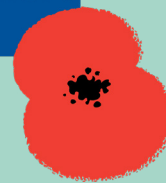




MINI SCHEME OF WORK



Key Stage 3 – stainless steel (English, history, science)

To mark 100 years since the end of the First World War, The Royal British Legion is leading a national movement to say 'Thank You' to all who served, sacrificed and changed our world during the First World War. We want to look beyond traditional commemoration of British servicemen and celebrate the efforts of an entire generation, with the movement based around themes of:

- The arts
- Commonwealth
- Women
- Children
- Pioneers
- Armed forces

This mini scheme of work focuses on the contribution of Harry Brearley who invented stainless steel to improve the equipment the armed forces used during the First World War. The lessons have been planned by the National Literacy Trust and support young people in Key Stage 3 to write a thank you letter to Harry as their personal act of Remembrance.

In addition to literacy outcomes, the lessons provide an opportunity for students to understand the social and economic context for scientific advancements. We have provided lesson plans, supporting powerpoints and worksheets for use in English, history or science classes.

By delivering this scheme of work your school will become part of The Royal British Legion's Thank You movement. You can celebrate this by sharing the students' work in the following ways:

On Facebook: <https://www.facebook.com/groups/thankyou100>

On Twitter: @PoppyLegion

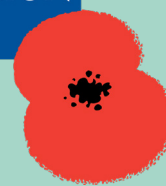
Contact The Royal British Legion at thankyou@britishlegion.org.uk and let them know you're involved. By sharing your schools' logo with the Legion you can become a Thank You school and your activity can be shared on the Thank You website.

To find out more about the ways your school can get involved with the Thank You campaign, please visit www.rbl.org.uk/thankyou



rbl.org.uk/thankyou

KS3 UNIT OF WORK: STAINLESS STEEL



Unit objective:

To examine and celebrate the role of Harry Brearley's invention of stainless steel during WW1, using literacy skills to read, comprehend and discuss. To use information and understanding to craft a written letter.

These lessons could be taught by history or science teachers as well as English.

The National Curriculum KS3 programme of study for science notes that:

"The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science." (DFE 2013)

Introductory Lesson

Use the Introductory lesson, Remembrance and Thank You to set a purpose for the sequence of lessons about pioneers.

The Royal British Legion 'Thank You Campaign - pioneers':

<https://www.britishlegion.org.uk/remembrance/ww1-centenary/thank-you/what-is-thank-you/pioneers/>

Man of Steel – Harry Brearley (60minutes) Lesson 1: Reading Comprehension

Key objective:

To understand the unexpected impact that Harry Brearley's work in steel had on everyday life in Britain.

Description:

This lesson seeks to give a grounding of the general information known about Harry Brearley and his work in the steel industry. It should help pupils to understand his work and how his discovery had unintended lasting consequences for the world. It is also hoped that pupils will recognize the importance of science and technology in the war effort and how developments made during wartime can have peacetime benefits.



KS3 UNIT OF WORK: STAINLESS STEEL



Man of Steel – Harry Brearley (60minutes) Lesson 1: Reading Comprehension

Literacy outcomes:

Speaking: take a role within group discussions

Reading: reading for comprehension

Writing: communicating personal opinion in their writing

Teacher notes on delivery:

This lesson is designed to be an introduction to lesson sequence, helping pupils to read around the subject before delving deeper into the life of Brearley and the impact that his invention had on the world.

The comprehension itself is framed as a classroom task within this lesson plan designed as a guided reading task. It is split into two sets of questions, with the second set being designed as an extension for those pupils who work quickly and finish before their peers.

*Please note pupil allergies & dietary requirements before using food in the classroom.

Resources:

Harry Brearley – comprehension worksheet.

A4 paper, paperclips and pencils

Whiteboard and pen

Highlighter pens

Bowl of vegetable soup or equivalent*

Differentiation:

The language of this worksheet has been deliberately written for all KS3 pupils to access, but for those who struggle with reading comprehension skills, it is recommended that teachers work through the main task as a class before attempting to answer the questions.



KS3 UNIT OF WORK: STAINLESS STEEL



Starter (10 minutes)

Place a bowl of vegetable soup at the front of the class. Provide pairs of students with a sheet of A4 paper, four paper clips and a pencil and ask them to create a spoon which they can use to eat the soup. If they are feeling brave let them try to eat some soup with their spoon!

Discuss what worked and didn't work with the spoons and what the useful properties of the stainless steel spoons we use every day are. Consider the material's suitability (e.g. compared to silver, wood etc), reusability, lack of taste etc.

Main activity (20 minutes)

As a class, read through the sheet detailing the story of Harry Brearley, stainless steel and his role in the war effort. As you reach the end of each paragraph use highlighter pens to pick out some key facts from the text (you might choose to use different colours for key dates, locations or names).

Now focus on the questions – remind students of what is expected when there are a number of marks available for each question.

Complete the answers on the worksheet ensuring that all answers are evidenced from the text.

As a class, go through the questions one by one, with pupils recalling the facts from the text as well as offering their own opinions about the work of Harry Brearley.

Plenary (20 minutes)

On a sticky note ask students to write down an invention that they think has revolutionized the world (this could be a piece of technology, a medicine or even a concept).

Place the sticky note at the front of the class on a washing line or scale that runs from 0 to 10, depending on how important they think the invention has been.

Where does Harry Brearley's invention of stainless steel fit on the scale?

Homework/extension

What other inventions came about from wartime that are still in use today? Do you think that war is a useful time for developing technology in the world?



KS3 UNIT OF WORK: STAINLESS STEEL



Man of Steel – Harry Brearley (60minutes) Lesson 2: Poetry

Key objective:

To be able to create a new piece of poetry which tells of Harry Brearley's discovery in limerick form.

Description:

The content of this lesson focuses on the structure of limericks and how they can be used in a light-hearted way to inform a reader. Using the idea of 'serendipitous' discovery, pupils will discuss five other key inventions in history and add Harry Brearley's stainless steel to the mix.

Literacy outcomes:

Speaking: performing a prepared piece of poetry.

Reading: identifying form within a piece of poetic work.

Writing: communicating a personal viewpoint in poetic writing

Teacher notes on delivery:

The poem 'Serendipity' has been composed in a highly structured form so that pupils tune in to the rhyme and rhythm of a limerick.

As each of the verses acts as a standalone poem, adding pupil responses should be a simple 'add on' at the end of the poem.

It is likely that the word 'serendipity' is one which pupils are unlikely to have come across before so you may wish to introduce it as 'accidental discovery' at first.

Resources:

'Serendipity' by Paul Jenkins

Quote from Alexander Graham Bell

Inventions cards

Differentiation:

For groups who struggle with composition in poetry, it may be that you create a 'whole class' limerick which can be structured on the whiteboard.



KS3 UNIT OF WORK: STAINLESS STEEL



Starter (15 minutes):

Using the cards on your desk – order them from least important to most important as inventions in the world. All of them are inventions that were discovered by accident.

Discuss as a class your opinions/findings. Where would stainless steel fit in your ranking order?

Main activity (30 minutes)

Share this quote from Alexander Graham Bell:

“Before anything else, preparation is the key to success”

Alexander Graham Bell - British inventor

- Do students agree with Bell's statement?
- Harry Brearley's invention was described as accidental. As a class discuss whether preparation or luck was more important in Brearley's discovery about the properties of stainless steel.
- Now read the poem 'Serendipity' – the poem is in limerick form. What is the structure of each verse of the limerick? What are the rules of this form? (Five lines, regular number of syllables in each verse, AABBA rhyme scheme, use of humour).
- Ask students to compose a new verse for 'Serendipity' which follows the same form as the other verses and celebrates the discovery of stainless steel by Harry Brearley. The form is typically light-hearted so encourage students to try and inject a little humour into their poems.

Plenary (15 minutes)

Share some of the poems with the class noting how successfully they have used the form and whether the poems have managed to use humour effectively.

Homework/extension

Could you write a poem about Harry's work in another form? Perhaps you might write one from his point of view which tells the story of his life? Perhaps you might write it about how stainless steel products became affordable for everyone? Maybe even create a list poem of all the uses for stainless steel. The choice is up to you!



KS3 UNIT OF WORK: STAINLESS STEEL



Man of Steel – Harry Brearley (60minutes) Lesson 3: Speaking and Listening

Key objective:

To be able to discuss the impact of WW1 innovations on modern life.

Description:

This lesson is intended to examine the way that scientific and other human discoveries from WW1 have now had an impact on our everyday life. It uses Pathe newsreel footage and a wider BBC article as a stimulus for discussion about the nature of war and innovation.

Literacy outcomes:

Speaking: pupils will formulate opinions and articulate them in classroom discussion.

Reading: pupils will examine a variety of sources to evidence in the debate.

Writing: pupils will create bullet points in note form to summarise their thoughts.

Teacher notes on delivery:

The Youtube clips of the innovations of WW1 are wide ranging and are chosen specifically to stimulate classroom debate. Harry Brearley's invention of stainless steel is mentioned within the BBC article but it is important that pupils realise that his discovery was part of an era of innovation which the war cultivated.

Please be aware that some of the war innovations involve discussion around sensitive issues such as hygiene products and this will need to be framed in a mature manner with pupils.



KS3 UNIT OF WORK: STAINLESS STEEL



Man of Steel – Harry Brearley (60minutes) Lesson 3: Speaking and Listening

Resources:

Video -- “Top Inventions of WW1” parts 1 & 2

<https://www.youtube.com/watch?v=NNf8ave7P3k>

https://www.youtube.com/watch?v=QigkNnA_Vu8

Inventions cards (in a hat)

BBC inventions article pages (taken from <https://www.bbc.co.uk/news/magazine-26935867> and <http://www.bbc.co.uk/guides/zs3wpv4#z3dhr82>)

ICT facilities

Differentiation:

Many pupils in your classes may not feel confident volunteering their opinions without prompting, so it's important that during these sessions pupils are given ample time to put forward their viewpoint, whether that be in a smaller group setting during the preparation or through the wider group discussion.

Starter (15 minutes)

Watch & discuss parts 1 & 2 of the video “Top inventions of WW1”

Main activity

- In pairs or groups of three, give the students the chance to choose an invention by pulling a card out of a hat.
- They must prepare to argue that their invention is the most important invention to come out of World War 1. You can provide students with the relevant section of the BBC article provided. It may also be useful for students to have access to the internet so they can research facts and statistics.



KS3 UNIT OF WORK: STAINLESS STEEL



- Ensure each pair/group prepares an opening statement which explains why they think their invention is the most important.
- As a class you will aim to answer the question: 'Which of these deserves to be crowned the number one invention from the First World War?'
- Hear the opening statement from each pair/group before you allow students to challenge each other. It may be useful to provide phrases such as: 'I don't agree that _____ is more important than _____ because...'; 'I would challenge your statement that...'; 'It seems clear that my invention is more important than _____ because...'

Plenary (10 minutes)

- Is there a winner? Ask the class to vote for the most important invention.
- Is it surprising that so many inventions came out of World War One. Would these inventions have been created if it wasn't for the war?
- What would life be like without these items?

Homework/extension

Choose one of the items from the list of ten and create a poster advert for it – similar to the Kotex advert in the article. Remember that as well as making the product sound exciting you will need to try and phrase the advert in a way that people in WW1 will understand.

Man of Steel – Harry Brearley (60minutes)

Lesson 4: Comparing texts and writing a summary blog

Key objective:

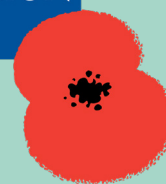
To write a blog about Harry's life

Description:

This lesson is designed to build on lessons 1 and 3 and synthesise different sources of information and use it to write a short blog for a history website.



KS3 UNIT OF WORK: STAINLESS STEEL



Man of Steel – Harry Brearley (60minutes) Lesson 4: Comparing texts and writing a summary blog

Literacy outcomes:

Reading: pupils will be able to extract key pieces of information from text written in different voices.

Writing: pupils will be able to summarise key points from different sources.

Teacher notes on delivery

Writing this blog enables students to summarise key information for a different audience.

It is important that teachers give students support for reading Harry's story monologue and a framework for recording key points (note making) before writing.

Resources:

Reading comprehension and answers from lesson 1

<http://www.centenarynews.com/>

Harry's story

Text comparison framework

Differentiation:

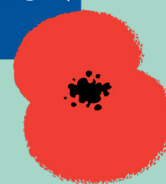
A text comparison framework is provided for students to record notes.

Starter (10 minutes)

- Show pupils Centenary News- <http://www.centenarynews.com/> a website dedicated to remembering the events of the war that happened 100 years ago. Explain that they are going to write a short blog entry about Harry Brearley.
- Chose one short blog entry from the website and read aloud with pupils. Show them how short many of the blog entries are; just four or five sentences.



KS3 UNIT OF WORK: STAINLESS STEEL



Main task (40 minutes)

- Remind pupils about the story of Harry Brearley and his invention of stainless steel that they read in Lesson 1. Hand out copies of this text along with Harry's story and the text comparison framework.
- Ask pupils to work in pairs to skim each text to fill in the key points from each text in the relevant section of the note making framework. This will enable them to revise the facts and see the difference between a first person text and a third person text.
- Next pupils must summarise each section in one sentence and use their summary sentences to write the short blog about Harry's life and invention and charitable legacy.

Plenary (10 minutes)

Draw out key learning: comparing texts, looking at different voices in reporting facts. Ask pupils to identify a sentence from the monologue and find an equivalent sentence from the information text.

Homework/extension

Ask pupils to write a short blog (4 – 5 sentences) about another invention from World War one. You could reference some of the medical inventions like the mobile X ray machine or the blood transfusion kit used in the Women Surgeons mini scheme of work.

Man of Steel – Harry Brearley (60minutes) Lesson 5: Thank You

Key objective:

To write a formal letter thanking Harry Brearley for his contribution to our lives today.

Description:

This lesson is designed as a culmination of the work completed so far in this unit, giving pupils a chance to say 'Thank You' to Harry Brearley for his invention's impact upon the country not only during the First World War, but for the lasting impact it has had for us today.



KS3 UNIT OF WORK: STAINLESS STEEL



Man of Steel – Harry Brearley (60minutes) Lesson 5: Thank You

Literacy outcomes:

Speaking: pupils will be able to demonstrate a variety of ways to verbalise thanks.

Reading: pupils will be able to see a clear example of the layout of a formal letter

Writing: pupils will be able to articulate a personal response within a structured letter.

Teacher notes on delivery:

This year provides an opportunity for us to remember all the people who contributed to the war effort in some way including the soldiers on the frontline, the surgeons working to save injured soldiers' lives and the women who took on new jobs to keep the country running.

Writing this letter is an act of Remembrance for the work Harry Brearley did. You might want to make students aware that young people all over the country are writing letters to thank people for their contributions to the First World War.

It is important that teachers give students guidance in the structure but allow a personal response within the 'content' of the letter.

All of the symbols and ceremonies of Remembrance which are recognised today – such as the National Service of Remembrance at the Cenotaph, Two Minute Silence, and the poppy - were borne out of the First World War. Draw the link between this lesson and these symbols and ceremonies. While very different, all demonstrate participation in Remembrance activity which serves to highlight the personal nature of Remembrance.

*For the sweets/treats please be aware of pupil diet/cultural implications of certain ingredients in some sweets.



KS3 UNIT OF WORK: STAINLESS STEEL



Man of Steel – Harry Brearley (60minutes) Lesson 5: Thank You

Resources:

Letter writing template/guide.

Chocolate/Sweets/Small treats*

Sticky notes

Differentiation:

A letter template is available if required.

Starter (15 minutes)

- As pupils enter the classroom, offer them a small treat. It is up to pupils if they choose a chocolate/sweet/biscuit/whatever you choose to be appropriate. On the desk is a post it note. Let pupils know that they have been donated by a mystery benefactor.
- If pupils took a treat, use the sticky note to write a quick message to the mystery person but you are not allowed to use the words 'thank you'.
- Place the sticky notes at the front and ask pupils to look at other people's efforts. What are the most creative ways of saying 'thanks'?

Main task (40 minutes)

- Direct students to look at the example sheet for how to set out your letter which we will be writing to Harry Brearley – the discoverer of stainless steel. Why do you think that we would be writing this as a formal correspondence? Think about Harry's role as a scientist and the time in history he lived in.
- Ask students to write down two or three bullet points based on what they have learned/studied in this unit that we can thank Harry for.



KS3 UNIT OF WORK: STAINLESS STEEL



- Students will write a letter thanking Harry for his contribution to not only the war effort, but for the way he has helped to improve our lives today.
- Place the finished letters into a mailbag/post box.

Plenary (10 minutes)

'Draw 2/3 letters out of the mailbag and deliver them to another student to read aloud. After each one, comment on how you think it would have made the reader feel to receive a letter such as this.



rbl.org.uk/thankyou