

7th Grade– Science

CONTENT: Earth and Space Sciences

Skills Based on Academic Content Standards
Explain the biogeochemical cycles which move materials between the lithosphere (land), hydrosphere (water) and atmosphere (air).
Explain that Earth's capacity to absorb and recycle materials naturally (e.g., smoke, smog and sewage) can change the environmental quality depending on the length of time involved (e.g. global warming).
Describe the water cycle and explain the transfer of energy between the atmosphere and hydrosphere.
Analyze data on the availability of fresh water that is essential for life and for most industrial and agricultural processes. Describe how rivers, lakes and groundwater can be depleted or polluted becoming less hospitable to life and even becoming unavailable or unsuitable for life.
Make simple weather predictions based on the changing cloud types associated with frontal systems.
Determine how weather observations and measurements are combined to produce weather maps and that data for a specific location at one point in time can be displayed in a station model.
Read a weather map to interpret local, regional and national weather.
Describe how temperature and precipitation determine climatic zones (biomes) (e.g., desert, grasslands, forests, tundra and alpine).
Describe the connection between the water cycle and weather-related phenomenon (e.g., tornadoes, floods, droughts and hurricanes).

CONTENT: Life Sciences

Skills Based on Academic Content Standards
Investigate the great variety of body plans and internal structures found in multicellular organisms.
Investigate how organisms or populations may interact with one another through symbiotic relationships and how some species have become so adapted to each other that neither could survive without the other (e.g., predator-prey, parasitism, mutualism and commensalism).
Explain how the number of organisms an ecosystem can support depends on adequate biotic (living) resources (e.g., plants, animals) and abiotic (non-living) resources (e.g., light, water and soil).
Investigate how overpopulation impacts an ecosystem.
Explain that some environmental changes occur slowly while others occur rapidly (e.g., forest and pond

succession, fires and decomposition).
Summarize the ways that natural occurrences and human activity affect the transfer of energy in Earth's ecosystems (e.g., fire, hurricanes, roads and oil spills).
Explain that photosynthetic cells convert solar energy into chemical energy that is used to carry on life functions or is transferred to consumers and used to carry on their life functions.
Investigate the great diversity among organisms.

CONTENT: Physical Sciences

Skills Based on Academic Content Standards
Investigate how matter can change forms but the total amount of matter remains constant.
Describe how an object can have potential energy due to its position or chemical composition and can have kinetic energy due to its motion.
Identify different forms of energy (e.g., electrical, mechanical, chemical, thermal, nuclear, radiant and acoustic).
Explain how energy can change forms but the total amount of energy remains constant.
Trace energy transformation in a simple closed system (e.g., a flashlight).

CONTENT: Science and Technology

Skills Based on Academic Content Standards
Explain how needs, attitudes and values influence the direction of technological development in various cultures.
Describe how decisions to develop and use technologies often put environmental and economic concerns in direct competition with each other.
Recognize that science can only answer some questions and technology can only solve some human problems.
Design and build a product or create a solution to a problem given two constraints (e.g., limits of cost and time for design and production or supply of materials and environmental effects).

CONTENT: Scientific Inquiry

Skills Based on Academic Content Standards
Explain that variables and controls can affect the results of an investigation and that ideally one variable should be tested at a time; however it is not always possible to control all variables.
Identify simple independent and dependent variables.
Formulate and identify questions to guide scientific investigations that connect to science concepts and can be answered through scientific investigations.
Choose the appropriate tools and instruments and use relevant safety procedures to complete scientific investigations.
Analyze alternative scientific explanations and predictions and recognize that there may be more than one good way to interpret a given set of data.
Identify faulty reasoning and statements that go beyond the evidence or misinterpret the evidence.
Use graphs, tables and charts to study physical phenomena and infer mathematical relationships between variables (e.g., speed and density).

CONTENT: Scientific Ways of Knowing

Skills Based on Academic Content Standards
Show that the reproducibility of results is essential to reduce bias in scientific investigations.
Describe how repetition of an experiment may reduce bias.
Describe how the work of science requires a variety of human abilities and qualities that are helpful in daily life (e.g., reasoning, creativity, skepticism and openness).

