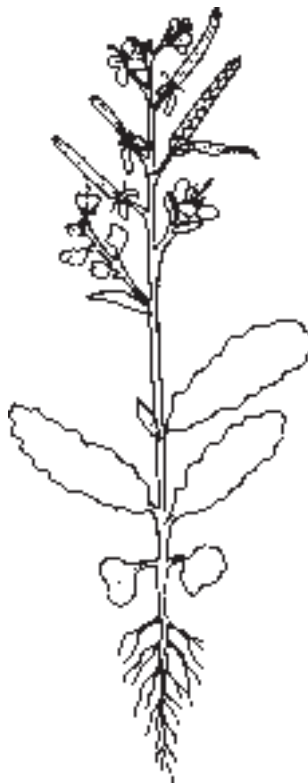


# OVERVIEW

## NEW PLANTS

### GOALS

The New Plants Module provides experiences that heighten young students' awareness of the diversity of life in the plant kingdom. Students care for plants to learn what they need to grow and develop. They observe the structures of flowering plants and discover ways to propagate new plants from mature plants (from seeds, bulbs, roots, and stem cuttings). They observe and describe changes that occur as plants grow, and organize their observations on a calendar and in a journal.



### FOSS EXPECTS STUDENTS TO

- Develop a curiosity and interest in plants as living things.
- Experience some of the diversity of forms in the plant kingdom.
- Provide for the needs of growing plants.
- Observe and describe the changes that occur as plants grow and develop.
- Become familiar with the structures and functions of flowering plants (root, stem, leaf, bud, flower, seed).
- Discover various ways that new plants can develop from mature plants.
- Compare change over time in different kinds of plants.
- Organize and communicate observations through drawing and writing.
- Acquire the vocabulary associated with the structures of plants.

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# NEW PLANTS MODULE MATRIX

## SYNOPSIS

## SCIENCE CONTENT

## THINKING PROCESSES

### 1. BRASSICA SEEDS

Each student plants tiny rapid-cycling brassica seeds in a planter cup. The cups are kept in a tray under continuous light. The brassica plants grow and develop for a month while students care for them, observe, and record the complete life cycle.

- Plants are alive.
- Seeds are alive and grow into new plants.
- Plants need water, air, nutrients, and light to grow and develop.
- As plants grow, they develop roots, stems, leaves, buds, flowers, and seeds in a sequence called a life cycle.
- Bees and other insects help some plants by moving pollen from flower to flower.

- Observe the growth of seeds.
- Record and communicate observations in words and drawings.
- Compare the development of brassica plants.
- Identify the parts of growing plants as they develop.

### 2. GRASS AND GRAIN SEEDS

Students plant miniature lawns with rye grass and alfalfa. Periodically they mow the lawns and observe the response of grass and alfalfa to cutting. They plant individual wheat seeds in clear soda straws and observe in detail how grain seeds germinate and grow.

- Seeds are alive.
- Seeds need water and light to grow into new plants.
- Some plants die and some plants continue to grow after they are mowed.
- Wheat and other cereals that we eat come from seeds called grains.
- Plants have different structures that function in growth and survival.

- Observe plant development.
- Record and communicate observations in words and drawings.
- Compare the development of different kinds of plants.
- Organize representations of lawns to show the sequence of events during growth and mowing.

### 3. STEMS

Students make new plants from stems of houseplants. They put sections of stems from mints, ivies, and other plants into water and look for evidence that a new plant is forming. Stem pieces that develop roots are planted to make new plants. Students also plant pieces of potatoes (modified stems) and observe them grow into plants.

- New plants can grow from stems of mature plants.
- Plants need water and light to grow.
- Leaves, twigs, and roots develop on stems at the nodes.
- Potatoes are underground stems.

- Observe the development of roots on stems.
- Record and communicate observations in words and drawings.
- Compare the development of cuttings from different plants.
- Identify evidence that a cutting will develop into a new plant.

### 4. BULBS AND ROOTS

Students plant onion bulbs or garlic cloves in moist cotton and observe as they develop into new plants. They plant parts of roots—carrots and radishes—to discover which parts will develop into new plants.

- Bulbs are alive.
- Bulbs need water to start growing.
- Parts of roots will grow into new plants. Other parts will not.

- Observe the growth of roots and bulbs.
- Record and communicate observations in words and drawings.
- Compare the development of different parts of plants.

**Language Extension**

- Label a mature plant.

**Math Extensions**

- Solve two problems.

**Science Extensions**

- Plant your harvested brassica.
- Look for roadside brassica.

- *What Do Plants Need?*

Students look for other brassicas, such as mustard, cabbage, cauliflower, broccoli, and collards.

**Language Extension**

- Tell the story of your plant.

**Math Extensions**

- Solve two problems.

**Science Extensions**

- Plant oat seeds.
- Grow plants in the dark.
- Plant radish-seed gardens.
- Grow flowers from seed.
- Try growing plants without water.

- *How Seeds Travel*
- *Flowers and Seeds*
- *The Story of Wheat*

Students look for uses of grains at home.

**Math Extensions**

- Solve two problems.

**Science Extensions**

- Turn cuttings into gifts.
- Grow spider plants.
- Grow new plants from leaves.

Students make a plastic-bottle terrarium to grow plants at home.

**Language Extension**

- Illustrate homonyms.

**Math Extensions**

- Solve two problems.

**Science Extensions**

- Eat roots.
- Start other culinary bulbs.
- Grow a sweet potato in water.
- Plant flower bulbs.

- *Plants and Animals around the World*
- *Animal Teeth*

Adults read part of a story to students, who write an ending to the story.

## **FOSS AND NATIONAL STANDARDS**

The New Plants Module emphasizes the development of observation and description skills and building explanations based on experience. This module supports the following National Science Education Standards.

### **SCIENCE AS INQUIRY**

Develop students' abilities to do and understand scientific inquiry.

- Ask and answer questions.
- Plan and conduct simple investigations.
- Employ tools and techniques to gather data.
- Use data to construct reasonable explanations.
- Communicate investigations and explanations.
- Understand that scientists use different kinds of investigations and tools to develop explanations using evidence and knowledge.

### **CONTENT: LIFE SCIENCE**

Develop students' understanding of the characteristics of organisms.

- Organisms have basic needs. Plants require water, nutrients, light, and air.
- Each plant has different structures that function in growth, survival, and reproduction.
- The world has many different environments, and distinct environments support the life of different types of plants.

Develop students' understanding of the life cycle of organisms.

- Plants have life cycles that may include sprouting; growing leaves, flowers, and seeds; and eventually dying. New plants from the same seeds, stems, or bulbs closely resemble their parents.

Develop students' understanding of organisms and their environments.

- The availability of nutrients, light, and water influences the growth of plants.

### **SCIENCE AND TECHNOLOGY**

Develop students' understandings about science and technology.

- Scientists work collaboratively in teams and use tools and scientific techniques to make better observations.