

Supplemental Materials for Standard 4 – Life Science

The materials on the following pages are supplemental to the core. Each objective in Standard 4 has a sheet of information vital to student learning of science and the scientific processes inherent in the core. They are intended to give guidance to the teacher on the following topics:

- The Big Ideas go beyond discrete facts or skills to focus on larger concepts, principles, or processes (Grant Wiggins and Jay McTighe, *Understanding by Design*, 1998, p. 10). Big Ideas are cumulative, meaning that students revisit ideas that are previously developed, but in more and more complex ways at each successive grade level. This allows teachers to anchor learning at the beginning of the grade level to “concepts and reasoning abilities that young children bring with them” (NRC, 2008).
- Indicators provide both Measureable Outcomes framed by Standard 1 objectives and Big Ideas and measurable indicators of student content knowledge and scientific processing for teachers.
- Science language is the language that students should use when conversing on each objective within the standard. Students may not be expected to spell and read each and every term.
- Guidance for combining Content and Process are suggested strategies teachers may use to teach the core. One-letter abbreviations (L, M, A, S) are included to show how the science learning may be integrated into Language Arts, Mathematics, Arts, and Social Studies concepts. Science content should never be taught as content alone, but should be taught through the process of scientific practice, embedding content into inquiry, hands-on learning, experimentation, interpretation of evidence, and communication of findings. “When students engage in science as practice, they develop knowledge and explanations of the natural world as they generate and interpret evidence.” (*Ready, Set, Science: Putting Research to Work in K-8 Science Classrooms*, pg. 34)
- According to the National Science Education Standards, it is important to help students “establish connections between the natural and designed worlds.” Guidance for combining Science, Technology, and Society provide support to teachers in this area.
- A key for interpreting the abbreviations used in the supplementary materials is found at the bottom of the page.

Important Note: A guide for reading the supplementary materials is found in Appendix B.

| Subject | Grade | Standard | Objective |
|--|--------------------------------------|--|--|
| Science | Second | 4. Life Science | 1. Relate how external features affect an animal's ability to survive in its environment. |
| Content Big Ideas | | Standard 1 Big Ideas – Intended Learning Outcomes | Science, Technology, and Society Big Ideas |
| <p>(CT) Different plants and animals have external features that help them thrive in different kinds of places.</p> <p>(CT) Living things are found everywhere in the world. There are different kinds of living things in different places.</p> <p>(CT) Some kinds of living things that once lived on earth have completely disappeared, although they were something like others that are alive today.</p> | | <p>(PoS) When science investigation is done the way it was done before, we expect to get a very similar result.</p> <p>(NoS) Sometimes people aren't sure what will happen because they don't know everything that might have an effect.</p> <p>(CoS) When doing science activities, it is often helpful to work with a team and to share findings with others. All team members should reach their own individual conclusions, however, about what the findings mean.</p> | <p>(T) People use appropriate tools and models to investigate the world.</p> <p>(A) People working alone or in groups often invent new ways to solve problems and get work done.</p> <p>(S) The tools and ways of doing things that people have invented affect all aspects of life.</p> |
| Indicators: Measureable Outcomes framed by Standard 1 Big Ideas | | | |
| <p>Indicator 1. Compare and contrast the characteristics of living things in different habitats.</p> <p>Indicator 2. Develop, communicate, and justify an explanation as to why a habitat is or is not suitable for a specific organism.</p> <p>Indicator 3. Create possible explanations as to why some organisms no longer exist, but similar organisms are still alive today.</p> | | | |
| <p>Science language students should be able to use correctly: characteristics, environments, habitats, justify, compare, contrast, extinct, desert, ocean, rainforest, tundra.</p> | | | |
| Guidance for Combining Content and Process | | | Guidance for Combining Science, Technology, and Society |
| <p>Suggested Strategies</p> <p>Using cooperative learning structures, students can explore the characteristics of living things in various environments (i.e. desert, rainforest, tundra, oceans) and communicate their findings through charts, posters, journals, books, etc. (L) (M) (FA) (SS) (NoS) (CoS)</p> <p>Students can classify and sort plants and animals into habitats and justify their reasoning through classroom discussion. Suggested questions for discussion: Are any similar plant or animal structures seen in different environments? Which plant or animal has the most unique structures? (PoS) (CoS) (NoS)</p> <p>Using a variety of informational texts on extinct animals (e.g., mammoth, sabertooth tiger, dodo bird, megatooth shark), students can compare and contrast these extinct animals with similar animals that are alive today and share plausible explanations for their extinctions through charts, journals, discussions, etc. (L) (FA) (M) (PoS) (CoS)</p> | | | <p>(T) Teachers can use a variety of media including the internet to find pictures of plants and animals in their environment.</p> <p>(A) Students can explain how living things depend on the health of their habitats, which need to be protected.</p> <p>(A) Students can research endangered species.</p> <p>(S) Students can discuss adaptations that plants and animals make in order to live in their specific environment.</p> |
| Life Sciences | Curriculum Connections | | Processes, Communication and Nature of Science |
| (CT) Changes over time (N) Nature of Living Things | (M) Mathematics (L) Language Arts | (FA) Fine Arts (SS) Social Studies | (PoS) Processes of science (CoS) Communication of science (NoS) Nature of science |
| | | | Applications: Science, Technology, and Society |
| | | | (T) Tools of science (A) Applications of science (S) Implications of science for people |