Unit 1: Plant Growth and Development

Content Area: **Science**
Course(s): **Science**
Time Period: **Generic Time Period**
Length: **Weeks**
Status: **Published**

Unit Overview

In the Plant Growth and Development unit, the students will explore the life cycle of plants from seed germination to seed pod development. They will observe, measure, describe and record changes to their plants and then compare and discuss these changes with their cooperative groups. The students will describe the parts of plants and understand how these parts help support plant life. They will develop an awareness of the interaction between plants and animals and they will utilize the Scientific Method as they observe how plants grow and change.

Standards

SCI.3-4.5.1.4.A.1	Demonstrate understanding of the interrelationships among fundamental concepts in the physical, life, and Earth systems sciences.
SCI.3-4.5.1.4.A.2	Use outcomes of investigations to build and refine questions, models, and explanations.
SCI.3-4.5.1.4.A.3	Use scientific facts, measurements, observations, and patterns in nature to build and critique scientific arguments.
SCI.3-4.5.1.4.B.1	Design and follow simple plans using systematic observations to explore questions and predictions.
SCI.3-4.5.1.4.B.2	Measure, gather, evaluate, and share evidence using tools and technologies.
SCI.3-4.5.1.4.B.3	Formulate explanations from evidence.
SCI.3-4.5.1.4.B.4	Communicate and justify explanations with reasonable and logical arguments.
SCI.3-4.5.1.4.C.1	Monitor and reflect on one's own knowledge regarding how ideas change over time.
SCI.3-4.5.1.4.D.1	Actively participate in discussions about student data, questions, and understandings.
SCI.3-4.5.1.4.D.2	Work collaboratively to pose, refine, and evaluate questions, investigations, models, and theories.
SCI.3-4.5.1.4.D.4	Handle and treat organisms humanely, responsibly, and ethically.
SCI.3-4.5.3.4.A.1	Develop and use evidence-based criteria to determine if an unfamiliar object is living or nonliving.
SCI.3-4.5.3.4.A.2	Compare and contrast structures that have similar functions in various organisms, and explain how those functions may be carried out by structures that have different physical appearances.
SCI.3-4.5.3.4.B.1	Identify sources of energy (food) in a variety of settings (farm, zoo, ocean, forest).
SCI.3-4.5.3.4.D.1	Compare the physical characteristics of the different stages of the life cycle of an individual organism, and compare the characteristics of life stages among species.

Essential Questions

1. How does the relationship of plants to their environment affect plant survival?
2. How does studying cycles help us to understand natural processes?
3. How do plants and animals help each other?

Application of Knowledge and Skills...

Students will know that...

- 1. Students will know that seeds are made of parts.
- 2. Students will know that plants are made of parts.
- 2. Students will know the steps to planting a seed.
- 3. Students will know how to thin and transplant seedlings.
- 4. Students will know what plants need to live.
- 5. Students will know the steps of the photosynthesis process.
- 6. Students will know the steps in the life cycle of a plant.
- 7. Students will know how to measure, collect and record data.
- 8. Students will know that plants and animals depend on each other.

Students will be able to...

- A. identify and label the parts of a seed.
- B. identify and label the parts of a plant.
- C. explain that a seed needs water, warmth and air to germinate.
- D. plant a seed.
- E. explain that a plant needs light, water and nutrients from the soil to live and grow.
- F. thin and transplant seedlings.
- G. explain photosynthesis.
- H. identify the steps in the life cycle of a plant.
- I. use measurement tools to collect data.
- J. use graphs to record data.
- K. explain why plants and bees need each other.

Assessments

Diagnostic: Instructional/Assessment Focus

Splash Activity: students use vocabulary splash sheet to generate ideas about upcoming unit of study. 5.3.4.A.2; 5.3.4.B.1;5.3.4.D.1

Formative: Other written assessments
Foods That Have Seeds assignment 5.3.4.A.2; 5.3.4.D.1

Formative: Extended Essay
Write conclusions about the "What Does a Seed Need to Germinate" lab acivity. 5.1.4.A.1; 5.1.4.A.2; 5.1.4.A.3; 5.1.4.B.3; 5.1.4.B.4; 5.1.4.C.1; 5.3.4.B.1; 5.3.4.D.1

Formative: Other written assessments
Wisconson Fast Plant worksheet 5.1.4.A.1; 5.1.4.C.1; 5.3.4.A.2; 5.3.4.D.1; 5.3.4.B.1

Formative: Other written assessments
Thinning and Transplanting worksheet 5.1.4.D.4

Formative: Other written assessments
Students will record the growth of their plants on a lab sheet. 5.1.4.B.1; 5.1.4.B.2; 5.1.4.D.4

Formative: Other visual assessments
Label the parts of a bee 5.1.4.A.3; 5.1.4.C.1

Formative: Other written assessments
Cross Pollination Quiz (Bee Reading Selection) 5.1.4.A.1; 5.1.4.A.2; 5.1.4.C.1

Formative: Other visual assessments
Label the parts of a flower 5.1.4.A.2; 5.1.4.C.1;

Formative: Other written assessments
"A Honeybee's Job" reading selection worksheet 5.1.4.C.1; 5.3.4.A.2

Formative: Other written assessments
photosynthesis assessments 5.1.4.A.2; 5.1.4.B.4; 5.1.4.C.1; 5.3.4.A.2

Summative: Other written assessments
Plant Test 5.1.4.A.1; 5.1.4.A.2; 5.1.4.A.3; 5.1.4.B.4; 5.1.4.C.1; 5.3.4.A.2; 5.3.4.B.1; 5.3.4.D.1

Summative: Other written assessments
Mid Year Benchmark Test 5.1.4.A.1; 5.1.4.A.2; 5.1.4.A.3; 5.1.4.B.4; 5.1.4.C.1; 5.3.4.A.2; 5.3.4.B.1; 5.3.4.D.1

Activities

*Diagnostic Assessment

1. KWL activity

2. Read, The Tiny Seed, by Eric Carle

*Foods That Have Seeds Assessment

3. Observe and record the characteristics of a dry lima bean seed and a soaked lima bean seed.

4. Record the parts of a seed on worksheet

5. Conduct "What Does a Seed Need to Germinate" lab activity.

*lab activity assessment

6. "All About Seeds" Activity

7. photosynthesis reading selection

*photosynthesis assessment

7. Read selection on "Wisconson Fast Plants".

*selection assessment

8. Planting Seeds Crossword Puzzle

9. Plant seed quads

10. Thin and transplant seedlings

*assessment worksheet

11. Measure and record plant growth using centimeter strips and recording lab sheets.

*assessment lab worksheets

12. Life Cycle of a Plant cards

13. Observing the Growth Spurt lab sheet

14. Bee Prediction sheet

*label parts of a bee assessment

15. "What are flowers For?" booklet

16. "The Bee" reading selection

*reading selection assessment

17. How to Make a Bee Stick lab sheet

20. Crucifer Family reading selection

*label the flower assessment

*A Honeybee's Job" assessment

21. Plant Unit Study Guide

22. Jeopardy Review Game

*Unit Assessment

*Benchmark Assessment

Activities to Differentiate Instruction

Provide vocabulary cards/lists

Study Guides for assessments

Preprinted worksheets

Visual Aids for Instruction

Assigned lab partners/lab groups

Instruction for using measurement tools

Read tests aloud

Resource supplements (ie books from library) available for further research

Computer websites for further research

Blank booklets provided for student research

Integrated/Cross-Disciplinary Instruction

Mathematics: Measurement

4.4; 4.6

Reading/Language Arts: Reading Informational Text

3.1; 3.2; 3.3; 3.4; 3.5; 3.7

Resources

Water Cycle Activity Packet

Plant Growth and Development Science Module, National Science Resource Center, 2002

The Tiny Seed, Eric Carle