

SCIENCE GRADE 1

PURPOSE

The first grade science program will focus on using a broad range of science skills in understanding the natural world. The grade one curriculum integrates all the natural sciences so that the students can appreciate the ideas that unify the science and make the connections between these ideas and concepts.

Student will experience the richness and excitement of scientific discovery of the natural world through investigating phenomena and applying scientific concepts, skills and processes to everyday experiences. The aim of this program is to help students develop scientific dispositions and habits of mind including curiosity, demand for verification, respect for logic and rational thinking, attention to accuracy, precision and patience.

Making detailed observations, drawing conclusions and recognizing unusual or unexpected data are skills needed to be able to use and validate information. The science curriculum heightens critical thinking skills by providing opportunities for students to generalize, evaluate and apply information, and solve problems by asking appropriate questions. Utilizing scientific methodology is strongly reinforced.

I. Student Outcomes

A. Scientific Process, 5.1, 5.2, 5.3, 5.4

Students will:

1. Comprehend that most systems are components of larger systems. 5.1, A, B
2. Understand how components of a system influence and interact with one another. 5.1 B
3. Be able to communicate experimental findings using words, charts, graphs, pictures and diagrams. 5.3 D
4. Be able to collect and organize data to support the results of an experiment. 5.3 D
5. Determine that scientific theories emerge over time and depend on the contributions of many people. 5.2 A, B
6. Identify how people apply scientific knowledge using tools, technology, and other devices to solve problems. 5. 4 A, B, C
7. Grasp how science uses mathematics as a tool to determine and support conclusions. 5.3 A, B, C, D
8. Recognize that conducting science activities requires an awareness of potential hazards and the need for safe practices. 5.1 C
9. Understand and practice safety procedures for continuing science investigations. 5.1 C

B. Life Science 5.5, 5.10

Students will:

1. Determine the needs and characteristics of basic organisms. 5.5 A, B
2. Describe lifecycles of organisms. 5.5 A, B, C
3. Understand organisms and their environments. 5.5 A, B ,C 5.10 A

C. Physical Science 5.6, 5.7

Students will:

1. Describe and sort objects according to the materials from which they are made and their physical properties. 5.6 A
2. Recognize that matter can exist as a solid, liquid, or gas and can be transformed from one state to another by heating or cooling. 5.6 A
3. Demonstrate that motion of an object can vary in speed and direction. 5.7 A
4. Demonstrate that the position and motion of an object can be changed by pushing or pulling and that the changed is related to the strength of the push or pull. 5.7 A
5. Recognize that some forces are invisible and can act at a distance. Investigate sources of light, heat, electricity and magnetism. 5.7 A, B

D. Earth Science 5.8

Students will:

1. Recognize and demonstrate the use of different kinds of maps. 5.8 D
2. Investigate materials that make up the earth including rocks, minerals, soil and fossils, and how they are formed. 5.8 A,D
3. Collect and record weather data and recognize how those conditions affect our daily lives. 5.8 B
4. Observe and identify objects and their apparent motion in the day and night sky. 5.8 B, D
5. Relate the motions of the earth-sun-moon system to units of time (day, months, seasons, years). 5.9 A, B, C, D

II. CONTENT

A. Scientific Process 5.1, 5.2, 5.3, 5.4

1. Observing
 - a. Comparing and contrasting
 - b. Recognizing cause and effect
2. Organizing and Communicating Information
 - a. Classifying and sequencing
 - b. Using tables, graphs, charts and journals
3. Practicing Scientific Process
 - a. Forming a hypothesis
 - b. Testing a hypothesis through experiment
 - c. Representing and interpreting data

B. Life Science (Unit A) 5.5, 5.10

1. Plants and Animals All Around
 - a. Living and Nonliving Things
 - b. Senses
 - c. Plant Parts
 - d. How do plants grow?
 - e. What do plants need?
 - f. What do animals need?
 - g. What are insects?
 - h. How animals grow.
 - i. How butterflies grow.
 - j. How frogs grow.

C. Earth Science (Unit C and D) 5.8, 5.9, 5.10

1. About Our Earth
 - a. Earth's land
 - b. Rocks
 - c. Soil
 - d. Earth's air and Water
 - e. Where is air on earth?
 - f. Where is fresh and salt water found?
2. Weather and the Seasons

- a. Measuring weather
- b. Understanding the seasons

(Integrate with Captain Bill's Journey)

3. Environment
 - a. The Case of the Green Feathers by Environmental and Occupational Health Sciences Institute, UMDNJ
 1. Investigate air pollution as a health problem

D. Physical Science (Unit E) 5.6, 5.7

1. Matter and Energy
 - a. Investigating matter
 - b. Heat and Light

Recommended scope and sequence for instruction:

As outlined above

III. ACTIVITIES AND MATERIALS

- A. Text: Harcourt Science, copyright 2000 Big Book
- B. Teacher Resources
 1. Science Resource Kit/ Consumable and Non-consumable
 2. Teacher's Assessment Package
 3. Interactive Transparency
 4. Student workbook
 5. The Case of the Green Feathers by Environmental and Occupational Health Sciences Institute, UMDNJ
 6. www.harcourtschool.com
 7. www.sciencenetlinks.com
- C. Open Court Big Books, Machines in Our Garden and Captain Bill's Journey used to integrate language arts and science.

IV. Evaluation

Students will:

- A. Be prepared and ready for work.
- B. Prepare work neatly.
- C. Follow directions.
- D. Hand in completed class work and homework assignments.
- E. Participate in class discussions, activities and experiments.
- F. Prepare for and successfully complete all tests and quizzes
- G. The final grade represents the teacher’s professional judgment of the student’s performance. All of the above areas are included in the evaluation process.

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