The Dinosaur Hunter

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Year 5

Overview

This article tells the story of a New Zealand woman who, like Mary Anning (see "Mary Anning: Fossil Hunter"), had a great curiosity about rocks and the fossils in them. The article continues the theme of change over time. Joan Wiffen's story parallels Mary's, giving students opportunities to make interesting comparisons between:

- fossil hunting in different times and places
- women's lives – then and now
- scientific knowledge of the value of fossils – then and now.

The article will engage students through the detective-like search for dinosaur fossils.

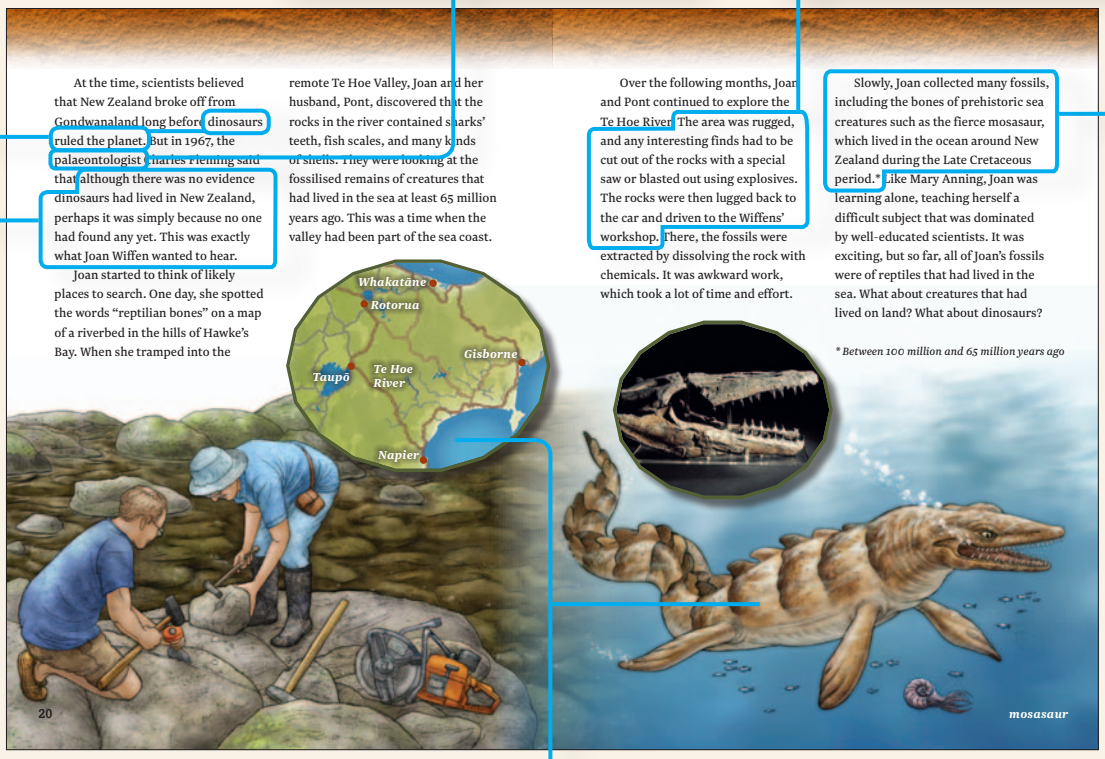
Texts related by theme **"Mary Anning: Fossil Hunter"** SJ L3 Sept 2012 | **"The Biggest Snake in History"** SJ L3 Sept 2011 | **"On the Dinosaur Trail"** SJ 4.1.11

Text characteristics from the year 5 reading standard

figurative and/or ambiguous language that the context helps students to understand

a significant amount of vocabulary that is unfamiliar to the students (including academic and content-specific words and phrases), which is generally explained in the text by words or illustrations

some information that is irrelevant to the identified purpose for reading (that is, some competing information), which students need to identify and reject as they integrate pieces of information in order to answer questions



some ideas and information that are conveyed indirectly and require students to infer by drawing on several related pieces of information in the text

illustrations, photographs, text boxes, diagrams, maps, charts, and graphs that clarify or extend the text and may require some interpretation

sentences that vary in length and in structure (for example, sentences that begin in different ways and different kinds of complex sentences with a number of subordinate clauses)

Reading standard: by the end of year 5

Possible curriculum contexts

SCIENCE (Living World)

LEVEL 3 – Evolution: Explore how the groups of living things we have in the world have changed over long periods ...

ENGLISH (Reading)

LEVEL 3 – Structure: Show a developing understanding of text structures.

ENGLISH (Writing)

LEVEL 3 – Structure: Organise texts, using a range of appropriate structures.

Possible reading purposes

- To learn about New Zealand's own fossil hunter and her important discoveries
- To understand how fossils are discovered and identified
- To learn about New Zealand's ancient history.

See Instructional focus – Reading for illustrations of some of these reading purposes.

Possible writing purposes

- To write about another person who made scientific discoveries
- To compare the work of Joan Wiffen with that of Mary Anning
- To write a fictional story inspired by the article, for example, an adventure set in the time of the dinosaurs.

See Instructional focus – Writing for illustrations of some of these writing purposes.

The New Zealand Curriculum

Text and language challenges

VOCABULARY:

- Possible unfamiliar words and phrases, including "night school", "geology", "ammonite", "squid-like", "extinct", "Gondwanaland", "palaeontologist", "evidence", "likely", "reptilian", "riverbed", "tramped", "remote", "fossilised", "rugged", "lugged", "prehistoric", "Cretaceous", "dominated", "breakthrough", "armoured", "honorary doctorate", "self-taught"
- The metaphors "I was hooked", "dinosaurss ruled the planet", "to reach back in time ..."
- The idiomatic expression "most wanted list"
- The time periods, such as "65 million years ago"
- The names of prehistoric creatures..

Possible supporting strategies

If students have read "Mary Anning: Fossil Hunter", they will be familiar with much of the specialist vocabulary in this article. Use charts (for example, of dinosaur names) made while reading the previous article and have students add information to the chart as they read. Students can also explore more Greek and Latin root words as they research the derivations of the specialist vocabulary.

Identify words or terms that will be unfamiliar. Make decisions on how to address them based on:

- whether or not each word will create a barrier to overall meaning
- whether students can work out the meaning using strategies
- prioritising the most useful vocabulary for your students to learn
- the students' level of vocabulary knowledge.

Discuss the pronunciation of the words "rugged" and "lugged". If "rugged" is used as a verb ("She rugged up warmly"), the pronunciation changes.

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

SPECIFIC KNOWLEDGE REQUIRED:

- Knowledge of fossils and how they have helped scientists understand evolution
- Knowledge of prehistoric creatures
- An understanding that life forms have changed over very long time periods
- Some familiarity with New Zealand's geology, including Gondwanaland.

Possible supporting strategies

Review what the students already know about fossils and their importance, including information they gained if they read "Mary Anning: Fossil Hunter".

If necessary, support students to comprehend the extremely long time frames involved. This timeline is useful: http://science.nationalgeographic.com/science/prehistoric-world/prehistoric-time-line

TEXT FEATURES AND STRUCTURE:

- Historical recount, told chronologically through Joan Wiffen's life
- The introduction, which gives the topic focus and creates reader interest
- Photos, illustrations, and a map
- The skeleton images with related photos of bones and with scales to gauge relative sizes
- Questions that reflect Joan's own questioning and that prompt students to make predictions
- Direct quotes from Joan
- A footnote to explain a term
- A definition in brackets after a technical word
- The pull-out quote in upper-case letters
- Time and sequencing language.

Possible supporting strategies

If necessary, support the students to identify the structure of the text, skimming the article to notice its features. Prompt them to examine the photographs and the captions as well as the text.

Students may need support to make the connections in pages 22–23 between the body text, the illustrations, the photos, and the scale measures. Work through one slowly or ask the students to work in pairs, taking turns to explain one example each.

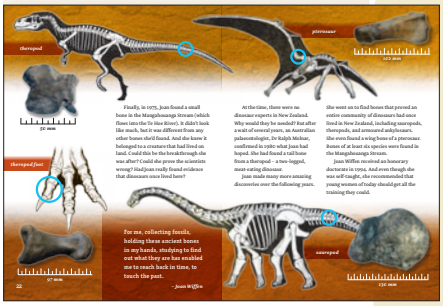
Create a timeline, adding the times and the main events in sequence.

Sounds and Words

Instructional focus – Reading

Science (Living World, level 3 – Evolution: Explore how the groups of living things we have in the world have changed over long periods …)

English (Level 3 – Structure: Show a developing understanding of text structures.)

Text excerpts from "The Dinosaur Hunter"	Students (what they might do)	Teacher (possible deliberate acts of teaching)
Unlike Mary Anning, who explored the cliffs along the beach at Lyme Regis, Joan Wiffen often came across shells buried in hillsides a long way from the sea. As a young girl, she was very curious about these discoveries. Shells but no ocean – how could that be? "I would run my finger over the shells and wonder how they got there," Joan said.	*Assuming students have read "Mary Anning: Fossil Hunter", they will **make connections** between the two articles, comparing the places the women lived. They **ask and answer questions** about the reasons each started to collect shells, drawing on knowledge of the time to **infer** that for Mary it was initially for money but for Joan it was curiosity. The students will use the photo to infer that this article is about a living person. They **make connections** between the text and knowledge they have of finding shells a long way from the sea. They compare their thoughts with Joan's and **form hypotheses** about the origins of the shells.*	**DIRECT** the students to work in pairs as they draw on what they already know about fossils and dinosaurs, including new information they have gained from reading "Mary Anning: Fossil Hunter". **PROMPT** the students to compare Joan and Mary. • Make a two-column chart headed "Mary" and "Joan". • While you're reading, pause where you can compare Mary Anning and Joan Wiffen and their discoveries. • Share these comparisons with your partner and make notes on the chart. • When you've finished reading, summarise your comparisons. **PROMPT** the students to ask questions and develop hypotheses. • As you read, record any questions you have about the text. You can then develop hypotheses from them. For example, my question might be "Why do we sometimes find shells inland?" • What do you know about the formation of the land over very long periods? • How can this help you form a hypothesis about the shells? • How will you know if your hypothesis is correct?
It didn't look like much, but it was different from any other bones she'd found. And she knew it belonged to a creature that had lived on land. Could this be the breakthrough she was after? Could she prove the scientists wrong? Had Joan really found evidence that dinosaurs once lived here?	*The students **integrate** information across the text and **make connections** with their knowledge of the way a detective story builds suspense to **infer** that the bone is probably from a dinosaur. They **make further connections** between their own questions and Joan's to **form hypotheses** about identifying dinosaur bones.*	**DIRECT** the students to work in pairs to find clues. • Go back to the start of the article. Find all the clues that led Joan to believe dinosaurs once lived in New Zealand. • Ask each other questions about her find and form hypotheses about why she thought this bone was from a dinosaur. • How do you think she can prove it is a dinosaur bone?
 She had found a tail bone from a theropod – a two-legged, meat-eating dinosaur.	*The students **make connections** between the words in the main text, the theropod skeleton, the blue circle, the photo of the bone, and the 50-mm scale to understand where the bone came from and how big it was. They **integrate** this information and their own knowledge of bones (for example, animal tail bones they may have seen) to **visualise** the size of the theropod and where the bone fitted. They **make connections** between the text, the illustration, and what they know about animals such as kangaroos to **infer** that the theropod's tail enabled it to walk on two legs.*	Enlarge pages 22–23 so you can connect the information in the illustrations, the photos, and the scales. Bring an animal tail bone to class if you have one – for example, from a rat, possum, cat, or dog. **ASK QUESTIONS** and prompt to support the students. • Have you ever seen a bone this shape? Think about skeletons of dead animals you might have seen. • How big was the theropod's tailbone? Compare it with a bone you've seen. What does that tell you about the way the animal used its tail? • What animals have long tails and walk on two legs? • Look at the illustration of a sauropod on page 23. It has a long tail. Why do you think it walked on four legs? • How are these ancient animals similar to animals today? How are they different? **GIVE FEEDBACK** • You've compared Joan with Mary Anning and connected this with your own interests in collecting shells. Making connections between texts and your own experiences helps to fill in information that authors don't always give us. • Integrating information from the diagram, and from the words in the text, to work out what the diagram shows was a good way of working out what the author was trying to convey.

METACOGNITION

- Tell me what you were thinking as you read about Joan's search for dinosaurs. What were you wondering? How does thinking like that help your reading?
- How often do you make notes when you're reading? Why do you do this? Is it helpful?
- How do you read pages like 22–23? What strategies help you understand the information?

Reading standard: by the end of year 5

The Literacy Learning Progressions

Assessment Resource Banks

Instructional focus – Writing

Science (Living World, level 3 – Evolution: Explore how the groups of living things we have in the world have changed over long periods …)

English (Level 3 – Structure: Organise texts, using a range of appropriate structures.)

Text excerpts from "The Dinosaur Hunter"	Examples of text characteristics	Teacher (possible deliberate acts of teaching)

You might think that by the 1930s, when Joan Wiffen first became interested in fossils, there was nothing more to discover. So much had been found already. But up until 1980, experts said there had never been dinosaurs in New Zealand. They were wrong. And Joan Wiffen, who thought differently, was determined to prove it.

INTRODUCTIONS

Introductions serve many different purposes. In factual texts, introductions give the topic and context and, usually in the last sentence, the specific focus of the text – as well as stimulating interest.

MODEL the way the author might have made decisions about this article.

- I can see he hasn't used headings, but the piece of text that starts it is different from the rest: this is the introduction. He starts by using the pronoun "you" to show he is talking to us, the readers. Then he tells us the name of the dinosaur hunter.
- Think about your own writing and how you can use an introduction to give the topic and focus of your text and catch your readers' interest.

Students who find constructing an introduction challenging may benefit from using a writing frame (like the example below).

Introduction

Topic	
Who? Where? When?	
Specific focus	

On a visit to Australia, Joan was given the fossil of an ammonite (an extinct squid-like sea creature).

Slowly, Joan collected many fossils, including the bones of prehistoric sea creatures such as the fierce mosasaur, which lived in the ocean around New Zealand during the Late Cretaceous period.*

**Between 100 million and 65 million years ago*

SPECIALISED LANGUAGE

Using accurate, specialised words gives writing interest and authenticity. It helps readers understand connections (for example, "saur" words indicate a lizard-shaped animal). It also helps readers make connections with related vocabulary so they can add to their knowledge.

ASK QUESTIONS to help the students consider their vocabulary choices.

- Make a list of all the specialised words you've used.
- Are they specific enough? For example, instead of saying "animal", could you be more specific and name the family or species?
- Are the specialised words accurate? Check each one to make sure you've used it correctly.
- Will your readers need help to understand any of the words? Check each word again and mark those that will be tricky for your readers.
- How can you support your readers? Look for models in this and other articles, then add information that will help your readers.

Some students may benefit from support in writing definitions. One way to do this is to supply a writing frame like the one below. Sentences that give definitions often use relative clauses. Some students will benefit from explicit teaching and practice with using relative clauses.

Definitions sentence frame

Item	Am/is/ are/was/ were	Category	Who/that/ which	Characteristic or action
Dinosaurs	are	animals	that	lived millions of years ago.

SUPPORTING UNFAMILIAR VOCABULARY

Authors often give explanations for specialised words. They can:

- *give details in the text, close to the word*
- *supply details in a clause ("which lived …")*
- *use a footnote, indicating this with an asterisk or a number*
- *explain the word in a glossary (not used in this article, but see page 14).*

GIVE FEEDBACK

- Adding the introduction helped pull your structure together: I can see where the article is taking me now.
- You've used accurate words and terms about …, and the glossary helped me understand the unfamiliar words.
- Your use of a simile allowed me to gain a better understanding of … It showed me what she thought and felt and allowed me to make a connection to my own feelings.
- This works well as a graphic novel. The format limits the amount of writing, so every word has to count. You've trimmed your sentences down to short, vivid statements.

METACOGNITION

- How did planning with a graphic organiser help you put your information into a logical order?
- How do you make decisions about the structure and language that will best suit your audience?
- Show me where you found this information. Which sources have been most useful? Why is that?

Writing standard: by the end of year 5

The Literacy Learning Progressions

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