



Ohio Academic Standards Addressed By Zoo Program

GUIDED TOUR—OUR GREEN PLANET (K-12)

Program description:

Explore the major biomes of the world. Find out how plants and animals have adapted in order to survive in differing biomes.

Ohio Science and Social Studies Standards addressed by this program, organized by grade band and then standard:

GRADES K-2

SCIENCE

Standard: Life Sciences

Benchmark A: Discover that there are living things, non-living things and pretend things, and describe the basic needs of living things (organisms).

Indicators:

Grade 1

1. Explore that organisms, including people, have basic needs which include air, water, food, living space and shelter.
4. Investigate that animals eat plants and/or other animals for food and may also use plants or other animals for shelter and nesting.

Grade 2

1. Explain that animals, including people, need air, water, food, living space and shelter; plants need air, water and nutrients (e.g., minerals), living space and light to survive.

Benchmark B: Explain how organisms function and interact with their physical environment.

Indicators:

Kindergarten

5. Investigate observable features of plants and animals that help them live in different kinds of places.
6. Investigate the habitats of many different kinds of local plants and animals and some of the ways in which animals depend on plants and each other in our community.

Grade 1

2. Explain that food comes from sources other than grocery stores (e.g., farm crops, farm animals, oceans, lakes and forests).
5. Recognize that seasonal changes can influence the health, survival or activities of organisms.

Grade 2

2. Identify that there are many distinct environments that support different kinds of organisms.
3. Explain why organisms can survive only in environments that meet their needs (e.g., organisms that once lived on Earth have disappeared for different reasons such as natural forces of human-caused effects.)

6. Investigate the different structures of plants and animals that help them live in different environments (e.g., lungs, gills, leaves and roots).
7. Compare the habitats of many different kinds of Ohio plants and animals and some of the ways animals depend on plants and each other.

Standard: Scientific Inquiry

Benchmark A: Ask a testable question.

Indicators:

Kindergarten

1. Ask “what if” questions.

Grade 1

1. Ask “what if” questions.

Grade 2

1. Ask “how can I/we” questions.

Standard: Scientific Ways of Knowing

Benchmark B: Recognize the importance of respect for all living things.

Indicators:

Kindergarten

3. Interact with living things and the environment in ways that promote respect.

Grade 2

3. Describe ways in which using the solution to a problem might affect other people and the environment.

SOCIAL STUDIES

Standard: Geography

Places and Regions

Indicator:

Grade 2

6. Describe the immediate surroundings of home (e.g., streets, buildings, fields, woods or lakes).

Standard: Social Studies Skills and Methods

Obtaining Information

Indicator:

Grade 1

1. Obtain information about a topic using a variety of oral and visual sources.

Grade 2

1. Obtain information from oral, visual and print sources.

GRADES 3-5

SCIENCE

Standard: Life Sciences

Benchmark A: Differentiate between the life cycles of different plants and animals.

Indicators:

Grade 3

1. Compare the life cycles of different animals including birth to adulthood, reproduction and death (e.g., egg-tadpole-frog, egg-caterpillar-chrysalis-butterfly).

Grade 4

5. Describe how organisms interact with one another in various ways (e.g., many plants depend on animals for carrying pollen or dispersing seeds)

Benchmark B: Analyze plant and animal structures and functions needed for survival and describe the flow of energy through a system that all organisms use to survive.

Indicators:

Grade 3

2. Relate animal structures to their specific survival functions (e.g., obtaining food, escaping or hiding from enemies).

Grade 4

2. Relate plant structures to their specific functions (e.g., growth, survival and reproduction).

Grade 5

3. Trace the organization of simple food chains and food webs (e.g., producers, herbivores, carnivores, omnivores and decomposers).

Benchmark C: Compare changes in an organism's ecosystem/habitat that affects its survival.

Indicators:

Grade 3

6. Describe how changes in an organism's habitat are sometimes beneficial and sometimes harmful.

Grade 5

4. Summarize that organisms can survive only in ecosystems in which their needs can be met (e.g., food, water, shelter, air, carrying capacity and waste disposal). The world has different ecosystems and distinct ecosystems support the lives of different types of organisms.

5. Support how an organism's patterns of behavior are related to the nature of that organism's ecosystem, including the kinds and numbers of other organisms present, the availability of food and resources, and the changing physical characteristics of the ecosystem.

6. Analyze how all organisms, including humans, cause changes in their ecosystems and how these changes can be beneficial, neutral or detrimental (e.g., beaver pond, earthworm borrows, grasshoppers eating plants, people planting and cutting trees and people introducing a new species).

Standard: Science and Technology

Benchmark A: Describe how technology affects human life.

Indicators:

Grade 3

2. Describe ways that using technology can have helpful and/or harmful results.

Grade 5

1. Investigate positive and negative impacts of human activity and technology on the environment.

SOCIAL STUDIES

Standard: Geography

Places and Regions

Indicator:

Grade 5

3. Describe and compare the landforms, climates, population, culture and economic characteristics of places and regions in North America.

GRADES 6-8

SCIENCE

Standard: Life Sciences

Benchmark B: Describe the characteristics of an organism in terms of a combination of inherited traits and recognize reproduction as a characteristic of living organism essential to the continuation of the species.

Indicators:

Grade 7

8. Investigate the great diversity among organisms.

Grade 8

3. Explain how variations in structures, behavior or physiology allow some organisms to enhance their reproductive success and survival in a particular environment.

Benchmark C: Explain how energy entering the ecosystems as sunlight supports the life of organisms through photosynthesis and the transfer of energy through the interactions of organisms and the environment.

Indicators:

Grade 6

8. Describe how organisms may interact with one another.

Grade 7

2. Investigate how organisms or populations may interact with one another through symbiotic relationships and how some species have become so adapted to each other that neither could survive without the other (e.g., predator-prey, parasitism, mutualism and commensalism).
3. Explain how the number of organisms an ecosystem can support depends on adequate biotic (living) resources (e.g., plants, animals) and abiotic (non-living) resources (e.g., light, water and soil).
6. Summarize the ways that natural occurrences and human activity affect the transfer of energy in Earth's ecosystems (e.g., fire, hurricanes, roads and oil spill).

Benchmark D

Explain how extinction of a species occurs when the environment changes and its adaptive characteristics are insufficient to allow survival (as seen in evidence of the fossil record).

Indicators

Grade 7

4. Investigate how overpopulation impacts an ecosystem.
5. Explain that some environmental changes occur slowly while others occur rapidly (e.g., forest and pond succession, fires and decomposition).

SOCIAL STUDIES

Standard: Geography

Places and Regions

Indicator:

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Grade 6

4. Identify and describe a variety of physical and human regions by analyzing maps, charts and graphs that show patterns of characteristics that define regions.

Human Environmental Interaction

Indicator:

Grade 6

7. Describe ways humans depend on and modify the environment and the positive and negative consequences of the modifications including:
 - a. Dam building;
 - b. Energy production/usage;
 - c. Agriculture;
 - d. Urban growth.
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GRADES 9-10

SCIENCE

Standard: Life Sciences

Benchmark F: Explain the structure and function of ecosystems and relate how ecosystems change over time.

Indicators:

Grade 10

15. Explain how living things interact with biotic and abiotic components of the environment (e.g., predation, competition, natural disasters and weather).
16. Relate how distribution and abundance of organisms and populations in ecosystems are limited by the ability of the ecosystems are limited by the ability of the ecosystem to recycle materials and the availability of matter, space and energy.

Benchmark G: Describe how human activities can impact the status of natural systems.

Indicators

Grade 10

18. Describe ways that human activities can deliberately or inadvertently alter the equilibrium in ecosystems. Explain how changes in technology/biotechnology can cause significant changes, either positive or negative, in environmental quality and carrying capacity.
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GRADES 11-12

SCIENCE

Standard: Life Sciences

Benchmark D: Relate how biotic and abiotic global changes have occurred in the past and will continue to do so in the future.

Indicators:

Grade 11

12. Recognize that ecosystems change when significant climate changes occur or when one or more new species appear as a result of immigration or speciation.

Benchmark E: Explain the interconnectedness of the components of a natural system.

Indicators:

Grade 11

6. Predict some possible impacts on an ecosystem with the introduction of a non-native species.

Standard: Science and Technology

Benchmark A: Predict how human choices today will determine the quality and quantity of life on Earth.

Indicators

Grade 11

2. Predict how decisions regarding the implementation of technologies involve the weighing of trade-offs between predicted positive and negative effects on the environment and/or humans.

SOCIAL STUDIES

Standard: Geography

Human Environmental Interaction

Indicator:

Grade 12

2. Describe the intended and unintended effects of human modifications to the physical environment and weigh the costs and benefits of alternative approaches to addressing environmental concerns (e.g., alternative sources of energy, mass transportation systems, or farmland and wetland preservation).