# The Diversity of Living Things

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The Diversity of Living Things

Unit Overview

This unit is divided into four components. The topics in each component, as well as the components themselves, are best covered sequentially, however, each component may be used alone. At the beginning of each component is a brief overview of the component, the learning expectations for the activities, and suggestions for implementing the activities. The implementation suggestions are presented as ideas only. It is not intended that any or all need be implemented to use the activity pages. At the end of each component is a two-page quiz. Many of the activities can be integrated into other areas of the curriculum.

<table>
<thead>
<tr>
<th>Component</th>
<th>This component examines the concepts related to...</th>
<th>The main investigative activities will require the students to...</th>
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</table>
| Classification               | • classification as a method of making order of things  
• the five kingdoms of living things  
(i.e., protist, moneran, fungi, plant and animal kingdoms)  
• the scientific classification of living things  
(i.e., phylum, class, order, family, genus, species) | • understand and use classification keys  
• complete a tree diagram  
• understand and interpret the scientific method of classification  
• interpret and construct graphs  
• use charts and tables |
| Processes of Life            | • the characteristics (life processes) common to all living things  
• the adaptation of animals to their environment  
• the effects of change on species of living things  
• the fossil record  
• heredity | • understand that metabolism, growth, movement, reproduction, response and adaptation are processes common to all living things  
• make a family tree and trace heredity factors in his/her family |
| Under the Microscope         | • microorganisms and the ways these organisms meet their basic needs  
• the characteristics and life processes of single-celled organisms such as the paramecium and amoeba  
• microscopy | • investigate different types of cells using a microscope  
• draw and label diagrams  
• investigate paramecium and/or amoeba cells using a microscope  
• investigate life in pond water  
• prepare slides |
| The Animal Kingdom           | • the characteristics of arthropods  
• the characteristics of vertebrates and their classification  
• the characteristics of invertebrates and their classification | • compare the characteristics of vertebrates and invertebrates using charts, tables and reference materials  
• research and prepare a report about vertebrates and invertebrates  
• compare arthropods using tables and reference materials |
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List of Vocabulary

Classification

Why Classify: Aristotle, biologist, characteristics, classify, compare, European, explorer, habitat, italicized, Latin, Linnaeus, order, reproduction, scientific, similar, species, specimen, structure, system, taxonomy

The Five Kingdoms: absorb, algae, amoeba, bacteria, bacterium, cell, chitin, extinct, fungi, kingdom, microscope, moneran, mould, nucleus, nutrients, organism, parasite, protist, protozoa, yeast

The Processes of Life

Staying Alive: adaptation, asexual, autotroph, circulate, clone, digestion, excretion, function, heterotroph, ingestion, intestine, irritability, locomotion, metabolism, mitosis, molecule, process, respiration, response, sexual

Heredity: ancestor, blueprint, breed, clone, chromosome, conceived, descendent, fertile, generation, hybrid, offspring

Adapting to Change: adapt, embedded, evolution, fossil, gradually, paleontologist, preserved

Under the Microscope

The Cell: cellulose, chloroplast, chlorophyll, complex, cytoplasm, elimination, heredity, membrane, microorganism, microscope, muscle, multicellular, nourishment, organ, organelle, pigment, substance, tissue, unicellular, vacuole

The Kingdom of Protist: abundant, cilia, contractile, vacuole, flexible, micron, projection, pseudopodia, visible

The Animal Kingdom

Backbone or No Backbone: advanced, bilateral, cartilage, chordate, complex, embryo, enclosed, environment, gill, gristle, invertebrate, lengthwise, notochord, vertebrate
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Living Things Crossword Puzzle

Across
1. the phylum insects belong to
5. a type of fungus
6. amoebas and parameciums
8. substance found in insects and cell walls of fungi
10. loose top layer of the earth
12. cyanobacteria is one
14. class of vertebrates
16. segmented worm
17. plural of phylum
19. a centipede is one

Down
1. one of the "Five Kingdoms"
2. uses pseudopods for movement
3. some of nature's recyclers
4. a sample
7. a type of reproduction
9. a group of arthropods
11. ancient language
13. means heat
15. simplest classification of an organism
18. next lower classification after class
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Classification – Information Card 1

Why Classify?

Before you read this page, study the pictures. How are they different? Are the objects alike in any way?

Did you find any ways in which the objects are alike? You probably decided that the objects are all very different and would have difficulty making a list of the ways they are alike. Could you use these things to make a group of similar objects?

If instead of one book, one car, one shoe and one ball, there were several of each, the items could be separated into groups. The items could be sorted into groups in which all the items are alike or similar.

The books could be placed in one group, the shoes in another and the cards and balls could also be placed in their own groups. Looking at each group, however, you might decide that the items in each group could be made into smaller groups. The cars could be sorted into two-door cars and four-door cars. The books could be divided into soft covers and hard covers. The balls could be sorted into big balls and little balls and the shoes could be sorted into men’s and women’s shoes. These groups could then be sorted into smaller groups. The two-door cars and the four-door cars could be sorted into sizes, colors and models, etc. The women’s and men’s shoes could be sorted according to size, color or height of heel.

You can see that sorting large numbers of things into groups helps to put order into our lives. We have so many things and so much knowledge to keep track of. It makes sense to keep large numbers of things in some kind of order. We can find things more easily when there is order.

When scientists sort and group living things, they call it classification. They classify living things into groups that are alike in some way. Scientists separate animals because of their differences and put them into groups because of their likenesses or similar characteristics. Classification is the sorting out of likenesses.

Scientists believe there are more than twenty million different types of plants and animals living on the earth. Did you know that scientists have discovered and named over 300 000 different kinds of beetles? Today about 1 400 000 species of animals and over 2700 000 kinds of plants have been discovered and named. Each year, many new animals are discovered and added to the animal kingdom. Each new species has to be classified and given a scientific name. Animals are classified and given scientific names in order to keep track of them and make them easy to identify.