British Glass

Glass Guardians

KS2 Lesson Notes

in partnership with Friends of Glass

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Introduction

Glass Guardians is a fun, exciting education project for 5-11-year olds, allowing them to explore the value of glass as a material, while encouraging them to see the importance of recycling glass for maintaining the world they live in. Your pupils will learn that glass is one of the most sustainable and eco-friendly materials and create their own Glass Guardian Superhero!

This is a Key Stage 2 resource. The Glass Guardians Key Stage 1 resource is available to download from the website here: https://nationalschoolspartnership.com/initiatives/glass-guardians/

Activity ideas

Assembly: Introducing Glass Guardians

Launch Glass Guardians in your school using the **Glass Guardians PowerPoint Presentation**.

1. Raise your hand

Using **Slide 2-5**, start by asking pupils to raise their hand if...

- they know what recycling means **(Slide 2)**
- they know at least one material that can be recycled **(Slide 3)**
- they know where their recycling bin is at home **(Slide 4)**
- they think we should recycle more **(Slide 5)**

2. Which materials can be recycled? (Slide 6)

Ask pupils if they can name some materials that can be recycled. If lots of your pupils have recycling bins at home, you may want to ask them to think about what kinds of things get put in. Alternatively, you can tell them some examples of materials that get recycled using the images on **Slide 7**.

Ask pupils what the materials (cardboard, plastic, aluminium, steel, and glass) have in common. The answer is that they're all used for packaging. (**Slide 8**)

Using **Slides 9-10** ask pupils if they can think of reasons why we use packaging.

(As an extension you could ask them whether all packaging is completely necessary. For example, peanut butter, oil or eggs would be difficult to transport without packaging, but could other things use less or no packaging?)

In this KS2 pack:

- Assembly: Introducing Glass Guardians
- PSHE/Citizenship activity
- English activity
- Maths activity
- Science activity
- Homework leaflet

What is packaging made from?

Using Slide 11, explain to pupils that packaging is made using natural resources:

- Cardboard is made from trees.
- Aluminium is made from a mineral that is mined out of the ground called bauxite, which contains aluminium oxide.
- Steel is made from iron and carbon.
- Plastic is made from oil.
- Glass is made from silica sand, limestone and soda ash.

4. What is the impact on the environment?

Inform pupils, using the information on Slides 12 and 13, that there is an impact on the environment through the production of packaging materials as well as the disposal of them.

5. Introduction of Glass Guardians

Read the information to pupils about how they can become Glass Guardians by completing four missions. (Slide 14) They can then take part in the homework challenge to create their own Glass Guardians superhero!

Ask pupils what they think we could do to minimise the impact on the environment. They can recycle! (Slide 15)

6. How is glass recycled?

Using the video on Slide 16, show pupils how glass is recycled.

7. Create a Glass Guardian Superhero!

Slide 17 introduces the challenge.

MISSION 1: The Power of People (PHSE/Citizenship)

Starter: Ask pupils to think about all the ways their community encourages people to recycle. This could be through advertising, providing recycling bins, holding events etc. They could write each idea on a 'post-it-note' and stick it to the board.

Task 1: Divide pupils into small groups and allocate one of the following three statements to each group:

1. It saves money for the local authority/ community
2. It saves energy and reduces CO_2 emissions
3. It preserves natural resources

Ask pupils to discuss with their group, or with you if there are not enough pupils, and make notes on their **Glass Guardians Mission 1 Activity Sheet** about why they think their statement is the **most** important reason for recycling.

Sit in a circle as a whole class and a hold a recycling debate, deciding the most important reason for recycling. (If pupils need reminding of some of the important facts surrounding recycling, refer to the **Glass Guardians PowerPoint Presentation** for additional support. Alternatively, pupils can be given time to prepare for the debate prior to completing this mission as a home learning activity).

Task 2: Ask pupils individually to come up with a mission statement for their superhero. What is the problem that they will need to solve?
They can complete the task on their **Mission 1 Activity Sheet**.

Inform pupils that this will be useful if they choose to create their own Glass Guardians superhero for the homework activity.

Stretch: Ask pupils to think of a mnemonic for the word recycle as a way of highlighting the benefits of this social action movement. For example:

Really

Enthusiastic

Clever

Young

Crusaders

Love

Earth

Plenary: Despite everything discussed during mission 1, only 67% of glass was recycled in 2017. Ask pupils why they think this might be, then ask them how their Glass Guardians Superhero could change things.

MISSION 2: Power of the Natural world (Science)

Starter: Ask pupils to match the keywords with the correct definitions on the **Glass Gaurdians Mission 2 Activity Sheet**.

Task 1: Ask pupils to label each packaging material with the properties they have using the keyword bank. Pupils could also be asked to label each packaging material with its purpose e.g. Glass is strong and transparent which makes it ideal to carry food and drink.

Task 2: Watch the video on **Slide 16** and ask pupils to complete the questions. They will be able to use this information to help them develop a superpower for their superhero.

Task 3: What Science Super Power could your Glass Guardians Superhero have to be successful? How would they use their power to recycle glass and transform it into something new? Write or draw it in the box below.

Stretch: Ask pupils to come up with an additional question about what they have learned in the video.

Plenary: Pupils can feedback about their Glass Guardian Superhero's Science Super Power and how they would use it.

MISSION 3: Power of Numbers (Maths)

Starter: Ask pupils to guess how many tonnes of glass were recycled in 2017. They could write their answers on mini-whiteboards or a post-it note. *The answer is 1,715,000 tonnes.*

Task 1: Using the **Glass Guardians Mission 3 Activity Sheet**, ask pupils to work out approximately what percentage of each material was recycled in the UK in 2017.
(Please note: all figures have been rounded to the nearest five per cent).

Answers: glass = 65%; plastic = 45%;
paper/card = 80%;
aluminium/steel = 70%.

Task 2: Ask pupils to work in small groups to create a 5-question survey about recycling for family and friends. Each question should have the answer options, Yes/No/Unsure. Pupils will need to each write down the questions and create a results table to collect data.

Schools may wish to ask pupils as a home learning task to try out their survey questions with family and friends and write down their results. Pupils with survey results can create bar charts if desired.

Stretch: Ask young people to convert the amount of glass wasted in the UK (0.8 million tonnes in 2016), to any of the following: the number of grand pianos, the number of elephants, the number of Titanic's. Alternatively, you could challenge them to work out the average amount of glass wasted per person in the UK.

Plenary: Ask pupils to write down one Super Shocking Statistic they have learned that their Glass Guardians Superhero will use to encourage others to recycle.

MISSION 4: Power of Words (English)

Starter: Ask pupils to think of as many items as possible around their home that come in glass bottles or jars.

Task 1: For larger classes, organise pupils into small groups, and show them the 8 facts from the **Glass Guardians Mission 4 Activity Sheet** about glass recycling. Ask each group or pupil to read the facts, and then discuss the importance of each. Teams should then order the facts from the most to the least important based on their group opinion. Each group should nominate one person to share the most and least important facts with the whole class.

Task 2: Create a short comic strip starring your superhero in a recycling mission! Pupils can introduce them with their Mission Statement from Activity 1 and include how they use their Super Shocking Statistic from Activity 3 and their Science Superpower from Activity 2.

Stretch: Ask pupils who have finished their work to use a coloured pen or highlighter to underline any points in their letters where they have talked about the advantages of recycling. In pairs decide if you can each adapt or change any of your language in your letter, in order to be more persuasive to the reader.

Plenary: Give your Glass Guardians Superhero a name.

Homework activity

Slide 17 of the **Glass Guardians PowerPoint Presentation.**

We're challenging pupils aged 7 to 11, across the UK, to create their own Glass Guardian Superhero who will use their powers to save the planet by recycling even more.

Just print off the **Glass Guardians Homework leaflet** for more details on how they can enter.

Curriculum Links

ENGLAND

PSHE

L5. ways of carrying out shared responsibilities for protecting the environment in school and at home; how everyday choices can affect the environment (e.g. reducing, reusing, recycling; food choices)

English

In narratives, creating settings, characters and plot

Science

observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)

give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic

SCOTLAND

Sciences

By considering examples where energy is conserved, I can identify the energy source, how it is transferred and ways of reducing wasted energy. SCN 2-04a.

By contributing to investigations into familiar changes in substances to produce other substances, I can describe how their characteristics have changed. SCN 2-15a.

English/Literacy

I can convey information, describe events, explain processes or combine ideas in different ways. LIT 2-28a.

Maths

I have investigated the everyday contexts in which simple fractions, percentages or decimal fractions are used and can carry out the necessary calculations to solve related problems. MNU 2-07a

NORTHERN IRELAND

PDMU

Playing an active and meaningful part in the life of the community and being concerned about the wider environment.

Language and Literacy

Express thoughts, feelings and opinions in imaginative and factual writing

Mathematics and numeracy.

Understand and use vulgar fractions, decimal fractions and percentages and explore the relationships between them.

The World Around Us

Positive and negative effects of natural and human events upon place over time.

WALES

Personal and social education

how the environment can be affected by the decisions we make individually and collectively.

Science

the properties of sustainable materials and how these are related to their uses in everyday life, e.g. in the construction and manufacturing industries, and the importance of sustainability.

English

use the characteristic features of a range of continuous and non-continuous texts creatively in their writing, adapting their style to engage the reader, using imagination where appropriate.

Maths

use understanding of simple fraction and decimal equivalences when measuring and calculating.