

Scientists and Inventors: Stephen Hawking

<p>Aim: To report and present findings from inquiries, including causal relationships, in oral and written forms such as displays and other presentations in the context of Stephen Hawking and his findings on black holes.</p> <p>To understand Stephen Hawking's theories about black holes and report my findings.</p>	<p>Success Criteria: I can share facts about Stephen Hawking's life. I can explain what I already know about black holes. I can set up an inquiry to demonstrate the causes of black holes. I can report on my findings from an inquiry.</p>	<p>Resources: Lesson Pack</p> <p>Balloon – one per group</p> <p>Tin foil sheets – approximately three 30cm square sheets per group</p> <p>Pin – one per group</p> <p>Sheet of stretchy fabric – one per group (tubular bandages cut open on one side and straightened out work well)</p> <p>Marble – one per group</p> <p>Heavy balls or a round weight – one per group (a boules ball is ideal)</p> <p>Balloon pump – if required</p>
<p>Key/New Words: Stephen Hawking, astrophysicist, black hole, gravity, density, light, event horizon, matter, amyotrophic lateral sclerosis (ALS), also known as motor neurone disease (MND).</p>	<p>Preparation: Black Holes Activity Sheet – one per child Black Hole Inquiries Instructions – one per group Differentiated Black Hole Report Activity Sheet – one per child</p>	

Prior Learning: It will be helpful if children have previously learnt about gravity and space. This lesson would also work well as part of the 'Forces' unit of work.

Learning Sequence

	<p>Stephen Hawking: Introduce Stephen Hawking. Children discuss anything they already know about him and his work. <i>Look for children who can share their prior knowledge about Stephen Hawking.</i></p>	
	<p>Hawking's Life: Describe Hawking's life using the information on the Lesson Presentation.</p>	
	<p>Black Holes: Children use the Black Holes Activity Sheet to draw and label a diagram showing their understanding of black holes.</p>	
	<p>Black Hole Theories: Use the Lesson Presentation to explain Hawking's theories about black holes, including how they behave and how they are formed.</p>	
	<p>Black Hole Inquiries: Children work in groups to carry out two inquiries to demonstrate how black holes are formed and how they behave. Explain the inquiries described on the Lesson Presentation, ensuring that children understand how each inquiry represents a theory about black holes. Give each group the Black Hole Inquiries Instructions and the resources listed above. Children follow the instructions to carry out the inquiries. <i>Look for children who can work with their group to carry out inquiries into the causes and behaviour of black holes.</i></p>	
	<p>Report on Your Findings: Children use the differentiated Black Hole Report Activity Sheet to report on their observations from the inquiries, and to explain how their observations relate to Hawking's theories about black holes. <i>Look for children who are able to report on their findings and observations from their inquiries.</i></p> <div style="display: flex; justify-content: space-around;"> <div> <p> Children draw a diagram of their observations and label it using the keywords.</p> </div> <div> <p> Children use the keywords to explain their observations, and draw labelled diagrams of their inquiries.</p> </div> <div> <p> Children explain their observations and draw labelled diagrams of their inquiries.</p> </div> </div>	
	<p>Stephen Hawking: True or False? Children discuss whether the statements on the Lesson Presentation are true or false. Reveal the correct answers. <i>Look for children who are able to identify facts about Stephen Hawking's life and work.</i></p>	

Taskit

Writeit: Use this **Mini Biography Activity Sheet** to create a fact sheet about Stephen Hawking.

Askit: Challenge children to create a list of questions that they would like to ask about black holes. You may want to send their questions to a local university astrophysics department.