

Duke Field Trip / Correlation to Mississippi Science Framework Standards

Third Grade

1. Investigate the interactions of objects and organisms.
 - a. Identify major causes of endangerment and extinction.
 - b. Distinguish between harmful and helpful human actions on the environment.
 - c. Describe methods to prevent pollution of the environment.
2. Explore the components of living systems.
 - g. Understand the functions of the skeletal system and label major bones of the body.

Fourth Grade

1. Investigate the ability of living things to adapt to their environment.
 - a. Compare food chains and food webs.
 - b. Compare and contrast adaptations necessary for animals and plants to survive in different habitats.
2. Explore the interactions of components in living systems.
 - c. Group animals as invertebrates or vertebrates.
7. Discover how environmental concerns relate to the hydrosphere, lithosphere, and atmosphere.
 - b. Recognize the need for conservation of water resources.
 - c. Discuss the ways man can protect and manage organisms in the environment.

Fifth Grade

1. Identify and describe structures and functions in living systems.
 - b. Explore ecosystems and biomes.
2. Identify and describe reproduction and heredity of organisms.
 - b. Explore how traits are used to classify individual inheritance patterns.
3. Determine the factors that influence the regulation and behavior of organisms.
 - a. Identify and describe resources needed to grow, reproduce, maintain, and survive in a changing environment.
 - b. Investigate ways organisms adapt to their environment.
4. Examine the physical factors of populations as they relate to the formation of an ecosystem.
 - a. Identify, describe, and illustrate the roles among producers, consumers, and decomposers in a food web.
 - b. Investigate resources and other factors (living and nonliving) that promote and limit growth of populations in an ecosystem.
5. Explore the diversity and adaptations of organisms.
 - a. Classify organisms by their similarities.
 - b. Explore and explain biological adaptations in a particular environment.

Sixth Grade

1. Investigate structure and function in living systems.
 - b. Compare and contrast patterns and interactions of ecosystems and biomes.
2. Compare and classify the reproduction and heredity of organisms.
 - b. Determine how traits are used to classify individual inherited patterns.
3. Explore how changing resources will influence the regulation and behavior of organisms.
 - a. Evaluate the significance of resources required by organisms.
 - b. Investigate, compare/contrast ways organisms adapt to their environment.
4. Explore how different populations determine the formation of an ecosystem.
 - a. Compare/contrast the roles among producers, consumers, and decomposers in a food web.
 - b. Manipulate resources and other factors (living and nonliving) that promote and limit growth of populations in an ecosystem.

5. Explore the unique characteristics and adaptations of organisms.
 - a. Evaluate and chart the similarities of organisms.

Seventh Grade

1. Compare and contrast structure and function in living systems.
 - a. Compare and contrast plant and animal cells through investigations.
3. Determine how organisms co-exist in their environment.
 - a. Demonstrate that cells interact with their environment.
4. Explore how environmental factors of population influence the formation of an ecosystem.
 - c. Investigate and research environmental concerns of the land, water, and air.
 - d. Analyze the importance of biological diversity in communities and ecosystems.
5. Examine survival strategies of organisms over many generations.
 - a. Apply concepts of adaptation by analyzing how organisms are classified into groups and subgroups.
 - b. Research animal adaptations and behaviors as related to survival strategies.
 - c. Explain how natural and man-made pressures cause extinction.

Eight Grade

3. Determine the economic factors that influence the regulation and behavior of organisms.
 - b. Explain environmental degradation to include overpopulation, biodiversity, sea-level rise, and enhanced greenhouse effect.
4. Examine the physical factors of populations as they relate to the formation of ecosystems.
 - a. Analyze the adaptation of representative organisms to aquatic or terrestrial environments.
 - b. Evaluate the effects of urbanization on aquatic or terrestrial ecosystems.
 - c. Analyze how predation and food webs help structure communities.

Aquatic Science

4. Describe the biodiversity and interactions among aquatic life.
 - a. Analyze the adaptations of representative organisms to aquatic environments.
 - b. Analyze the relationship of organisms in food chains/webs within aquatic environments.
 - e. Compare and contrast characteristics of planktonic, nektonic, and benthic organisms.
 - f. Classify different aquatic organisms using dichotomous keys.
 - g. Compare and contrast aquatic producers, consumers, and decomposers.
5. Examine the unique properties of selected aquatic ecosystems.
 - a. Describe the abiotic and biotic characteristics of a barrier island, coral reef, and ocean.
 - c. Describe the abiotic and biotic characteristics of a bay, sound, estuary, and marsh.
6. Identify the impact of natural and human activity on aquatic ecosystems.
 - a. Identify various sources of pollution in aquatic environments.
 - b. Describe the effects of natural phenomena such as hurricanes, floods, or drought on aquatic habitats.
 - c. Describe a variety of methods of environmental management and stewardship.

Biology I

2. Investigate the biochemical basis of life.
 - a. Identify the characteristics of living things.
6. Investigate concepts of natural selection as they relate to diversity of life.
 - a. Analyze how organisms are classified into a hierarchy of groups and subgroups based on similarities and differences.
 - b. Identify characteristics of kingdoms including monerans, protists, fungi, plants, and animals.
 - c. Differentiate among major divisions of the plant and animal kingdoms (vascular/non-vascular; vertebrate/invertebrate).

7. Investigate the interdependence and interactions that occur within an ecosystem.
 - b. Interpret interactions among organisms in an ecosystem (producer/consumer/decomposer, predator/prey, symbiotic relationships and competitive relationships).
 - c. Compare variations, tolerances, and adaptations of plants and animals in major biomes.
 - d. Investigate and explain the transfer of energy in an ecosystem including food chains, food webs, and food pyramids.
 - e. Examine long and short-term changes to the environment as a result of natural events and human actions.

Biology II

5. Apply principles of classification to groups of organisms.
 - a. Use classification as a tool to organize diverse groups.
 - b. Compare classical (morphological) and modern (molecular) classification systems.
 - c. Conduct an in-depth study of classification within at least one of the kingdoms.
6. Examine the behavior of organisms.
 - a. Analyze the behavioral responses of an organism to internal and external stimuli.
 - c. Distinguish among types of learned, innate, and voluntary behavior.

Environmental Science

2. Explain the flow of matter and energy in ecosystems.
 - a. Investigate the role of biotic and abiotic factors within habitats, ecosystems, and biomes.
 - b. Identify indigenous plants and animals and their roles in different ecosystems.
 - c. Describe food chains and food webs within an ecosystem.
3. Describe the relationships and changes within an ecosystem.
 - c. Evaluate the effects of biotic and abiotic factors on local ecosystems and biomes.
 - e. Analyze and describe the effects of events such as fires, hurricanes, deforestation, mining, population growth, and industry on environments.
4. Investigate the major biomes of the world's ecosystems.
 - a. Describe the following biomes to include location, climate, adaptations, and diversity: aquatic environments.
5. Summarize the interrelationships among the resources and human activities in the local environment.
 - a. Identify sources, use, quality, and conservation of water.
 - b. Identify renewable and non-renewable resources.
 - d. Identify the effects of pollution (water, noise, air, etc.) on the ecosystem.

Microbiology

3. Demonstrate current methods used to culture and study microorganisms.
 - b. Demonstrate proper use of the microscope and slide preparation techniques.
7. Describe the classification, morphology, characteristics, and associated pathology of protists.
 - a. Describe the characteristics that distinguish protists from other microorganisms.
 - b. Describe the classification of protists.

Zoology

2. Review the general characteristics and phylogeny of animals.
 - b. Describe the characteristics of animals that distinguish them from other kingdoms.
 - c. Discuss adaptations of the major phyla that lead to their survival.
 - e. Review the classification scheme used in zoology.
5. Explain how behavior and symbiosis are related to the success of a group of animals.
 - b. Compare and contrast the degree of parental care given in groups of animals.