Science - 3

Course #: E3302, E3309

Course Description:

The performance expectations in third grade help students formulate answers to questions such as: “What is typical weather in different parts of the world and during different times of the year? How can the impact of weather-related hazards be reduced? How do organisms vary in their traits? How are plants, animals, and environments of the past similar or different from current plants, animals, and environments? What happens to organisms when their environment changes? How do equal and unequal forces on an object affect the object? How can magnets be used?” Students are able to organize and use data to describe typical weather conditions expected during a particular season. By applying their understanding of weather-related hazards, students are able to make a claim about the merit of a design solution that reduces the impacts of such hazards. Students are expected to develop an understanding of the similarities and differences of organisms’ life cycles. An understanding that organisms have different inherited traits, and that the environment can also affect the traits that an organism develops, is acquired by students at this level. In addition, students are able to construct an explanation using evidence for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. Students are expected to develop an understanding of types of organisms that lived long ago and also about the nature of their environments. Third graders are expected to develop an understanding of the idea that when the environment changes some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die. Students are able to determine the effects of balanced and unbalanced forces on the motion of an object and the cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. They are then able to apply their understanding of magnetic interactions to define a simple design problem that can be solved with magnets. The crosscutting concepts of patterns; cause and effect; scale, proportion, and quantity; systems and system models; interdependence of science, engineering, and technology; 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 third grade performance expectations, students are expected to demonstrate grade-appropriate proficiency in asking questions and defining problems; developing and using models, planning and carrying out investigations, analyzing and interpreting data, constructing explanations and designing solutions, engaging in argument from evidence, and obtaining, evaluating, and communicating information. Students are expected to use these practices to demonstrate understanding of the core ideas.

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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 an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. ***(3-PS2-1)***
2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. ***(3-PS2-2)***
3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. ***(3-PS2-3)***
4. Define a simple design problem that can be solved by applying scientific ideas about magnets. ***(3-PS2-4)***
5. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. ***(3-LS1-1)***
6. Construct an argument that some animals form groups that help members survive. ***(3-LS2-1)***
7. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. ***(3-LS3-1)***
8. Use evidence to support the explanation that traits can be influenced by the environment. ***(3-LS3-2)***
9. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. ***(3-LS4-1)***
10. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. ***(3-LS4-2)***
11. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. ***(3-LS4-3)***
12. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. ***(3-LS4-4)***
13. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. ***(3-ESS2-1)***
14. Obtain and combine information to describe climates in different regions of the world. ***(3-ESS2-2)***

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15. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. ***(3ESS3-1)***
16. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. ***(3-5 - ETS1-1)***
17. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. ***(3-5 - ETS1-2)***
18. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. ***(3-5 - ETS1-3)***
19. 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. ***(8.1.5.A.1, 8.1.5.A.2, 8.1.5.A.3, 8.1.5.A.4, 8.1.5.E.1, 8.1.5.F.1)***
20. Develop an understanding of the nature and impact of technology, engineering, design, and computational thinking on the individual, global society, and the environment. ***(8.2.5.A.4, 8.2.5.A.5, 8.2.5.B.4, 8.2.5.C.4, 8.2.5.D.1, 8.2.5.D.7)***
21. 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 3, 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 benchmarks and/or 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. Matter and Motion
2. Water and Climate
3. Structures of Life

Author: The Lawrence Hall of Science, University of California, Berkeley
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