Plant Response Activity: Plant Hormones and Tropisms

High School (NGSS Aligned) Teacher Guide

Overview

This guide supports implementation of the Plant Response Activity: Plant Hormones and Tropisms using the 5E instructional model.

Learning Objectives

- Students will model how plants respond to light stimuli
- Students will analyze the role of hormones in plant growth
- Students will explain how day length affects flowering
- Students will evaluate advantages of plant responses

Standards Alignment

- **HS-LS1-5:** Use a model to illustrate how photosynthesis transforms light energy
- **HS-LS2-8:** Evaluate evidence for the role of group behavior on survival
- **HS-LS4-4:** Construct an explanation for how natural selection leads to adaptation

Prerequisites

- Basic plant structure
- Photosynthesis concepts
- Natural selection principles

Time Estimate

50 minutes

Materials Needed

- Computer/tablet with internet access
- Student Activity Sheet
- Ruler for measurements
- Colored pencils (optional)

Teaching Tips by Phase

Phase 1: ENGAGE (5-10 minutes)

- Start with the phenomenon or problem presented
- Elicit student predictions and prior knowledge
- Create cognitive dissonance if possible
- Build excitement for investigation

Phase 2: EXPLORE (15-20 minutes)

- Allow students to investigate with minimal guidance
- Circulate and ask probing questions
- Encourage systematic data collection
- Note common discoveries and difficulties

Phase 3: EXPLAIN (10-15 minutes)

- Have students share their findings first
- Build on their observations to introduce concepts
- Address misconceptions directly
- Connect to broader biological principles

Phase 4: ELABORATE (10 minutes)

- Apply knowledge to new scenarios
- Make real-world connections

- Encourage deeper investigation
- Support transfer of learning

Phase 5: EVALUATE (5-10 minutes)

- Use varied assessment strategies
- Focus on conceptual understanding
- Provide immediate feedback
- Plan follow-up based on results

NGSS Three-Dimensional Learning

- **Science Practices:** Developing and using models, analyzing data, constructing explanations
- **Crosscutting Concepts:** Patterns, cause and effect, systems thinking
- **Disciplinary Core Ideas:** See standards alignment above

> ### Remember:
>
> The goal is student discovery through guided inquiry. Resist the urge to explain concepts before students have explored them!
