

THE SPACE ACADEMY: A SUCCESSFUL STEM PARTNERSHIP

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Introduction: Launched in October 2008, the Space Academy is a collaboration between the University of Leicester, the University of Nottingham, the National Space Center, the Science Learning Center East Midlands, STEMNET and the East Midlands Development Agency. The project has an Earth/planetary research scientist at each university, dedicated full-time staff and outstanding teachers seconded as lead educators to the project. The Space Academy offers curriculum focused full-day programmes in biology, chemistry, physics, astronomy, earth sciences and applied sciences for students from Key Stages 3 to 5, tailor-made to the curriculum focus of the participating school. In addition, the Space Academy hosts an annual teacher CPD conference and INSET sessions for science educators.

Methodology: A suite of materials using space sciences and climate change as the context for learning and engagement in KS3-5 curriculum themes have been developed in collaboration with internationally recognised experts in space science, education and industry. Researchers and teachers work together to ensure that masterclass content is curriculum-focussed and include current discoveries and scientific information. The programme is delivered by both research scientists experienced in public engagement and teachers (seconded from their schools) that are recognised as outstanding educators. An example Space Academy programme includes an A Level/Cambridge Pre-U masterclass that uses “an away day to Mars” as the context for learning topics such as Newton's law and forces, gravitational potential and field strength, EM spectrum and spectroscopy through the investigation of physical properties/environment of Mars and its habitability. Similarly, a GCSE/A Level chemistry masterclass uses “Comets: harbingers of doom or agents of life?” as the context for learning low-temperature physics, simulating a comet nucleus, kinetics and mass spectrometry.

Evaluation: The Space Academy methodology has received international recognition by the science education community, enabling the project to contribute on an international-scale including i) hosting the largest session at the NASA Space Exploration Educators Conference, ii) leading a session at the ESA human space-flight teachers workshop and iii) leading a session at the European Space Camp at the Andoya Rocket Range in Northern Norway. The Space Academy masterclasses and teacher CPD sessions have been externally evaluated by both the University of Leicester and an OFSTED inspector in terms of lasting student understanding and teacher effectiveness. There is evidence that the Space Academy programme increases attainment in national examinations.

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