

The Life of Corn

Photo Credit: Johan Neven

Grade Levels

6-8

Overview

The following activity can be used as an introduction to the concept of phenology. It demonstrates the life cycle of a corn plant, a plant familiar to many, putting this plant into a new perspective. *The Life of Corn* highlights the importance of the developmental life-cycle, something which all organisms experience in a predictable manner.

The activity increases science literacy by teaching about life-cycle events, encourages students not only to recall experiences outdoors but also to spend more time outdoors and observe things they may not yet have experienced.

Real-world Connection

This activity is tied to observed plant and animal life cycles. It is also related to seasonal change because many of these events are associated with a particular season. The concept of climate change may also be introduced, in the event that the timing has shifted since participants have been observing these life-cycles.

Citizen Science Connection

Nature's Notebooks not critical to completing the activity, rather can be used as an addendum to the activity.

Time Required/Location

15 mins

A space large enough for students to mingle and arrange themselves into a circle.

Background

Phenology, or the study of the timing of life-cycle events and their relationship to the environment, can be used to teach a number of scientific concepts in many grades from kindergarden through adult. This particular game can be used as an ice-breaker, conversation starter, observation cue, or team building game and can be implemented in formal or non-formal settings.

Humans have a predictable cycle of development from birth to death, with only minor variations between individual people. Even plants have a developmental cycle. Most plants outside the tropics have a predictable developmental cycle that follows the seasons. (As an aside, many plants tell the time of year by photoperiod, which is how long the daylight is. In a lab, you can make plants bloom in the dead of winter or lose their leaves in spring by using a timer on their sunlamp).

Learning Objectives

Participants will be able to:

- Define phenology
- Understand seasonal impacts on life-cycle events
- Make observations

Next Generation Science Standards

LS: Life Science			
Grades 6-8		Grades 9-12	
MS-LS1-4	Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively. ¹	HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. ²
MS-LS1-4	Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. ¹		
MS-LS1-4	Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy. ¹		

¹ Can be elicited through the Explaining and Elaborating portion of the activity.

² This standard could be addressed by a discussion of how nutrient and water cycles affect the reproductive process of the corn.

Conducting the Activity

Materials

Resources needed - depending upon the way you choose to present the activity

- Laminated cards with pictures of corn developmental stage
- Depending on the size of the group, you may choose to have two copies of cards available. Each participant should have a different card.

Experience

ENGAGE

1. Discuss the seasons. What memories do you have of seasons; personal, human or natural? Why do things occur when they do? How do seasons affect habitats and their inhabitants?
2. Introduce the concept of phenology
 - All of the seasonal changes you talked about above are phenological events
 - Pheno-to show or appear
 - ology-to study
 - Phenology- the science of recurring plant and animal life cycle stages

RESOURCES

Adapted from:

Corn image credit:
sarahlyngay.com

This activity was adapted
from *Dandelion Life*,
presented by
NatureBridge.



NOTES ON ACTIVITY

A large grid area for taking notes, consisting of a light blue grid pattern on a white background.

Conducting the Activity

- What are some more examples you can think of? (migration, breeding, green-up, senescence)
ADVANCED CONCEPT - explain the difference between a monocot and a dicot. Note that corn is an example of a monocot. How would this activity be different if a dicot were used.

EXPLORE

1. Hand each participant a card
2. Ask the participants to arrange themselves in an order that makes sense to them – one upon which they can all agree. Tell them they should form a circle.
3. If you can relate the corn stages to the time of year, do so! Especially if the participants are familiar with the timing of the developmental stages.
4. If the cards are arranged out of order, help the students come to an agreement about which should appear where.

Share

EXPLAIN

1. Participants review the experience and reflect. Review questions can include:
 - Why did we create the arrangement in a circle?
 - Why did the card get arranged in the order they did? Why does this make sense?
 - Why do plants have flowers? (for reproduction!)
 - What does the flower of the corn plant look like? (The tassel is the male part, the ear shoot is the female part)
 - Why do plants get pollinated? (to restart the life cycle. Corn is wind pollinated.)
 - Do all plants follow the same basic life cycle? (Yes, although the parts of the plant may look different, the outcome is the same.)
 - Do all plants do the same thing at the same time? (NO, there is intra-species variation as well as variation between species. Eg., a saguaro plant may not flower at the same time of year as a corn plant).
2. This step may include a variety of sharing methods: verbal, illustrative, etc.

Process and Generalize

ELABORATE

1. How might we keep track of events like this? (e.g. nature journal, *Nature's Notebook*, photography, etc.)

Apply

EXTEND

1. Ask participants if they would like to join *Nature's Notebook* to collect observations
2. Host a *Nature's Notebook* workshop
3. Implement a long-term *Nature's Notebook* activity in your program

4. REFLECTION

1. Ask students to draw connections between this experience and other similar ones they have had.
2. Ask students about what they liked and disliked about this assignment. If they had to share the experience with someone else, what would they say?

Evaluate the Activity

The use of reflective practice is critical to understanding. Examples of reflection questions include:

1. Share one new thing you learned from this experience.
2. Share one thing you still have a question about.
3. Share something that you learned which will be useful in the future.
4. Share something that I (the instructor) could have done differently, or will do differently in the future.
5. Share something that I (the instructor) learned from the participants.

Seed



Germination



Sprout



Flowering



Fruits
with seeds



Fruit