

Examples of Evolutionary Concepts in the Proposed Biology Curriculum

You can read the complete draft of the curriculum and find more examples at www.gadoe.org.

- SB2. Students will understand how biological traits are passed on to successive generations.**
- g. Students will describe the relationships between changes in DNA and appearances of new traits including:**
 - **Mutations**
 - **Environmental Influence**

Benchmark

Ecosystems can be reasonably stable over thousands of years. As any population of organisms grows, it is held in check by one or more environmental factors: depletion of food or nesting sites, increased loss to increased numbers of predators, or parasites. If a disaster such as flood or fire occurs, the damaged ecosystem is likely to recover in stages that eventually result in a system similar to the original one. Like many complex systems, ecosystems tend to have cyclic fluctuations around a state of rough equilibrium. **In the long run, however, ecosystems always change when climate changes or when one or more new species appear as a result of migration or local changes over time.**

- SB3. Students will be aware of the dependence of all organisms on one another and their environments.**
- d. Students will evaluate the survival of organisms and suitable adaptive responses to environmental pressures.**

Language students should use: Predator-prey, symbiosis, competition, ecosystem, carbon cycle, nitrogen cycle, oxygen cycle, population, diversity, energy pyramid, consumers, producers, limiting factor, competition, decomposers, food chain, biotic, abiotic, community, variable, evidence, inference, qualitative, quantitative.

Benchmark

There are historical scientific models of change, such as those of **Lamarck, Malthus, Wallace, Buffon, and Darwin**. Evidence from fossil, molecular biology, and anatomical structures suggest relationships among organisms. As climatic conditions change, organisms that do not adapt die off; those organisms suitably adapted survive. Over time, the proportion of individuals that have advantageous characteristics will increase. Heritable characteristics can be observed at molecular and whole-organism levels in structure, chemistry, and behavior. Natural selection leads to organisms that are well suited for survival in particular environments. Chance alone can result in the persistence of some heritable characteristics having no survival or reproductive advantage for the organism. When an environment changes, the survival value of some inherited characteristics may change.

- SB7. Students will be familiar w/the development of living organisms and their changes over time, including inherited characteristics that lead to survival of organisms and their successive generations.**
- a. Students will relate the nature of science to the progression of historical scientific models of change over time.**
 - b. Students will relate reproductive isolation to speciation.**
 - c. Students will compare selective breeding to natural selection and relate the differences to agricultural practices.**

Language students should use: fossil record, geologic record, molecular evidence, homologous, vestigial structures, mutation, recombination, hierarchy, natural selection, adaptation, evidence, speciation, biodiversity.

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