

## Using the resource and Inventive podcast

This resource is based on the [Inventive podcast](#). The podcast mixes engineering fact with fiction. Each podcast features an interview with an engineer. That interview was used as inspiration by a variety of authors and poets to create a piece of fiction.

These resources make use of those pieces of writing to support the teaching of English.

Short audio clips about the engineer provides context and can be played during a lesson. Students may wish to listen to the whole podcast in their own time. All resources can be accessed using the QR code below.

## This English lesson resource supports students in:

### Reading:

- read a wide range of challenging fiction including poetry
- draw on knowledge of the purpose and context of the writing to inform evaluation
- seek evidence in the text to support a point of view.

### Writing

- select and organise ideas, facts and key points, citing evidence and quotation effectively.

## Additional context and careers resources

Audio clips from Inventive podcast

- **Clip 1: Current work** Jack introduces himself, his education, and the work he is doing currently.
- **Clip 2: Robots** Jack describes the robots that he works with and what they are used for.
- **Clip 3: Hierarchy of Education (used in Activity 4)**

For other resources including posters and more information about Jack:



[nustem.uk/inventive/#jack](https://nustem.uk/inventive/#jack)

## Meet the engineer



### Jack Howarth

#### Electrical Engineer

Jack did an electrical engineering apprenticeship, and eventually gained a degree in engineering. He now works at Sellafield Ltd developing robots that can complete tasks that are too risky for humans.

## Meet the author



Image: Tony Griffiths

### Katrina Porteous

#### Ingenious

Katrina Porteous is a poet based in Northumberland. Her poetry is often inspired by scientific topics including the Sun and the solar system.

Katrina has used ideas from Jack's interview and written poetry about collaboration and the future of engineering.

The table provides an outline of the resource activities, and suggests approximate timings for each activity. You may wish to adapt these to suit your students' needs.

This lesson resource is targeted at students aged 14 - 18. However, it could be used with younger students.

It also compliments the lesson resource '[Healing the Fractured](#)', building on student understanding of dystopian and utopian fiction.

1	Meet the poet and the poem (pg 2-3)	10 min	Read about the poet and her poem and introduce the key vocabulary.  Students use this information, and the title to make inferences about the poem.
2	Meet the Engineer (pg 4)	1 hour	Listen to the podcast and read the summary about the engineer.  The podcast interleaves the interview with Jack Haworth and the poetry by Katrina Porteous.  <i>Students could listen to the podcast on their own as preparation for the lesson.</i>
3	What makes an engineer? (pg 5)	30 min	Summarise the attributes that are important for engineers.  Students discuss the attributes and why they may be important (group task). Suggested answers are given on pg 4 of this guide  You could discuss with students whether they have these attributes, and if they are valuable in other careers
4	Textual analysis - seeking evidence (pg 6)	30 min	Listen to the podcast clip and read the section of the poem.  Ask students to reflect on the phrase 'hierarchy of education'.  Students should record what the poem tells us about teamwork and skills needed for engineering.
5	Text analysis - writers' techniques. (pg 7)	20 min	Listen to, or read the opening stanza of the poem. Discuss the concept of the third eye looking to the future. Explore the metaphor of the eye and hand. Discuss how the poet uses metaphor to describe engineering and technology.

# Teacher Information

## Resource Activity Overview continued

6	Identify and interpret themes (pg 8 - 9)	40 min	<p>Read the next stanza of the poem.</p> <p>Ensure students understand the origins of the word 'robot' and the history of slavery.</p> <p>Explain the choice of the word 'evolution' to mean adapting to meet needs.</p> <p>Students use the extracts from the poem to describe the evolution of robotics.</p>
7	Dystopia/Utopia (pg 10 - 11)	60 min	<p>Read section IV- v of the poem.</p> <p>Remind students about dystopian fiction and compare the utopian view of the future provided in the poem.</p> <p>Students carry out close textual analysis to identify positive and negative features of language in section IV- v .</p> <p>Extended writing:</p> <p>Students read the final stanza of the poem and answer the question 'Does the poem present a utopian or dystopian view of the future?'</p>

Students will hear all the stanzas of the poetry while listening to the podcast. However, the activities in this lesson resource uses a smaller number of excerpts from the poem.

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### Activity 3: What makes an engineer? answers

This table provides a list of suggested definitions for the attributes and why they are needed by engineers. It also gives examples of where Jack refers to this attribute (either directly or indirectly) in the podcast.

These attributes can be useful in many different jobs and careers.

Attribute	Definition	Why needed
Collaborative	Working with others to produce something, to solve a problem	Most engineering projects require teams of people to work together. To be successful, engineers have to work with others. Jack describes working with other people to develop a strategy to deal with large items at Sellafield
a Communicator	Imparting or exchanging information by speaking and writing.	All engineers have to share their ideas and projects with others. They will present project proposals to customers and write reports about what they have done.
Creative	Using imagination and original ideas to produce something, or to solve a problem.	Many problems that engineers solve need to use new ideas, or adapt previous ideas. Thinking creatively helps them to do this. Jack describes how he is working with a team to test a robot that can move by itself.
Curious	Wanting to learn new things, interested in the world around you.	Often engineers have to learn new skills. They might also want to think of new ways to approach tasks. Jack describes the new computer skills he has learnt to help him do his job.
Observant	Paying attention to details and information. Being able to spot fine details and links between different ideas.	Many engineering projects involve a large number of different systems or components. Engineers must be observant to make sure that these are working correctly. Jack talks about how he used the things he noticed from his apprenticeship which could have been improved.