

SCIENCE

LENGTH OF TIME: one year

GRADE LEVEL: 2

COURSE STANDARDS:

Students will:

1. Demonstrate an understanding of how solids, liquids, and gases change from one state to another state. (PA Academic Std 3.1e, 3.4a)
2. Demonstrate how to use scientific processes (i.e. sieving, filtration, evaporation) as they relate to different states of matter. (PA Academic Std 3.2c, 3.7a, 3.7b)
3. Develop an understanding of the relationship between balance and weight. (PA Academic Std 3.4a, 3.7a)
4. Develop an understanding of the relationship between weight, density, and volume. (PA Academic Std 3.4a, 3.7a)
5. Develop an understanding of the chief components of soil. (PA Academic Std 3.1a, 3.2b, 3.5a, 3.5b, 4.2d)
6. Demonstrate an understanding of the relationship of soil and plant growth. (PA Academic Std 3.1e, 3.2c, 4.6a)
7. Describe fossils and the type of environment they lived in (e.g. tropical, aquatic, desert) (PA Academic Std 3.5.4a)
8. Identify changes in living things over time (compare extinct life forms with living organisms) (PA Academic Std 3.3.4d)

RELATED PA ACADEMIC STANDARDS FOR SCIENCE AND TECHNOLOGY

- 3.1 Unifying Themes
 - A. Systems
 - E. Change
- 3.2 Inquiry and Design
 - B. Process Knowledge
 - C. Scientific Method
- 3.3 Biological Sciences
 - D. Evolution
- 3.4 Physical Science, Chemistry and Physics
 - A. Matter
- 3.5 Earth Sciences
 - A. Land Forms and Processes
 - B. Resources
- 3.7 Technological Devices
 - A. Tools
 - B. Instruments

RELATED PA ACADEMIC STANDARDS FOR ENVIRONMENT AND ECOLOGY

4.2 Renewable and Nonrenewable Resources

D. Influential Factors

4.6 Ecosystems and their Interactions

A. Living and Nonliving Components

PERFORMANCE ASSESSMENTS:

Students will demonstrate achievement of the standards by:

1. Keeping records of results of investigative activities about the components of soil. (Course Standards 2, 5, 6)
2. Applying soil tests to unknown soil samples as well as local soil samples. (Course Standard 2, 5, 6)
3. Completing and recording simple experiments with a balance. (Course Standard 3, 4)
4. Building mobiles using data collected from previous balance experiments. (Course Standard 3)
5. Predicting what and how physical and chemical changes occurred in water using “change cards.” (Course Standard 1, 2)
6. Conducting experiments to identify and separate a mystery mixture. (Course Standard 2)
7. Working in cooperative groups, students will research and report on various geological periods (include: dinosaurs, habitat, timeline, etc.) (Course Standards 7, 8)

DESCRIPTION OF COURSE:

This course allows students to observe and investigate science concepts of physical and earth/space science and chemistry. This course introduces the student to and extends previous knowledge of a variety of topics such as: unique properties of different soil components, the factors that affect plant and root growth, the physical world is changing constantly and the speed of changes, the comparison of physical and chemical changes, factors affecting the balance scale, and the weight of an object is not determined by its size. Students will also study Earth’s history examining similarities and differences of extinct and present day organisms.

TITLES OF UNITS:

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|--|------------|
| 1. Physical Science, <u>Balancing and Weighing</u> | 20-30 days |
| 2. Earth/Space Science, <u>Soils</u> | 20-30 days |
| 3. Chemistry, <u>Changes</u> | 20-30 days |
| 4. Earth History | 20-30 days |

SAMPLE INSTRUCTIONAL STRATEGIES:

1. Cooperative groups
2. Experimentation
3. Research
4. Discussion
5. Demonstration
6. Use of Timeliner software
7. Differentiated activities and assessments

MATERIALS:

1. Carolina Biological Kits, Grade 2, 1998

METHODS OF ASSISTANCE AND ENRICHMENT:

1. Computer - interactive programs
2. Peer assistance
3. Special projects
4. Research

PORTFOLIO DEVELOPMENT:

1. Lab report of discovering unknown soil samples
2. Photo of mobile constructed by students with written description
3. Individual component of Earth history project/presentation

METHODS OF EVALUATION:

1. Class participation
2. Projects
3. Teacher and/or text tests
4. Experiments

INTEGRATED ACTIVITIES:

1. Concepts
 - matter
 - soil
 - technology/technological tools
 - Earth history
2. Communication
 - read and use a variety of methods to make sense of various texts
 - respond orally and in writing
 - write for a variety of purposes
 - exchange information orally
 - listen and understand oral messages
 - compose and make oral presentations
 - produce, perform or exhibit work
 - converse
 - construct meaning
 - use the writing process
3. Thinking/Problem Solving
 - analyze
 - observe
 - make critical judgments about
 - evaluate
 - compute, measure, estimate

- infer
- draw conclusions
- show relationships
- make decisions
- construct
- recognize patterns

4. Application of Knowledge

- use and evaluate
- relate
- develop and defend a position
- exhibit skills
- demonstrate connections, relationships

5. Interpersonal Skills

- demonstrate skills
- work cooperatively
- communicate effectively
- work effectively with others