

5th grade Life Science Structure of Living Things

Teacher Background Information – for teacher content knowledge only, not student learning goals

Animals and plants have a great variety of body plans, with different overall structures and arrangements of internal parts to perform the basic operations of making or finding food, deriving energy or materials from it, synthesizing new materials, and reproducing. Some of these characteristics will give individuals an advantage over others in surviving to maturity and reproducing. Populations can adapt their physical structures, physiology, and behaviors over time but individuals do not generally change during their lifetime. All living things are composed of cells, the fundamental units of life. Most organisms are single cells; other organisms, including humans, are multi-cellular.

AAAS Benchmarks/National and Science Education Standards

- For any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all. 5D/E1
- A great variety of kinds of living things can be sorted into groups in many ways. 5E/1
- Individuals of the same kind differ in their characteristics, and sometimes these differences give individuals advantages in surviving and reproducing. 5F/E1
- Some organisms are made of a collection of similar cells that benefit from cooperating. Some organisms' cells vary greatly in appearance and perform very different roles in the organism.
- Microscopes make it possible to see that living things are made mostly of cells

Big Idea

We understand how various organisms survive by comparing the structure and function of living things.

Essential Question

How do living things use their unique characteristics as an advantage to survive?

Instructional Implications

The focus in upper elementary should be on how the structures and behaviors animals are born with help them to survive in a particular environment. Students should have opportunities to investigate local plants and animals to notice these adaptations. Why does a great blue heron have long legs? Why do birds have different types of beaks? Why do so many plants have large leaves in S.E. Alaska?

In third grade (Health Curriculum) students learn the structure and function of human body systems. In fifth grade the focus is on comparing our own external and internal features of human body systems (Health Curriculum) with those of other animals.

Upper elementary students are just beginning to learn about cells as the basic unit of structure. Experiences include looking at cells in tissues of familiar plants and animals as well as single-celled organisms. Items on the list should be limited to those that are familiar to students.

Local Connections

Audubon – Mary Lou King
Discovery Southeast
Kristine Romanoff (Fish and Game)
Bob Armstrong
Southeast Alaska Museum of Natural
History

Materials/Resources

- JSD Kit: Birds
- STC: Animal Studies
- Bird Books from Audubon
- Mendenhall Wetlands
- Study Skins from ADF&G

Assessments

Uncovering Student Ideas in Science
Volume 2; Probe #18: **Whales and Shrew**
Volume 1; Probe #20: **Function of Living Things**
Volume 2; Probe #19: **Habitat Change**
Volume 4; Probe #15: Adaptation

Related Scientist or Career Path

Who was Charles Darwin?
by Deborah Hopkinson

Alaska GLE's

The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by

[5] **SC2.1** identifying and sorting animals into groups using basic external and internal features

[5] **SC2.2** explaining how external features and internal systems (i.e., respiratory, excretory, skeletal, circulatory, and digestive) of plants and animals may help them grow, survive, and reproduce

[5] **SC2.3** recognizing that organisms are composed of cells

[5] **SD4.3** recognizing and using appropriate instruments of magnification

Student Difficulties and Misconceptions

Elementary students tend to confuse non-inherited adaptations acquired during an individual's lifetime, such as learning how to ride a bike, with adaptive features that are inherited in a population, such as number of limbs.

Most upper-elementary students list only vertebrates as animals. They tend not to use hierarchical classification; thus, they may have difficulty understanding that an organism can be classified as both a bird and an animal. Furthermore, students often do not recognize that trees, vegetables, and grass are all plants.