



Science Curriculum – Intermediate Level

May 2007

Introduction

Science Curriculum

Science is a process we use to understand the world. Scientific literacy means a person can ask, find, and determine answers for questions derived from curiosity. Science-learning is both developing content knowledge and skills in the scientific process. We use the scientific process as a basis for our study: hypothesizing, collecting data, recording observations, drawing conclusions, inferring, generalizing, and extending knowledge. Scientific literacy has different degrees and forms and expands over a lifetime to enable people to make reasoned, insightful decisions that contribute to the common good.

2nd - 3rd Grade Science Inquiry:

Skills and Processes

- Formulates questions
- Generates hypothesis based on prior knowledge
- Observes in detail and records data accurately
- Draws conclusions based on observations
- Compares observations of individual and group results
- Applies learned concepts to new situations
- Makes connections about issues affecting people and the environment
- Uses scientific equipment carefully and competently

2nd – 3rd Life Science:

Concepts

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|------------------------------|--|
| Characteristics of Organisms | <ul style="list-style-type: none">• Organisms have basic needs, such as, air, food, water, nutrients |
| Life Cycles of Organisms | <ul style="list-style-type: none">• Life cycles are different for different organisms• Plants and animals closely resemble their parents |
| Environments of Organisms | <ul style="list-style-type: none">• All animals rely on plants• Humans change environments in ways that are either helpful or harmful to themselves and other organisms (recycling, water cycle, pollution) |

2nd - 3rd Earth Science:

Concepts

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|-------------------------------|---|
| Properties of Earth Materials | <ul style="list-style-type: none">• Earth materials are solid rocks and soils, water, and the gases of the atmosphere• Soils have properties of color and texture, capacity to retain water, and ability to support the growth of many kinds of plants, including those in our food supply |
| Changes in Earth and Sky | <ul style="list-style-type: none">• Weather changes from day to day and over the seasons• Objects in the sky have patterns of movement |

2nd - 3rd Physical Science:

Concepts

Properties of
Objects and
Materials

- Objects have many observable properties (size, weight, shape, color, temperature, and the ability to react with other substances). Those properties can be measured using tools
- Objects can be described by the materials from which they are made
- Materials can exist in different states-solid, liquid, and gas

Position and
Motion of Objects

- An object's motion can be described by tracing and measuring its position over time
- The position and motion of objects can be changed by pushing or pulling. The size of the change is related to the strength of the push or pull

Light, Heat,
Electricity, Sound,
and Magnetism

- Sound is produced by vibrations
- Magnets attract and repel each other and certain kinds of other materials

2nd - 3rd Science in Personal and Social Perspective:

Concepts

Personal Health
Characteristics

- Safety and security are basic needs of humans
- Individuals have some responsibility for their own health
- Human beings have different interests, motivations, skills, and talents
- People can learn from each other by telling and listening, showing and watching, and imitating what others do
- Human beings can use the memory of their past experiences to make judgments about new situations

Characteristics and
Changes in
Populations

- Human populations include groups of individuals living in a particular location

Types of
Resources

- Resources are things that we get from the living and nonliving environment to meet the needs and wants of a population
- Some resources are basic materials, such as air, water, and soil; some are produced from basic resources; and some resources are nonmaterial
- The supply of many resources is limited. Resources can be extended through recycling and decreased use

Changes in
Environments

- Environments are the space, conditions, and factors that affect an individual's and a population's ability to survive and their quality of life

Science and
Technology in
Local Challenges

- People continue inventing new ways of doing things, solving problems, and getting work done. New ideas and inventions often affect other people
- Human beings have made tools and machines to sense and do things that they could not otherwise sense or do at all, or as quickly, or as well

4th - 5th Grade Science Inquiry:

Skills and Processes

- Formulates questions
- Generates hypothesis based on prior knowledge
- Observes in detail and records data accurately
- Draws conclusions based on observations
- Compares observations of individual and group results
- Applies learned concepts to new situations
- Makes connections about issues affecting people and the environment
- Selects appropriate scientific equipment
- Uses scientific equipment carefully and competently

4th - 5th Earth Science:

Concepts

Changes in Earth and Sky

- The surface of the earth changes. Some changes are due to slow processes, such as erosion and weathering, and some changes are due to rapid processes, such as landslides, volcanic eruptions, and earthquakes
- Soil consists of weathered rocks and decomposed organic material from dead plants, animals, and bacteria. Soils are found in layers
- The sun is a major source of energy for phenomena on the earth's surface, such as seasons and growth of plants

Objects in the Sky

- All objects in the sky have properties, locations, and movements that can be observed and described
- The sun provides the light and heat necessary to maintain the temperature of the earth

4th - 5th Physical Science:

Concepts

Light, Heat, Electricity, and Magnetism

- Light travels in a straight line
- Light interacts with matter by transmission, absorption, or reflection. To see an object, light from that object must enter the eye
- Electricity in circuits can produce light, heat, sound, and magnetic effects. Electrical circuits require a complete loop through which an electrical current can pass
- Magnets attract and repel each other and certain kinds of other materials

Position and Motion of Objects

- Sound is produced by vibrating objects. The pitch of the sound can be carried by changing the rate of vibration

Transfer of Energy

- Energy is a property of many substances and is associated with heat, light, electricity, mechanical motion, sound, nuclei, and the nature of a chemical
- Energy is transferred many ways
- The sun is a major source of energy for changes on the earth's surface

4th - 5th Science in Personal and Social Perspective:

Concepts

Personal Health

- Nutrition is essential to health. Students should understand how the body uses food and characteristics of a healthy diet
- Different substances can damage the body and how it functions. Some substances are beneficial and others can be harmful if used inappropriately

Changes in
Environments

- Environments are the space, conditions, and factors that affect an individual's and a population's ability to survive and their quality of life
- Some changes are good, some are bad, and some are neither, can be natural or influenced by humans