direct observations of the subject being studied. Observations are important and can be recorded in a variety of ways, depending on the purpose and the audience.

QUESTIONS AS HEADINGS

Questions can be useful ways to organise and record information in an investigation. They help the writer manage the information collected, and they help the reader know what each section will try to answer.

SCIENTIFIC LANGUAGE

Accurate scientific vocabulary helps readers know exactly what is being described or explained. When the vocabulary is unfamiliar, writers can support the meaning by using labelled diagrams or photographs.

USE OF SIMILE AND METAPHOR

Writers often use a simile or metaphor to help readers understand an unfamiliar concept or object. The writer likens the unfamiliar idea to something the reader is familiar with. Adding an example gives further support.

METACOGNITION

- How did your careful planning at the start of the investigation make the write-up easier?
- How did you decide on the purpose and audience as you prepared to write about your experiences? What difference did this make to the structure and language of your text?
- How did you decide which parts of the text needed more support? How will the labelled diagrams give this support?

Teacher

(possible deliberate acts of teaching)

ASK QUESTIONS to help students clarify their writing purpose and audience.

- Why are you writing about this?
- How will you decide what to include and what to leave out?
- What is the best structure for this type of writing?
- What vocabulary is key to use in your writing?

PROMPT the students to organise their ideas.

- When you're gathering information, your own questions can help you to know what to look for.
- You can use these questions as headings so your readers know what they'll find in each section.
- Work with a partner to evaluate your writing. Identify any places that you have used a question as a heading. What effect does this have on the writing?

MODEL ways to use specialist vocabulary.

- In this extract, the writer tells us how fungi grow. She's used the specialist words “spores” and “pores” and has provided a photo with labels to show where they are. The spores look a bit like powder or flour, and she's told us the pores are tiny. She expects her readers to use this information to understand what spores are like.
- Ask students to identify places where using specialist vocabulary will add meaning to their writing.

EXPLAIN how and why to use similes and metaphors.

- A simile says that one thing is “like” or similar to something else. A metaphor says that one thing “is” something else, as a shortcut way of comparing two things. These language features can help your readers to understand unfamiliar ideas by comparing them with the familiar things, especially when writing about a scientific topic.
- How can a simile or metaphor help your readers? Review your writing to see if there are places where a simile or metaphor would be a quicker and easier way to explain or describe something.

Many students may need more explicit and detailed scaffolding when they begin to use similes and metaphors in their writing. To support them to use similes, create a writing frame using the sentences from the text.

- On the board, write the sentence “Bracket fungi are like forest recyclers.” Rub out the words “bracket fungi” and “forest recyclers”.
- Replace “bracket fungi” with something your students are very familiar with and prompt them to supply another noun to finish the simile.
- Ask them why they made this comparison and co-construct a second sentence explaining the simile.
- Have the students work in pairs to create more examples (within a context relevant to your discussion or topic) and share them.
- Prompt the students to use similes in their writing and offer guidance.
- Beware of over or unnecessary use of similes and metaphors. You may need to re-emphasise their specific purpose, of enhancing meaning.

GIVE FEEDBACK

- The planning you did has been really helpful when it came to writing up your observations. You've used the same set of questions effectively for both parts of the process.
- The simile you've used here helped me understand how the rata grows and takes over a tree. It is a lot like the way a spider puts a web around its prey.

 Writing standard: by the end of year 4

 The Literacy Learning Progressions