

## Contemporary Science Issues

Physics		Lesson 13: The Martian colony		
<b>Curriculum Key:</b>	AQA Core 13.4		OCR B P2f	Edexcel Topic 12
<b>Objective(s)</b> 1. Understand what Mars is like as another planet 2. Know that scientific knowledge evolves over time. 3. Recognise that sometimes good scientists reach the wrong conclusion – but that does not make them bad scientists.		<b>Resources needed:</b> Starter activity cards British Imperial Colonial society sheet and assessment sheet Optional: extract from science fiction of the 19th or 20th Century.		
<b>Starter:</b> 15 minutes Mars card sort: What methods of investigating Mars do we have? Ask students to sort the facts of Mars into a chronological order of discovery; then to suggest what equipment or skills were needed to make that discovery.		<b>Teacher input/assessment</b> Prompting. Achieving a “whole class” order for the cards.		
<b>Main Activity 1:</b> 10 minutes British Imperial Colonial Society investigation of Mars 1912. This is a quite challenging document, so the students will need to discuss, and perhaps annotate it with the teacher. Go through the document and discuss. Students should attempt to respond to the brief given in the document.		<b>Teacher input / assessment</b> Explaining the language of the sheet. Introduce the work of Lowell.		
<b>Main Activity 2:</b> 20 minutes Students complete the assessment sheet individually. Next, they compare responses in pairs; then discuss answers in whole class discussion.		<b>Teacher input / assessment</b> Monitor the discussions at the pair stage, challenge the students to consider alternative opinions.		
<b>Plenary:</b> 15 minutes <b>Either</b> 1) Ask students to write a short summary of their views on the mistaken ideas of what Mars was like that, as shown in the document. How do we know it is wrong now? Were the people who thought up such ideas good scientists or bad ones? <b>Or</b> 2) Read the students an extract from a science fiction story from the past (e.g. CS Lewis’ description of Venus in “Perelandra”). Ask students to guess which planet it describes and then why people of the author’s day might have found the description believable.		<b>Teacher input / assessment</b> Either 1) assess quality of reasoning in students’ descriptions. Or 2) Read the passage and lead the discussion.		
<b>Learning Outcomes:</b> <b>All students must:</b> Complete the assessment sheet and participate in the card sort. <b>Most students should:</b> Contribute to the discussion of mistakes and misconceptions on a factual level. <b>Some students could:</b> Make reasoned judgements about the quality of the science displayed in the resources.				
<b>Key Skills:</b> Analysis and logic <b>Key words:</b> Evidence, Assumption <b>Homework:</b> Write a short description in the style of a science fiction writer of the past.		<b>Differentiation:</b> <b>More able:</b> A chance to be creative through their own writing and discussion. <b>Less able:</b> Can follow the assessment sheet and focus on mistakes that are found in the original brief.		