SCHOOL DISTRICT OF THE CHATHAMS
CURRICULUM PROFILE

Science
Grade 3
Full Year

Course Overview

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 an understanding of the core ideas.

New Jersey Student Learning Standards
The New Jersey Student Learning Standards (NJSLS) can be located at www.nj.gov/education/cccs/2020/.

Physical Science
3-PS2-1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
3-PS2-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.
3-PS2-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets.*

Life Science

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
3-LS2-1. Construct an argument that some animals form groups that help members survive.
3-LS3-1. 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-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment.
3-LS4-1. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
3-LS4-2. 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-LS4-3. 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-LS4-4. 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.*

Earth and Space Sciences
3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
3-ESS2-2. Obtain and combine information to describe climates in different regions of the world.
3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.*

Engineering, Technology & Applications of Science
3-5-ETS1-2. 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-ETS1-3. 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.

Technology Standards
9.4.5.IML.2: Create a visual representation to organize information about a problem or issue (e.g., 4.MD.B.4, 8.1.5.DA.3).
9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data
9.4.5.TL.2: Sort and filter data in a spreadsheet to analyze findings.
9.4.5.TL.3: Format a document using a word processing application to enhance text, change page formatting, and include appropriate images, graphics, or symbols.

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9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.

Career Ready Practices
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social, and economic impacts of decisions.
CRP7. Employ valid and reliable research strategies.
CRP11. Use technology to enhance productivity.

Interdisciplinary Connections
English Language Arts:
Reading:

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- RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.
- RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to
- time, sequence, and cause/effect.
- RI.3.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).
- RI.3.8 Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).
- RI.3.9 Compare and contrast the most important points and key details presented in two texts on the same topic.

Writing:

- W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons.
- W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- W.3.7 Conduct short research projects that build knowledge about a topic.
- W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
- W.3.9 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

Speaking and Listening:

- SL.3.3 Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
- SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
- SL.3.5 Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

<u>Mathematics:</u>

- 3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve
- one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent
- the problem.
- 3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.
- 3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Units of Study

Unit 1: Weather and Climate *(~20 days)*

- How can we predict the kind of weather that we will see in the spring, summer, autumn, or winter?
- How can climates in different regions of the world be described?
- How can we protect people from natural hazards such as flooding, fast wind, or lightning?

Unit 2: Relationships in Ecosystems *(~20 days)*

- In a particular habitat, why do some organisms survive well, some survive less well, and some not survive at all?
- What do fossils tell us about the organisms and the environments in which they lived?
- What happens to the plants and animals when the environment changes?

Unit 3: Inheritance and Variation of Traits *(~20 days)*

- What kinds of traits are passed on from parent to offspring?
- What environmental factors might influence the traits of a specific organism?
- How can we identify patterns in life cycles of various organisms?
- How do the variations in characteristics among individuals of the same species provide an advantage?

Unit 4: Forces and Interactions *(~20 days)*

- Can we use patterns to predict the future?
- How do scientists play soccer?
- What are the relationships between electrical and magnetic forces?
- How can we use our understanding about magnets to solve problems?

Learning Objectives/Discipline Standards of Practice

Learning Objectives:

Physical Science

- Objects in contact exert forces on each other.
- Each force that acts on a particular object has both strength and a direction.
- An object at rest typically has multiple forces acting on it, but it does not move.
- The patterns of an object's motion in various situations can be observed and measured.
- The sizes of the forces in each situation depend on the properties of the objects and their distances apart.
- For forces between two magnets, the size of the force depends on their orientation relative to each other.

Life Science

- Being part of a group helps animals obtain food, defend themselves, and cope with changes.
- Animal groups may serve different functions and vary dramatically in size.
- For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.
- Organisms and their habitat make up a system in which the parts depend on each other.
- Reproduction is essential to the continued existence of every kind of organism.
- Plants and animals have unique and diverse life cycles.
- Many characteristics of organisms are inherited from their parents.
- Many characteristics involve both inheritance and environment

Earth Science

- The typical weather conditions expected during a particular season
- A variety of natural hazards result from natural processes (e.g., flooding, fast wind, or lightning).

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- Problems caused by the weather related hazard
- Engineers improve technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones).
- Climates in different regions of the world (e.g., equatorial, polar, coastal, mid-continental).
- That climate can vary over years in different regions of the world.

<u>Discipline Standards of Practice:</u>
Science and Engineering Practices
- Plan and Carryout and Investigation
- Asking Questions and Defining Problems
- Analyzing and Interpreting Data
- Constructing Explanations and Designing Solutions
- Obtaining, Evaluating, and Communicating Information
- Engaging In Argument From Evidence
- Developing and Using Models

Crosscutting Concepts
- Patterns
- Cause and Effect
- Interdependence of Science, Engineering, and Technology
- Influence of Engineering, Technology, and Science on Society and the Natural World
- System and System Models
- Scale, Proportion and Quantity
- Scientific Knowledge Assumes an Order and Consistency in Natural Systems
- Influence of Engineering, Technology, and Science on Society and the Natural World
- Connections to Nature of Science
- Science is a Human Endeavor

Instructional Resources and Materials
Whole class resources have been identified with an asterisk.

Resources
- Picture Perfect Science by Karen Ansberry and Emily Morgan
- More Picture Perfect Science by Karen Ansberry and Emily Morgan
- Even More Picture Perfect Science by Karen Ansberry and Emily Morgan
- Generation Genius

Materials
- Science Journal

Assessment Strategies
Assessment is designed to measure a student's mastery of a course standard and learning objective. Assessment can be used for both instructional purposes (formative assessment) and for evaluative purposes (summative assessment).

The following is a general list of the many forms assessment may take in learning.
- Science Journals
- Investigations

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- Class discussions