STANDARD 1: SCIENCE AS INQUIRY **Second Grade**

As a result of these activities, all USD 312 second graders will experience science as *full inquiry*. In the elementary grades, students begin to develop the physical and intellectual abilities of scientific inquiry.

State Benchmark 1: All students will be involved in activities that develop skills necessary to conduct scientific inquiries.

These activities involve asking a simple question, completing an investigation, answering the question and presenting the results to others. Not every activity will involve all of these stages nor must any particular sequence of these stages be followed.

Second Grade Indicators	Instructional Examples
The student… 1. ▲identifies *properties* of objects. 2. ▲*classifies* and arranges groups of objects by a variety of properties, one property at a time. 3. uses appropriate materials, *tools, and safety procedures* to collect information. 4. asks and answers questions about objects, organisms, and events in his/her environment. 5. describes an observation orally or pictorially. *6.* experiences science through *technology.* *7.* is involved in explorations that make his/her mind wonder and know that he/she is practicing science.	The student… 1. states properties of objects such as leaves, shells, rocks, water, and insects. 2. groups objects by texture, size; color, and hardness. 3a. uses tools such as magnifiers, balances, scales, thermometers, measuring cups, and spoons when engaged in investigations. 3b. uses appropriate precautions, procedures, and safety equipment when doing investigations. 4. observes and asks questions about a variety of objects and discusses how they are alike and different. 5. draws pictures of plant growth on a daily basis; notes color, number of leaves; labels plant parts. 6. uses *tools* such as balances, thermometers, hand lenses, but viewers, and science software programs. 7. observes and tells (reports what happens when you place a banana or an orange (with and without the skin), or a crayon in water. Observes and tells (reports) what changes occur when you hold an M&M, a chocolate chip, or a raisin in your hand. Observes and tells (reports) what happens when you rub your hands together very fast.

Teacher Notes:
Properties – a word that describes an object based on direct observations using touch, sight, hearing, taste, smell, and measurement.
Tools – object used to achieve a goal, to make an observation, and extend the senses (see page 122 in the National Science Education Standards, 1996).
Full inquiry – involves asking a simple question, completing an investigation, answering the question, and presenting the results to others. In elementary grades, students begin to develop the physical and intellectual abilities of scientific inquiry. They can design investigations to try things to see what happens – they tend to focus on concrete results of tests and will entertain the idea of a "fair" test (a test in which only one variable at a time is changed) (see page 122 in the National Science Education Standards, 1996).
Classify – a method for establishing order on collections of objects or events. Students use classification systems to identify objects or events, to show similarities, differences, and interrelationships. It is important to realize that all classification systems are subjective and may change as criteria change; the test for good classification system is whether others can use it.
Technology – application of knowledge through inventions.

STANDARD 2: PHYSICAL SCIENCE **Second Grade**

As a result of these activities, all USD 312 second graders will explore the world by observing and manipulating common objects and materials in their environment.

State Benchmark 1: All students will develop skills to describe objects.

All students will have opportunities to compare, describe, and sort objects.

Second Grade Indicators	Instructional Examples
The student… 1. separates or sorts a group of objects or materials by *properties*. 2. ▲compares solids, liquids, and gasses. 3. ▲demonstrates that magnets attract and repel. 4. designs a simple experiment to determine whether various objects will be attracted to magnets.	The student… 1. compares and sorts objects by shape, size, *mass*, and color. 2. compares the *properties* of liquid water and frozen water, or liquid (melted) chocolate chips and solid chocolate chips. 3a. gives students two magnets and let them explore what happens. 3b. designs a simple experiement with two magnets to show that they attract or repel. 4. designs an experiment involving a group of objects to determine which are attracted or repelled to the magnet.

Teacher Notes:

Mass - measure of the amount of material something contains.
Properties - word that describes an object based on direct observations using touch, sight, hearing, taste, smell, and measurement.

STANDARD 3: LIFE SCIENCE **Second Grade**

As a result of these activities, all USD 312 second graders will begin to develop an understanding of biological concepts.

State Benchmark 1: All students will develop an understanding of the characteristics of living things.

Through direct experiences, students will observe living things, their *life cycles*, and their habitats.

Second Grade Indicators	Instructional Examples
The student… 1. ▲discusses that *organisms* live only in *environments* in which their needs can be met. 2. ▲observes *life cycles* of different living things. 3. observes living things in various *environments*. 4. examines the *structures*/parts of living things. 5. engages in personal care. 6. discusses healthy foods. 7. ▲discusses that safety is a basic human need. 8. discusses that various foods contribute to health.	The student… 1. learns that children need air, water, food, shelter, and care. Learns that plants need light, air, water*. Learns that animals need air, water, food, and shelter. 2. observes the *life cycles* of spiders, insects, plants, or humans. 3. observes classroom plants; takes nature walks and field trips in his/her own area; observes terrariums and aquariums. 4. observes that insects may have wings, legs, and antenna; compares spiders to other insects (spiders have eight legs and two body parts / insects have six legs and three body parts); plants have roots. 5. practices washing hands, brushing teeth, and engaging in exercise. Discusses appropriate types of clothing to wear. Discusses personal hygiene. 6. explores real fruits and vegetables for textures, tastes, and health value, and/or, cuts out pictures of foods and sorts into healthy and not healthy groups. 7. discusses the need to obey traffic signals, use crosswalks, and the danger of talking to strangers. 8. reads and compares nutrition information found on labels; discusses healthy foods; makes a healthy snack.

Teacher Notes:

* - like children and animals, plants also require nutrients. Children and animals obtain nutrients and energy from the food that they eat. Plants obtain their nutrients from the soil/root media by way of their roots, and energy from the sun.
Structures – parts of the organism that serve different functions in growth, survival, and reproduction.
Organisms – any form of life.
Environment – all external conditions and factors, living and non-living, that affect an organism during its life time.

Life cycle – the process by which organisms mature, reproduce, and die.

STANDARD 4: EARTH AND SPACE SCIENCE **Second Grade**

As a result of these activities, all USD 312 second graders will observe closely the objects and materials in their environment.

State Benchmark 2: All students will observe and compare objects in the sky.

The sun, moon, stars, clouds, birds, and other objects such as airplanes have properties that can be observed and compared.

Second Grade Indicators	Instructional Examples
The student… 1. observes and recognizes the sun, moon, stars, clouds, birds, airplanes, and other objects in the sky. 2. ▲describes that the sun provides light and warmth.	The student… 1. observes day and night sky regularly. 2a. feels heat from the sun on the face and skin. 2b. observes shadows.

STANDARD 4: EARTH AND SPACE SCIENCE **Second Grade**

As a result of these activities, all USD 312 second graders will observe closely the objects and materials in their environment.

State Benchmark 3: All students will describe changes in weather.

Weather includes snow, rain, sleet, wind, and violent storms.

Second Grade Indicators	Instructional Examples
The student… 1. observes changes in the weather from day to day. 2. discusses weather safety procedures.	The student… 1. draws pictures or uses symbols to record weather observations. 2. practices tornado drill procedures; talks about the dangers of lightning and flooding.