

Art/Design Technology

What is the Pupil Pipeline?

WaterAid provides safe water, sanitation and hygiene education to some of the world's poorest people. In the next year millions of people will experience the transformative effect of having clean, safe water and sanitation for the very first time.

It costs just £2 for one meter of pipeline needed to transport clean, safe water across the developing world. The Pupil Pipeline challenge is a fun and educational challenge for schools to help raise these vital funds for WaterAid.

Pupils need to pass one or more buckets, bottles, jars, cups or even wellies filled with water along the line without dripping a drop. Or can they design their own water carrying device or pipe.

These teaching materials add context to the Pupil Pipeline to ensure that pupils have a broad understanding of the importance of water and a foundation from which to begin exploring wider global issues associated with water.

Make a waterproof container

Aims

- To know that products are used for different purposes and for different users.
- To look at similarities and differences between a variety of water containers.
- To collect visual and other information to help develop ideas.
- To design a suitable water container using different materials
- To use experience of art and design techniques to make the containers fit for purpose and visually appealing.
- To evaluate strengths and weaknesses of the water containers.

Key words

- Waterproof
- Container

Resources and materials

- Magazines, newspapers, catalogues
- Scissors
- Glue
- Large sheets of paper
- Variety of materials – clay, plastic sheets, card, sticky backed plastic, tape, cling film, silver foil etc
- Design and planning sheets (these are differentiated levels 1 – 4)

• Curriculum links

KS2 Design Technology:

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.

Technical knowledge: Apply their understanding of how to strengthen, stiffen and reinforce more complex structures

KS2 Art and Design:

Improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials [for example, pencil, charcoal, paint, clay].

Starter

- Place newspapers, magazines and catalogues on each table with scissors. Each pair or small group needs to find as many pictures of products and containers which can hold and pour water. Explain that the items they select do not necessarily have to be designed for holding water but they should be able to do the job effectively. They should cut their images out.


Activities

- Tell the pupils that they are going to be designing and making containers for passing water along their Pupil Pipeline. The containers must be suitable for holding water (waterproof), easy to hold and pour water from, as well as looking visually appealing within the water or pipeline theme.
- Using the images from the starter activity, each pair should create a research chart to record their thoughts about what makes a suitable water holding container. They should stick their chosen images onto their chart alongside an explanation of why each one is suitable for holding and pouring water – the advantages. For example, the pot is deep, so it is easy to not spill water out of it or it is made of plastic so is water proof and will not leak. They should then think of any disadvantages that their chosen items might have, for example it is made of glass which is easy to break if it is dropped or dangerous if it breaks, it is heavy and so on. They can

use the **template** on page 4 for their chart.

- Split the class into small groups consisting of two or three pairs per group. Each pair should choose one or two of their images and explanations from their chart to share with the rest of the group. Other group members can add their thoughts about the items chosen if they feel that something has been missed.
- With the whole class, mind-map the types of products and materials that would be suitable for holding water. You could also consider materials that can make something unsuitable waterproof, for example sticky backed plastic, PVA glue, varnish and so on.
- Each pupil should be given a **planning and design sheet**. They should spend some time thinking about what type of container they would like to design and what materials they will need to make it. They should fill this information on their sheets. Suggested materials could be cling film, silver foil, plastic sheeting etc.
- Tell the class that they need to make their containers eye catching and that they should use Simango Basic School and a water theme for inspiration. Individually they should think about how they would do this. For example, the shape of their container, the colour, patterns painted on to it and so on. In pairs they should share their ideas and discuss any improvements or changes to their initial thoughts.
- Using the design sheets, they should begin to draw the designs for their containers. If possible, they should annotate their designs to explain their decisions. They can design more than one if they wish and then choose the best one by gathering feedback from their peers.
- In pairs, they should share their designs and work together to decide how they will make their containers. They should help each other to ensure that they have thought through the process thoroughly. Using their design sheets, they should write down or even draw the different stages of making their container.
- Individually, the pupils should use their design sheets to make their containers.
- Set aside time for the pupils to test their containers. You could line everyone up in the style of a Pupil Pipeline to test the containers and ensure that they are fit for purpose. Remind the pupils that the purpose of testing is to improve their containers if necessary and change them to make them better if possible. This will make sure that they have produced the best container possible.
- Once everyone is happy with their containers, they should complete their **design sheets** by evaluating their containers.



Product	Material	Advantages	Disadvantages
 <p>Cup</p>	Porcelain	<ul style="list-style-type: none"> - It is water proof as it is made of porcelain. - It is easy to hold as it has a handle. 	<ul style="list-style-type: none"> - It can break easily. - If it is dropped and breaks, it is dangerous.