Destination Moon Primary Incursion for Stages 2 and 3

Incursion Outline

Your incursion

Offered to local primary schools in the St George and Sutherland Shire regions of Southern Sydney.

The Destination Moon Primary Incursion is delivered to your classroom by two experienced and passionate educators with science qualifications and specialised knowledge in lunar science and technology.

Requirements for this incursion are as follows:

- Desks for construction activities
- Students work in pairs
- Large outdoor open area/playground or school hall with high ceiling for launching rockets
- Technology for PowerPoint presentation

For further enquiries or to book this incursion, contact the ANSTO Education Team:

Phone: 02 9717 3090 email: tours@ansto.gov.au

Overview

We start with an interactive presentation that reveals the surprising science of the Moon and looks at lunar exploration and other fascinating facts about our natural satellite. Students can share their knowledge and interest with our experienced STEM education staff.

A take-apart scale model of the mighty *Saturn V* rocket, and model of the *Eagle* Lunar Module (lander), are used to demonstrate how a total of 12 men landed on the moon in the NASA Apollo missions. Students also learn about recent research on lunar geology by ANSTO scientists.

In the first STEM activity students learn about rocket design and construct a paper rocket. They launch their rocket in the playground and evaluate which rocket travelled the farthest and why.

In the second STEM activity, students design a lunar lander and construct it from supplied craft materials. They test the performance of their design and evaluate whether modifications to the design are needed. Students then retest their lander after making modifications. In this activity, students learn design and evaluation processes followed by aerospace engineers.

Extension Project Suggestion: This incursion provides a suitable introduction to student projects on designing/planning for a Moon Base.

Format Summary

Component	Suggested timings (mins)
Interactive presentation	40
Demonstration with model of *Saturn V* rocket and *Eagle* lander	20
STEM Activity 1: Create and launch a lunar rocket	50
(Recess break)	20
STEM Activity 2: Design and test a lunar lander	50

The incursion is approximately 3 hours in duration and has been successfully run from start of day to lunch, with a recess break. The timings can be adjusted to suit your school's needs.

Group size: Student numbers are limited to 30

Content Summary:

- Moon Science: Geology, formation, age, size, distance from Earth, length of day, gravity, moon phases, near and far side
- Historical interest and fun facts
- Exploration: Lunar missions past and present, crewed and uncrewed
- First landing: Neil Armstrong and Buzz Aldrin (Apollo 11)
- *Soft* versus *hard* landings
- Rocket science: workings and features
- Lunar landers: stability and design considerations
- Lunar research conducted at ANSTO

Links to NSW Science and Technology K-6 Syllabus 2017:

Stage 2 - Earth and Space

Skills:

Working scientifically: Communicating

- represent and communicate observations, ideas and findings, using formal and informal representations (ACSIS060, ACSIS071)

Design and Production: Researching and planning

- identify and define a design problem with consideration of practical and aesthetic needs
- consider sustainable use of resources and time constraints in planning design solutions
- develop, record and communicate design ideas and decisions using appropriate technical terms
- produce labelled and annotated drawings (ACTDEP015)
- plan a sequence of production steps when producing designed solutions individually and collaboratively (ACTDEP018)

Stage 3 - Earth and Space

Content:

Earth's place in our solar system

- identify that Earth is part of a system of planets orbiting around a star (the Sun) (ACSSU078) SysT
- investigate the role of light energy in how we observe the Sun, Moon and planets SysT
- examine and discuss current developments in astronomy, space and planetary science, particularly related to making observations and gathering data SciT

Skills:

Working scientifically: Communicating

- communicate ideas, explanations and processes, using scientific representations including multimodal forms (ACSIS093, ACSIS110)

Design and Production: Researching and planning

- consider functional and aesthetic needs in planning a design solution
- develop, record and communicate design ideas, decisions and processes using appropriate technical terms
- produce labelled and annotated drawings for an audience (ACTDEP025)
- consider sustainability of resources when planning design solutions
- manage projects within time constraints