

SCIENCE

LENGTH OF TIME: one year

GRADE LEVEL: 3

COURSE STANDARDS:

Students will:

1. Demonstrate an understanding of the life cycles of different plants and animals (e.g. amphibians, insects, mammals). (PA Academic Std 3.1.4c, 3.3.4a)
2. Develop an understanding of the relationship between organisms and their environments (including types of pests and pest control). (PA Academic Std 3.3.4a, 4.3.4a, 4.3.4b, 4.3.4c, 4.6.4a, 4.8.4a, 4.8.4c, 4.5.4a,b,c)
3. Describe that characteristics are inherited and that offspring closely resemble their parents (PA Academic Std 3.3.4c)
4. Demonstrate an understanding of how sound is produced in objects and how sound is produced by human vocal cords. (PA Academic Std 3.4.4c)
5. Develop an understanding of the anatomy and functioning of the human ear. (PA Academic Std 3.1.4b, 3.3.4b)
6. Describe the composition and structure of the universe and the earth's place in it (PA Academic Std 3.4.4d)
7. Develop an understanding that gravity does the following; gives the planets their shape, pulls on any object on or near the surface of a planet and keeps solar system objects in predictable orbits. (PA Academic Std 3.4.4d)

RELATED PA ACADEMIC STANDARDS FOR SCIENCE AND TECHNOLOGY

- 3.1 Unifying Themes
 - B. Models
 - C. Patterns
- 3.3 Biological Sciences
 - A. Living Forms
 - B. Structure and Function
 - C. Inheritance
- 3.4 Physical Science, Chemistry and Physics
 - C. Forces and Motion
 - D. Astronomy

RELATED PA ACADEMIC STANDARDS FOR ENVIRONMENT AND ECOLOGY

- 4.3 Environmental Health
 - A. Environmental Health Issues
 - B. Human Actions
 - C. Biological Diversity
- 4.5 Integrated Pest Management
 - A. Effects, Benefits and Impacts

- B. Health Risks
- C. Management Practices
- 4.6 Ecosystems and their Interactions
 - A. Living and Nonliving Components
- 4.8 Humans and the Environment
 - A. Societal Needs
 - C. Human Impacts

PERFORMANCE ASSESSMENTS:

Students will demonstrate achievement of the standards by:

1. Keeping a laboratory notebook to the record life cycle of a plant. (Course Standard 1, 2)
2. Designing and building models of the Brassica plant and a bee. (Course Standard 1, 2)
3. Using Kidspiration software, identify common characteristics of parent and offspring of a particular pet (Course Standard 3)
4. Applying concepts of sound and the function of the human ear to design new sound-producing devices (wind instruments). (Course Standard 4, 5)
5. Investigating and recording data about properties of sound. (Course Standard 4)
6. Cooperative group project on designing and presenting travel brochure (include effect of gravity on weight, atmosphere, topography, temperature, moons, length of day, etc) to different planets (read *Magic School Bus* on solar system) (Course Standard 6, 7)

DESCRIPTION OF COURSE:

This course allows students to observe and investigate the science concepts of biology, chemistry, and the solar system. This course introduces new concepts to the student and builds on previous knowledge using a variety of topics such as: many plants follow a life cycle that begins with a seed and proceeds through the production of seeds, the needs of plants to survive, sound is produced by vibration of objects and air, different properties of an object change the sound produced, how the human ear works, and properties of the solar system.

TITLES OF UNITS:

- | | |
|---|------------|
| 1. Biology, <u>Plant Growth and Development</u> | 30-40 days |
| 2. Physical Science, <u>Sound</u> | 30-40 days |
| 3. Solar System | 30-40 days |

SAMPLE INSTRUCTIONAL STRATEGIES:

1. Experimentation
2. Use of scientific method
3. Data collection/research
4. Group work

MATERIALS:

1. STC Kit Plant Growth and Development 1998.
2. STC Kit Sound: Musical Instruments 1998.
3. Exploring Space, Evan-Moor, 1998
4. Inflatable Solar System, Learning Resources

METHODS OF ASSISTANCE AND ENRICHMENT:

1. Peer tutors
2. Volunteer tutors
3. IST, learning support, PAL

PORTFOLIO DEVELOPMENT:

1. Photo of wind instrument designed by student with written explanation
2. Planetary Travel Brochure
3. Kidspiration developed graphic organizer on parent/offspring characteristics

METHODS OF EVALUATION:

1. Reports
2. Text and/or teacher made tests
3. Projects
4. Experiments
5. Class participation
6. Differentiated Instructional activities and assessments

INTEGRATED ACTIVITIES:

1. Concepts
 - plant growth cycle
 - sound
 - technology/technological tools
 - sources of air pollution
 - effect of air pollution on human body
2. Communication
 - read and use a variety of methods to make sense of various kinds of complex text
 - respond orally and in writing
 - write for a variety of purposes
 - listen and understand oral messages
 - compose and make oral presentations
 - produce, perform or exhibit work
 - converse
 - construct meaning from
 - use the writing process
3. Thinking/Problem Solving
 - analyze
 - observe
 - make critical judgments about
 - use effective research
 - evaluate
 - respond critically to

- compute, measure, estimate
- formulate and solve problems
- infer
- make predictions
- draw conclusions
- show relationships
- make decisions
- recognize patterns

4. Application of Knowledge

- use and evaluate
- develop and defend a position
- relate
- exhibit skills
- examine and evaluate problems
- demonstrate connections

5. Interpersonal Skills

- demonstrate skills
- cooperative groups
- communicate effectively
- work effectively with others