Science Show

Duration: 45 mins
Available: Monday-Friday
Group size: up to 17 pupils per workshop (4 available per day)
Cost: £30 per workshop
Location: Hope Workshop (a 10 min walk away from the main entrance)

Basic Information

The explosive Science Show explores the invention of the flame safety lamp. Using a combination of storytelling and science experiments pupils learn about the dangerous gases underground and how science helped to solve the problem of finding a safe light source for miners to use.

Breakdown of session

The children are taken back to 1815, to a time when miners worked by candlelight and many miners lost their lives due to gas explosions underground. They meet the scientific pioneers Sir Humphry Davy, George Stephenson and Dr William Reid Clanny who all took a different approach to solving the problem of finding a safe light source for miners to use. Pupils watch experiments, which demonstrate the scientific principles of the safety lamp. Following the Show there are simple experiments for pupils to try connected to light and shadows and a chance for pupils to make a 'lamp' to take home.

How can group leaders help?

It would be helpful if group leaders ensure pupils listen to the instructions throughout the Show and encourage them to ask questions. You can support the pupils after the show as they try the simple experiments. Your enthusiasm and participation is much appreciated.

Links to topics

- Working scientifically
- Local heritage and important people
- The Industrial Revolution
- Victorian Children
- Technology and inventions

Learning Outcomes

Pupils will:

- Know why the lamp was needed and why mining was so dangerous
- Know that the firedamp was an explosive gas
- Find out about Humphry Davy and George Stephenson and their different approaches to solving the problem of finding safe light underground
- Understand the basic science behind the inventions
- Find out what the impact of the invention was for miners and mine owners

Links to curriculum

KS1/2 History

- Local history study
- Significant people and places

KS2 Science

- Working scientifically
- Light

Other places to visit on site

Hope Pit Inman Shaft: Find out how miners deal with the problem of water underground.
Hope Pit Fan House: Find out how mines were ventilated so miners could work safely.

Coal Interface Gallery: Find out about the technical and scientific problems that miners faced at work; the tools they used and how men and coal were transported.
Steam Winding Engine House: Find out how this mechanism moved men and equipment up and down the shaft.
1842 Gallery: Find out more about Humphry Davy. Discover how families worked together in the 19th century.
Stable Yard: Visit the stables to meet our ponies and find out what important jobs pit ponies did and what their life was like underground.

Suggested Pre Visit Activities

- Find out what coal is and what it is used for.
- Find out what working conditions underground were like in the 19th century. See our Learning Resources for information.
- Discuss what problems miners might face working underground.
- Light a candle; collect words that describe it. Collect different words for light and dark.
- Take a look at the films of different light sources on our Science Resources webpage.

Suggested Post Visit Activities

- Borrow a Victorian Loans Box and investigate the objects and resources.
- Draw the safety lamp and annotate with all the key features.
- Find out more about Sir Humphry Davy and George Stephenson. What else did they invent?
- Design your own lamp or a new way to create light underground.
- Design a poster warning other miners of the dangers of gas and explosions underground or a poster reminding Museum visitors what items they are not allowed to take underground.
- Have a look at this fantastic on-line resource about Humphry Davy created by Lancaster University.