Museums & Schools Lesson Plan

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Workshop Title: Science Innovation Island Digital Explorer Quiz	**Venue:** In school.	**Key Stage:** KS3 **Class Size: N/a**
Length of Session: 60 mins	**Support Staff Required:** N/a	**Arrival Details / Risk Assessment:** N/a

Curriculum Links and Skills

Science	• 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:
	  ○ Forces, motion, friction and equilibrium
	  ○ Pressure in liquids, increasing with depth; upthrust effects, floating and sinking
	  ○ Waves
	  ▪ 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)

Technology	• Analysing the work of past and present professionals • Understand developments in design and technology • Understand and use properties of materials

Pre-Session

Prior Learning Required	No prior learning is necessary
Resources Required	• Science Innovation Island Introductory Film • Science Innovation Island Digital Explorer (interactive map) • Science Innovation Island Digital Explorer Quiz KS3 (activity sheet) Access to up-to-date computer hardware, with up-to-date browser, and good broadband/ WiFi connection. (This exercise can be undertaken individually or in groups) *Card game and physical map version for settings without digital access (pick a card and find the places on a map, undertaken as a class) – from end May 2021*

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Vocabulary to be Introduced	Satellite map, artefacts, documents, shipbuilding, design, powerboat, hovercraft, hypocaust, engineer, speedometer, steam-powered beam engine, constructed, submarine, reconnaissance, flying boat, wireless, signature, seismometers, seismographs, hull, invented, earthquakes
Learning Objectives / Outcomes	
ALL students	• Be able to describe examples of scientific invention and innovation that have taken place on the Island in history • Experience working with digital maps and GIS software
MOST students	• Understand how these scientists used principles of chemistry, physics and mathematics to develop their inventions and give examples for each
SOME students	• Explain how these scientific inventions helped solve problems in society and give an example of a similar problem that needs solving today
Differentiation / Extension Activities	Have a go at developing their own short quiz using the map for other students to use Research and propose other items to add to the map, and prepare content for 'pop-up windows'
Provision for Students with Additional Needs:	This lesson plan has been designed to provide active learning that combines both individual and collaborative engagement. Students can work at individual pace and take an active role in small group/ class-based work. Use of technology supports adjustments for visual and hearing impaired. Duration of digital engagement time is focused.
Assessment Strategies	Individual completion of activity quiz sheet Drawing upon their 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) Or create an infographic to show the history of scientific innovation on the Isle of Wight
Learner Activities / Questions & Class Organisation	
Starter 10 mins	Play the introductory film to the Digital Explorer and Quiz
Activities 40 mins	Explore the digital map and answer the quiz about past scientists on the Island and how they used chemistry, physics and maths Choose one of the inventions on the map and research online to discover more
Plenary 10 mins	• The scientific word they have to find in the quiz is '**planing**' – planing hulls are 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

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	• 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? • 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.?

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