



Overview

Building a rocket in the backyard may not be a common experience for many students, but most will be able to identify with the ongoing human dream of exploring space. This text combines two texts: "Rocket Club" (a recount of one boy's rocket-building experiences) and "Blast from the Past" (a report linking historical and contemporary information about rockets). The report explains and describes how, when, and why rockets have been used over more than 900 years.

Students have opportunities to learn interesting facts and to think critically about the developments in rocket technology and the purposes for which this technology can be used.

Using the items together (possibly over several sessions) will allow students to make connections between the specific development of one boy's rockets and a more general history of rocket development. Through this, students can be supported to uncover the theme of human ingenuity or inventiveness and the desire to achieve increasingly ambitious goals. There is an audio version of this text available at www.schooljournalstorylibrary.tki.org.nz

Texts related by theme

"First Up" SJ 3.1.11 | "The Space Race" SJ 3.2.07 | "One Small Step" SJ 4.3.09

Text characteristics from the year 7 reading standard

complex layers of meaning, and/or information that is irrelevant to the identified purpose for reading (that is, competing information), requiring students to infer meanings or make judgments

academic and content-specific vocabulary

adverbial clauses or connectives that require students to make links across the whole text

Dr Goddard transports a rocket

Dr Goddard conducts the first flight of a liquid-fuel rocket, 1926

Dr Robert Goddard was one of the greatest rocket builders of the early 1900s. He built many new types of rocket. Goddard also tried different types of fuel. His first liquid-fuel rocket was built in 1926. It only rose 12 metres off the ground before crashing into a cabbage patch. But it worked! Goddard's dream was to send a rocket into outer space. People laughed at him and said it could never happen. They were wrong.

Meanwhile, rockets continued to be used for war. Near the end of the Second World War, Germany began launching a long-distance rocket. This was the huge V2, which stood taller than a five-storey building. A V2 would fly for over 300 kilometres before silently dropping down onto its target. It carried enough explosive to destroy a whole city block. No fighter plane could catch it. No one could even hear it until the explosion came.

A V2 rocket from the Second World War

Distance from Auckland to Sydney: 3000 kilometres

AUSTRALIA

Sydney

Auckland

NEW ZEALAND

After the Second World War, several countries made military rockets that could reach targets 3000 kilometres away. That's like launching a rocket in Auckland and hitting something in Sydney. Luckily, none of these have ever been used in a war.

sentences that vary in length, including long, complex sentences that contain a lot of information

illustrations, photographs, text boxes, diagrams, maps, charts, and graphs, containing main ideas that relate to the text's content

Possible curriculum contexts

SCIENCE (Physical World)

Level 4: Physical inquiry and physics concepts – Explore, describe, and represent patterns and trends for everyday examples of physical phenomena ...

SOCIAL SCIENCES (Social Studies)

Level 4: Understand how exploration and innovation create opportunities and challenges for people, places, and environments.

ENGLISH (Reading)

Level 4: Structure – Show a developing understanding of text structures.

Possible reading purposes

- To find out how a boy makes his own rockets
- To learn about the history of rockets
- To understand why people through time have wanted to make and use rockets
- To understand how inventions over time have influenced space exploration.

Page 4 has suggestions for writing instruction.

For more support and suggestions for accelerating students' writing, see *Accelerating Writing Progress in Years 7 and 8* on the Writing Hub.



The Writing Hub

Text and language challenges

VOCABULARY:

“Rocket Club”

- Possible unfamiliar and/or topic-specific words and phrases, including “range”, “launch pad”, “billow”, “Rocketry Association”, “site”, “parachute”, “designed”, “research”, “jutting-out”, “efficient”, “mesh”, “cylinder”, “layers”, “glued”, “spray-painted”, “aeroplanes”, “signals”, “orbiting”, “location”, “handset”, “pyramid-shaped”.

“Blast from the Past”

- Possible unfamiliar and/or topic-specific words and phrases, including “exactly”, “basic”, “enemies”, “created”, “aimed”, “bouncing and blazing”, “elephants”, “skyrockets”, “Whalers”, “shore”, “liquid-fuel”, “Meanwhile”, “continued”, “long-distance”, “five-storey”, “target”, “military”, “dangerous”, “blew up”, “disaster”, “astronauts”, “25-storey”, “necessary”.

Possible supporting strategies

Identify vocabulary that may be challenging for your students. Use strategies to support them to understand these words and phrases, such as:

- providing opportunities for the students to meet words through oral language (using real objects, photos, and/or audiovisual clips as prompts for tasks before reading)
- reviewing how to use a glossary.

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

SPECIFIC KNOWLEDGE REQUIRED:

“Rocket Club”

- Understanding of the kinds of hobbies and interests that lead children and adults to create items themselves.

“Blast from the Past”

- Knowledge of major conflicts in history, including those in China, India, and the First and Second World Wars
- Knowledge of whaling
- Knowledge of the “space race” between Russia and America in the 1950s and 1960s.

Possible supporting strategies

Read the titles of the book and the articles aloud and ask the students to predict what they may be about. Support them to make connections between their predictions and any knowledge they have about rockets, making a list of topics or ideas they predict may be in the articles. During reading, allow them time to confirm or revise their predictions.

For students who will find the vocabulary challenging, you could also begin a list of key vocabulary for the reading during the discussions about the titles. For these learners, you could use enlarged copies of some of the illustrations to make labels and notes, including key words and concepts.

Before reading “Blast from the Past”, make a timeline (with divisions from 500BC to 2050AD) with the students and add entries during reading.

TEXT FEATURES AND STRUCTURE:

“Rocket Club”

- A recount in the present tense
- The use of photographs with captions
- The fact box with an explanatory diagram of how a GPS unit works
- The use of explanations with descriptive details.

“Blast from the Past”

- A report with examples from history
- The use of explanations and descriptions
- The use of language that signals time and sequence
- Illustrations, photos, captions, and a map.

Possible supporting strategies

Skim the two texts to give the students opportunities to notice the differences between them, supporting them to make connections with other texts they have read that have similar features. Point out the captions, photos, glossary, diagrams, maps, and illustrations and explain how they can be used.

Students may need support to understand the language that signals cause and effect relationships and how it is used. To support them to follow the sequence of events and to identify the time markers, you could construct (either as a class or in pairs) a timeline. Put all the events into the timeline and note the time markers (or other information) that tell the reader when they occur.

If appropriate for your students, you could start creating lists of language to show time, including examples from the text. Use these lists to refer to when working with future texts and to help them to use this language in their writing.



Sounds and Words

Instructional focus – Reading

Science (Physical World – Physical inquiry and physics concepts: Explore, describe, and represent patterns and trends for everyday examples of physical phenomena ...)

Social Sciences (Social studies: Understand how exploration and innovation create opportunities and challenges for people, places, and environments.)

English (Structure: Show an increasing understanding of text structures.)

Text excerpt from “Rocket Club”

To make the body of the shark rocket, Matthew and his dad wrapped fibreglass mesh around a cylinder. They made the three fins by stacking layers of fibreglass onto a pane of glass. Then they covered the fins with epoxy resin. When the fins were hard, they cut off the sharp bits, sanded the fins smooth, and glued them onto the body. The rocket was spray-painted at the panel beaters’ workshop.

DEMANDS OF THE TEXT

Students need to:

- draw on their prior knowledge of reading procedural texts
- make links between the text, the photos, and prior knowledge
- use the glossary
- work out who did the action in the sentence with a passive construction (“The rocket was spray-painted ...”).

Students

(what to prompt, support, and look for as the students are reading)

Students **make connections** between the text and other texts they have read that describe a procedure to **locate** the features of this kind of text, such as the purpose (“To make the body”), the materials used, the sequential steps, and the words that signal sequence.

Students **locate and integrate** information from the text, the photos, and the captions to clarify the parts and processes. They **make connections** between the text and any experiences they have of making models to **visualise** the procedure.

Students use the glossary if they are not sure of the bolded words, substituting the definitions into the context and checking for meaning.

In the last sentence, they use their knowledge of sentence structure along with their prior knowledge of what panel beaters do to **infer** that the person who spray-painted the rocket is one of the panel beaters.

Teacher

(possible deliberate acts of teaching)

MODEL making connections with text features.

- When I read the first words, I thought to myself, “This is going to tell me how they did this. It’s going to be similar to other texts I’ve read that describe how to make or do something. I know from reading other “how to” texts that there will probably be a specific purpose, a list of the things you need, and a sequence of steps.”

EXPLAIN why it’s helpful to make connections as you read.

- Making connections with similar text structures helps you prepare yourself for what you’re about to read. You can get a good idea of what to expect, and that helps you to understand and navigate the text.

ASK QUESTIONS to support the students as they make connections.

- How have you made connections between the text and the photos? Did that help you understand what Matthew and his dad did?
- What connections with things you already know helped you to work out words and phrases like “mesh”, “cylinder”, and “pane of glass”?
- Were there any other words you were not sure of? What did you do to work out their meaning? Did you use the glossary?

PROMPT the students in order to support their understanding of passive constructions. Write the last sentence on the board.

- What was the action in this sentence? (“was spray-painted”)
- What was spray-painted? (“the rocket”)
- I wonder who spray-painted it? How did you work that out?

EXPLAIN how passive-tense sentences work.

- When the writer uses a sentence like this, we know something is done to something, but we aren’t told who is doing it. We have to use our prior knowledge and the words in the text to make an inference. I know panel beaters spray-paint things, so I infer that one of them spray-painted the rocket for Matthew.

Also give the purpose of using the passive tense.

- In this sentence, stating who spray-painted it is not important. The focus is the rocket as well as Matthew and his dad.

GIVE FEEDBACK

- You integrated information about making the rocket with your own experiences of building a trolley. That helped you understand that the order of steps is important when you’re making something.
- You used the photos and the captions to support your understanding. Integrating information from across a text like that is a good way to deepen your understanding.

MONITORING THE IMPACT OF TEACHING

Observe carefully as the students work through this extract. If the density of information challenges them, support them to tease out the text into separate steps. Show them how to use a graphic organiser to record the purpose and the materials and then to carefully locate and record each step using a numbered list. Notice how the students do this and reduce or increase your support as necessary.

Text excerpts from “Blast from the Past”

Students
(what to prompt, support, and look for as the students are reading)

Teacher
(possible deliberate acts of teaching)

Meanwhile, rockets continued to be used for war. Near the end of the Second World War, Germany began launching a long-distance rocket. This was the huge V2, which stood taller than a five-storey building. A V2 would fly for over 300 kilometres before silently dropping down onto its target. It carried enough explosive to destroy a whole city block. No fighter plane could catch it. No one could even hear it until the explosion came.

DEMANDS OF THE TEXT

Students need to:

- draw on prior knowledge of sentence structure
- integrate information within the text
- use prior knowledge to make inferences.

Will rockets ever carry people to Mars and further into space? Not all the way. Rockets need too much fuel and are too heavy for long journeys. But rockets will still be needed to launch satellites and astronauts up from Earth. Nothing else is powerful enough to reach the speed (11 kilometres per second) necessary to break free from Earth’s gravity. In fact, rockets will always be ... a real blast.

DEMANDS OF THE TEXT

Students need to:

- ask and answer questions
- draw on their scientific knowledge to make inferences
- make predictions.

*Students use what they know about structure and language to **integrate** information within the text, linking “Meanwhile” in this paragraph to the earlier parts of the text (pages 9–11) that discuss the use of rockets for war.*

*They use their prior knowledge of history to **infer** that Germany probably fired V2 rockets at Britain. They **integrate** information in the text with the captioned photo to **visualise** the enormous size of the V2 rockets.*

*Students draw on their prior knowledge of distance and war tactics to **infer** that the V2’s advantages of range, explosive power, speed, and silence made them a very effective weapon.*

*Students **ask and answer questions** about the V2 rockets and visualise the impact they would have.*

*Students **ask and answer questions** about rockets and **make connections** between the text and their knowledge of space to **infer** that the amount of fuel needed for the vast distances of space would be enormous.*

*They **ask questions** about devices already in space (such as the space station and satellites) and **infer** that they are not rockets, although they were put into space by rockets.*

*The students **make connections** with their knowledge of speed to compare speeds they are familiar with and the speed needed to escape gravity. They **make connections** between the text and their scientific knowledge to **infer** that to reach space, an object has to overcome the effect of gravity.*

EXPLAIN and discuss the use of “Meanwhile” as a linking word.

- Sometimes writers use a linking word to connect different parts of a text. In the first sentence here, the writer lets us know he’s going to tell us more about rockets used for war. The word “Meanwhile” lets us know that rockets kept on being used for war over the time period since the previous mention of war.
- Look back to find the last place he mentioned war – can you find it? (first half of page 11). What did he write about between that place and page 13? (using rockets in different ways; an early rocket builder)

PROMPT the students to draw on prior knowledge as they read.

- What do you know about the Second World War? What knowledge helps you understand the time period in this paragraph and the countries involved?
- Use what you know about warfare and the information in the text to make inferences about why the V2 was such a powerful weapon.

GIVE FEEDBACK

- Thanks for sharing your knowledge of fighter planes, Charlie. That helps us to understand why they couldn’t catch V2s.
- You’ve compared the way fighter planes dropped bombs with the way V2s operated. This helped you understand how dangerous V2s were.

MONITORING THE IMPACT OF TEACHING

If the students need support to make inferences, use a map of Europe to identify countries involved in the Second World War. Support them to calculate distances and use what they know to infer that Britain was the most likely target of the V2s. Help them locate information about the V2 as a weapon of war. Prompt them to integrate this information with what they already know about weapons, then ask them to identify (by making an inference) the special advantages of the V2.

PROMPT the students to ask and answer questions as they read.

- Is this a question you’ve wondered about?
- What other questions do you have as you read this page? What answers can you find here? Where else could you look for answers?

EXPLAIN that asking questions (wondering) in your head as you read is something good readers do a lot. Model this for the students.

- I’m wondering about the space station. I wonder how it got there? When I read the third sentence, I find the answer: if rockets are used to launch satellites, I guess (infer) they were used to launch the space station. Asking that question helped me read on, look hard for information, and then make an inference. I could confirm this by doing some research.

MODEL some possible questions.

- Why are rockets still important for space exploration?
- What is special about the speed they have to reach?
- What is gravity, and why do they have to break free from it?

GIVE FEEDBACK

- You connected the word “blast” back to its use in the title of the text. That helped you to understand how the author was using it in different ways.

MONITORING THE IMPACT OF TEACHING

If the students have difficulty making inferences by connecting with prior knowledge, focus on questions they can ask themselves to activate relevant connections. For example:

- What do you already know about gravity? What does that tell you about going into space?
- What do you already know about fuel, such as the amount of petrol a car needs for a long trip? Multiply that many, many times: how does that help you understand why rockets can’t take people to Mars and beyond?

Text excerpts from “Rocket Club” and “Blast from the Past”

Matthew wants to build a pyramid-shaped rocket next. As well as designing ...

People have been making rockets for a very long time. They have been used as fireworks ...

In fact, rockets will always be ... a real blast.

DEMANDS OF THE TEXT

Students need to:

- make connections between the texts
- identify the thematic links between the extracts
- integrate ideas and information to deepen their understanding of what motivates people to build rockets.

METACOGNITION

- What strategies did you use to work out words and phrases you hadn't seen before? How successful were they?
- What interests of your own helped you understand the articles in this book? How did using these connections help you?
- Show me some places where you used your connections to make an inference. How did this help you understand the text?

Students

(what to prompt, support, and look for as the students are reading)

Students ask questions as they think critically about the links between the two articles. With support, they locate information throughout the book and then evaluate and integrate this in relation to the reading purpose. They infer that people want to improve on their inventions and set new goals. They also infer that humans have a great desire to explore and understand space and that there is always more to explore.

Teacher

(possible deliberate acts of teaching)

DIRECT the students to locate information in both texts.

- Find places in the text (both articles) that will help answer the question “Why do people make rockets?”
- What key ideas or themes have you found in the book that can help answer the question?
- Make notes about them and discuss them with a partner.

MODEL integrating your ideas across the two articles.

- When I read about Matthew, I could see that he set himself goals and enjoyed the challenges of meeting them. When I read “Blast from the Past”, I learnt that people have been making rockets for hundreds of years for many purposes. But I wondered why people keep making bigger and bigger rockets. I made a connection when I read the comment in the last line: like Matthew, some people just love the thrill of making rockets and finding new uses for them.
- I brought together these ideas to understand that building rockets allows people to try out new ideas and to explore places they couldn't reach any other way. Humans love exploration and innovation, and rockets bring together both these things.

GIVE FEEDBACK

- Writing your question helped you to stay focused as you searched for answers in the text.
- I noticed that in your group discussion, you built on each other's ideas to identify the themes in the two articles. That was a good way of developing your thinking.

MONITORING THE IMPACT OF TEACHING

If the students are struggling to identify themes and connections across the articles, model your thinking more explicitly as you locate ideas in the text. Highlight key words.

You could chart ideas across the text by using a graphic organiser: write the question at the top and then list related ideas below it. Alternatively, use a mind map to show direct and indirect connections.

Use the audio track of this text to support the students' comprehension and fluency following reading.




Suggestions for writing instruction

The students could use “Rocket Club” as a model for writing about a hobby or project – their own or someone else's. Support them to identify the kind of information they will need to gather, the structure they could use, and ways to organise their information. They could work collaboratively to recount a school project, using photos to illustrate their work.

The students could choose one aspect of the article “Blast from the Past” to research further. Support them to identify a suitable topic, for example, by using a question they had while reading. Provide a graphic organiser or writing frame to help them plan for writing as well as to plan access to materials for their research. Encourage them to define their topic or question as clearly as possible to make the research and writing manageable.

Make connections to topics the students are studying in science, and design a writing activity that will help them learn about science as well as develop writing skills. For example, ask them to design an experiment to test the effectiveness of everyday materials (rubber bands, baking soda, air pressure) to propel a small object. They can use a template to describe the experiment, the materials they used, the steps they took, and the results.

Provide scaffolding to help the students build on their writing strengths, giving them stronger support where needed and reducing it as they take control.

 **Writing standard: by the end of year 7**
 **The Literacy Learning Progressions**
 **Assessment Resource Banks**