HARLEY HITCH AND THE FOSSIL MYSTERY

AN INVENTIVE ADVENTURE FROM AWARD-WINNING AUTHOR
VASHTI HARDY AND ILLUSTRATOR GEORGE ERMOS

CONTENTS

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LOWER KEY STAGE 2 LESSON PLAN

OBJECTIVES

- To explore the role of a paleontologist
- To create a dinosaur based on exploration of a text
- To explore habitats
- To write a description using imagery

OUTCOMES

- Children will explore the term paleontologist and look at their role. They will create a dinosaur and look at potential habitats. Children will write their own descriptive piece describing the dinosaur they created.

RESOURCES

- *Harley Hitch and the Fossil Mystery* by Vashti Hard
- ***Resource Sheet 1 - 'A paleontologist'***
- ***Resource Sheet 2 - 'My extraordinary discovery'***
- ***Resource Sheet 3 - 'My dinosaur description'***
- Colouring pens

LEAD IN

As a whole class, read chapter 1, pages 1-3. Discuss with the children what the letter could be about. Then read page 4 and pause at this point:

"Professor Anning, the esteemed paleontologist?" Grandpa Elliot sounded impressed.
"Paleo-what-what?"

Ask the children what a paleontologist does and why their role might be important. (It might be worth distinguishing the difference between a paleontologist and an archaeologist, especially if this comes up during the discussion.)

> *Definitions from dictionary.com*
> ***Paleontologist:*** *a scientist who specialises in the study of life forms that existed in previous geologic periods, as represented by their fossils*
> ***Archaeologist:*** *a specialist in archaeology, the scientific study of prehistoric peoples and their cultures by analysis of their artefacts, inscriptions, monuments, etc.*

Ask the children to draw what they think the paleontologist Professor Anning might look like and the tools they might use. The children need to label their drawing with captions and explanations about the paleontologist they have drawn. Share the drawings and discuss why the children chose their image and the tools. The children can use ***Resource Sheet 1 - 'A paleontologist'*** to help them do this.

Read some more of chapter 1 with the children and pause at the point where Grandpa Elliot says this:

"There's a new professor at Cogworks," said Grandpa Elliot. "Professor Anning!"
"She's a paleo-what-what fossil person, and she's taking us on a school trip!"
said Harley, already thinking about what she'd need to pack."

Ask the children if there is anything about Professor Anning that is different from what they expected.

Read the rest of chapter 1 with the children. Ask the children what clothing and equipment/tools they would pack if they were going to Inventia Jurassic Coast on a school trip.

Continued...

LOWER KEY STAGE 2 LESSON PLAN CONT.

TASK

As a whole class read up to chapter 3, page 36. Discuss the following questions with the children:

- What discoveries did some of the children make?
- What was significant about these discoveries?
- What was unusual about Cosmo's find?
- How did Harley feel about not finding anything when all the other children had found something?

Read page 37 and pause at the end of the chapter:

"The rock had split, revealing something extraordinary."

What do the children think Harley had discovered? Discuss with the children what dinosaur they might have discovered if they were Harley. Talk about what their dinosaur might look like, what its physiological features might be, what it might eat, where it might live, etc. Using ***Resource Sheet 2 - 'My extraordinary discovery'***, the children need to create their own dinosaur. They need to draw the fossil and what their dinosaur looks like. They can then create a factfile about their dinosaur including what it eats, how it moves, how it hunts for food, what type of habitat it lives in, etc. The children also need to name their new dinosaur, e.g. Hitchasaurus regina.

PLENARY

As a whole class, read to chapter 4, page 43:

"Surely such an important discovery made Pupil of the Term a fair certainty."

Do the children think that Harley will achieve the 'Pupil of the Term' this term? Will her discovery be enough?

EXTENSION

Read chapter 11 and the description of Harley's dinosaur. The children need to draw the dinosaur using ***Resource Sheet 3 - 'My dinosaur description'***. They then need to share their pictures with the whole class. Once they have done that, they can look at the picture on page 111 and compare their own drawing to that picture. What do they notice? The main conclusion should be that people can interpret written descriptions in different ways.

The children need to use ***Resource Sheet 3*** to create a mindmap to help them with their description of the dinosaur they 'created' in the task. They need to think about the size, number of legs, has it got wings, what its skin is like (e.g. does it have feathers, scales, smooth skin, etc...), the sounds it might make, if it has spikes on its back or a plume on its head, etc. They can write some similes and metaphors to help them describe the dinosaur. Using the mindmap and their own dinosaur from the task, the children need to write a description of it.

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LOWER KEY STAGE 2 CURRICULUM LINKS

HARLEY HITCH AND THE FOSSIL MYSTERY

LKS2 ENGLISH – PUPILS SHOULD BE TAUGHT TO:

- Develop positive attitudes to reading and understanding of what they read by reading books that are structured in different ways and reading for a range of purposes
- Using dictionaries to check the meaning of words that they have read
- Increasing their familiarity with a wide range of books
- Identifying themes and conventions
- Discussing words and phrases that capture the reader's interest and imagination
- Understand what they read, in books they can read independently
- Asking questions to improve their understanding of a text
- Drawing inferences such as inferring characters' feelings, thoughts and motives from their actions, and justifying inferences with evidence
- Predicting what might happen from details stated and implied
- Identifying how language, structure, and presentation contribute to meaning
- Participate in discussion about both books that are read to them and those they can read for themselves, taking turns and listening to what others say

LSK2 SCIENCE – PUPILS SHOULD BE TAUGHT TO:

Living things and their habitats

- Recognise that living things can be grouped in a variety of ways
- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- Recognise that environments can change and that this can sometimes pose dangers to living things

KS2 ART:

Pupils should be taught to develop their techniques, including their control and their use of materials, with creativity, experimentation and an increasing awareness of different kinds of art, craft and design.

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RESOURCE SHEET 1:
A PALEONTOLOGIST

"Professor Anning, the esteemed paleontologist?" Grandpa Elliot sounded impressed.
"Paleo-what-what?"

Draw what you think the paleontologist, Professor Anning, might look like and the tools they might use. You need to label your drawing using captions and explanations about the paleontologist you have drawn.

MY DRAWING OF PROFESSOR ANNING

RESOURCE SHEET 2: MY EXTRAORDINARY DISCOVERY

Create a picture of what your own dinosaur might look like. You should draw the fossil you might find as well as what your dinosaur might look like.

Use this information to create a factfile about your dinosaur. Include: what it eats, how it moves, how it hunts for food, what type of habitat it lives in, etc. Give your dinosaur a scientific name, e.g. Hitchasaurus Regina.

My dinosaur

My fossil for my dinosaur

My dinosaur's scientific name:

How my dinosaur moves:

The features of my dinosaur:
(Does it have spikes, feathers, scales or horns? How many legs? Does it have a tail? How many toes on its feet? Does it have wings?)

What my dinosaur eats:

How my dinosaur hunts for food (if it does hunt):

The type of habitat my dinosaur lives in:

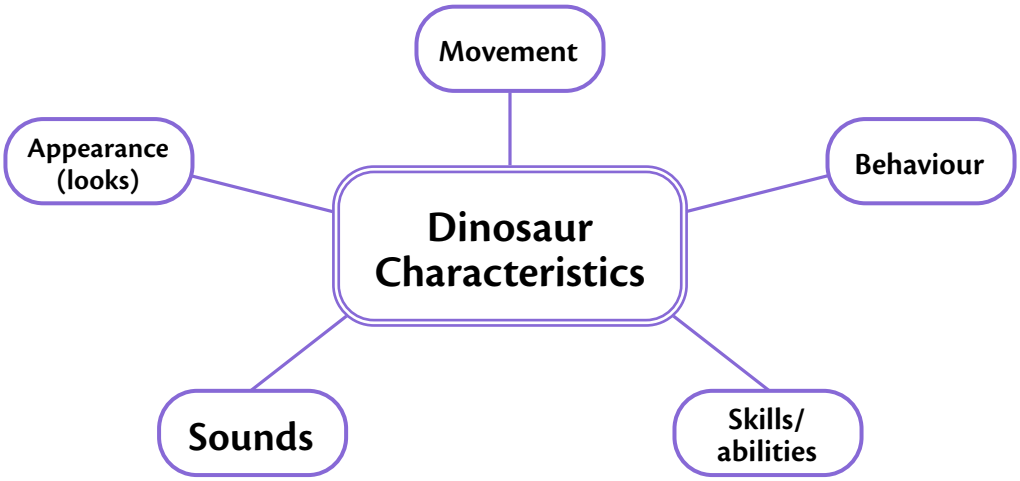
Anything else about my dinosaur:

RESOURCE SHEET 3:
MY DINOSAUR DESCRIPTION (PAGE 1)

Read chapter 11 and the description of Harley's dinosaur.
Draw what you think Harley's dinosaur looks like from the description.
Then compare your drawing to the picture on page 111.

RESOURCE SHEET 3:
MY DINOSAUR DESCRIPTION (PAGE 2)

Create a mindmap about your dinosaur. Think about what it looks like, how it moves, how it behaves, how it sounds, etc.



Use your mindmap to help you write some similes and/or metaphors about your dinosaur.

Feature of my dinosaur	Simile	Metaphor
Moves quickly	My dinosaur is as quick as a jet plane	My dinosaur is a jet plane

Using your mindmap and your work on similes and metaphors, write a short description of your dinosaur.

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UPPER KEY STAGE 2 LESSON PLAN

OBJECTIVES

- To explore characters, feelings and emotions
- To explore phrases and use these to motivate
- To plan, design and make an invention
- To consider whether all inventions are beneficial

OUTCOMES

- Children will explore the feelings of characters from the book. They will look at how phrases can motivate. They will also plan, design and create an invention that helps others.

RESOURCES

- *Harley Hitch and the Fossil Mystery* by Vashti Hardy
- ***Resource Sheet 1 - 'Pupil of the Term'***
- ***Resource Sheet 2 - 'Wise Fish Phrases'***
- ***Resource Sheet 3 - 'The greatest invention planning sheet'***
- ***Resource Sheet 4 - 'Invention feedback'***
- Materials for creating a prototype, e.g. card, glue, scissors, moving mechanisms, circuits, etc.

LEAD IN

Read chapter 4, from page 43:

> *"Two days later, Harley's claw-print fossil had been positioned in pride of place in the Cogworks entrance hall beside a huge, fossilized ammonite that Professor Anning had found on a previous dig."*

Read to this part on page 45:

> *"She'd let Pupil of the Term slip through her fingers too many times, and she wasn't going to do it again."*

Consider why it was important to Harley that she didn't allow the 'Pupil of the Term' to slip through her fingers.

Using ***Resource Sheet 1 - 'Pupil of the Term',*** the children need to design their own badge for the new 'Pupil of the Term'.

TASKS

Carry on reading chapter 4 from page 45:

> *"Professor Fretshaw left the room and Professor Spark stood up.*
> *"Right, class," she said. "It seems like a good time to announce your big project for the term."*

What do the children think the big project might be? Discuss as a class what projects Harley and her classmates could do. Read to the end of chapter 4 with the announcement of the project being the 'greatest invention'. Think about the types of inventions that have helped in school or at home, for example, the light bulb, the computer/laptop/technology, tables and chairs, etc. Why have these inventions helped with everyday life?

As a whole class, read chapter 5 and identify some of the ideas that Harley's school friends might be using. Why would these ideas for inventions be good ideas? What help might some of these ideas provide?

Continued...

UPPER KEY STAGE 2 LESSON PLAN CONT.

TASK 1

Read chapter 6 and pause at the end of this text:

> *"The robot manta ray cleared its throat. "Those who see further do so by standing on the shoulders of giants."*

What does this phrase mean? Read the rest of the chapter and discuss what Harley thought the phrase meant.

Using ***Resource Sheet 2 - 'Wise fish phrases',*** the children need to come up with some wise phrases that might help their classmates with their inventions. There are some examples on the resource sheet for guidance. Also, children need to suggest what the phrases might mean.

TASK 2

Read chapter 7 and consider Harley's 'time machine' invention, as well as looking at some of the other classmates' suggested inventions. Discuss whether Harley's invention is a good idea and whether it will work.

Using ***Resource Sheet 3 - 'The greatest invention planning sheet',*** the children need to plan their own invention to help others. They can work alone, in pairs or in small groups to do this. If the children are struggling to come up with ideas, they could use an idea from the book.

They need to remember Professor Spark's advice on page 47:

> *"While your idea could be absolutely anything, it should solve a problem, big or small. The quieter problems can be just as valid and make a big impact, so don't discount anything."*

The children need to think about:

- What is the purpose of your invention?
- What safety issues might you need to consider?
- How will the invention help others?
- Label the invention to show what movements and mechanisms it might use, and how it might work.

PLENARY

Discuss the pros and cons of inventions and whether all new inventions help improve our lives. Are there any inventions the children can think of that might not improve our lives (this could lead into a discussion about the pros and cons of things like social media/computers etc.)? Are there any inventions the children can think of that have really helped improve our lives?

EXTENSION

The children need to make a prototype of their invention from task 2. They should present their prototypes to the rest of the class. Discuss the inventions that the children have come up with and whether these would be beneficial to others. ***Resource Sheet 4 - 'Invention feedback',*** provides a structure for giving feedback. It is important that all feedback is constructive.

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UPPER KEY STAGE 2 CURRICULUM LINKS

UKS2 ENGLISH – PUPILS SHOULD BE TAUGHT TO:

Reading comprehension:

- Maintain positive attitudes to reading and understanding of what they read
- Discuss and evaluate how authors use language, including figurative language, considering the impact on the reader
- Distinguish between statements of fact and opinion
- Retrieve, record and present information from non-fiction
- Participate in discussions about books that are read to them and those they can read for themselves, building on their own and others' ideas and challenging views courteously
- Provide reasoned justifications for their views

UKS2 SCIENCE – PUPILS SHOULD BE TAUGHT TO:

Working scientifically

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- Identifying scientific evidence that has been used to support or refute ideas or arguments

KS2 ART:

Pupils should be taught to develop their techniques, including their control and their use of materials, with creativity, experimentation and an increasing awareness of different kinds of art, craft and design.

KS2 DESIGN AND TECHNOLOGY

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

Design

- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make

- Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

Evaluate

- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- Understand how key events and individuals in design and technology have helped shape the world

Continued...

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UPPER KEY STAGE 2 CURRICULUM LINKS CONT.

Technical knowledge

- Apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

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RESOURCE SHEET 1:
PUPIL OF THE TERM

Design a new badge for the 'Pupil of the Term'. Think about the historic value of the badge. Your new badge could be any shape and colour, but it must clearly show that it is for the 'Pupil of the Term'.

RESOURCE SHEET 2: WISE FISH PHRASES

The robot manta ray cleared its throat. 'Those who see further do so by standing on the shoulders of giants.'

Look at the phrase above. Can you come up with your own wise fish phrases? Remember to explain what they mean.

Wise Fish Phrase	**What the meaning is**
"Those who see further do so by standing on the shoulders of giants."	*"In order to make a time-travel machine, she didn't have to do all the work herself. She would research all the inventors who'd tried to invent time-travel machines before her, and simply pick up where they had left off, filling in the missing pieces!"* Research those who came first.
You can't use up creativity. The more you use, the more you have - *Maya Angelou*	Being creative and using your imagination makes you become even more creative. Practise.

RESOURCE SHEET 3:
THE GREATEST INVENTION PLANNING SHEET

"While your idea could be absolutely anything, it should solve a problem, big or small. The quieter problems can be just as valid and make a big impact, so don't discount anything."

You need to plan your own invention. The focus must be on helping others. It doesn't have to solve a big problem; it could be something small. Think about:

- What is the purpose of your invention?
- What safety issues might you need to consider?
- How will the invention help others?
- Label the invention to show what movements and mechanisms it might use and how it might work.

Invention name:

The reason for my invention is....

My invention will help....

Resources I will need to make my invention....

How my invention works...

My invention looks like... *(add captions to explain how it works)*

RESOURCE SHEET 4:
INVENTION FEEDBACK

Invention name:

Describe what the invention does...

Describe one thing about the invention that is good...

Describe one way the invention could be improved...

Describe how effective the invention is...

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