

The Big Water Workshop

Abbey Pumping Station



1. Session Description

Key Stage 2 Science, Maths, History, PSHE

Key Stage 2 Topics: Victorian Life, Inventions and Engineering, The Environment, Water

Based at APS students use scientific, mathematical and historical skills to discover the history of the Beam Engine, why it was needed, how pollution affected Victorian health and hygiene and why Victorian inventions are still used today. Students will learn about water and waste and how their actions impact on the environment.

2. Session length

90 minutes (1 hour 30 minutes)

3. Session Structure and Breakdown of Timings

Time	Activity	Length of activity
10am	1. Welcome and Introduction	5 mins
10.05	2. Beam Engines - The Pumps Levers, pistons, and Steam power The pump interactive	20 mins
10.25	3. Health and Hygiene - Leicester Victorians Disease, Bathing, Soap, Washday	10 mins
10.35	4. Human Waste - Toilets Buckets, earth, and water closet	10 mins
10.45	5. Thomas Crapper- The U Bend and Victorian Sewers compared with modern.	5 mins
10.50	6. Water Treatments and Filtration Purification	30 mins
11.20	7. Water conservation	5 mins
11.25	8. Conclusion	5 mins
11.30	End	End

Note: timings are flexible in response to pupil participation

4. Learning Outcomes

- To develop knowledge and understanding of how STEM was used to improve pollution and health problems in Leicester in Victorian times.
- To know about Victorian everyday life, health, and hygiene and how inventions have improved our lives today.
- To understand how the water and sewerage cycle affects our environment.
- To understand how steam driven engines with pistons and levers operate.

5. Curriculum Links

Science KS2

Properties and changes of materials - Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. (Yr5/6)

Properties and changes of materials -Use knowledge of solids, liquids, and gases to decide how mixtures might be separated, including through filtering, sieving, and evaporating. (Yr5/6)

Forces - Identify the effects of air resistance, water-resistance, and friction, that act between moving surfaces. (Yr5/6)

Forces - Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. (Yr5/6)

Living Things - Recognise that environments can change and that this can sometimes pose dangers to living things. (Yr4)

History KS2

Understand historical concepts such as continuity and change, cause and consequence, similarity, difference and significance, and use them to make connections, draw contrasts, analyse trends, frame historically valid questions and create their own structured accounts, including written narratives and analyses.

A study of an aspect of history or a site dating from a period beyond 1066 that is significant in the locality.

Maths KS2

Add and subtract numbers mentally with increasingly large numbers

Estimating and comparing volume

Ratios and measurements

RSE and Health Education KS2 - Primary Mental and Physical Health Statutory Guidance

Learn about personal hygiene and germs including bacteria, viruses, how they are spread, treated and the importance of handwashing.

6. Staffing requirements

Museum facilitator led plus at least 3 accompanying adults from the school.

7. Room requirements

Galleries.

Education space.

8. Pre-visit and Post-visit activities

Pre-visit activities

Water Cycle The water cycle... understanding the key vocabulary of evaporation, condensation, precipitation. Why is rain not salty if some of the water evaporates from the sea. Is rain clean?

Evaporation investigation... puddles. How long do they take to evaporate, what speeds it up? Showing how water vapour boiling from a pan will condense when it hits a cold tray.

Solutions: Dissolving and solutions. Understanding key vocabulary. Dissolving different substances in water e.g. sugar/salt and how to get them back again.

Steam powered engines What is a steam engine? Linking to steam trains, industrial revolution. Why do we not usually use steam powered engines today? What do we use instead, and how is this linked to the environment?

Post-visit activities

History of Leicester research in more depth the increase in population, changes in housing, changes in health and hygiene. Produce a timeline of changes

Victorian Inventions and Inventors – research significant Victorian inventors and their inventions. How did people's lives improve during Victorian times (especially regarding health and water).

Design an Environmental solution - Design solutions for Leicester City pollution problems that are environmentally friendly.

Energy and the Environment: Investigate fossil fuels and their alternatives

Create a poster about ways to conserve water and why it is important.

Build a model with moving parts using gears, pulleys, levers. Could it be wind or water powered?