Growing Plants

Suggested Age / Grade Level	Curriculum Covered	Duration
Grades 3, 4, 6	● Soil ● Plants ● Habitats & Biodiversity	1 hour

Overview

Students will learn about the importance of biodiversity and be introduced to the three levels that biodiversity is studied at: genetic, species and ecosystem. They will also learn ways that humans have historically threatened biodiversity and what we can do today to increase biodiversity. One way they will practice increasing biodiversity is through plant propagation.

Learning Goals

- Understand the importance of biodiversity and how scientists study biodiversity
- How have humans threatened biodiversity and the effects it has on us as well as other species
- How to increase biodiversity by plant propagation

Materials

- Potting soil
- Knife clippers
- Small pot
- Water
- plant

Procedure

1. Review the Biodiversity Video and discuss some of the terms and concepts with the class
2. Review the 3 things all plants need: food (nutrients from the soil), water (mostly taken up by roots from the soil) and sunlight (used to create the building blocks of the plant)
3. Locate the root node on the plant. Found at any point where a leaf is coming out of the vine
4. With clippers or knife, cut one cm in size on either side of the node

5. Place cuttings into small cup filled with water making sure nodes are submerged under water
6. Allow roots to grow (about 2-4 weeks)
7. Once they've grown, take the plant out and repot it in potting soil
8. Make sure it has enough life and water it every week

<u>Key Terms and Lesson Summary</u>

Biodiversity: the study of the varieties of life that are found on Earth

- Here on Earth we can find life in microorganisms, fungi, animals, plants, etc

Biodiversity can be studied at three different levels

1. **Genetic levels** - shows the ability of a group to remain overtime and what changes they go through in an environment
   Example: different breeds of dogs
2. **Species level** - the influential roles of certain species in their environments
   Example: predators and preys
3. **Ecosystem level** - shows interaction between living and non living environments that species are exposed to
   Example: aquatic ecosystems

All three levels of biodiversity are linked together and give us a full view of life on Earth

- Biodiversity is important because it provides us humans with the conditions we need in order to survive. Biodiversity is the reason why we can get water, food and a lot of our resources.
- Even though biodiversity is important and benefits us, many threats to biodiversity are caused by us. Things humans do that threaten biodiversity include habitat destruction/degradation, overexploitation of our natural resources, pollution and climate change.
- One way we can simply contribute to increasing biodiversity is by growing and nurturing plants

Plant Propagation

There are two kinds of plant propagation

1. **Asexual propagation** - taking part of the first plant and letting itself regenerate into a new plant that is similar to the first plant

Example: In the tiktok, pothos plants were cut at its root nodes and then submerged in water.

- After a few weeks of sunlight and water, they'll grow
- They are their own independent plant but are the same pothos plant as the one that they came from

2. **Sexual propagation** - when pollen and eggs (found in the centre of plant) come together and produce a seed

Example: Seed propagation - taking a seed, planting it in potting soil, and giving it sunlight and water.

- The seed will eventually grow out roots for it to take up water and nutrients from the potting soil.
- Once the roots take hold, a small plant will grow and sprout through the potting soil (this process is called **germination**).
- From there, the plant will continue to grow as long as it gets enough sunlight and water, and make its own food via photosynthesis.

Plant Growth

- Plants have specific needs in order to survive and reproduce:

➔ **Light** - light energy from the sun helps plants make sugar which is used as a source of energy

➔ **Air** - air contains many gases like carbon dioxide, oxygen, and nitrogen. The carbon dioxide from the air combines with the light energy from the sun to produce water and sugar. This process is called **photosynthesis**

➔ **Water** - also needed for photosynthesis but also needed to help move nutrients from the soil into the plants. This is water is taken up but the plants' **roots** and gets distributed throughout the rest of the plant

➔ **Nutrients** - nutrients are like food for the plan. They help nourish plants.

➔ **Space to grow** - As a plant grows, its roots will also grow so they need space for roots to spread out and absorb water and nutrients. Leaves also need space to grow so they can access the light

Soil

- Soil support plant growth and provides a majority of the things that plant need

➔ Soil provides:

➔ Anchorage - for root systems to extend down through the soil to stabilize plants

- ➔ Oxygen - the space between soil particle have oxygen which is needed for making energy
- ➔ Temperature modification - soil insulates roots from extreme temperature changes
- ➔ Nutrients - soil supplies nutrients and holds the nutrients that we add via fertilizers