-Science-
(2^{nd} Grade)

Physical Science
Properties of Matter
How does the structure of matter affect the properties and uses of materials?

- **Materials can be classified as solid, liquid or gas based on their observable properties.**

Initial Understanding
Define chemical change and physical change
Observe the characteristics of matter; i.e. color, shape, texture of materials such as rocks, sand, soil
Identify matter according to characteristics of solid, liquid, or gas
Describe the characteristics of a solid, a liquid, and a gas

Developing an Interpretation
Observe that solids float, dissolve or sink when mixed with a liquid
Observe that liquids mix, separate or are suspended when combined
Observe that gases take up space inside a liquid
Observe that when certain substances combine they form entirely new substances (chemical changes)
Observe that some matter changes form under pressure

Making Connections
Demonstrate that solids can become liquids and that liquids can become solids and that matter changes state by adding or taking away heat energy
Illustrate differences in the physical properties of solids and liquids

Critical Stance
Demonstrate that solids tend to maintain their own shapes, while liquids tend to assume the shapes of their containers, and gases fill their containers fully

Life Science
Structure and Function
How are organisms structured to ensure efficiency and survival?

- **Plants change their forms as part of their life cycles**

Initial Understanding
Observe the characteristics of green plants
Observe the various stages of plant development i.e. seeds, seedling development, plant growth
Determine the survival needs of plants in a given environment

Developing an Interpretation
Explore and describe the effects of light and water on seed germination and plant growth
Describe the life cycles of flowering plants as they grow from seeds, proceed through maturation and produce new seeds
Describe and record the shapes and parts of a flowering plant

Making Connections
Illustrate that in order to meet the nutritional needs of plants carbon dioxide and water in the presence of sunlight in the green parts of the plants combine to produce sugar with oxygen being given of as a by-product
Recognize that plants are the foundation of the world's food chain

Critical Stance
Demonstrate that the life cycles of flowering plants include seed germination, growth, flowering, pollination and seed dispersal
Explain: CO2 + H2O in the presence of sunlight produce CH2O + O2
Describe how the cultivation of certain plants has enabled humans to move from hunter gatherers to agricultural societies

Earth Science
The Changing Earth
How do materials cycle through the Earth's systems?

- **Earth materials have varied physical properties which make them useful in different ways**

Initial Understanding
Investigate how weathering and erosion form soil
Observe that wind shapes a desert landscape and infer the formation of sand dunes
Identify different soils by their properties, such as particle size, color, and composition

Developing an Interpretation

Relate the properties of different soils to their capacity to retain water and support the growth of certain plants
Recognize that wind, ice, and glaciers can carve the land

Making Connections

Understand that soils can be described by their color, texture and capacity to retain water
Illustrate the relationship between rain and soil
Compare and contrast methods of soil conservation and its affect on agriculture

Critical Stance

Illustrate that soils support the growth of many kinds of plants, including those in our food supply
Demonstrate the relationship between fertile soils and agriculture (plant production) with the development of human living areas

Science and Technology in Society
How do science and technology affect the quality of our lives?

- **Human beings, like all other living things, have special nutritional needs for survival**

Initial Understanding

Identify plant parts that are used as nutrient sources by animals including human
Identify the sources of common foods and classify them by their basic food groups

Developing an Interpretation

Describe how people in different cultures use different food sources to meet their nutritional needs
Describe how the cultivation of certain plants has enabled humans to move from hunter gatherers to agricultural societies

Making Connections

Understand that the essential components of balanced nutrition can be obtained from plant and animal sources
Recognize that advanced agricultural techniques has increased food production

Critical Stance

People eat different foods in order to satisfy nutritional needs for carbohydrates, proteins and fats which enable the people to survive in their environment
Understand that continual governmental food safety inspections assure safe food