

Bursting, Budding and Blooming

Explore the signs of spring in your own schoolyard



Contact:

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Standards addressed

NY State: Elementary standards for math, science and technology:

Standard 1 (Analysis, inquiry and design):

- Observe and discuss objects and events and record observations

Standard 4 (Science) Major Understandings:

- 1.1b Plants require air, water, nutrients, and light in order to live and thrive.
- 3.1b Each plant has different structures that serve different functions in growth, survival, and reproduction.
- 5.2a Plants respond to changes in their environment
- 6.1a Green plants are producers because they provide the basic food supply for themselves and animals.

Standard 6 (Interconnectedness)

- Observe and describe interactions among components of simple systems

Vocabulary may include:

- **ECOSYSTEM** – the relationship between biotic (living) and abiotic (non-living) factors in an environment.
- **PHENOLOGY** – the study of the timing of life cycle events in plants and animals.
- **PHENOPHASE** – the timing of phases of the plant life cycle.
- **MICROCLIMATE** – the climate of a small specific place within an area as contrasted with the climate of the entire area.
- **PREDICTION**- A general statement about what will happen in the future based on an observation, experience, or scientific reason. A hypothesis also gives an explanation about an observation, but is different than a prediction because a hypothesis must be testable by scientific investigation.

Objectives

- Students predict when and why plants begin growing in spring.
- Students observe, record and draw stages of plant growth to understand how organisms react to a changing environment.
- Students will submit data to nationwide citizen science program.
- Students experience authentic ecological research by collecting data over the course of several months.

Grade Level: 3-5

Duration:

Day 1 – 1 hour
Day 2 – (optional) 1 hour
Day 3 – 1 hour

Program Synopsis

Day 1:

Introduction to Cary Institute and how our ecologists define Ecosystems.	5 minutes
Students discuss the signs of spring. What evidence do we have that spring has sprung? Does spring arrive at the same time every year and at different places in the country? Can we predict when living organisms	5 minutes

will become active?	
Sequencing card game—plant life cycles.	10 minutes
Reading a bird’s eye map of schoolyard and picking a sight for plant investigation.	10 minutes
Review the student’s role as scientists.	5 minutes
Visit the schoolyard, set up study plots and begin collecting data	20 minutes

Teachers facilitate regular observations of study plant(s)

Day 2 (optional visit):

Students report data collected to date, begin graphing data and looking at trends	20 minutes
Study plant phenophase activity – students compare the phenology of plants in different microclimates within their schoolyard	30 minutes

Day 3:

Review of project/observations/questions	10 minutes
Students report and organize data	20 minutes
Data is graphed and analyzed	20 minutes
Students help submit data to nationwide citizen science program	10 minutes

Possible extensions/adaptations for this schoolyard investigation include:

- Collecting meteorological data (e.g. precipitation and temperature data) to examine the effect of weather on the phenology of the study plant.
- Setting up comparative plots in the schoolyard to understand the impacts of soil temperature, soil moisture and/or available sunlight light on the timing of plant growth.
- Creating a long term ecological monitoring project, whereby student groups monitor plant growth over many years. Long term research programs provide many unique opportunities for enriching graphing and data analysis exercises.
- Creating “phenology pen pals” where students from different schoolyards share their phenological data.
- Conducting phenological studies on other schoolyard organisms such as worms, insects, amphibians or humans