Laboratory –Plants & their Organs

Assessment	AS/OF
Cross-curricular	Literacy

Big Ideas

2. investigate cell division, cell specialization, organs, and systems in animals and plants, using research and inquiry skills, including various laboratory techniques;

Specific Expectations

3.3 explain the links between specialized cells, tissues, organs, and systems in plants and animals (e.g., muscle cells and nerve cells form the tissue found in the heart, which is a component of the circulatory system; granum and thylakoid structures act as solar collectors in the chloroplast to produce carbohydrates for plant growth).

3.5 explain the interaction of different systems within an organism (e.g., the respiratory system brings oxygen into the body, and the circulatory system transports the oxygen to cells) and why such interactions are necessary for the organism's survival.

Description

In groups, students will conduct a laboratory inquiry to determine whether the root system that draws water up into a plant is more important than the shoot system, which is responsible for photosynthesis.

Materials

3 white carnation plants in pots (each plant must have at least 5 blooms)
2 balloons
2 elastic bands
blue food colouring
four 400-mL beakers
water

Safety Notes

Introduction

In a class discussion, co-define, the differences between organs, tissues and systems. Then co-create a mind map around the different organs, tissues and systems that exist in humans and plants. Also discuss the similarities and differences between animals and plants. Remind students that plants are also multicellular organisms like humans and that their organs also work together in organ systems. Introduce the lab activity, where students will determine if the root system that draws water up into a plant is more important than the shoot system, which is responsible for photosynthesis.

Action

In small groups, students will conduct the lab (see handout) and answer the discussion questions. If time permits, students can use the smarter steps to inquiry framework to identify other variables that they would like to test and create an inquiry around their chosen variable.

Consolidation/Extension

Extension - students can use the smarter steps to inquiry framework to identify other variables that they would like to test and create an inquiry around their chosen variable.

Consolidation – Discuss the questions at the end of the lab. Students should agree that while both systems are important, the root system is more important to the plant's survival.

Resources

Adapted from:
https://portal.ddsb.ca/class/aeltaa9/Lists/HandoutsandMaterials/Science/Unit%20A-%20Cells/Chapter%203/sci8_unit_a_ch03.pdf