Appendix B (continued)
What Students Should Understand, Do, and Know

By the end of Second Grade students should be able to:

Understand:

- When science investigation is done the way it was done before, we expect to get a very similar result.
- Sometimes people aren't sure what will happen because they don't know everything that might have an effect.
- It is often helpful to work with a team and to share findings with others. All team members should reach their own individual conclusions, however, about what the findings mean.
- Chunks of rocks come in many sizes and shapes, from boulders to grains of sand and even smaller.
- There are recognizable patterns among objects in the night sky.
- Some changes, such as changes in weather can vary based on season and location.
- Things near the earth fall to the ground unless something holds them up.
- Things can be done to materials to change some of their properties, but not all materials respond the same way to what is done to them.
- All living things need water, food, air, waste removal, and a particular range of temperatures in their environment.
- Animals, including humans, have parts that help them seek, find, and take in food when they feel hunger—eyes and noses for detecting food, legs to get it, arms to carry it away and a mouth to eat it.
- Senses can warn individuals about danger; muscles help them to fight, hide, or get out of danger.
- Some kinds of living things that once lived on earth have completely disappeared, although they were something like others that are alive today.
- Different plants and animals have external features that help them thrive in different kinds of places.
- Living things are found almost everywhere in the world. There are somewhat different kinds in different places.

Do:

- Explain weathering and breakage of rocks.
- Describe, classify, and communicate scientific ideas, e.g., ,rocks in terms of their parts, stars in the night sky,
- Observe, compare, describe and sort objects by their characteristics and properties, e.g., color, hardness, texture, layering, particle size
- Observe, describe, record, and compare patterns in nature.
- Compare and contrast, e.g., seasonal weather patterns, characteristics of living things in various habitats

- Observe and identify scientific phenomena, e.g., observe falling objects and identify things that prevent them from reaching the ground.
- Communicate about their observations, e.g., similar objects of varying masses fall at the same rate.
- Model changes in various materials, e.g., physical changes
- Analyze and interpret data, e.g. temperatures in different locations and different times,
- Investigate and provide evidence to others.
- Develop, communicate, and justify a scientific explanation, e.g., why a habitat is or is not suitable for a specific organism, how the physical characteristics of living things help them meet their basic needs.
- Create possible explanations for natural phenomena, e.g., why some organisms no longer exist but similar organisms are still alive today. Identify responses of living things to their environment.
- Communicate and share findings with others.
- Conduct simple experiments and explain their findings.
- Construct questions, give reasons, and share findings with others.

Know:

- Smaller rocks come from the breakage and weathering of larger rocks.
- Rocks have parts that can be used in their classification.
- Rocks can be sorted by their color, hardness, texture, layering, and particle size.
- Changes in the moon's appearance and apparent motion can be described in terms of patterns.
- Stars have brightness and color differences and can be described by their arrangement.
- The seasons of the year have discernible patterns.
- Temperatures can and do change based on location and time.
- Objects close to the earth fall toward it but can be stopped before reaching the ground.
- Similar objects of varying masses will fall at the same rate.
- Physical changes can occur to earth materials.
- Matter is not destroyed or created through changes.
- Living things in different habitats have characteristics that can be compared and contrasted .
- Different habitats are suitable for different organisms.
- Some organisms that once lived on the earth no longer exist though similar organisms are still on the earth.
- The physical characteristics of living things along with their behaviors and reactions help them to meet their basic needs.
- The behaviors and reactions of living things can and do change in response to changes in the environment including seasonal changes.