

Enquiry Question:

Could a great flood happen in Sheffield again?

Objective

To find out about the Great Sheffield Flood in 1864, make links with other floods and the study of Rivers to find out more about how Sheffield is prone to flooding.

1 Additional resources are available to support learning activities - look for the orange number to guide you.

Equipment

- Pen or pencil
- Paper and clipboard or a notebook
- Additional resources
- Map of Sheffield General Cemetery
- Materials for STEM activity - plastic box/container, bottle of water
- Small pebble for reflection

Time - this activity can take around **two hours** to complete.

Prepare

Explain that we are going to be finding out about the Great Sheffield Flood which happened in 1864.

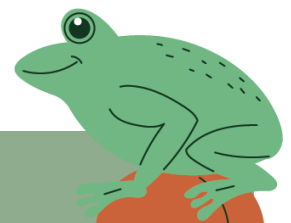
Establish this was during the Victorian times.

Explain that we will hear stories about some people buried in the Cemetery who were affected both directly and indirectly by the flood.

Establish what a flood is and the different ways it can happen. A flood occurs when water is forced to spread over land that is normally dry. This can happen in many ways: excessive rain, a ruptured dam or levee; rapid melting of snow or ice.

Coastal flooding occurs when a large storm or tsunami causes the sea to surge inland.

Establish that the Great Sheffield Flood was due to excessive rain and a ruptured dam.



Explore

Share The Great Sheffield Flood Trail map to show the journey of the flood in 1864 from Dale Dyke Reservoir towards the city centre. Read the information on the night the flood occurred. 1

Share a map of the site so the learner is familiar with where you are going to go. There are optional stops on the map where you can share a story from the Great Sheffield Flood. 2

Discover

Lead into a short activity to determine the cause of the flood - **What caused the Great Sheffield Flood?**

Give learner(s) possible causes of the flood and then ask them to choose a side to stand on (agree/disagree) and explain their reason for their choice. 3

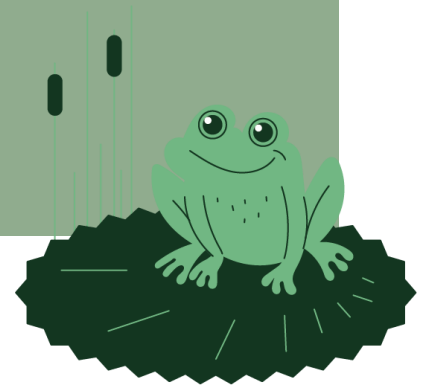
Explain that the immediate cause of the panic in 1864 was a crack found in the embankment. This crack led to the dam bursting, but the overall cause of the flood was never fully determined.

The dam's failure led to reforms in engineering practice, setting standards on specifics that needed to be met when constructing such large scale structures. The dam was rebuilt in 1875 on a smaller scale and 300m upstream.

Refer back to the main enquiry question:

Could a great flood happen in Sheffield again?

- **What would this be like?**
- **What ways might we be more prepared?**



Share

Find somewhere to sit or stand in the cemetery park such as the stone circle to discuss with the learner how the Great Sheffield Flood has helped with their understanding of flooding.

- **Can you remember a time when Sheffield has had a flood?**
- **How did it affect people in more recent times?**

Walk round the path to the bottom of the Cemetery. Standing along the path with the Porter River to the right; all stand still and listen. What can everyone hear? (running water). Reveal that the River Porter runs alongside the Cemetery and heads underground and joins the River Sheaf under Sheffield railway station.

Remind learner(s) about the most recent floods which caused disruption to the city. The 2007 flood was caused by exceptionally high rainfall levels in a short period of time. Two people died and £1 billion worth of damage was caused. In 2019, flooding again caused disruption, school closures and even people spending the night at Meadowhall shopping centre. This again was due to excessive rainfall in a short period of time.

- **What do you think makes Sheffield more prone to flooding?**
- **What do you think the city might have in place to prevent flooding?**
- **What is a flood barrier?**

Establish a flood barrier is something designed to keep flood waters out of a certain area.

The Don and Rother Catchment Plan states that the major factor influencing flood risk in the future is climate change.

Explain that rising global temperatures may cause heavier rainfall events, as well as causing sea levels to rise. So flooding is something that's not going to go away.

Gather in a circle and pass a rock around the group to reflect upon this question:

- **What small changes could you make to fight climate change?**

Fun fact to share: Do you know what role do Beavers play in the ecosystem?

Beavers are associated with many ecosystem benefits, such as sediment control and flood regulation.

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Create

Gather in the green space. Present the learners with a STEM challenge - **creating a leaky dam.**

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Explain that one type of flood defence is 'soft engineering' - leaky dams. There are two main aims of soft engineering:

- 1. To slow the flow of water as it travels through the drainage basin**
- 2. To create places where water can be stored in the upper part of the drainage basin.**

The Environment Agency use a number of strategies for their flood defence - including leaky dams, and they describe these strategies as 'working with nature' or natural flood management. Leaky dams are made of wood. Tree trunks or branches are laid across the river channel - usually a series of three or more dams a few metres apart. Normally the river water passes under the wooden dam. But, when the river is full of water after heavy rain, the leaky dams slow down the flow of water and encourage some water to spill out onto the floodplain where it is stored. Leaky dams delay the passage of flood water downstream, allowing sediment to settle out, and reduce flood risk in towns or cities further downstream.



Reflect

Which material or combination of materials were the best to create a leaky dam?

Was it easy? Were there difficulties when constructing the dam

Is this a sustainable method? Would it work for Sheffield?

Share with the group where Sheffield City Council has flood barriers and tell them about any future plans.

Gather back together in the circle. Remind the learners of their enquiry question:

Could a great flood happen in Sheffield again?

After a short moment thinking time, pass a small rock around the circle so that each learner has a chance to say a final thought about what they have discovered.

You could take photos to share with others on social media using

#learningatGenCem and tagging **@SheffieldGenCem** 



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