

Science

Grade Kindergarten

Program Goal:

Students will develop a curiosity for and understanding of our universe, including a sense of stewardship toward God's creation and dwindling natural resources. They will develop critical and independent thinking skills and a knowledge base which will enable them to solve (scientific) problems and to create new and ethical solutions for the future of our world.

Grade Level Goal:

In Kindergarten, students will use their senses and problem solving skills to explore various topics in science. Their curiosity and excitement about the world will be developed through active participation and exploration.

Program Goal Objectives:

Scientific Curiosity:

1. The learner will make use of senses, experiences and other resources to make observations in order to generate questions about the world around them.
2. The learner will use observations and experience to explore similarities and differences in the world around them.
3. The learner will use a variety of multi-sensory activities to experience changes in the environment.
4. The learner will gain an understanding that science is an on-going process that is present all around us.
5. The learner will begin to predict outcomes to further develop their sense of curiosity.
6. The learner will use a variety of scientific materials to further their sense of curiosity.

Stewardship:

1. The learner will develop healthy habits and respect for the body having recognized that they are part of God's creation.
2. The learner will demonstrate responsibility by taking care of their own environment and God's creation.
3. The learner will participate in a variety of projects as a response to the call to be good steward to God's creations.
4. The learner will understand that all living things have value as part of God's creation.
5. The learner will grow in appreciation for the beauty of God's creation.

Problem Solving/Critical Thinking:

1. The learner will develop critical thinking skills using a variety of teacher guided strategies.
2. The learner will compare and contrast data.
3. The learner will develop problem solving skills independently in small groups.
4. The learner will develop interactive skills such as listening, turn taking, leadership, and participation.
5. The learner will develop and demonstrate strategies for reviewing the process of problem solving.
6. The learner will make choices and practice using appropriate tools for a given scientific task.
7. The learner will begin to use the scientific method to collect, organize, analyze, and interpret data.
8. The learner will take risks, sharing ideas and information with their classmates.

Ethical Perspective:

1. The learner will show respect for all forms of life.
2. The learner will grow in the realization every human life is "precious, that people are more important than things."
3. The learner will recognize their call "to protect people and the planet, living our faith in relationship with all of God's creation."
4. The learner will demonstrate the use of Catholic faith values when making decisions.
5. The learner will act responsibly while using resources wisely.
6. The learner will cooperate and show consideration for others while working in groups.

Content Criteria:

Earth Science:

Geosphere:

1. The learner will identify common land forms using models and pictures.
2. The learner will identify and demonstrate ways to care for the land.

Weather/Atmosphere:

1. The learner will collect, organize and compare daily weather conditions.
2. The learner will describe season changes and climates
3. The learner will explain safety procedures during severe weather.

Hydrosphere:

1. The learner will identify common bodies of water using maps and visual aids.
2. The learner will understand that water is a valuable natural resource.
3. The learner will understand that pollution effects the environment.
4. The learner will identify the basic process of the water cycle.

Life Science:

1. The learner will identify and classify living and non-living things.
2. The learner will identify what living things need to survive and grow.
3. The learner will observe how animals and plants live and grow.
4. The learner will give evidence that characteristics are passed from parents to young.
5. The learner will sequence the life cycle of plants and animals.
6. The learner will identify basic characteristics of various animals.
7. The learner will identify parts of the body, their basic functions and their relationship to the whole.
8. The learner will distinguish between healthy and non-healthy habits.
9. The learner will demonstrate knowledge of good nutrition.
10. The learner will explore their five senses as a tool for learning.

Physical Science:

1. The learner will classify and sort common objects and substances according to observable attributes.
2. The learner will describe the interaction of magnetic materials with other magnetic materials and non-magnetic materials.
3. The learner will explore materials in different states (solid, liquid, gas) and their abilities to be changed from one state to another by heating and cooling.
4. The learner will describe and compare motions of common objects in terms of type, speed, direction.
5. The learner will describe the position of an object in relationship to another object or the background.
6. The learner will describe sounds in terms of their properties.
7. The learner will describe light in terms of its properties and its sources.
 - a. The learner will explore how shadows are made.

Space:

1. The learner will distinguish between the daytime sky and nighttime sky.
2. The learner will understand that the earth rotates to create day and night.
3. The learner will describe the characteristics of the sun, earth, and moon.
4. The learner will identify the planet earth as our home.
5. The learner will identify gravity as the force that keeps objects on the ground.

Scope:

Earth Science:

I. Geosphere

A. Landforms

1. Mountains
2. Valleys
3. Plains

B. Caring for the land

1. Reduce
2. Recycle
3. Reuse
4. Picking up litter

II. Hydrosphere

A. Bodies of water

1. River
2. Lake
3. Ocean

B. Natural resource

C. Pollution

1. Drinking water
2. Fish habitat
3. Recreation

D. Water cycle

1. Evaporation

2. Condensation
3. Precipitation

III. Atmosphere/Weather

A. Daily weather conditions

1. Sunny
2. Cloudy
3. Rainy
4. Windy
5. Foggy
6. Snowy

B. Seasonal changes

1. Winter
2. Spring
3. Summer
4. Fall

C. Climate

1. Hot
2. Cold
3. Warm
4. Cool

D. Severe Weather safety

1. Tornadoes
2. Thunderstorms
3. Blizzards

Life Science

I. Living things

A. Animals

1. Needs

- a. Food
- b. Water
- c. Air
- d. Shelter
- e. Sun

2. Life cycle

- a. Immature to mature

3. Characteristics

- a. Body Covering

- b. Movement
- B. Plants
 - 1. Needs
 - a. Sun
 - b. Water
 - c. Soil
 - d. Air
 - 2. Life cycle
 - a. Seed
 - b. Seedling
 - c. Adult plant
 - 3. Characteristics
 - a. Root
 - b. Stem
 - c. Leaves
 - d. Flower
 - e. Seeds

II. Non-living things

- A. Characteristics
 - 1. Doesn't move by itself
 - 2. Doesn't breathe
 - 3. Doesn't grow

III. Human Body

- A. Health
 - 1. Nutrition
 - 2. Hygiene (cleanliness)
 - 3. Dental care
 - 4. Exercise
 - 5. Rest
- B. Basic parts
 - 1. Function
 - 2. Interdependence
- C. Five senses
 - 1. Taste
 - 2. Touch
 - 3. Hear

4. Smell
5. See

Physical Science

I. Observable Attributes

- A. Size
- B. Color
- C. Shape
- D. Texture
- E. Weight
- F. Buoyancy (sink and float)

II. Magnets

- A. Attract
 1. Magnetic
 2. Non-magnetic
- B. Repel

III. States of Matter

- A. Solid
- B. Liquid
- C. Gas
- D. Changes
 1. Heating
 2. Cooling

IV. Motion

- A. Types
 1. Bounce (up and down)
 2. Roll
 3. Slide
- B. Speed
 1. Fast
 2. Slow
- C. Direction
 1. Push
 2. Pull

V. Position

- A. Above
- B. Below
- C. Under
- D. Over
- E. Inside
- F. Outside
- G. Beside
- H. Left
- I. Right
- J. On

VI. Sound

- A. Pitch
 - 1. High
 - 2. Low
- B. Volume
 - 1. Loud
 - 2. Soft

VII. Light

- A. Properties
 - 1. Bright
 - 2. Dim
- B. Sources
 - 1. Natural
 - a. Sun
 - 2. Manmade
 - a. Candle (fire)
 - b. Light bulb
- C. Shadows

Space Science

I. Sky

- A. Daytime
 - 1. Sun
 - 2. Clouds
- B. Nighttime
 - 1. Moon
 - 2. Stars

II. Rotation of Earth

- A. Day
- B. Night

III. Characteristics

- A. Earth
 - 1. Sphere
 - 2. Appearance
 - 3. Home
 - 4. Move around Sun
- B. Moon
 - 1. Sphere
 - 2. Appearance
 - 3. Life
- C. Sun
 - 1. Star
 - 2. Hot
 - 3. Source of light and heat

IV. Gravity

Instructional Criteria:

1. Students will comprehend vocabulary.
2. Students will exhibit good listening skills.
3. Students will exhibit turn-taking skills.
4. Students will show responsibility when using equipment.
5. Students will be able to make comparisons.
6. Students will participate in class discussions.
7. Students will be able to work in small and large group settings.
8. Students will use charts and graphs to compare data.
9. Students will use maps and models to look at the earth.

Textbook Recommendation(s):

Harcourt Brace "Science" (ISBN: 0-15-323680-9)

Rating: 4.4 out of 5.0

Strengths:

Materials provide suggestions for a variety of learning styles
Materials are at the appropriate reading/instructional level
Supplementary materials are high quality
Teacher's guide and students' text are well organized
Higher level thinking skills
Excellent materials.

Weaknesses:

Missing some elements of our curriculum - human body and health, water cycle, 5 senses.
Materials are only average or slightly lower in incorporating a multicultural perspective.