

SCIENCE

LENGTH OF TIME: one year

GRADE LEVEL: kindergarten

COURSE STANDARDS:

Students will:

1. Identify five basic senses and use them to describe objects (PA Academic Std 3.2.4b)
2. Identify objects as living or non-living based on their activities and needs (PA Academic Std 3.3.4c, 4.6.4a)
3. Describe the life cycle of a plant, label parts of a plant and identify air, water, light, nutrients and a place to live as needs of all plants; also recognize that many plants that people use need to be cared for to grow (PA Academic Std 3.1.4c, 3.3.4a, 3.3.4c, 4.2.4a, 4.3.4a, 4.4.4a, 4.6.4a)
4. Describe the life cycle of an animal (insect, amphibian, or mammal) and identify food, water, air and a place to live as needs of all animals (PA Academic Std 3.1.4c, 3.3.4a, 4.4.4a)
5. Recognize that Earth is a planet that looks like a sphere from space and when viewing a picture of earth, identify land, water and clouds (PA Academic Std 3.4.4d)
6. Identify four different seasons, the typical temperature and weather conditions associated with each, and their impact on people (PA Academic Std 3.1.4c, 3.5.4c)

RELATED PA ACADEMIC STANDARDS FOR SCIENCE AND TECHNOLOGY

- 3.1 Unifying Themes
 - C. Patterns
- 3.2 Inquiry and Design
 - B. Process Knowledge
 - C. Scientific Method
- 3.3 Biological Sciences
 - A. Living Forms
- 3.4 Physical Science, Chemistry and Physics
 - D. Astronomy
- 3.5 Earth Sciences
 - C. Meteorology

RELATED PA ACADEMIC STANDARDS FOR ENVIRONMENT AND ECOLOGY

- 4.2 Renewable and Nonrenewable Resources
 - A. Uses
- 4.3 Environmental Health
 - A. Environmental Health Issues
- 4.4 Agriculture and Society
 - A. Society's Needs
- 4.6 Ecosystems and their Interactions
 - A. Living and Nonliving Components

PERFORMANCE ASSESSMENTS:

Students will demonstrate achievement of the standards by:

1. Taking prepared unit tests and scoring with 80% or above (performance assessments and formal assessments as described in Harcourt teacher's edition)
 2. Applying scientific processes to investigate objects, record data with drawings or writing, and sharing outcomes verbally
 3. Producing unit projects from the "science in centers" section at the end of each unit of the Harcourt teacher's edition, level K, or designed independently by the teacher
 4. Recording ideas, predictions, and findings in a science notebook or journal
 5. Performing scientific inquiries using activity cards created by Harcourt
- All performance standards listed are expected to occur in each unit of study.

DESCRIPTION OF COURSE:

The kindergarten science curriculum will expose students to the elements of the scientific process: questioning, prediction, observation, investigating/experimenting, comparing, inferring, modifying thought, recording, and relating findings. Kindergarten curriculum content consists of the five senses, plant and animal life, earth, weather and seasons.

An active exploration of the students' environment is the focal and driving point of the science curriculum at the kindergarten level. Students will be expected to carry out experiments and in so doing work effectively with peers and communicate using scientific language. Traditional scientific tools (hand-lens and thermometer) will be introduced, but most investigating and measurement will require the students to use only their own senses.

TITLES OF UNITS

1. Senses – first marking period
2. Earth, weather and seasons – second marking period
3. Plants – third marking period
4. Animals – fourth marking period

SAMPLE INSTRUCTIONAL STRATEGIES:

1. Shared reading
2. Discussion
3. Investigation
4. Demonstration
5. Observation
6. Experimentation
7. Differentiated activities and assessments

MATERIALS:

1. Harcourt Science (2005) Teacher's Edition, Level K
2. Harcourt Science (2005) Activity Cards

METHODS OF ASSISTANCE AND ENRICHMENT:

1. Peer helpers/ parents helpers
2. Special projects
3. Cooperative groups
4. Extra teacher assistance

5. Outside presenters

PORTFOLIO DEVELOPMENT:

The student may select a science project or experiment record/data sheet to place in his/her portfolio.

METHODS OF EVALUATION:

1. Teacher-made and/or Harcourt prepared tests/checklists
2. Projects following major units
3. Completion of science journal/notebook
4. Observation of completed activities (Harcourt activity cards)

INTEGRATED ACTIVITIES:

1. Concepts
 - ◆ Demonstration of concepts listed under course standards
2. Communication
 - ◆ Appropriate use of kindergarten science concepts and language
 - ◆ Entries in journals/ experiment record sheets
 - ◆ Listen to and understand science project presentations/teacher presentations
3. Thinking/Problem Solving
 - ◆ Predict
 - ◆ Observe
 - ◆ Construct
 - ◆ Draw Conclusions
4. Application of Knowledge
 - ◆ Use skills of observation, prediction, experimentation to analyze science investigations
 - ◆ Measure, weigh, sort and classify, compare, interpret, describe, and record
5. Interpersonal Skills
 - ◆ Work cooperatively
 - ◆ Communicate effectively with teachers and peers