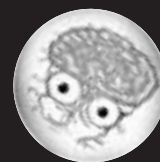


B R A I N W A V E S



Non-fiction to grab the grey matter!

PURPLE SET

Teaching Guide

MERRYN WHITFIELD

Series adviser: Julie Galliard, Literacy Consultant, Cambridgeshire LEA

Contents

Introducing <i>Brainwaves</i>	3
Reading and comprehending non-fiction	3
Writing non-fiction	4
Non-fiction text supports in <i>Brainwaves</i>	6
<i>Brainwaves</i> Purple Set overview	7
Linking <i>Brainwaves</i> to the NLS	8
NLS Objectives chart linked to comprehension lesson plans	9
Real World Robots	10
Living in Space	18
On the Edge of Extinction	26
Nightmares of Nature	34
Survival Against the Odds	42
Trailblazers	50
Purple Set quiz	58



**Badger
Publishing**

Badger Publishing Limited
26 Wedgwood Way
Pin Green Industrial Estate
Stevenage, Hertfordshire SG1 4QF
Telephone: 01438 356907
Fax: 01438 747015

www.badger-publishing.co.uk
enquiries@badger-publishing.co.uk

Brainwaves Purple Set Teaching Guide

First published 2003
ISBN 1 84424 164 5

Original work © Blake Publishing 2003
This edition © Badger Publishing Limited 2003

The right of Merryn Whitfield to be identified as author of this Work has been asserted by her in accordance with the Copyright, Designs and Patents Act 1988.

Series adviser: Julie Galliard, Literacy Consultant, Cambridgeshire LEA

You may copy this book freely for use in your school.

The pages in this book are copyright, but copies may be made without fees or prior permission provided that these copies are used only by the institution which purchased the book. For copying in any other circumstances, prior written consent must be obtained from the publisher.

Publisher: David Jamieson
Editor: Paul Martin
Designer: Cliff Watt
Illustrator: Stephen King

Printed in the UK.



Introducing Brainwaves

Non-fiction is probably the most important kind of writing for school and work success. Almost everything we write is non-fiction. We write to inform, to discuss, to explain, to persuade, to teach, to direct, and so on. There are many strategies that can be usefully applied when reading and writing non-fiction texts—adult readers/writers tend to use them without being aware that they are doing so. These strategies can be broken down into simple actions and steps, and they can be taught.

The *Brainwaves* books are full-colour, non-fiction chapter books that will grab pupils' attention and encourage their active involvement. Even the most reluctant readers will be motivated to pick up the books and then to read on because their interests are catered for in the topics chosen, and in the design elements and visual appeal of the books.

The *Brainwaves* Teaching Guide provides you with the background knowledge you'll need to teach your pupils a wide range of strategies to use when reading and writing non-fiction—as well as concrete lesson plans to help you do it. It contains a guided comprehension lesson and a non-fiction writing lesson for each book in the *Brainwaves* series. Each lesson targets a specific focus strategy. These lessons can be given as the need arises—to address questions that arise in the course of pupils' own reading or writing, to teach particular reading/writing strategies and skills, or for support when teaching a specific text type. The lessons can be adapted to involve one pupil, a small group, or the whole class.

Each lesson involves the following basic stages, in which you:

- first model the strategy;
- give pupils guided practice, then independent practice, in using it;
- have pupils apply the strategy in real reading and writing.

In this way, each lesson is designed to allow gradual release of responsibility from you to the pupil. Scaffolding can gradually be given up as pupils become more competent in using a particular strategy.

The integration of reading and writing with high-interest themes in Humanities and in Science means that the *Brainwaves* books are ideal for use in the literacy programme, or during a thematic unit that can link to one of the topics in the series. See the overview chart on page 7 for a helpful list of ways into the books. This teaching guide provides a page of suggestions for cross-curricular links plus a Copymaster. You can dip into or adapt these activities to suit the needs or interests of your pupils or a theme you are currently working on.

Reading and comprehending non-fiction

Pupils usually have greater background and experience in reading narrative text, which is generally based on the structure of orientation, complication, resolution. However, even pupils who are comfortable with the narrative form may find reading non-fiction texts more difficult. One reason for this is that non-fiction has a variety of structures (see page 5). Current research shows that when pupils are familiar with these structures, their comprehension improves.



The teaching notes for each *Brainwaves* book include comprehension questions (both literal and higher order). These questions provide a useful way to assess pupils' comprehension of the text. However, they do not actually teach pupils any comprehension strategies—and comprehension does need to be taught. To improve their comprehension, pupils need explicit instruction in comprehension strategies. The comprehension lesson plans in this guide take you beyond the simple asking of comprehension questions, and allow you to teach comprehension as well as assess it.

Comprehension strategies

Comprehension strategies include:

Previewing when readers activate background knowledge, make predictions, and set a purpose for their reading.

Self-questioning when readers generate questions to guide their reading.

Making connections when readers relate reading to themselves, to the text and to others.

Visualising when readers create mental pictures while reading.

Knowing how words work when readers understand words. They develop their vocabulary, and figure out unknown words using their knowledge of letters and sounds and of the way in which sentences and clauses are constructed, and their understanding of the meaning of the text.

Monitoring when readers ask, 'Does this make sense?' and use different strategies if it doesn't.

Summarising when readers pull together the most important ideas in a text.

Evaluating when readers make judgements about what they are reading.

Writing non-fiction

In a balanced literacy programme, writing is as important as reading. During the reading unit, pupils learn comprehension strategies. During the writing unit, pupils learn how to think about, plan, draft, revise and share their work as writers. As with focused comprehension lessons, guided writing lessons allow you to give explicit instruction in targeted skills and strategies. The teaching plans in this guide give detailed notes showing you how to actively model and scaffold strategies at each stage of the writing process.

Stages in the writing process

The first thing pupils need to consider at the beginning of any writing session is which stage in the writing process they are up to. This is fundamental to any writing lesson, as it determines which strategies it will be useful for them to apply.

There are five basic stages in the writing process:

Planning involves discussing and brainstorming to gather thoughts and ideas about a topic, and to determine the purpose and audience for the piece.

Drafting is the first attempt at writing. The writer organises and shapes their planning ideas into a first draft.

Revising requires the writer to clarify and improve their work. Writing can be reorganised on four levels: the whole piece, then each paragraph, then each sentence, and finally each word.

Proofreading is the polishing stage. The writer makes sure that spelling, grammar and punctuation are correct.

Publishing provides motivation for revising and proofreading. In this stage, the writer makes the piece available for others to enjoy. Not every piece of writing will be taken to this final stage.

It is assumed that pupils will have writing folders or notebooks containing work at various stages in the writing process. The lessons in this guide can be used with writing from these folders, or you can teach at a point of need. For example, if several pupils are up to the stage of revising a procedure, you can use the table on page 7 to find the lesson in which the revision stage of writing and the procedure text type are included in the writing focus.

Text types

Within each stage of the writing process, a writer needs to think about the purpose and audience for the piece of writing. This will determine the text type or structure of the writing. While most writing in the real world combines several text types—for example, something that is essentially a report text can contain descriptive elements and explanations—separating out individual text types and explicitly naming their features can be invaluable in helping pupils gain an understanding of the underlying structures of non-fiction texts and in helping pupils structure their own non-fiction writing.

The NLS suggests pupils become familiar with a range of text types which include:

Information report to describe an entire class of things in general terms, or to present factual information about something;

Discussion to look at different points of view about an issue, to present different opinions, or to examine an issue and then make a recommendation;

Explanation to explain how or why something happens, or to explain the stages or steps something goes through;

Argument to argue the case for or against a point of view;

Persuasion to persuade people to accept your point of view, or to persuade people to act in a particular way;

Procedure to tell how to do or make something;

Recount to tell what happened, to record past experiences and judge their importance, or to record a series of events in the order that they happened;

Description to describe the features of a particular thing;

Response to summarise a text, to respond to a text or work of art, or to analyse a text or work of art.

Features of good writing

The writing lessons in this guide teach the features of all good writing but their forms will vary across the different text types. For example, the text will be organised differently in a procedure to an argument, and word choice in a persuasion will be different to word choice in a description.

The features of good writing include:

Ideas and details that are clear and focused;

Organisation that shows coherent structure, sequencing and idea development;

Voice appropriate to the purpose and audience;







Word choice appropriate to the purpose and audience, and which effectively conveys the message;

Fluency of sentences so that the writing has flow and rhythm, and is easy and enjoyable to read;

Conventions of punctuation, spelling, capitalisation, paragraph breaks, grammar and usage.



Brainwaves Purple Set Overview

		READING AGE: 9+			INTEREST AGE: 9-14	
Themes	Modelled Text Structures <i>Page references are to pupil books</i>	Modelled Visual Literacy Features <i>Page references are to pupil books</i>	Guided Comprehension Lesson Focus	Non-fiction Writing Lesson	Cross curricular CM Focus	
 Robots Technology Future Artificial intelligence	Information report (problem/solution) Explanation Description (compare/contrast) Argument 17 (box) 6-7 (panel) 8, 28 (bottom caption) 13	Chart Labelled photo Flow diagram Magnification Full captions 9, 30 7, 10-11, 27 6-7 24, 25	Knowing how words work CM 1	Process: Drafting Text type: Description Feature: Organisation CM 2	Science Design a robot CM 3	
 Space Rockets Gravity Astronauts Space shuttles Space stations Space missions Space tourism Space colonies	Information report Recount Procedure Description Explanation Persuasion 7 14-18 13, 25, 27 (box) 20 (box) 23 (para 1)	Labelled photo Cutaway Flow chart Sidebars and boxes Key Full captions 17, 21, 25 8, 21, 29 30 7, 14, 20, 24, 27 25	Visualising CM 4	Process: Revising Text type: Information report Feature: Voice CM 5	Science Design a space suit CM 6	
 Extinct animals Endangered animals Hunting Habitat loss Mammoths Rainforests Tasmanian tiger Bison	Information report Description Discussion Argument Recount 6 (last para), 7 8, 9 (box) 13-17, 18-21, 20 (box) 26-29	Labelled diagram Labelled photo Map Key Graph Chart Sidebars and boxes Full captions 7 8-9 10, 20 10, 15 15 16, 17, 30 9, 17, 20, 25	Evaluating CM 7	Process: Planning Text type: Discussion Feature: Ideas and details CM 8	Humanities Research human impact on a species CM 9	
 Dangerous animals Leeches Lice Spiders Snakes Eels Sharks Crocodiles	Information report Explanation Recount Discussion 17 (box), 18-19, 22 13 (para 2), 27, 29 (last para) 26	Magnification Labelled photo Graph Map Keys Chart Sidebars and boxes Full captions 6, 7 9, 14, 17 19 26-27 27 30 8, 10, 17, 25	Making connections CM 10	Process: Revising Text type: Explanation Feature: Word choice CM 11	Art and Design Draw a 'nightmare of nature' cartoon CM 12	
 True survival stories Bear attack Shark attack Rodney Fox Volcanoes Apollo 13	Information report Recount Procedure Description 9 (top box), 16 (box), 19 (box) 6, 8-11, 14, 16, 18-21, 24-29 7, 10 (box), 30 9 (bottom box), 26 (box)	Labelled diagram Poster Labelled photo Chart Flow diagram Sidebars and boxes Full captions 9, 26 17 10, 20-21 25, 30 29 7, 9, 10, 16, 19, 25, 27, 29	Self-questioning CM 13	Process: Proofreading Text type: Procedure Feature: Conventions CM 14	Art and Design Design a movie poster CM 15	
 People who have changed the world Ferdinand Magellan Explorers Emmeline Pankhurst Women's suffrage Nelson Mandela Apartheid	Information report Recount/Biography 11 (box), 20 (box) 5-12, 15-21, 23-29	Map Key Cutaway Chart Timeline Sidebars and boxes Full captions 7, 12-13 13 8-9 30 20-21 7, 11, 20, 28	Summarising CM 16	Process: Revising Text type: Biography Feature: Fluency CM 17	Art and Design Design a badge to promote a cause CM 18	

Linking Brainwaves to NLS (PURPLE)

Text structures corresponding to NLS ranges

PURPLE	Text structures	Year 3	Year 4	Year 5	Year 6	Year 7
<i>Real World Robots</i>	Information report Discussion/Argument Explanation	Term 1 – Term 3	Term 1, 2, 3 Term 3 Term 2	Term 2 – Term 2	Term 1, 3 Term 2 Term 3	Sn 13a, W11 Sn 13f, W16 Sn 13c, W12
<i>Living in Space</i>	Information report Persuasion Explanation Recount Procedure	Term 1 – Term 3 Term 3 Term 2	Term 1, 2, 3 Term 3 Term 2 – Term 1	Term 2 Term 3 Term 2 Term 1 Term 1	Term 1, 3 Term 2 Term 3 Term 1 –	Sn 13a, W11 Sn 13e, W15 Sn 13c, W12 Sn 13b, W10 Sn 13d, W13
<i>On the Edge of Extinction</i>	Information report Recount Procedure Discussion/argument	Term 1 Term 3 – Term 3	Term 1, 2, 3 – Term 1 Term 3	Term 2 Term 1 Term 1 –	Term 1, 3 Term 1 – Term 2	Sn 13a, W11 Sn 13b, W10 Sn 13d, W13 Sn 13f, W16
<i>Nightmares of Nature</i>	Information report Recount Discussion Explanation	Term 1 Term 3 – Term 3	Term 1, 2, 3 – Term 3 Term 2	Term 2 Term 1 – Term 2	Term 1, 3 Term 1 Term 2 Term 3	Sn 13a, W11 Sn 13b, W10 Sn 13f, W16 Sn 13c, W12
<i>Survival against the odds</i>	Information report Recount Procedure	Term 1 Term 3 Term 2	Term 1, 2, 3 – Term 1	Term 2 Term 1 Term 1	Term 1, 3 Term 3 –	Sn 13a, W11 Sn 13b, W10 Sn 13d, W13
<i>Trailblazers</i>	Information report Recount/biography	Term 1 Term 3	Term 1, 2, 3 –	Term 2 Term 1 Term 1	Term 1, 3 Term 1 Term 1	Sn 13a, W11 Sn 13b, W10

In Year 7, pupils will revise the stylistic conventions of the main types of non-fiction (indicated as Sn above) and be taught to write a variety of text types (indicated as W above). In addition, all *Brainwaves* texts link directly to reading objective 6, writing objective 1 and sentence level objectives 8, 9, 10, 11, 12 and 14.

The teacher support materials include suggestions for encouraging pupils to practise and extend their oral skills. Direct links can be made to the QCA document 'Teaching Speaking and Listening at Key Stages 1 and 2'. The objectives for Year 7 build on these specific expectations for primary pupils.

NLS Objectives chart linked to comprehension lesson plans

	Year 3			Year 4			Year 5			Year 6		
	Term 1	Term 2	Term 3	Term 1	Term 2	Term 3	Term 1	Term 2	Term 3	Term 1	Term 2	Term 3
ORANGE												
Page 12	T18, 21, 22			T16, 27	T15, 19					T13, 17		
Page 20	S10, 12, 13	S9	S5, 7	S1, 5	S4	S2	S3, 7	S9	S4, 7	S5, 6	S3	
Page 28			T22				T21,24			T14		
Page 36				T16	S1 (some)	T16, 17, 21, 23			S7, T19		S5, T15, 16, 18	
Page 44		S2	T21	S4, T16	S1	S4	S3			S4, 5, T18 (some)	S3	T19, 22
Page 52	S3, 9			S2, 4 (some)	T20			W9, T15, 22, 24	W13	S2	S1	S1, 3, T15, 21
GREEN												
Page 12	S10, 11, 12, 13	T13		S5, T26	S4		S1, T22					
Page 20		T14, 16		T18, 25, 26			T21, 25					
Page 28	W16, T17 (some)	W20, S2	W12	T18	W9			W9, T24		T12, 17		T19
Page 36	W5, 10, 11, 12, 13			W2, S5	W2, S4	W2	W1, S3, S6	W1, S8, 9	W1, S4	W1, S5, 6	W1, S3	W1, S4, T21
Page 44					S1	T19, 25			S2, T15			
Page 52					T20, 23, 25			T19 (T15, 22 if flow charts included)				T15, 22
PURPLE												
Page 12	S13, T18, 23	S17	S12		S4 T19, 22	S4	S1	W9, T21	S7	S4, T17	S3	T19, 21, 22
Page 20	T18, 23			T18			T21, 24	S4, T21		T12, 15		T22
Page 28		T17(some)	T25	T16	T21	T16, 17, 21, 22, 23	T23, 26, 27		T18, 19		S8, T15, 18	T21, 22
Page 36	W13, S3			S3	S9, T20, 24, 25		W7, S3 S8 (some)	W9, T19, 23		S2	S1 (some)	S1, T15, 20, 21
Page 44	W5, S10, 11, 12, 13	W5, T14, 16	W5	W2, S5, T25, 26	W2	W2, S3 (some)	W1, S3, 9 T21, 25	W1, T24	W1	W1	W1	W1, S1, T22
Page 52			S5		T17, 19, 22		T21 (some)	S10	S7	S4, T11, 14		T18, 21

Real World Robots



Content summary

Chapter one gives a brief history of the development of robots, defines what a robot is, and talks about robots in everyday life.

Chapter two describes robots that do dangerous work: exploring the bottom of the ocean, exploring other planets, fighting fires, and clearing landmines.

Chapter three makes predictions about the future of robots, how they might be used in medicine, and the development of artificial intelligence.

Focus text type structures and features

Information report—the main text type is information report with other text types embedded and in sidebars and boxes. The information reports are organised in chapters with paragraphs, headings and subheadings. Each chapter has an opening page that introduces the main ideas for that chapter. Each main heading after that also has an opening theme paragraph.

Description—the book includes a number of descriptions of robots. The description of industrial robots on page 8 and the caption on the bottom of page 28 have a compare/contrast structure.

Visual literacy features

Chart
Labelled photos
Flow diagram
Magnification



Reading focus strategy

Knowing how words work

Writing focus strategy

Process: Drafting

Text type: Description

Feature: Organisation

Assessment

Speaking and Listening

- Discusses what a robot is, and gives examples
- Predicts meanings of unfamiliar words
- Discusses how a selected word connects to the whole text that contains it
- Brainstorms connecting words that can be used in a compare/contrast structure
- Discusses own draft descriptions and use of transitions

Reading and Viewing

- Previews text by reading headings, introductions in bold type, labels and captions
- Uses preview of text to predict meanings of unfamiliar words
- Locates a selected word in text and reads sentence containing it to gather more information about its meaning
- Reads full text to refine definitions of selected words
- Reads a descriptive text and pulls out elements of comparison and contrast
- Identifies connectives that indicate compare/contrast structure

Writing

- Does free writing to establish what they know and what they want to know about a topic, and to build connections with the text
- Uses a new word in a sentence to demonstrate understanding of its meaning
- Drafts a description, focusing on its organisation
- Uses compare/contrast connectives in a draft description

Reading non-fiction

Building background

If possible, bring in a robotic toy to stimulate a class discussion about robots. (Or ask pupils to bring in any robotic toys they might have at home.) Open the discussion by asking pupils the question: 'What is a robot?'. List on a chart all the qualities that they suggest. Then display the examples of robots brought in to the class. What is it that makes these things robots? Broaden the discussion by asking pupils what other examples of robots they can think of. What kinds of robots have they seen in use? What jobs do robots do? What applications might they have in the future? With pupils, try to write a definition of 'robot' that everyone in the class can agree with. You could return to this definition after reading the book. Do pupils still think it holds? Do they want to change it in any way?

Introducing the book

To introduce the book *Real World Robots*, allow pupils to do free writing for five to ten minutes. List on the board key words from the chapter or section you are about to read. For example, for chapter one you might list:

robot	intelligence	emotions	factory
repetitive	robotpet	memory	work

Tell pupils that they are to write freely about these words. If needed, list some questions pupils can ask themselves to get started, for example:

What do I know about this topic?

What don't I know about this topic?

How well can I explain this concept?

What are my personal thoughts about this?

Explain to pupils that writing like this is similar to brainstorming. Allow pupils to recall and record information and ideas through whatever associations come to them. This activity allows pupils to start building connections with the text.

Questions

Chapter one—Robots Get Real

Literal questions

- What does the Czech word 'robota' mean?
- What sport can Asimo play?
- How long can a robot work for?
- How does a robot work?
- Where do robots store information?

Higher order questions

- If you had a robot that could do anything, what would you get them to do? Why?
- What can robots do that humans can't do?
- What can humans do that robots can't do?

Chapter two—Going Where No Human Dares!

Literal questions

- What was the name of the robot that found the *Titanic*?
- What does the abbreviation 'ROV' stand for?
- How are ROVs connected to the ship on the surface?
- How is *Firespy* operated?
- What is a landmine?

Higher order questions

- What information can we gain from the historic objects brought back from the *Titanic*?
- Why is the topic of finding hidden landmines important?
- Would you rather learn more about what is at the bottom of the ocean, or what is in outer space? Why?

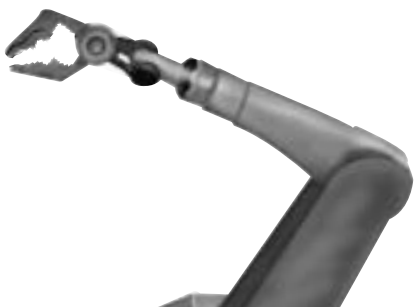
Chapter three—Into the Future

Literal questions

- What is Artificial Intelligence or AI?
- What emotions can Cog display?
- What kind of robot is Cog?
- Name two of Cog's senses.

Higher order questions

- If robots could one day think for themselves, do you think they could take over the world?
- What does a robot need to have to be useful?
- What could be some of the negative aspects of robots working and learning like humans?



Guided comprehension lesson plan

Strategy

Knowing how words work

Text selection

Modelling: Chapter one, 'Robots Get Real'

Applying: Chapter one, 'Robots Get Real'

Modelling the strategy

Select four or five words from Chapter one that you think pupils might be unfamiliar with but that they need to know in order to understand the chapter. For example: industrial, programme, assembly line, gripper, sensors.

On paper, write these words as the headings of three columns: 'Words', 'Predictions' and 'What I learned'. In the 'Words' column, list your first selected word, for example 'industrial'. Model how to preview the selection by reading the headings, the introductions in bold type, labels and captions.

Have pupils predict the meaning of the first word. Write their ideas in the 'Predictions' column. If previewing the text hasn't given them an idea, have them guess the meaning. If necessary, point out or remind pupils of strategies that can help them. These include:

- finding the base or root word and thinking of its meaning
- finding any prefix or suffix that might give a clue
- seeing if you remember having seen or read the word before in another situation or book
- previewing the text for meaning clues
- rereading the sentence that the word appears in
- reading two or three sentences around the word to try and find meaning clues.

Now find the first word in the text. For example, 'industrial' appears on page 8. Read aloud the sentence that contains it. Think aloud, explaining what this sentence tells you about the word's meaning and any clues you used. Record your ideas in the 'What I learned' column.

Read aloud the entire section containing the word. Think out loud again as you add any extra information you discovered. As a class, refine a definition for the word. Point out to pupils that 'industrial' is in bold type. Remind them that this means it will be found in the glossary. Compare the glossary entry to the definition the class wrote.

Applying the strategy

Give each pupil a copy of CM 1. Organise pupils into pairs or small groups. Tell pupils to skim the chapter again, reading headings, introductions in bold type, labels and captions. Then have them discuss the preview with their group and write predictions for each word on the CM.

Next have them locate a word from the list and read the sentence that contains it. What can they figure out from these clues about its meaning? Ask them to record any ideas in the 'What I learned' column. Now have them read the sentences around the word and discuss what they've learned with their group. They should then add any extra details in the column.

Next have pupils read the entire chapter and discuss it. How does the word connect to the entire selection? They should then add details and make any needed adjustments to refine a definition for each word in the 'What I learned' column.

Finally have pupils write sentences using each word. These sentences should show an understanding of each word's meaning.

Linking to writing

If appropriate, give pupils the opportunity to transfer what they have learned into a piece of their own writing. When pupils use the words correctly in their own writing, they will 'own' the word.





Name _____

Date _____

What's that

word?

Word	Predictions	What I learned
programme		
assembly line		
gripper		
sensors		

Write each word in a sentence. Your sentences should show you understand the meaning of each word.

programme

assembly line

gripper

sensors

Writing non-fiction lesson plan

Process

Drafting

Text model

Description: 'On the Job', page 8

Feature

Organisation

Teaching the feature

Point out to pupils that in non-fiction texts descriptive writing can be used to give details about the topic's attributes and features. Sometimes writers use a compare/contrast structure to organise a description. This tells how two or more things are alike or different.

Have pupils read the description of industrial robots on page 8 of *Real World Robots*. What is the author comparing? (A robot to a human.) Draw a table on the board and have pupils pull out the elements of the description, for example:

Industrial robots are . . .	
Similar to humans	Different from humans
Have elbow and wrist joints that move and rotate	Joints will never get stiff Joints can rotate 360 degrees End of arm can be fitted with devices

Ask pupils to identify the connectives that signal the use of a comparison structure to organise the writing. (Answer: Like . . . But, unlike . . .)

Have pupils brainstorm other connecting words that could be used in a compare/contrast structure. Make a chart of the words to display in the classroom so pupils can refer to it when doing their own writing, for example:

Compare/Contrast Connectives	
like	unlike
but	compared with
different from	similar to
in contrast	however
although	similarly
on the other hand	while

Point out to pupils that they don't always need to use these words when comparing and contrasting. Have them read the lead in bold type on page 8. In this description the connectives are omitted and the comparison is implied.

Applying the feature

Tell pupils that today in their writing you would like them to practise drafting a description, concentrating on its organisation. Tell them that you would also like them to practise using at least one of the connectives from the chart in their description.

Have pupils choose one of the robots from the book, or a piece of equipment in the classroom, to describe. They will first need to decide what they want to compare their thing with, and then do a quick planning brainstorm to gather ideas. To do this, they could use a table similar to the one used to analyse the text above.

When they are ready to draft their description, distribute copies of **CM 2** and have pupils use it to help them organise their writing.

Group sharing and evaluation

Bring pupils together at the end of the writing session to discuss their drafts. What connectives did pupils use to organise their writing? How did these connectives help to make the ideas in the descriptions clear? When might a compare/contrast structure be useful?

Going further

Pupils should consolidate the lesson by adding a compare/contrast description to a piece of writing in progress from their writing folders.

Pupils who are ready to go further could search through other pieces of writing and notice other words or phrases that are used to connect sentences and link ideas in different structures.

Name _____

Date _____



It's a bit like a . . .



Draft a description using a compare/contrast structure.

Possible titles: _____

Introduction

Write something general about the thing you are describing.
Make it catchy so the reader will want to keep reading.

Body

How is this thing similar to and different from something else?

Concluding statement

A final comment to wrap it up.

Cross curricular activities

Maths

- Ask pupils to find out what the current conversion rates are for US dollars and British pounds, and convert the amounts on page 30 of *Real World Robots* into Euros.

Music

- Tell pupils they have designed a new robot that they are now going to sell. Ask them to write a radio ad, including a jingle, to sell the robot. Encourage pupils to use instruments and experiment with voices when creating their jingle. Have pupils record the jingles onto a blank tape.

Art and Design

- Have pupils design and make a robot head, beginning with a cardboard box. Have them design the robot head on paper first, labelling each feature and explaining its function. Ask them to include moving parts if possible.
- Have pupils make the props, scenery and programme for the dramatisation of a play about robots.

Drama

- Have pupils work in pairs to role-play a journalist interviewing a robot of the future. The pupil in the journalist role could ask questions such as, 'What sort of work do you do? How do you do it? What is your role in society?'. The pupil in the robot role should consider before the role-play what kind of voice, movements and gestures they will use when answering the questions.
- Have pupils work in groups to choose one of the pupil-written plays about robots to polish, rehearse and perform for the class.

Science

- Have pupils think of a task that they find boring or tedious. Ask them to design a robot to do that task for them. They could use CM 3 to sketch their ideas. Ask them to write on a separate sheet of paper the steps in the programme that would allow the robot to do the task. Refer them to pages 6 and 7 of *Real World Robots* as a guide to how the steps in a programme work.

Humanities

- Tell pupils that the science fiction writer Isaac Asimov created the Three Laws of Robotics. Ask them to research what the Three Laws of Robotics were. Organise a class debate on the topic, 'The Three Laws of Robotics are still relevant today'.
- Have pupils do further research to find out other amazing robot records to add to the Robot Hall of Fame on page 30.
- Organise a class debate on the topic, 'The development of artificial intelligence is essential to humanity'.

English

- Have pupils read some science fiction books. If possible, obtain copies of the short-story collection 'I, Robot' by Isaac Asimov and the play 'Rossum's Universal Robots' by Karel Capek, as well as other science fiction stories containing robots. Providing a range will allow pupils to get a feel for the genre. Ask pupils to write their own science fiction story or play that includes robots.



Name

Date

You, robot!

Think of a task that you don't like doing, or that you find tedious or boring. Now design a robot to do it for you! Don't forget to think about how you will programme your robot.



Task

Physical characteristics needed to carry out this task:

Design sketch

Don't forget to add labels to clarify your ideas.

On another sheet of paper, write the series of steps needed in a programme to carry out this task.