

Oakwood City School District

Second Grade Science

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This course features an integrated science curriculum that offers the student learning experiences in the areas of Earth & Space Science and Life Science. Emphasis is placed on gaining an understanding of basic concepts through a variety of classroom activities and laboratories. Students are given the opportunity to solve problems and extend their critical thinking skills, as well as to work cooperatively with their fellow students.

Science Inquiry and Application

During the years of PreK-4 all students become proficient in the use of the following scientific processes, with appropriate laboratory safety techniques, to construct their knowledge and understanding in all science content areas:

- Observe and ask questions about the natural environment
- Plan and conduct simple investigations
- Employ simple equipment and tools to gather data and extend the senses
- Use appropriate mathematics with data to construct reasonable explanations
- Communicate about observations, investigations and explanations
- Review and ask questions about the observations and explanations of others

English Language Arts Standards for Science & Technical Subjects Grades K-2

Key Ideas and Details

Craft and Structure

Integration of Knowledge and Ideas

Range of Reading and Level of Text Complexity

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Content Standards

Earth and Space Science

- I. **The Atmosphere:** *This topic focuses on air and water as they relate to weather and weather changes that can be observed and measured.*
 - A. The atmosphere is made up of air.
 1. Air has properties that can be observed and measured.
 2. The transfer of energy in the atmosphere causes air movement, which is felt as wind.
 3. Wind speed and direction can be measured.
 4. Wind can be measured with numeric value and direction (for example, wind speed is 6 mph, wind direction is W -> E).
 5. Air takes up space (volume) and has weight (mass).
 6. Heating and cooling of air (transfer of energy) results in movement of air (wind).
 7. The direction and speed of the wind and air temperature can be measured using a variety of instruments, such as windsocks, weather vanes, thermometers, or simple anemometers.
 - B. Water is present in the air.
 1. Water is present in the air as clouds, steam, fog, rain, ice, snow, sleet or hail.
 2. When water in the air cools (change of energy), it forms small droplets of water that can be seen as clouds.
 3. Water can change from liquid to vapor in the air and from vapor to liquid.
 4. Water droplets can form into raindrops.
 5. Water droplets can change to solid by freezing into snow, sleet or hail.
 6. Clouds are moved by flowing air.
 7. The physical properties of water (from 1st grade) are expanded to include water vapor (water in the air).
 8. The different states of water are observed in weather events, nature and/or classroom investigations.

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9. The concepts of condensation and evaporation are explored through experimentation and observation.
10. The different parts of the water cycle are explored and discussed, but the emphasis at this grade level is investigating condensation and evaporation at depth, not memorizing the water cycle itself.
11. The focus is on investigation and understanding, not on the vocabulary.
12. Cloud formation and types of clouds are introduced as they relate to weather, storm fronts and changing weather, again the emphasis is not in naming cloud types, but in relating the characteristics of the clouds with weather.
13. Factors such as water contamination/pollution can be introduced within this content statement as it relates to pollutants that can enter waterways through precipitation, evaporation and condensation.

C. Long and short-term weather changes occur due to changes in energy.

1. Changes in energy affect aspects of weather, including temperature, precipitation amount and wind. Note: Discussion of energy at this grade level should be limited to observable changes.
2. Weather is a result of energy change.
3. Heating and cooling of water, air, and land (from sunlight) are directly related to wind, evaporation, condensation, freezing, thawing and precipitation.
4. Weather patterns (long-term) and fronts (short-term) can be documented through consistent measuring of temperature, air pressure, wind speed and direction, and precipitation. Note: Density and convection should not be introduced at this grade level.

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Life Science

- I. **Interactions within Habitats:** This topic focuses on how ecosystems work by observations of simple interactions between the biotic/living and abiotic/nonliving parts of an ecosystem. Just as living things impact the environment in which they live, the environment also impacts living things.
 - A. Living things cause changes on Earth.
 1. Living things function and interact with their physical environments.
 2. Living things cause changes in the environments where they live; the change can be very noticeable or slightly noticeable, fast or slow.
 3. The environment is a combination of the interactions between living and non-living components.
 4. Living things can cause changes in their environment, which can be observed.
 5. These interactions can cause changes in groups of organisms and the physical environment.
 6. Some of the changes that can be observed are beavers building a dam, plants growing in cracks of sidewalks and soil formation.
 7. The focus should not be limited to human interaction with the environment. Students can observe earthworm compost bins, ant farms, and weeds growing on vacant lot.
 - B. Some kinds of individuals that once lived on Earth have completely disappeared, although they were something like others that are alive today.
 1. Some living things that once lived on Earth no longer exist; their basic needs were no longer met.
 2. From looking at fossils it can be determined that many extinct plants and animals looked something like plants and animals that are alive today, while others were very different from anything alive today.
 3. The word “fossil” refers to the physical evidence of former life from a period of time prior to recorded human history.

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4. Students can explore a vast array of organisms, both extinct (Rugosa Coral and ferns) and extant (Brain Coral and fiddleheads). For example, Rugosa Coral and Brain Coral can be used to show that some extinct organisms are like currently living organisms.
5. Research and exposure should focus on the organism and its environment for both extinct and extant organisms. Pictures, video, websites, books, local parks and museums can be used to help students visualize past environments and the organisms that lived in them.

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Physical Science

- I. **Changes In Motion:** This topic focuses on observing the relationship between forces and motion.
 - A. Forces change the motion of an object.
 1. Motion can increase, change direction or stop depending on the force applied.
 2. The change in motion of an object is related to the size of the force.
 3. Some forces act without touching, such as using a magnet to move an object or objects falling to the ground. Note: At this grade level, gravitational and magnetic forces should be introduced through observation and experimentation only.
 4. Forces are required to change the movement of an object (speed up, slow down, change direction, or stop).
 5. Many forces exist when one object is in contact with another object and exerts push or a pull.
 6. Other forces can act without objects touching each other.
 7. Earth pulls down on objects that are not touching Earth's surface with a force called gravity.
 8. Magnets can affect the movement of other magnets or things made of iron, even when there is no touching.
 9. Magnets can either attract one another (a pull) or repel one another (a push).
 10. Magnets have a north pole and a south pole. North poles are attracted to Earth's north pole. Like poles repel. Opposite poles attract.
 11. Some magnetic materials, like iron, can be attracted to both north and south poles.
 12. An electrically charged object pulls on uncharged objects and may either push or pull other charged objects, even when the objects are not touching.
 13. There are two types of charges: positive and negative. Like charges repel. Opposite charges attract.
 14. For a particular object, larger forces can cause larger changes in motion. A strong kick to a rock is able to cause more change in motion than a weak kick to the same rock.