

# N-MUSD Science Curriculum

## Kindergarten Science Concepts

### I. Standards:

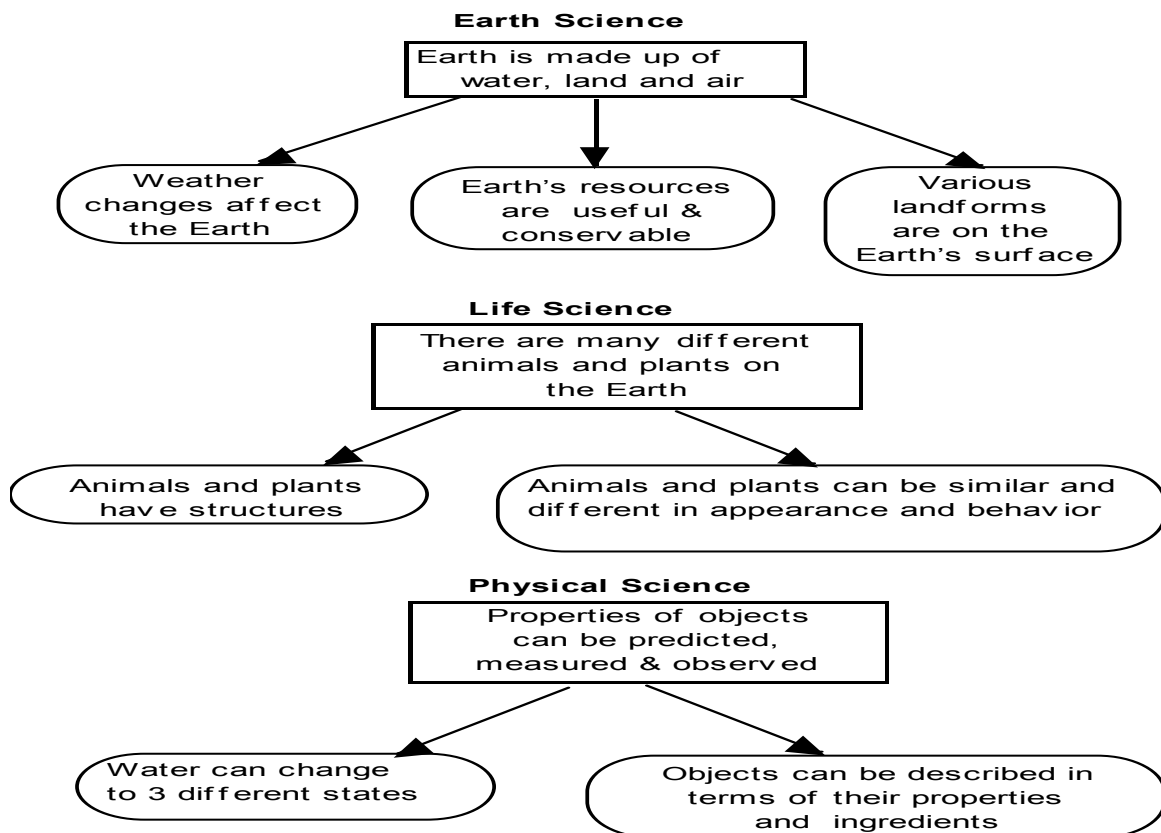
- Earth Science: Earth is made up of water, land and air; characteristics of major landforms, resources and ever-changing weather
- Life Science: identify & describe major structures, similarities and differences of plants & animals
- Physical Science: properties of objects are observed, predicted and measured

### II. Kits Available:

- Wood (Earth): investigate properties of various woods using glue, nails & water
- Animals 2 x 2 (Life): investigate structures & behaviors of similar organisms: goldfish & guppies, land & water snails
- Paper (Physical): explore paper's properties through investigations with paper constructions & water

### III. Cognitive Arena of Kindergartners:

- 5 years are very curious, able to handle one concept at a time
- work best with concrete ideas & are pre-logical
- need hands-on lessons, using manipulatives & five senses



# N-MUSD Science Curriculum

## 1<sup>st</sup> Grade Science Concepts

### I. Standards:

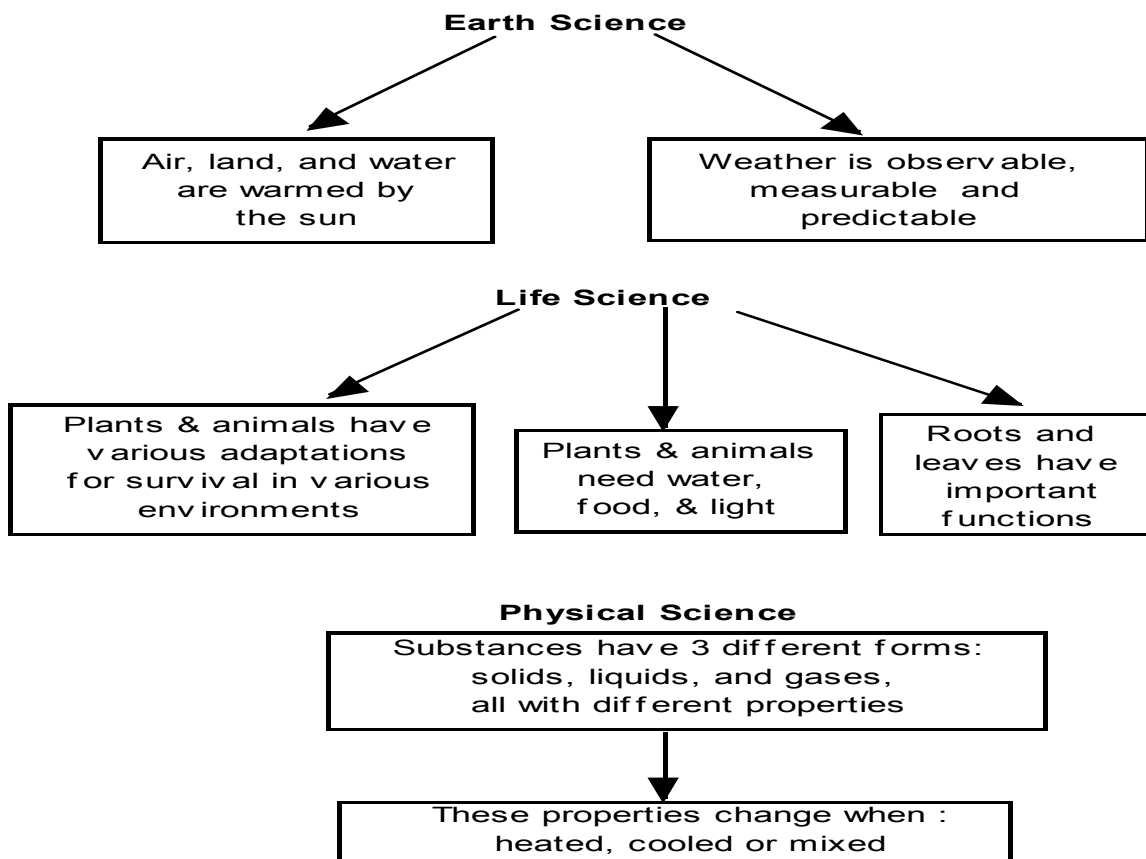
- Earth Science: weather is described, observed and measured, daily and by the season. Air, land & water are warmed by the sun
- Life Science: Plants & animals have needs, structures and adaptations
- Physical Science: Three different states of matter can be changed by cooling, heating or mixing

### II. Kits Available:

- Air & Weather (Earth): monitor weather tubes & syringes, and explore air with self made devices such as kits & balloon rockets.
- Organisms (Life): Investigate similarities and differences in plants & animals through planting & growing seeds, making observing terrariums, & using Venn diagrams
- Solids & Liquids (Physical): Using toothpaste, beans & syrup to explore & compare properties of solids and liquids

### III. Cognitive Area of 1st Graders:

- 6 years begin to understand cause & effect
- Can identify differences
- Lessons should include hands-on activities, games,
- Can apply visual & auditory strategies,
- Need opportunities to investigate and analyze



# N-MUSD Science Curriculum

## 2<sup>nd</sup> Grade Science Concepts

### I. Standards:

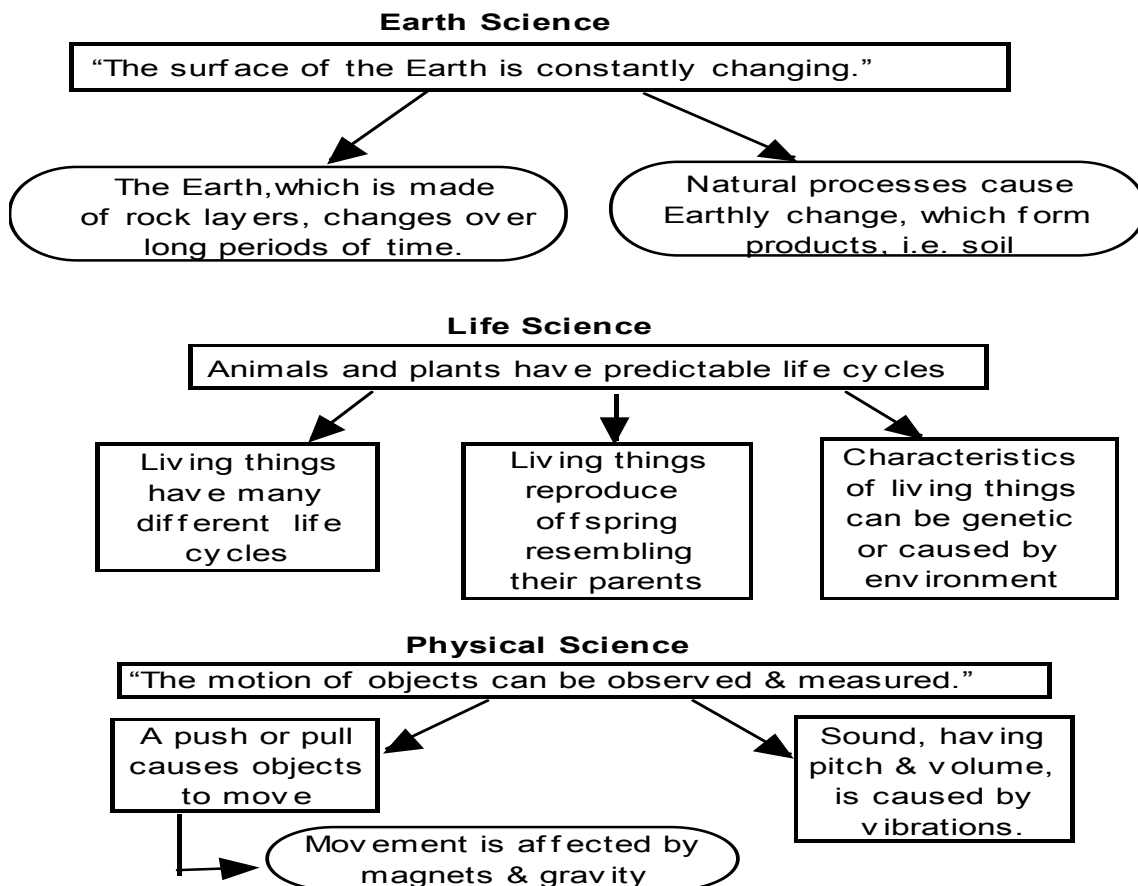
- Earth Science: Earth is made of materials having distinct properties and provides resources. Materials range from rocks to soil, fossils to water, fossilized plants and animals.
- Life Science: Animals and plants have predictable life cycles, and can be influenced by both environmental factors and heredity
- Physical Science: the motion of objects can be measured & observed; students explore this concept with simple machines and magnets.

### II. Kits Available:

- Pebbles, Sand, And Silt (Earth): Investigate properties of rocks & other Earth materials through sorting, comparing, and discovering relevant daily uses.
- Life Cycle of Butterflies (Life): Explore life cycles through careful observation, comparison, and care of butterflies from larva to adult. (Note: Some schools may substitute the raising of fish in the Trout in the Classroom program, which culminates in a release into mountain streams).
- Balance and Motion (Physical): Students learn about the physics of motion through investigations with toys like tops, whirlers, rolling cups, and wheel-and-axle systems.

### III. Cognitive Domain of 2nd Graders:

- Active thinkers, who can categorize, infer, and predict, & are beginning to use abstract reasoning
- Provide hands-on projects using categorizing and taking objects apart
- Individual or paired activities, with little group work



# N-MUSD Science Curriculum

## 3<sup>rd</sup> Grade Science Concepts

### I. Standards:

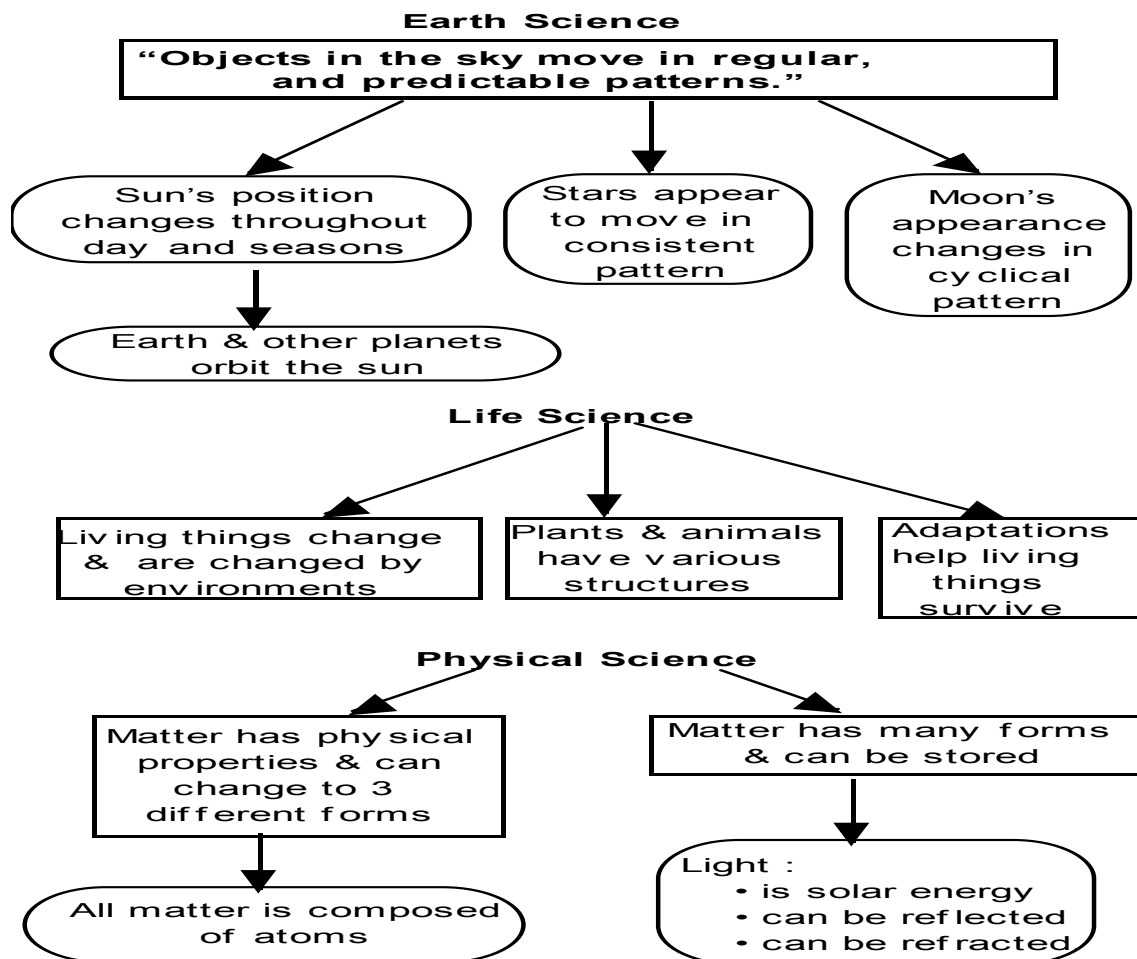
- Earth Science: Space and the planets
- Life Science: Explore adaptations & interdependence of plants and animals with their environments
- Physical Science: The forms, sources, and changing nature of energy, matter, and light

### II. Kits Available:

- Linda Poore's Space module addresses the regular & predictable patterns of the sun, moon, and planets in our solar system, as well as touching on the Physical Science area of light energy from the sun
- Sound: explores the physics of Sound, an energy that can travel through various forms of matter
- Plant Growth and Development: hands-on investigation, from germination through the entire life cycle

### III. Cognitive Arena of 8-Year Olds:

- just beginning to move from concrete to abstract
- full of ideas, energy, and curiosity
- provide cooperative learning activities, especially in categorizing the natural world



# N-MUSD Science Curriculum

## 4<sup>th</sup> Grade Science Concepts

### I. Standards:

- Earth Science: Rocks can be differentiated into
  - a. igneous,
  - b. metamorphic, and
  - c. sedimentary

and identified by their properties and methods of formation; the Earth's surface is constantly reshaped by rapid and slow processes.

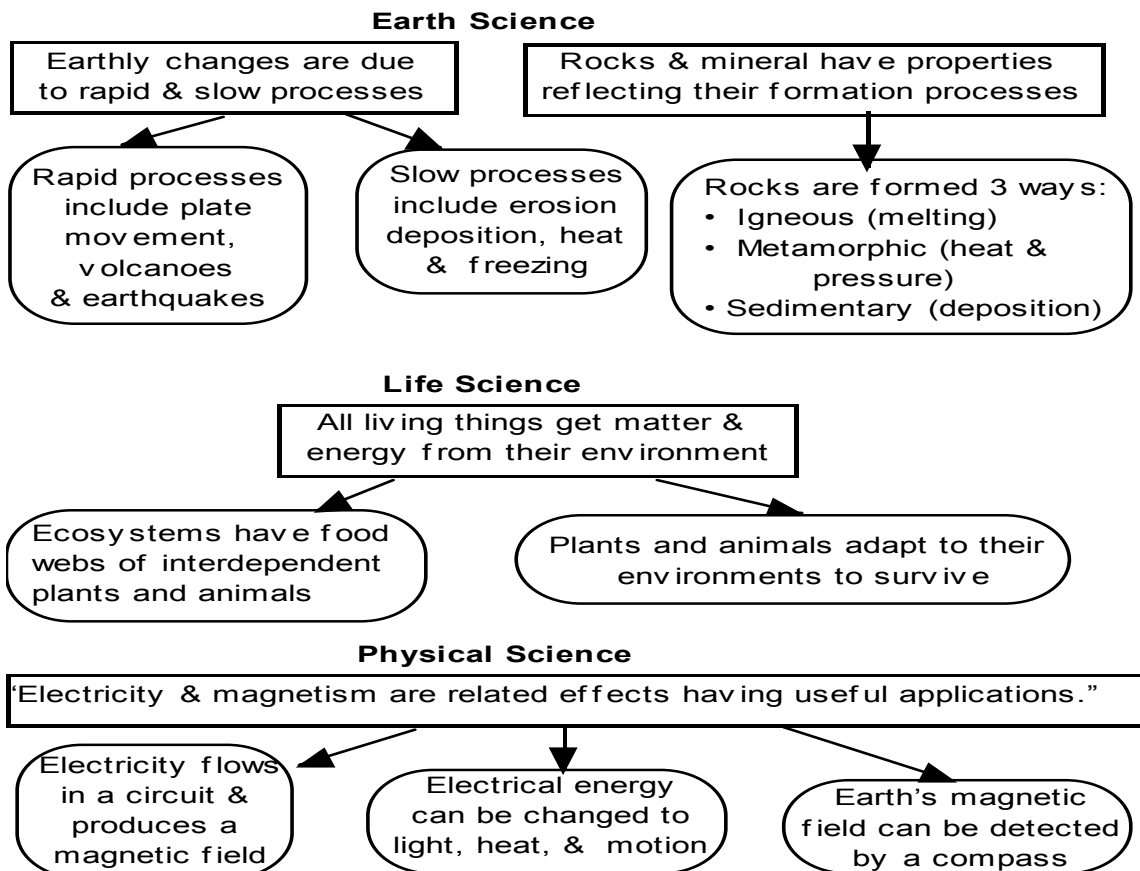
- Life Science: All living things need energy and matter to survive; Living things are interdependent on each other and their environment.
- Physical Science: Electricity and magnets have related effects and useful applications.

### II. Kits Available:

- Rocks and Minerals (Earth): Students investigate properties of various rocks and minerals, classify and test properties, then create and use their own field guides.
- Ecosystems (Life): Students explore ecosystems & the interdependence of plants, animals, and abiotic factors by making and observing aquatic and terrestrial ecosystems.
- Magnetism and Electricity (Physical): Students explore electricity, magnetism, and electromagnetism through communications using homemade telegraphs & codes.

### III. Cognitive Domain of 4th Graders:

- beginning to work with multiple variables
- need to provide activities for scientific exploration of how and why things work



# N-MUSD Science Curriculum

## 5<sup>th</sup> Grade Science Concepts

### I. Standards:

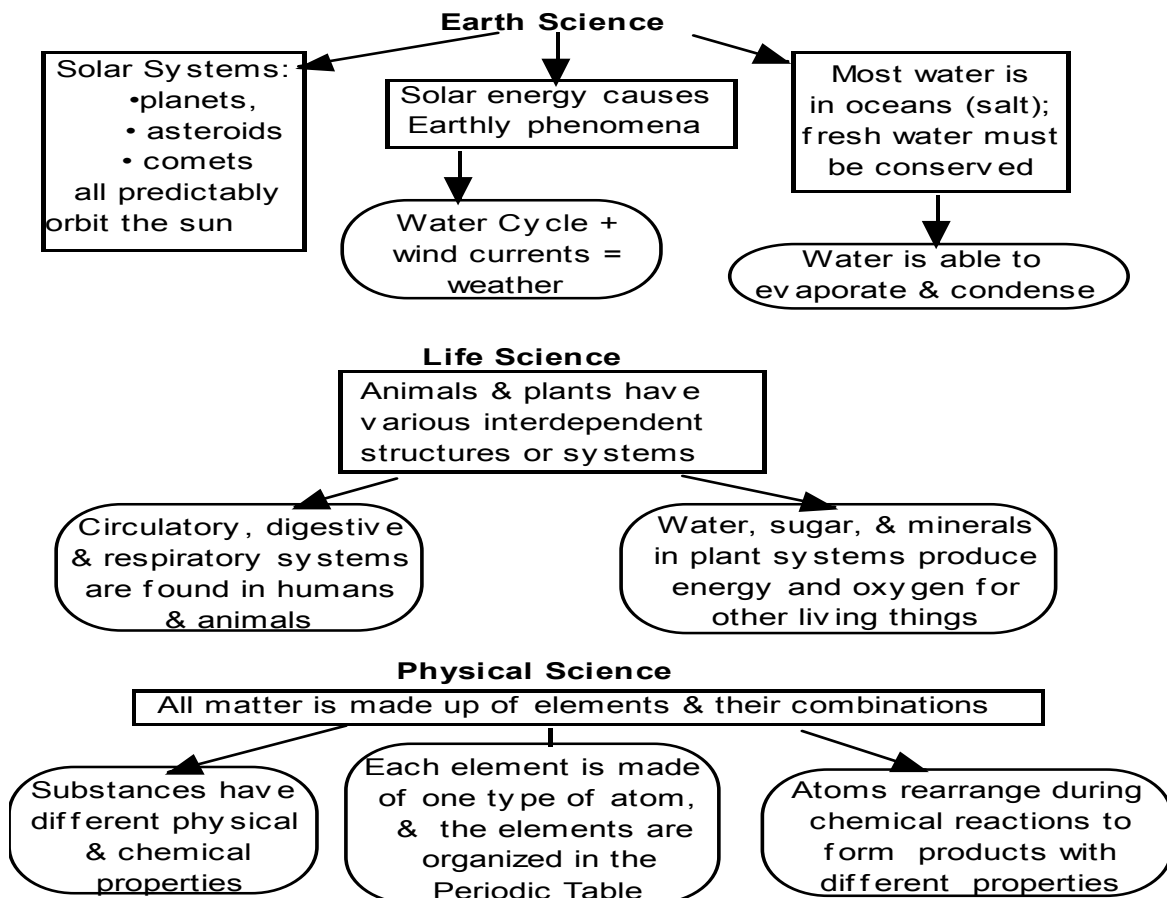
- Earth Science: the study of water, both fresh & salt, and the processes of condensation and evaporation.
- Life Science: structures of living things, with emphasis on how the various systems function (e.g. digestive and respiratory).
- Physical Science: investigating elements, matter, and chemical reactions.

### II. Kits Available:

- Water (Earth): Students experiment with condensation and evaporation, water density and surface tension, as well as observing the states of water, using materials like food coloring and liquid soap in investigations.
- Human Body Systems (Life): Students explore how their bodies function through a detailed investigation into three different but interdependent systems (circulatory, digestive, and respiratory).
- Variables (Physical): Students learn how to control and predict variables, as they manipulate such toys as wind-up planes, catapults, and paper cup boats.

### III. Cognitive Domain of 5th Graders:

- increased ability to use abstract reasoning
- 10 and 11-year olds enjoy categorizing, working in groups, organizing collections, memorizing facts, and applying knowledge.



# N-MUSD Science Curriculum

## 6<sup>th</sup> Grade Science Concepts

### I. Standards:

- focus in the standards is on Earth Science, specifically:
  - plate tectonics,
  - geology,
  - earthquakes
  - volcanoes,
  - topography, and
  - erosion
- energy—thermal, heat, and solar
- ecosystems and natural resources

### II. Kits Available:

- Landforms: use stream tables to explore shaping forces of nature, such as deposition, erosion, weathering, and mountain-building; work with real topographic maps; and create 2-D and 3-D school maps
- Solar Energy: investigate efficient harnessing of the sun's heat using models of solar houses

**Please Note:** The Environmental Standard of exploring of the relationships between living organisms and their ecosystems, is met through the Outdoor Education experience.

### III. Cognitive Arena of 6th Graders

- broad interests, but narrow attention spans
- provide variety and involvement, all at a fast pace

