TOOLKIT

TOOLKIT: LIFE CYCLE

THEME: NATURE
SUBJECT: SCIENCE
ARTIST: DANNY BRACKEN / WINIFRED LUTZ
GRADE: recommended 3rd-12th grade

OBJECTIVES

Students will consider a life cycle and the stages of growth different living things go through.
Students observe the stages of a plant as it grows.
Students will nurture and care for a living plant.

KEY QUESTIONS

1. What is a life cycle?
2. Do all living things go through the same life cycle?
3. What does a plant need to live?
4. Why do we need plants?
5. How do you know a plant is healthy?

VISUAL REFERENCES

1. *Garden Installation* (ongoing), (1993) by Winifred Lutz
2. *Is Always,* (2014) by Danny Bracken

ACTIVITY

Consider the live grass in Danny Bracken's installation. It has grown, died and been replanted in just a few short months during the time of the exhibition. The whole life cycle of the grass occurred inside the gallery space. In Winifred Lutz's *Garden Installation* the changes are more subtle as they cycle through the seasons. Plant seeds as a class and monitor the growth of the plant (for example, a bean stalk, grass, etc.). Make a weekly drawing of what happens to the plant. When is it the healthiest? When is it the most colorful? Does it keep getting bigger and healthier or is there a point when it starts to wilt? When do you need to find a home to plant it in the ground? Where will you plant it? Will you continue to care for it? What happens to the plant once the weather changes?

TOOLKIT

PENNSYLVANIA CORE STANDARDS
***SCIENCE** Organisms and Cells*

3rd Grade
(3.1.3.A1)
-describe characteristics of living things and help to identify and classify them
(3.1.3.A2)
-describe the basic needs of living things and their dependence on light, food, air, water, and shelter
(3.1.3.A3)
-illustrate how plants and animals go through predictable life cycles that include birth, growth, development, reproduction, and death
(3.1.3.A5)
-identify the structures in plants that are responsible for food production, support, water transport, reproduction, growth, and protection

4th Grade
(3.1.4.A2)
-describe the different resources that plants and animals need to live
(3.1.4.A3)
-identify differences in the life cycles of plants and animals
(3.1.4.A5)
-describe common functions living things share to help them function in a specific environment
(3.1.4.A8)
-construct and interpret models and diagrams of various animal and plant life cycles

5th Grade
(3.1.5.A2)
-describe how life on earth depends on energy from the sun
(3.1.5.A3)
-compare and contrast the similarities and differences in life cycles of different

6th Grade
(3.1.6.A1)
-describe the similarities and differences of major physical characteristics in plants, animals, fungi, protists, and bacteria
(3.1.6.A2)
-describe how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within a food chain from producers (plants) to consumers to decomposers

7th Grade
(3.1.7.A2)
-describes how organisms obtain and use energy throughout their lives

(3.1.7.A5)
-explain how the cell is the basic structural and functional unit of living things
(3.1.7.A8)
-apply the appropriate models to show interactions among organisms in an environment

8th Grade
(3.1.8.A8)
-explain mechanisms organisms use to adapt to their environment

10th Grade
(3.1.10.A1)
-explain the characteristics of life common to all organisms
(3.1.10.A3)
-compare and contrast the life cycles of different organisms

12th Grade
(3.1.12.A1)
-relate changes in the environment to various organisms' ability to compensate using homeostatic mechanisms
(3.1.12.A2)
-evaluate how organisms must derive energy from their environment or their food in order to survive
(3.1.12.A4)
-explain how the cell cycle is regulated

3rd Grade-8th Grade
(3.1.7.A9)
-identify questions that can be answered through scientific investigations and evaluate the appropriateness of questions
-design and conduct a scientific investigation and understand that current scientific knowledge guides scientific investigations
-analyze alternative explanations and understanding that science advances through legitimate skepticism
-use mathematics in all aspects of scientific inquiry
-understand that scientific investigations may result in new ideas for study, new methods, or procedures for an investigation or new technologies to improve data collection