

Correlation of TechCONNECT to
Ohio Academic Content Standards
Indicators by Grade Level
Science, 6–8

Grade Six

Earth and Space Sciences

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| <i>Earth Systems</i> | 1. Describe the rock cycle and explain that there are sedimentary, igneous and metamorphic rocks that have distinct properties (e.g., color, texture) and are formed in different ways. | TechCONNECT Activities: AC081 |
| | 2. Explain that rocks are made of one or more minerals. | TechCONNECT Activities: AC081 |
| | 3. Identify minerals by their characteristic properties. | TechCONNECT Activities: AC081 |

Life Sciences

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| <i>Characteristics and Structure of Life</i> | 1. Explain that many of the basic functions of organisms are carried out by or within cells and are similar in all organisms. | TechCONNECT Activities: AC002, AC139, AC140, AC146, AC153, AC160 |
| | 2. Explain that multicellular organisms have a variety of specialized cells, tissues, organs and organ systems that perform specialized functions. | TechCONNECT Activities: AC002, AC139, AC140, AC146, AC153, AC160 |
| | 3. Identify how plant cells differ from animal cells (e.g., cell wall and chloroplasts). | TechCONNECT Activities: AC002, AC146, AC153, AC160 |
| <i>Heredity</i> | 4. Recognize that an individual organism does not live forever; therefore reproduction is necessary for the continuation of every species and traits are passed on to the next generation through reproduction. | TechCONNECT Activities: AC002, AC116, AC140, AC146, AC153, AC158, AC160 |
| | 5. Describe that in asexual reproduction all the inherited traits come from a single parent. | TechCONNECT Activities: AC002, AC146, AC153, AC160 |

6. Describe that in sexual reproduction an egg and sperm unite and some traits come from each parent, so the offspring is never identical to either of its parents.
- TechCONNECT Activities:**
AC002, AC116, AC140, AC146, AC153, AC160
7. Recognize that likenesses between parents and offspring (e.g., eye color, flower color) are inherited. Other likenesses, such as table manners are learned.
- TechCONNECT Activities:**
AC002, AC116, AC140, AC146, AC153, AC160
- Diversity and Interdependence of Life*
8. Describe how organisms may interact with one another.
- TechCONNECT Activities:**
AC002, AC140, AC146, AC153, AC159, AC160

Physical Sciences

- Nature of Matter*
1. Explain that equal volumes of different substances usually have different masses.
- TechCONNECT Activities:**
AC073
2. Describe that in a chemical change new substances are formed with different properties than the original substance (e.g., rusting, burning).
- TechCONNECT Activities:**
AC073
3. Describe that in a physical change (e.g., state, shape and size) the chemical properties of a substance remain unchanged.
- TechCONNECT Activities:**
AC073
4. Describe that chemical and physical changes occur all around us (e.g., in the human body, cooking and industry).
- TechCONNECT Activities:**
AC073
- Nature of Energy*
5. Explain that the energy found in nonrenewable resources such as fossil fuels (e.g., oil, coal and natural gas) originally came from the sun and may renew slowly over millions of years.
- TechCONNECT Activities:**
AC073, AC154
6. Explain that energy derived from renewable resources such as wind and water is assumed to be available indefinitely.
- TechCONNECT Activities:**
AC073, AC154, AC163
7. Describe how electric energy can be produced from a variety of sources (e.g., sun, wind and coal).
- TechCONNECT Activities:**
AC073, AC154

8. Describe how renewable and nonrenewable energy resources can be managed (e.g., fossil fuels, trees and water).

TechCONNECT Activities:
AC073, AC154, AC163

Science and Technology

Understanding Technology

1. Explain how technology influences the quality of life.
2. Explain how decisions about the use of products and systems can result in desirable or undesirable consequences (e.g., social and environmental).
3. Describe how automation (e.g., robots) has changed manufacturing including manual labor being replaced by highly-skilled jobs.
4. Explain how the usefulness of manufactured parts of an object depend on how well their properties allow them to fit and interact with other materials.

TechCONNECT Activities:
AC143, AC145, AC146, AC154,
AC163

TechCONNECT Activities:
AC143, AC145, AC146, AC154,
AC163

TechCONNECT Activities:
AC143, AC154

TechCONNECT Activities:
AC119, AC143, AC154

Abilities To Do Technological Design

5. Design and build a product or create a solution to a problem given one constraint (e.g., limits of cost and time for design and production, supply of materials and environmental effects).

TechCONNECT Activities:
AC119, AC143, AC154

Scientific Inquiry

Doing Scientific Inquiry

1. Explain that there are not fixed procedures for guiding scientific investigations; however, the nature of an investigation determines the procedures needed.
2. Choose the appropriate tools or instruments and use relevant safety procedures to complete scientific investigations.
3. Distinguish between observation and inference.

TechCONNECT Activities:
AC119, AC120, AC122, AC140,
AC145, AC146, AC153, AC155

TechCONNECT Activities:
AC119, AC120, AC122 AC140,
AC145, AC146, AC153, AC155

TechCONNECT Activities:
AC120, AC122 AC140, AC145,
AC146, AC153, AC155

4. Explain that a single example can never prove that something is always correct, but sometimes a single example can disprove something.

TechCONNECT Activities:
AC120, AC122 AC140, AC145,
AC146, AC153, AC155

Scientific Ways of Knowing

- Nature of Science*
1. Identify that hypotheses are valuable even when they are not supported.

TechCONNECT Activities:
AC122, AC140, AC146, AC153,
AC155

- Ethical Practices*
2. Describe why it is important to keep clear, thorough and accurate records.

TechCONNECT Activities:
AC120, AC122, AC140, AC145,
AC146, AC153, AC154, AC155,
AC159

- Science and Society*
3. Identify ways scientific thinking is helpful in a variety of everyday settings.

TechCONNECT Activities:
AC120, AC122, AC140, AC145,
AC146, AC153, AC155, AC159

4. Describe how the pursuit of scientific knowledge is beneficial for any career and for daily life.

TechCONNECT Activities:
AC120, AC122, AC140, AC145,
AC146, AC153, AC155, AC159

5. Research how men and women of all countries and cultures have contributed to the development of science.

TechCONNECT Activities:
AC120, AC122, AC140, AC145,
AC146, AC153, AC155, AC159

Grade Seven

Earth and Space Sciences

- Earth Systems*
1. Explain the biogeochemical cycles which move materials between the lithosphere (land), hydrosphere (water) and atmosphere (air).

TechCONNECT Activities:
AC037, AC102, AC145, AC146,
AC153, AC154, AC155, AC163

2. 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).

TechCONNECT Activities:
AC037, AC102, AC145, AC146,
AC153, AC154, AC155, AC159,
AC163

3. Describe the water cycle and explain the transfer of energy between the atmosphere and hydrosphere.

TechCONNECT Activities:
AC037, AC102, AC145, AC146,
AC153, AC154, AC155, AC163

4. 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.
TechCONNECT Activities:
AC037, AC102, AC145, AC146, AC153, AC154, AC155, AC159, AC163
5. Make simple weather predictions based on the changing cloud types associated with frontal systems.
TechCONNECT Activities:
AC037, AC145, AC146, AC153, AC154, AC155, AC163
6. 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.
TechCONNECT Activities:
AC037, AC145, AC146, AC153, AC154, AC155, AC163
7. Read a weather map to interpret local, regional and national weather.
TechCONNECT Activities:
AC037, AC145, AC146, AC153, AC154, AC155, AC163
8. Describe how temperature and precipitation determine climatic zones (biomes) (e.g., desert, grasslands, forests, tundra and alpine).
TechCONNECT Activities:
AC037, AC145, AC146, AC153, AC154, AC155, AC163
9. Describe the connection between the water cycle and weather-related phenomenon (e.g., tornadoes, floods, droughts and hurricanes).
TechCONNECT Activities:
AC037, AC145, AC146, AC153, AC154, AC155, AC163

Life Sciences

Characteristics and Structure of Life

1. Investigate the great variety of body plans and internal structures found in multicellular organisms.
TechCONNECT Activities:
AC002, AC013, AC027, AC036, AC106, AC107, AC139, AC146, AC153, AC158, AC159, AC160

Diversity and Interdependence of Life

2. 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).
TechCONNECT Activities:
AC002, AC013, AC036, AC106, AC107, AC146, AC153, AC158, AC159, AC160

3. 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).
TechCONNECT Activities:
AC002, AC013, AC036, AC106, AC107, AC146, AC153, AC158, AC159, AC160
4. Investigate how overpopulation impacts an ecosystem.
TechCONNECT Activities:
AC002, AC013, AC036, AC106, AC107, AC146, AC153, AC154, AC158, AC159, AC160
5. Explain that some environmental changes occur slowly while others occur rapidly (e.g., forest and pond succession, fires and decomposition).
TechCONNECT Activities:
AC002, AC013, AC036, AC106, AC107, AC146, AC153, AC155, AC158, AC159, AC160
6. 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).
TechCONNECT Activities:
AC013, AC036, AC106, AC107, AC145, AC146, AC153, AC158, AC159, AC160
7. 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.
TechCONNECT Activities:
AC013, AC036, AC106, AC107, AC146, AC153, AC158, AC159, AC160
- Evolutionary Theory* 8. Investigate the great diversity among organisms.
TechCONNECT Activities:
AC002, AC013, AC036, AC106, AC107, AC140, AC146, AC153, AC158, AC159, AC160

Physical Sciences

- Nature of Matter*
1. Investigate how matter can change forms but the total amount of matter remains constant.
TechCONNECT Activities:
AC038, AC138
- Nature of Energy*
2. Describe how an object can have potential energy due to its position or chemical composition and can have kinetic energy due to its motion.
TechCONNECT Activities:
AC033, AC038
 3. Identify different forms of energy (e.g., electrical, mechanical, chemical, thermal, nuclear, radiant and acoustic).
TechCONNECT Activities:
AC033, AC038

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| 4. Explain how energy can change forms but the total amount of energy remains constant. | TechCONNECT Activities: AC033, AC038 |
| 5. Trace energy transformation in a simple closed system (e.g., a flashlight). | TechCONNECT Activities: AC033, AC038 |

Science and Technology

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| <i>Understanding Technology</i> | 1. Explain how needs, attitudes and values influence the direction of technological development in various cultures. | TechCONNECT Activities: AC143, AC145, AC146, AC153, AC154 |
| | 2. Describe how decisions to develop and use technologies often put environmental and economic concerns in direct competition with each other. | TechCONNECT Activities: AC145, AC146, AC153, AC154 |
| | 3. Recognize that science can only answer some questions and technology can only solve some human problems. | TechCONNECT Activities: AC143, AC145, AC146, AC153, AC154 |
| <i>Abilities To Do Technological Design</i> | 4. 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). | TechCONNECT Activities: AC119, AC143, AC145, AC146, AC153, AC154 |

Scientific Inquiry

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| <i>Doing Scientific Inquiry</i> | 1. 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. | TechCONNECT Activities: AC074, AC119, AC122, AC140, AC145, AC146, AC153, AC155 |
| | 2. Identify simple independent and dependent variables. | TechCONNECT Activities: AC074, AC119, AC122, AC140, AC146, AC153, AC155 |
| | 3. Formulate and identify questions to guide scientific investigations that connect to science concepts and can be answered through scientific investigations. | TechCONNECT Activities: AC074, AC119, AC120, AC122, AC140, AC145, AC146, AC153, AC155 |

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| 4. Choose the appropriate tools and instruments and use relevant safety procedures to complete scientific investigations. | TechCONNECT Activities: AC074, AC119, AC120, AC122, AC140, AC145, AC146, AC153, AC155, AC159 |
| 5. Analyze alternative scientific explanations and predictions and recognize that there may be more than one good way to interpret a given set of data. | TechCONNECT Activities: AC074, AC119, AC120, AC122, AC140, AC145, AC146, AC153, AC155 |
| 6. Identify faulty reasoning and statements that go beyond the evidence or misinterpret the evidence. | TechCONNECT Activities: AC074, AC120, AC122, AC140, AC145, AC146, AC153, AC155 |
| 7. Use graphs, tables and charts to study physical phenomena and infer mathematical relationships between variables (e.g., speed and density). | TechCONNECT Activities: AC074, AC116, AC119, AC120, AC122, AC140, AC145, AC146, AC153, AC155, AC158, AC159 |

Scientific Ways of Knowing

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| <i>Ethical Practices</i> | 1. Show that the reproducibility of results is essential to reduce bias in scientific investigations. | TechCONNECT Activities: AC122, AC146, AC153, AC155 |
| | 2. Describe how repetition of an experiment may reduce bias. | TechCONNECT Activities: AC122, AC146, AC153, AC155 |
| <i>Science and Society</i> | 3. 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). | TechCONNECT Activities: AC122, AC146, AC153, AC155 |

Grade Eight

Earth and Space Sciences

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| <i>The Universe</i> | 1. Describe how objects in the solar system are in regular and predictable motions that explain such phenomena as days, years, seasons, eclipses, tides and moon cycles. | TechCONNECT Activities: AC034, AC119, AC120 |
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| | 2. Explain that gravitational force is the dominant force determining motions in the solar system and in particular keeps the planets in orbit around the sun. | TechCONNECT Activities: AC034, AC119, AC120 |
| | 3. Compare the orbits and composition of comets and asteroids with that of Earth. | TechCONNECT Activities: AC034, AC119, AC120 |
| | 4. Describe the effect that asteroids or meteoroids have when moving through space and sometimes entering planetary atmospheres (e.g., meteor-"shooting star" and meteorite). | TechCONNECT Activities: AC034, AC119, AC120 |
| | 5. Explain that the universe consists of billions of galaxies that are classified by shape. | TechCONNECT Activities: AC034, AC119, AC120 |
| | 6. Explain interstellar distances are measured in light years (e.g., the nearest star beyond the sun is 4.3 light years away). | TechCONNECT Activities: AC034, AC119, AC120 |
| | 7. Examine the life cycle of a star and predict the next likely stage of a star. | TechCONNECT Activities: AC034, AC119, AC120 |
| | 8. Name and describe tools used to study the universe (e.g., telescopes, probes, satellites and spacecraft). | TechCONNECT Activities: AC034, AC119, AC120 |
| <i>Earth Systems</i> | 9. Describe the interior structure of Earth and Earth's crust as divided into tectonic plates riding on top of the slow moving currents of magma in the mantle. | TechCONNECT Activities: AC034, AC077 |
| | 10. Explain that most major geological events (e.g., earthquakes, volcanic eruptions, hot spots and mountain building) result from plate motion. | TechCONNECT Activities: AC034, AC077 |
| | 11. Use models to analyze the size and shape of Earth, its surface and its interior (e.g., globes, topographic maps, satellite images). | TechCONNECT Activities: AC034, AC077 |
| | 12. Explain that some processes involved in the rock cycle are directly related to thermal energy and forces in the mantle that drive plate motions. | TechCONNECT Activities: AC034, AC077 |

13. Describe how landforms are created through a combination of destructive (e.g., weathering and erosion) and constructive processes (e.g., crustal deformation, volcanic eruptions and deposition of sediment).
TechCONNECT Activities:
AC034, AC077, AC155
14. Explain that folding, faulting and uplifting can rearrange the rock layers so the youngest is not always found on top.
TechCONNECT Activities:
AC034, AC077
15. Illustrate how the three primary types of plate boundaries (transform, divergent and convergent) cause different landforms (e.g., mountains, volcanoes and ocean trenches).
TechCONNECT Activities:
AC034, AC077, AC103, AC104, AC105

Life Sciences

- Heredity*
1. Describe that asexual reproduction limits the spread of detrimental characteristics through a species and allows for genetic continuity.
TechCONNECT Activities:
AC002, AC140, AC146, AC153, AC158, AC159, AC160
2. Recognize that in sexual reproduction new combinations of traits are produced which may increase or decrease an organism's chances for survival.
TechCONNECT Activities:
AC002, AC139, AC140, AC146, AC153, AC158, AC159, AC160
- Evolutionary Theory*
3. Explain how variations in structure, behavior or physiology allow some organisms to enhance their reproductive success and survival in a particular environment.
TechCONNECT Activities:
AC002, AC116, AC139, AC140, AC146, AC153, AC158, AC159, AC160
4. Explain that diversity of species is developed through gradual processes over many generations (e.g., fossil record).
TechCONNECT Activities:
AC002, AC139, AC140, AC146, AC153, AC158, AC159, AC160
5. Investigate how an organism adapted to a particular environment may become extinct if the environment, as shown by the fossil record, changes.
TechCONNECT Activities:
AC002, AC139, AC140, AC146, AC153, AC158, AC159, AC160

Physical Sciences

- Forces and Motion*
1. Describe how the change in the position (motion) of an object is always judged and described in comparison to a reference point. **TechCONNECT Activities:**
AC033
 2. Explain that motion describes the change in the position of an object (characterized by a speed and direction) as time changes. **TechCONNECT Activities:**
AC033
 3. Explain that an unbalanced force acting on an object changes that object's speed and/or direction. **TechCONNECT Activities:**
AC033
- Nature of Energy*
4. Demonstrate that waves transfer energy. **TechCONNECT Activities:**
AC033
 5. Demonstrate that vibrations in materials may produce waves that spread away from the source in all directions (e.g., earthquake waves and sound waves). **TechCONNECT Activities:**
AC033

Science and Technology

- Understanding Technology*
1. Examine how science and technology have advanced through the contributions of many different people, cultures and times in history. **TechCONNECT Activities:**
AC120, AC122, AC143, AC145, AC146, AC153, AC154, AC159
 2. Examine how choices regarding the use of technology are influenced by constraints caused by various unavoidable factors (e.g., geographic location, limited resources, social, political and economic considerations). **TechCONNECT Activities:**
AC122, AC143, AC145, AC146, AC153, AC154, AC159
- Abilities To Do Technological Design*
3. Design and build a product or create a solution to a problem given more than two constraints (e.g., limits of cost and time for design and production, supply of materials and environmental effects). **TechCONNECT Activities:**
AC119, AC120, AC122, AC143, AC145, AC146, AC153, AC154
 4. Evaluate the overall effectiveness of a product design or solution. **TechCONNECT Activities:**
AC119, AC120, AC122, AC143, AC146, AC153, AC154

Scientific Inquiry

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| <i>Doing Scientific Inquiry</i> | 1. Choose the appropriate tools or instruments and use relevant safety procedures to complete scientific investigations. | TechCONNECT Activities: AC116, AC119, AC120, AC122, AC140, AC146, AC153, AC155 |
| | 2. Describe the concepts of sample size and control and explain how these affect scientific investigations. | TechCONNECT Activities: AC122, AC146, AC153, AC155 |
| | 3. Read, construct and interpret data in various forms produced by self and others in both written and oral form (e.g., tables, charts, maps, graphs, diagrams and symbols). | TechCONNECT Activities: AC119, AC120, AC122, AC140, AC145, AC146, AC153, AC155, AC159 |
| | 4. Apply appropriate math skills to interpret quantitative data (e.g., mean, median and mode). | TechCONNECT Activities: AC119, AC120, AC122, AC140, AC145, AC146, AC153, AC155 |

Scientific Ways of Knowing

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| <i>Nature of Science</i> | 1. Identify the difference between description (e.g., observation and summary) and explanation (e.g., inference, prediction, significance and importance). | TechCONNECT Activities: AC122, AC146, AC153, AC155 |
| <i>Ethical Practices</i> | 2. Explain why it is important to examine data objectively and not let bias affect observations. | TechCONNECT Activities: AC095, AC119, AC120, AC122, AC146, AC153, AC155 |