Influence of the Environment on the Variety of Plants and Animals (an Outdoor Activity)

? Challenge

What is the Environment?

Biomes, or ecosystems, are home to the world's plants and animals. These ecosystems contain living (biotic) things such as plants, animals, people and fungi. They also contain non-living (abiotic) elements. These elements can either be materials such as rocks, soil, water and air or energy such as heat and light.

The ability for living things to survive and multiply in an ecosystem depends on their ability to adapt to their ecosystem. Major elements of this ecosystem are: temperature, humidity, rainfall, wind and clouds). Another aspect of ecosystems is the relationship between the living and non-living elements. Ecosystems are constantly changing both due to natural changes and the impact of man on the environment.

What will we investigate?

We will break up into groups and choose different areas to investigate. In each area we will record the environmental conditions and photograph the different plant and animal life of the ecosystem. The different locations you investigate should be as different as possible (such as: a beach, the woods and an urban area.)

1. Each group will investigate the air temperature, humidity and Light intensity of their area.

2. Each group will photograph the plants and animals found in their area

Each group will submit 2 reports:

The first report will contain:

    a) A map of the ecosystem they investigated

    b) A combined map of the all the areas investigated, relying on the data gathered by other groups

The second report will contain

    a) A photo album containing the plants and animals (along with their names) found in the ecosystem they investigated

    b) A photo album containing the plants and animals of all the areas investigated, relying on the data gathered by other groups

⚗ Equipment and Materials

- einstein™Tablet+ or einstein™Labmate+™ paired with a tablet

🕐 Before You Begin

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👥 Group Work

1. Turn on the einstein™Tablet+ or einstein™Labmate+™ (paired with a tablet)
2. Tap the MiLAB (🔵) icon to open the application.

⚙️ Sensor Setup

Tap the **Setup** cog (🟢) and use the table below to set up the measurement parameters:

Sensor:	Temperature (Internal)
Sensor:	Humidity (Internal)
Sensor:	Light (Internal)
Rate:	25/sec
Duration:	1000 Seconds

📋 Experimental Procedure

1. Go out to your chosen area
2. Tap the Table icon (🟩).
3. Tap the **Run** button (🟢).
4. When MiLAB stops measuring tap the Share icon ( ) and email it to one of the group members as a .csv file. If you are not connected to Wi-Fi, Save ( ) the results and Share them when you have a Wi-Fi connection. You can share then share this csv file with your group and your classmates.
5. Use the built-camera on your tablet to take photographs of the plants and animals in this area. Also try to record how many of these plants and animals can be found here.

📊 Understanding the Measurements

Discuss, in class, how the ecosystem affects how many different types of plants and animals were found in your area

- Relate to light and how it affects photosynthesis. The process of photosynthesis is dependent on, among other things, the amount of light in the area and will affect the number and diversity of plants in the area.
- The temperature affects all living things in the area – some animals such as reptiles and amphibians use the temperature to control their body heat, while plants, mammals and even one-celled creatures are also affected by temperature.
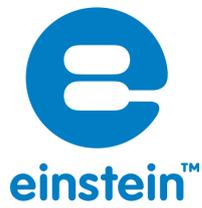
- Humidity – the higher the humidity the less water evaporates – how will this affect the ecosystem?

➕ Using What You Learned

Investigate how the plants and animals in the ecosystem you studied have adapted to the local conditions.