

Science - 1

Course #: E3102, E3109

Course Description:

The performance expectations in first grade help students formulate answers to questions such as: “What happens when materials vibrate? What happens when there is no light? What are some ways plants and animals meet their needs so that they can survive and grow? How are parents and their children similar and different? What objects are in the sky and how do they seem to move?” Students are expected to develop understanding of the relationship between sound and vibrating materials as well as between the availability of light and ability to see objects. The idea that light travels from place to place can be understood by students at this level through determining the effect of placing objects made with different materials in the path of a beam of light. Students are also expected to develop understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs as well as how behaviors of parents and offspring help the offspring survive. The understanding is developed that young plants and animals are like, but not exactly the same as, their parents. Students are able to observe, describe, and predict some patterns of the movement of objects in the sky. The crosscutting concepts of patterns; cause and effect; structure and function; and influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. In the first grade performance expectations, students are expected to demonstrate grade-appropriate proficiency in planning and carrying out investigations, analyzing and interpreting data, constructing explanations and designing solutions, and obtaining, evaluating, and communicating information. Students are expected to use these practices to demonstrate understanding of the core ideas.

Course Proficiencies:

The following is a list of skills and concepts students will be proficient in upon successful completion of this course. These proficiencies form the basis of assessment of each student's achievement. Students who demonstrate understanding can:

1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. *(1-PS4-1)*
2. Make observations to construct an evidence-based account that objects can be seen only when illuminated. *(1-PS4-2)*
3. Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light. *(1-PS4-3)*
4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. *(1-PS4-4)*

5. Use observations of the sun, moon, and stars to describe patterns that can be predicted. *(1-ESS1-1)*
6. Make observations at different times of year to relate the amount of daylight to the time of year. *(1-ESS1-2)*
7. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. *(K-2-ETS1-1)*
8. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. *(K-2-ETS1-2)*
9. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs. *(K-2-ETS1-3)*
10. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. *(1-LS1-1)*
11. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. *(1-LS1-2)*
12. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. *(1-LS3-1)*
13. Select and use technology applications effectively and productively to gather, evaluate and use the information to explore a problem, develop a solution, and communicate ideas. *(8.1.2.A.2, 8.1.2.A.4, 8.1.2.E.1, 8.1.2.F.1)*
14. Develop an understanding of the nature and impact of technology, engineering, design, and computational thinking on the individual, global society, and the environment. *(8.2.2.A.4, 8.2.2.B.2, 8.2.2.C.1-4, 8.2.2.D.1, 8.2.2.E.1)*
15. Relate how the skills and knowledge acquired lay the foundation for future academic and career success. *(9.2.4.A.3, 9.2.4.A.4)*

Assessment:

In grade 1, student progress in science is measured through teacher observation of students as they work with science materials, work with their peers and independently, and by the questions they ask and answer. Students will also maintain a science journal to record their observations, analyze data and draw conclusions. Students' progress will also be assessed through a summative assessment at the end of each investigation.

Board Adopted Materials:

Teaching Resources and Related Student Materials:

Title: FOSS (Full Options Science System) Next Generation

Modules:

1. Plants and Animals
2. Air and Weather
3. Sound and Light

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