

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 |
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| Science | K | 4. Life Science | 2. Describe the parts of living things. |
| Content Big Ideas | | Standard 1 Big Ideas – Intended Learning Outcomes | Science, Technology, and Society Big Ideas |
| (N) Most things are made of parts. (CT) Change is something that happens to many things. | | (PoS) People can often learn about things around them by just observing those things carefully (raise questions about the world around them, be willing to seek answers to some of those questions by making careful observations). (NoS) People are more likely to believe your ideas if you can give reasons for them (ask “How do you know?” in appropriate situations and attempt reasonable answers when others ask them the same questions). (CoS) When doing science activities, it is often helpful to work with a team and to share findings with others. | (T) People use appropriate tools and models to investigate the world. (A) People working alone or in groups often invent new ways to solve problems and get work done. (S) The tools and ways of doing things that people have invented affect all aspects of life. |
| Indicators: Measureable Outcomes framed by Standard 1 Big Ideas | | | |
| <p>Indicator 1. Differentiate between the five senses and related body parts.</p> <p>Indicator 2. Identify major parts of plants, e.g., roots, stem, leaf, flower, trunk, branches.</p> <p>Indicator 3. Compare the parts of different animals, e.g., skin, fur, feathers, scales; hand, wing, flipper, fin.</p> | | | |
| Science language students should be able to use correctly: living vs. non-living things, senses, sight, taste, touch, smell, sound, bitter, sweet, salty. | | | |
| Guidance for Combining Content and Process | | | Guidance for Combining Science, Technology, and Society |
| <p>Suggested Strategies</p> <p>Have students identify the major parts of plants. Ask them to investigate using the following questions (and others that you or your students choose): (PoS) (CoS)</p> <ul style="list-style-type: none"> How many different types of plants can we find in the schoolyard? What do they have in common? What is different? Do all plants have similar parts? How might these differences help/hurt the plant in its environment? <p>Have students take measurements as part of their observations of different plants and their parts(M), and then ask them to discuss why one plant may have larger leaves than another.(L) (PoS) (CoS) (NoS)</p> <p>Have students compare/contrast the differences and similarities between animal structures. Ask them to investigate using the following questions (and others that you or your students choose): (FA) (PoS) (CoS) (NoS)</p> <ul style="list-style-type: none"> Do all animals look the same? What are the major differences between specific types of animals?(ex. Compare a duck to a snake to a dog) How could you use your five senses to help identify the differences/similarities between animals? What body parts do all animals have? How do animals use their body parts to make observations about their environment? (ex. Snakes use their tongues to ‘taste’ the air, bats use their hearing to ‘see’ where they are going) | | | <p>(A) By investigating parts of living things scientists and doctors have learned how to repair or replace some of the parts.</p> <p>(S) Improved living.</p> <p>(T) Discuss the use of technology in the process of science by pointing out the various tools used while learning this objective. Examples of tools are a magnifying glass, video, camera, and computers.</p> <p>(S) Show that society has benefited from the use of science in studying living things. By understanding the needs of living things we have improved living and cutting edge medical applications.</p> |
| <p>Life Sciences</p> <p>(CT) Changes over time</p> <p>(N) Nature of Living Things</p> | <p>Curriculum Connections</p> <p>(M) Mathematics</p> <p>(L) Language Arts</p> | <p>Processes, Communication and Nature of Science</p> <p>(FA) Fine Arts</p> <p>(SS) Social Studies</p> | <p>Applications: Science, Technology, and Society</p> <p>(T) Tools of science</p> <p>(A) Applications of science</p> <p>(S) Implications of science for people</p> |