

Instructional Focus Document

Grade 8 Science

TITLE : Unit 08: Investigating Interdependence Among Living Systems

SUGGESTED DURATION : 18 days

UNIT OVERVIEW

Introduction

This unit bundles Student Expectations that address the interdependence among living systems and the environment and how human activities can affect these systems. Organisms in an ecosystem depend on and compete for biotic and abiotic factors. Availability of these factors affects the numbers of organisms and populations present in ecosystems. Organisms and traits in subsequent populations respond to short- and long-term environmental changes, including those caused by human activities.

Prior to this Unit

- Grade 3
 - [3.9A](#) – Observe and describe the physical characteristics of environments and how they support populations and communities within an ecosystem.
 - [3.9B](#) – Identify and describe the flow of energy in a food chain and predict how changes in a food chain affect the ecosystem such as removal of frogs from a pond or bees from a field.
 - [3.9C](#) – Describe environmental changes such as floods and droughts where some organisms thrive and others perish or move to new locations.
- Grade 4
 - [4.9A](#) – Investigate that most producers need sunlight, water, and carbon dioxide to make their own food, while consumers are dependent on other organisms for food.
 - [4.9B](#) – Describe the flow of energy through food webs, beginning with the Sun, and predict how changes in the ecosystem affect the food web.
- Grade 5
 - [5.9A](#) – Observe the way organisms live and survive in their ecosystem by interacting with the living and nonliving components.
 - [5.9B](#) – Describe the flow of energy within a food web, including the roles of the Sun, producers, consumers, and decomposers.
 - [5.9C](#) – Predict the effects of changes in ecosystems caused by living organisms, including humans, such as the overpopulation of grazers or the building of highways.
- Grade 6
 - [6.12E](#) – Describe biotic and abiotic parts of an ecosystem in which organisms interact.
 - [6.12F](#) – Diagram the levels of organization within an ecosystem, including organism, population, community, and ecosystem.
- Grade 7
 - [7.10A](#) – Observe and describe how different environments, including microhabitats in schoolyards and biomes, support different varieties of organisms.
 - [7.10B](#) – Describe how biodiversity contributes to the sustainability of an ecosystem.
 - [7.10C](#) – Observe, record, and describe the role of ecological succession such as in a microhabitat of a garden with weeds.
 - [7.11C](#) – Identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos

Instructional Focus Document

Grade 8 Science

TITLE : Unit 08: Investigating Interdependence Among Living Systems

SUGGESTED DURATION : 18 days

Medium Ground Finch (*Geospiza fortis*) or domestic animals and hybrid plants.

During this Unit

Students use scientific practices and a variety of tools to investigate how organisms and populations in an ecosystem depend on and may compete for biotic and abiotic factors. They explore how short-term and long-term environmental changes affect organisms and traits in subsequent populations. Students recognize human dependence on ocean systems and explain how human activities have modified these systems. They realize that not all modifications to systems may have negative impacts. Additionally, students communicate and discuss their observations and record and organize data in their notebooks. Furthermore, students analyze and interpret information to construct reasonable explanations based on evidence from their investigations and communicate valid conclusions (supported by collected data). Students continue to demonstrate safe practices as outlined in the Texas Education Agency-approved safety standards and consider environmentally appropriate and ethical practices with resources during investigations.

After this Unit

In high school Biology, students will continue the study of interdependence within living systems and the relationship of natural selection to adaptation and to the development of diversity within and among species.

Additional Notes

STAAR Note

The Grade 8 Science STAAR will directly assess Student Expectations in the following Reporting Categories:

- Reporting Category 4: Organisms and Environments
 - [8.11A](#) – Readiness Standard
 - [8.11B](#) – Readiness Standard
 - [8.11C](#) – Supporting Standard

Instructional Focus Document

Grade 8 Science

TITLE : Unit 08: Investigating Interdependence Among Living Systems

SUGGESTED DURATION : 18 days

Research

“By the end of the 8th grade students should know that:

- In all environments, organisms with similar needs may compete with one another for limited resources, including food, space, water, air, and shelter. 5D/M1a*
- The world contains a wide diversity of physical conditions, which creates a wide variety of environments: freshwater, marine, forest, desert, grassland, mountain, and others. In any particular environment, the growth and survival of organisms depend on the physical conditions. 5D/M1b*
- Interactions between organisms may be for nourishment, reproduction, or protection and may benefit one of the organisms or both of them. Some species have become so dependent on each other that neither could survive without the other. 5D/M2*
- One organism may scavenge or decompose another. 5D/M2b”

American Association for the Advancement of Science. (2009). *Benchmarks on-line*. Retrieved from <http://www.project2061.org/publications/bsl/online/index.php?chapter=5#D3>.

OVERARCHING UNDERSTANDINGS AND QUESTIONS

SAMPLE