CROWFALL

VASHTI HARDY

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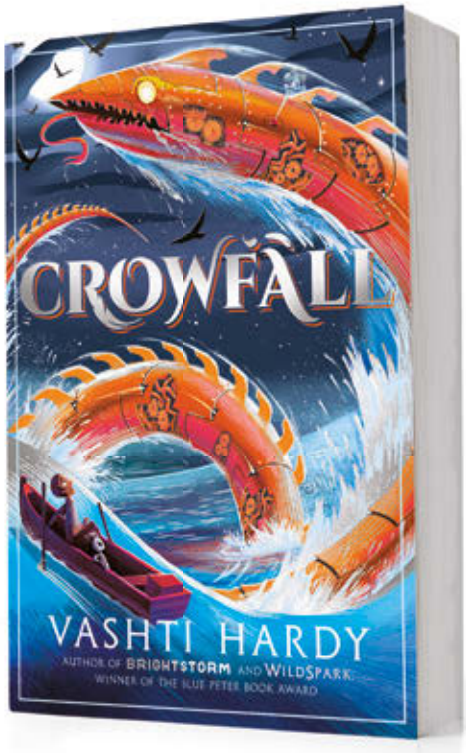

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CROWFALL LESSON PLAN | LKS2

OBJECTIVES

- To compare and contrast robots for different purposes
- To explore robotics
- To explore electrical circuits
- To design and make robots for a particular purpose

OUTCOMES

Children will compare and contrast the robots from the story and explore their purposes and roles. They will then create their own designs and prototypes of a robot for a particular purpose.

RESOURCES

Crowfall book
Resource Sheet 1 – 'Cody – the fixie'
Resource Sheet 2 – 'Design a robot'
Resource Sheet 3 – 'Electrical circuits'

LEAD IN

As a whole class, read Chapters 1-4 and pause at the points where the different types of robots are introduced. Explore the roles of these robots. Discuss why the children think Ironhold has introduced robots and other types of systems into their society and culture. Explore Cody the fixie. Why do the children think she might have been different to the other fixies?

- Robot guard
- Cody
- The fixies
- Medibot
- The mechanical sea monster (the Sentinel)

Using Resource Sheet 1, 'Cody – the fixie', get the children to draw a picture of what they think Cody looks like and what she is able to do, they need to also draw a 'normal fixie' and compare the two. The children need to label Cody and the other fixies. Each label should state what Cody and the fixies are made from, what powers each have, what other things they can do, etc.

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Discuss as a whole class what makes Cody so unique. (Key point: she received her power from the Eard.)
Why do the children think that this made Cody unique? What might be so special about the Eard?

TASK

Robot creation design and prototype

As a whole class, discuss the types of robots mentioned in the lead in activity. Discuss what types of robots might be particularly useful to help the children at school or home during different tasks. Using Resource Sheet 2, 'Design a robot', the children need to design their own robot for a particular role at school or at home. Once it has been designed, the children need to make a prototype using 'junk' materials (cardboard boxes, plastic bottles, cartons etc.). Once completed, the children need to 'pitch it' like in *Dragons Den* to the class/year group. They should be awarded points for:

- An effective design with a good explanation of how it will work
- A working prototype which looks like the design with a good explanation of it working
- An effective and clear presentation, where clarity of voice is used

EXTENSION (the following extension activities can both be done or choose one of them to help explore the themes of the story further)

1) **Robotics** – If there are different types of robotics in school, the children could create a robot using the robotic kits and programme it to do a particular task. For example, could they programme a car to go round a particular track? Could they create a robot to draw a pattern on paper?

2) **Electronics** – Discuss with the children how Cody worked using an electrical circuit. Can the children design a robot using an electrical circuit for a particular purpose? For example, can they design a game to communicate? Can they create a vehicle to carry books? They need to draw the circuit using Resource Sheet 3, 'Electrical circuits'. The children can also create their own game or robot using electrical circuits.

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CROWFALL LKS2 LESSON PLAN 1
RESOURCE SHEET 1, 'CODY – THE FIXIE'

Draw a picture of what you think Cody looks like and what she is able to do. Next, draw a 'normal fixie' and compare them. Label both drawings, clearly identifying what Cody and the fixies are made from, what powers they have, what other things they can do, etc. Identify the similarities and differences between them.

CODY

OTHER FIXIES

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CROWFALL LKS2 LESSON PLAN 1
RESOURCE SHEET 1, 'CODY – THE FIXIE'

SIMILARITIES

DIFFERENCES

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RESOURCE SHEET 2, 'DESIGN A ROBOT'

Design a robot to help you with a role either at home or school. Think about what you might want its help with and what it might look like. Remember to label it!

Once you have designed it, make a prototype using 'junk' materials (cardboard boxes, plastic bottles, cartons etc.).

Once complete, you need to 'pitch it' like in *Dragons Den* to your class/year group. You will be awarded points for:

- An effective design with a good explanation of how it will work
- A working prototype which looks like the design with a good explanation of it working
- An effective and clear presentation, where clarity of voice is used

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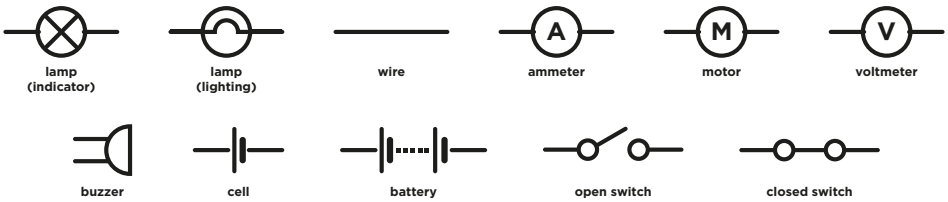
CROWFALL LKS2 LESSON PLAN 1
RESOURCE SHEET 3, 'ELECTRICAL CIRCUITS'

In the design for your robot, think of an electrical circuit for a purpose. For example, a game to communicate, something to pick objects up, etc. Design the circuit and draw it in the box below using the symbols for a circuit.

Electrical Circuit Systems



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CROWFALL LESSON PLAN | UKS2

OBJECTIVES

- To compare and contrast two places
- To explore the life cycle of a living plant
- To create a habitat
- To explore change and evolution

OUTCOMES

Children will compare and contrast two places and use this knowledge to design their own habitat centering around a living creature, 'the Eard'. They will also explore change and evolution of animals and humans for them to live within a particular habitat.

RESOURCES

Crowfall book
Resource Sheet 1 – 'Venn diagrams'
Resource Sheet 2 – 'The Eard's habitat'
Resource Sheet 3 – 'Evolution of animals and humans'

LEAD IN

Read Chapters 1-6 with the children and discuss the features of Ironhold. Read Chapters 8-15 and discuss the features of Natura. Explore the following questions with the children:

- What makes each so different?
- What makes each so similar?
- What is the 'lifeblood' of each?
- Where would the children prefer to live?

Explore the differences between Ironhold and Natura. What noticeable differences do the children observe? What similarities do the children observe? (Key point: the way the Eard is treated in both.)

Using Resource Sheet 1, 'Venn diagrams', discuss with the children how a Venn diagram can show comparisons between groups. Can the children complete a Venn diagram showing the similarities and differences between each place?

TASK

Explore the possible properties of the Eard. What is it? Is it a plant? Is it a creature? Explore the possible life cycle of the Eard. (Key point: pod is created, pod is planted, pod grows into the Eard.)

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HABITAT CREATION

Discuss with the children how each Eard from Ironhold and Natura were treated differently. Discuss what a different type of habitat might look like. What features might it have?

The children can use Resource Sheet 2, 'The Eard's habitat' to create a unique habitat with the Eard being the central focus. Discuss as a whole class what unique characteristics and features might that habitat have? For example, a habitat in the sea, a habitat in the clouds, a habitat in a desert, a habitat in the Arctic, etc. What type of living creature might be found in each habitat? Think about a habitat (possibly one explored in the task) and discuss what type of animal – bird, fish, amphibian, reptile, arachnid, etc. might live there.

EXTENSION

Commander Forge said she wanted the next stage of evolution for humans (but only for a select few). Read the part of the book where she was causing injury to the Eard (up to the end of Chapter 6). Explore what she was doing. Discuss whether this was a good thing to do or not. The class could be set up for a debate on this issue with for/against and a chair.

As a whole class, think about a habitat (possibly one explored in the task) and discuss what type of animal – bird, fish, amphibian, reptile, arachnid, etc. might live there. If you moved them to a different habitat how might that creature evolve? For example, if a fish moved to live on land, what might it need to survive? Discuss how the features of a human might have to change and evolve to live in a particular habitat the children have created. For example, living in a habitat under the sea, a human might need gills and fins. The children could explore, using the internet, what evolution is and how animals and plants change in order to live within a particular place. For example, cacti in deserts, camels and the reason they have humps, etc. The children can use Resource Sheet 3, 'Evolution of animals and humans' to help them complete this task.

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CROWFALL UKS2 LESSON PLAN 2

RESOURCE SHEET 1, 'VENN DIAGRAMS'

Explore the differences between Ironhold and Natura. What noticeable differences do you observe? What similarities do you see? Complete the Venn diagram showing the similarities and differences between each place. Similarities go in the centre of the Venn diagram.

IRONHOLD

NATURA

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RESOURCE SHEET 2, 'THE EARD'S HABITAT'

What type of habitat might The Eard have? Think about the types of habitats you know exist already, for example, a habitat in the sea, a habitat in the clouds, a habitat in a desert, a habitat in the Arctic, etc. Think about what type of animal – bird, fish, amphibian, reptile, arachnid, etc. might live in those places. Using your imagination, draw the habitat the Eard might live in. Label it to explain how it would suit the Eard.

UNIQUE CHARACTERISTICS	TYPES OF ANIMALS

DRAWING OF THE EARD'S HABITAT:

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CROWFALL UKS2 LESSON PLAN 2

RESOURCE SHEET 3, 'EVOLUTION OF ANIMALS AND HUMANS'

Using your design of the Eard's habitat, think about how a creature might need to evolve to survive in a different habitat. For example, how would a fish have to evolve to live on land? How would a human have to evolve to live in the sea?

WHAT WOULD A FISH NEED TO CHANGE TO LIVE ON LAND?	HOW WOULD A HUMAN HAVE TO EVOLVE TO LIVE IN THE SEA?

Now consider your design of the Eard's habitat. How would a human have to evolve to live in the habitat you have designed for the Eard? List and draw the changes below.

LIST OF CHANGES	DRAWING OF CHANGES

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CURRICULUM LINKS FOR *CROWFALL*

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 fiction
- 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

Writing composition

- plan their writing
- draft and write
- evaluate and edit
- proof-read
- perform their own compositions, using appropriate intonation, volume, and movement so that meaning is clear

Writing vocabulary, grammar and punctuation

- develop understanding of the concepts
- indicate grammatical and other features
- use and understand grammatical terminology

KS2 Geography

Pupils should extend their knowledge and understanding beyond the local area to include the United Kingdom and Europe, North and South America. This will include the location and characteristics of a range of the world's most significant human and physical features. They should develop their use of geographical knowledge, understanding and skills to enhance their locational and place knowledge.

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KS2 Science

Pupils in Years 3 and 4 should be given a range of scientific experiences to enable them to raise their own questions about the world around them. They should start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; recognise when a simple fair test is necessary and help to decide how to set it up; talk about criteria for grouping, sorting and classifying; and use simple keys. They should begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them. They should help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.

Electricity

Pupils should be taught to:

- identify common appliances that run on electricity
- construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- recognise some common conductors and insulators, and associate metals with being good conductors

Pupils in Years 5 and 6 should use their science experiences to: explore ideas and raise different kinds of questions; select and plan the most appropriate type of scientific enquiry to use to answer scientific questions; recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. They should use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment. They should make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them; choose the most appropriate equipment to make measurements and explain how to use it accurately. They should decide how to record data from a choice of familiar approaches; look for different causal relationships in their data and identify evidence that refutes or supports their ideas. They should use their results to identify when further tests and observations might be needed; recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact. They should use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time.

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All living things and their habitats

Pupils should be taught to:

- describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
- describe the life process of reproduction in some plants and animals
- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals
- give reasons for classifying plants and animals based on specific characteristics

Evolution and inheritance

Pupils should be taught to:

- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
- recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution

KS2 Design and Technology

Pupils should be taught to:

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].

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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

- investigate and analyse a range of existing products
- 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

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]
- apply their understanding of computing to program, monitor and control their products

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KS2 Computing

Pupils should be taught:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

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