

KS3 STEM *Science Inventors and Innovators*

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<p>Curriculum Links</p>	<p>Science:</p> <ul style="list-style-type: none"> • Working Scientifically: scientific attitudes; experimental skills and investigations; analysis and evaluation; measurement • The difference between chemical and physical changes • Importance of understanding laws of physics in relation to: <ul style="list-style-type: none"> ○ Forces, motion, friction and equilibrium ○ Pressure in liquids, increasing with depth; upthrust effects, floating and sinking ○ Waves <ul style="list-style-type: none"> ▪ observed on water ▪ Energy and pressure/ surface (seismic) waves associated with earthquakes ▪ light transferring energy from source to absorber leading to chemical and electrical effects – photo-sensitive material in cameras • Importance of understanding chemical properties of materials in solving social problems (real-life applications) <p>Technology:</p> <ul style="list-style-type: none"> • Analysing the work of past and present professionals • Understand developments in design and technology • Understand and use properties of materials <p>Maths:</p> <ul style="list-style-type: none"> • Solving multi-step problems through mathematical knowledge • Use scale factors and scale diagrams • Use geometric properties of faces, surfaces, edges and vertices to solve problems • Draw and measure line segments and angles in geometric figures, including interpreting scale drawings
<p>Key Themes</p>	<ul style="list-style-type: none"> • Island Inventors • Designing Hulls for Speed and Safety • Measuring earthquakes – John Milne and Tone Horikawa • Diving deep – the Mary Rose, Siebe Gorman and the history of diving • Capturing light – the photography of Julia Margaret Cameron

Suggested Learning Plan* (can be used as a basis to develop your own tailored learning and lesson plans)	Lesson 1 (Digital map)	School to Museum 1: Classic Boat Museum	School to Museum 2: Brading Roman Villa	<i>School to Museum 3: Carisbrooke Castle Museum (in development)</i>
	Island Inventors and Innovators	Local Study: Incredible Isle of Wight Innovations Prepare to sail!	Archaeology Digging	<i>Measuring earthquakes – John Milne and Tone Horikawa</i>
Learning Objectives/ Outcomes	<p>Be able to describe examples of scientific invention and innovation that have taken place on the Island in history</p> <p>Understand how these scientists used principles of chemistry, physics and mathematics to develop their inventions and give examples for each</p> <p>Explain how these scientific inventions helped solve problems in society and give an example of a similar problem that needs solving today.</p>	Lesson plans available	Lesson plan available	<i>In development</i>
Learner Activities	Play the introductory film to the Digital Explorer and Quiz			

	<p>Explore the digital map and answer the quiz about past scientists on the Island and how they used chemistry, physics and maths</p> <p>Choose one of the inventions on the map and research online to discover more</p> <p>In thinking about the evidence explored for the Isle of Wight having a history of science invention and innovation, explore the drivers for these changes happening when they did?</p> <p>Discuss the real-life changes that the objects they've investigated on the map brought to people; what impacts did these changes have? What use were faster boats, safer boats etc.?</p>			
Teacher Resources	<ul style="list-style-type: none"> • Science Innovation Island introductory film • Science Innovation Island Digital Explorer <p>The scientific word is 'planing' – planing hulls are</p>			

	<p>shaped to provide lift and allow a boat to accelerate over and ahead of its bow wave. Because there is less boat in the water there is less resistance and faster speeds can be reached. However, they are less stable in rough conditions</p>			
Suggested Assessment	<p>Drawing upon your research and observations about the object, write an exhibition label about what problem this invention helped solve, and suggest a similar problem that science needs to resolve today. (200 words)</p> <p>Or create an infographic to show the history of scientific innovation on the Isle of Wight</p>			