

Science

Grade 3

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 third grade, the students will explore a variety of topics in life, physical, earth and space science. The use of the scientific method, hands-on experiments and problem solving will engage and foster students' curiosity.

Program Goal Objectives:

Scientific Curiosity:

1. The learner will use their senses, prior experiences, and other resources to make observations and generate questions about the world around them.
2. The learner will conduct experiments using the scientific method and make observations relating to everyday life.
3. The learner will demonstrate scientific curiosity by constructing scientific models.
4. The learner will use a variety of scientific materials to further their sense of curiosity.
5. The learner will use senses, experiences and other resources to make observations in order to generate questions about the world around them.
6. The learner will use observations and experiences to explore similarities and differences in the world around them.
7. The learner will gain an understanding that science is an on-going process that is present all around us.

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 participate in a variety of projects as a response to the call to be good stewards of God's creation.
3. The learner will show respect for God's creation by actively pursuing responsible use of natural resources through conservation and preservation.
4. The learner will grow in appreciation for the beauty of God's creation.
5. The learner will recognize and value the unique characteristics, diversity and interdependence 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 and within groups.
4. The learner will develop interactive skills such as listening, turn-taking, leadership, and participation.
5. The learner will begin to identify and develop questions, make hypotheses, and conduct experiments.
6. The learner will develop and demonstrate strategies for reviewing the process of problem solving.
7. The learner will take measurements and begin to interpret data to draw conclusions.
8. The learner will begin to use the scientific method to collect, organize, analyze, and interpret data.
9. 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 and 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 describe the natural changes in the earth's surface and explain the causes and effects of these changes.

Weather/Atmosphere:

1. The learner will track/analyze seasonal changes in the climate.
2. The learner will compare and contrast temperatures and conditions locally and nationally.
3. The learner will develop an awareness of the effect of human activity on weather and climate.

Hydrosphere:

1. The learner will identify the effects of water on land surfaces.
2. The learner will describe how much water covers the earth.
 - a. The learner will identify how much of this water is useable.

Life Science:

1. The learner will describe how living things will adapt and change over time and within their environment.

2. The learner will describe basic requirements for all living things to maintain their existence.
3. The learner will compare and contrast food, energy, and environmental needs of selected organisms.
4. The learner will explain how physical and/or behavioral characteristics of organisms help them survive in their environment.
5. The learner will describe and contrast types of habitats.
6. The learner will identify relationships among plants and animals in an ecosystem.
7. The learner will describe common patterns of interdependence and interrelationships of living things.
8. The learner will identify cells as the basic structure of life.
9. The learner will identify lungs as the main component of the respiratory system.
10. The learner will identify healthy habits for the respiratory system.

Physical Science:

1. The learner will classify common objects according to properties.
2. The learner will define the properties of the three states of matter.
3. The learner will measure weight, dimensions and temperature of appropriate objects and material.
4. The learner will prepare mixtures and separate them into their component parts.
5. The learner will be able to distinguish the differences between the movement of molecules in the three states of matter.
6. The learner will demonstrate that sound and light travel in waves.

Space:

1. The learner will compare and contrast the sun, moon, and earth.
2. The learner will describe the motions of the earth and moon around the sun.
3. The learner will compare the sizes and distances among objects in space.
4. The learner will identify the tools used for observing objects in space.

Scope:

Earth Science:

I. Geosphere

A. Causes of natural changes

1. Volcanoes
2. Earthquakes
3. Erosion

B. Effects of natural changes

1. Mountains
2. Valleys
3. Cracks

II. Hydrosphere

A. Effects of water on land

1. Floods
2. Ice
3. Rivers

B. Amount of water on earth

III. Atmosphere/weather

A. Temperature

1. Graph high/low locally
2. Graph high/low nationally

B. Effect of human activity

1. Global warming
2. Acid rain
3. Ozone

Life Science

I. Evolution

A. Adaptation

1. Animal characteristics
2. Plant characteristics

II. Plant and Animals

A. Requirements for life

1. Food
 2. Water
 3. Shelter
 4. Space
 5. Air
- B. Compare and contrast needs
1. Food
 2. Energy
 3. Environment
- C. Characteristics for survival
1. Physical
 2. Behavioral
- D. Made of Cells

III. Habitats

- A. Types
- B. Compare/contrast

IV. Ecosystem

- A. Inter-relationships
 1. Predator-prey
 2. Producer - consumer
 3. Decomposer
 4. Symbiotic
 5. Parasite
- B. Adaptations
 1. Camouflage
 2. Behaviors
 - a. Migration
 - b. Communication of danger

V. Respiratory System

- A. Lungs
 1. Supplier of oxygen
- B. Healthy habits

Physical Science

I. Classifying common objects

- A. Properties
 - 1. Color
 - 2. Shape
 - 3. Size
 - 4. Smell
 - 5. Hardness
 - 6. Texture
 - a. Rough
 - b. Smooth
 - 7. Flexibility
 - a. Rigid
 - b. Stiff
 - c. Firm
 - d. Flexible
 - 8. Length
 - 9. Weight
 - 10. Buoyancy
 - a. Sink
 - b. Float
 - 11. State of matter
 - a. Solid
 - b. Liquid
 - c. Gas
 - 12. Magnetic properties

II. Measurement

- A. Weight (scale)
 - 1. Metric units
 - a. Grams, kilograms
 - 2. U.S. Customary Units
 - a. Ounces, pounds
- B. Dimension (ruler)
 - 1. Metric Units
 - a. mm, cm, m, km
 - 2. U.S. Customary Units

- a. in, ft, yds, mi
- C. Temperature (Thermometer)
 - 1. Metric units
 - a. degrees, Celsius
 - 2. U.S. Customary units
 - a. degrees, Fahrenheit

III. States of Matter

- A. Properties
 - 1. Solid
 - a. Definite shape, definite size, definite mass
 - 2. Liquid
 - a. Takes shape of its container
 - b. No definite shape, definite size, definite mass
 - 3. Gas
 - a. Takes shape of its container
 - b. No definite shape, no definite size, no definite mass
- B. Movement of Molecules
 - 1. Solid
 - a. molecules are touching, together
 - 2. Liquid
 - a. molecules are touching, can move separately
 - 3. Gas
 - a. molecules move freely

IV. Mixtures

- A. Liquids (solutions)
 - 1. Separated by density
- B. Solids (mixtures)
 - 1. Separation by
 - a. magnets
 - b. sieves
 - c. evaporation

V. Sound and Light

- A. Travel in waves
 - 1. Sound
 - a. molecules
 - 2. Light

a. photons

Space

- I. Features of Sun, Earth, Moon**
 - A. Comparisons
 - 1. All parts of solar system
 - 2. All spheres
 - B. Contrasts
 - 1. Sun-star, makes own light, made of gas
 - 2. Earth-planet, reflects light, made of rock
 - 3. Moon - satellite or moon, reflects light, made of rock
- II. Motion of Sun, Earth, Moon**
 - A. Rotation
 - B. Revolution
 - C. Gravity
- III. Objects in Space**
 - A. Size (small to large)
 - 1. Asteroids, meteors, comets
 - 2. Moons
 - 3. Planets
 - a. Rock
 - b. Gases
 - 4. Stars
 - 5. Galaxies
 - 6. Universe
 - B. Distance (miles and light years)
 - 1. Between Earth and Moon
 - 2. Between Earth and Sun
- IV. Tools for Observation**
 - A. Eyes
 - B. Binoculars
 - C. Telescopes (Earth base, Space base - Hubble)
 - D. Satellites/Probes
 - E. International Space Station

Instructional Criteria

1. Students will use research techniques (internet, periodicals, and reference books) to investigate scientific concepts.
2. Students will have the ability to compare and contrast.
3. Students will perform experiments independently and with group setting.
4. Student will construct and write an explanation of a project.
5. Students will comprehend and use vocabulary appropriately.
6. Students will use charts, graphs, and tables to illustrate scientific data.
7. Students will use maps to analyze the earth's features.
8. Students will demonstrate the ability to use laboratory equipment responsibly.
9. Students will use the scientific method while conducting experiments.
10. Students will use measurement devices.

Textbook Recommendations:

McGraw-Hill "Science" ISBN: 978002280069

Rating: 4.25 out of 5.0

Strengths:

5.0 out of 5.0:

Assessments are provided - Broad variety, includes Terra Nova prep.

Materials are visually attractive - National Geographic pictures, good layout.

4.0 out of 5.0:

Materials are aligned with curriculum - strong life science, good people in science.

Materials provide for a variety of learning styles - good broad

ideas and specific applications.
Appropriate reading level
Incorporate multicultural aspects
Supplementary materials - variety of kits are available

Weaknesses:
None listed

Second choice: Harcourt - Science - 0-15-322920-9