Workshop 2 The Science of Ecosystems!

Core STEM: SCIENCE

Core Subjects: BIOLOGY, GEOLOGY, MICROSCOPY, FITOLOGY, ECOLOGY

Activity: Build your own self sustainable ecosystem.

General description: During this activity, students will explore the different components that make an ecosystem.

Parts:

PART 1) PART 1) Especial attention will be paid to the different soil layers and their importance for the growth of plants. Comparisons can be made to the surface and composition of the soil in different parts of earth and other planets. Highlighting the importance of the carbon cycle. Students will have the opportunity to use microscopes to observe different soil samples (i.e. clay, compost, sand, rocks, etc).

PART 2) Studying Plants. Students will learn about plants, and the different parts of a plant anatomy (i.e. roots, stem, flowers, leaves). Questions to discuss are, why plants are green, why leaves are important, how plants change in different climates (how leaves are different), and what plants could they expect to find in different planets. Students will have the chance to observe different plant and moss samples using a microscope and comparisons can be done between them. The importance of the water cycle can be explored both in relation to plant growth and the formation of the land.

Part 3) With the knowledge they have acquired, students will be guided as they create their own enclosed ecosystem/terrarium. This terrarium can be kept at home or in different areas of the class, and students can make notes as they go, and as their terrarium develops with the passing of time. Students can develop their creative skills by personalising their terrarium with different stones and types of moss.

Space Theme Rationale: Understanding the importance of ecosystems in earth, and how all the different parts make life possible is the first step to understanding life in space. When looking for planets, scientists look for the basic elements that can sustain life. If a colony was to be stablished in Mars, or the moon, where some of these elements are not present, humans would need to create small habitats to recreate suitable conditions to sustain life as a means of producing the necessary oxygen, filtering the air, but also, generating food. NASA has already experimented with enclosed self-sustainable ecosystems. These experiments allow students to do the same.

Core Concepts: Layers of Soil and their function Soil Formation and Erosion, Plant Morphology, Importance of Plants, Plants life cycle, Water cycle, Stable Ecosystems, Plant growth Requirements

Core Skills: Exploration, Investigation, Critical thinking, Scientific Method

Strands: Living Things, Materials, Environmental Awareness