Pennsylvania Science, Environment, Ecology, Technology and Engineering (K-5)

Grade 5

Adopted 2022

Earth and Space Sciences

Earth and Human Activity

1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. ESH.5.1
2. Generate and design possible solutions to a current environmental issue, threat, or concern. ESH.5.2

Earth's Systems

1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. ESS.5.1
2. Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. ESS.5.2

Earth's Place in the Universe

1. Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth. EEP.5.1
2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. EEP.5.2

Life Science

From Molecules to Organisms: Structures and Processes

1. Support an argument that plants get the materials they need for growth chiefly from air and water. LSM.5.1

Ecosystems: Interactions, Energy, and Dynamics

1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. LSE.5.1

Physical Science

Motion and Stability: Forces and Interactions

1. Support an argument that the gravitational force exerted by Earth on objects is directed down. PSM.5.1

Energy

1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. PSE.5.1

Matter and Its Interactions

1. Develop a model to describe that matter is made of particles too small to be seen. PSI.5.1
2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. PSI.5.2
3. Make and communicate observations and measurements to identify materials based on their properties. PSI.5.3
4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances. PSI.5.4
5. Interpret and analyze data to make decisions about how to utilize materials based on their properties. PSI.5.5

Environmental Literacy and Sustainability

Agricultural and Environmental Systems and Resources

1. Analyze how living organisms, including humans, affect the environment in which they live, and how their environment affects them. ELA.35.1
2. Make a claim about the environmental and social impacts of design solutions and civic actions, including their own actions. ELA.35.2

Environmental Literacy Skills

1. Investigate how perspectives over the use of resources and the development of technology have changed over time and resulted in conflict over the development of societies and nations. ELE.35.1
2. Develop a model to demonstrate how local environmental issues are connected to larger local environment and human systems. ELE.35.2

Sustainability and Stewardship

1. Critique ways that people depend on and change the environment. ELS.35.1
2. Examine ways you influence your local environment and community by collecting and displaying data. ELS.35.2
3. Construct an argument to support whether action is needed on a selected environmental issue and propose possible solutions. ELS.35.3

Technology and Engineering

Applying, Maintaining, and Assessing Technological Products and Systems

1. Follow directions to complete a technological task. TEA.35.1
2. Use appropriate symbols, numbers and words to communicate key ideas about technological products and systems. TEA.35.2
3. Identify why a product or system is not working properly. TEA.35.3
4. Examine information to assess the trade-offs of using a product or system. TEA.35.4

Core Concepts of Technology and Engineering

1. Describe how a subsystem is a system that operates as a part of another larger system. TEC.35.1
2. Illustrate how, when parts of a system are missing, it may not work as planned. TEC.35.2
3. Identify the resources needed to get a technical job done, such as people, materials, capital, tools, machines, knowledge, energy, and time. TEC.35.3
4. Describe the properties of different materials. TEC.35.4
5. Demonstrate how tools and machines extend human capabilities, such as holding, lifting, carrying, fastening, separating, and computing. TEC.35.5
6. Describe requirements of designing or making a product or system. TEC.35.6
7. Create a new product that improves someone's life. TEC.35.7

Design in Technology and Engineering Education

1. Illustrate that there are multiple approaches to design. TED.35.1
2. Demonstrate essential skills of the engineering design process. TED.35.2
3. Evaluate designs based on criteria, constraints, and standards. TED.35.3
4. Interpret how good design improves the human condition. TED.35.4
5. Apply universal principles and elements of design. TED.35.5
6. Evaluate the strengths and weaknesses of existing design solutions, including their own solutions. TED.35.6
7. Practice successful design skills. TED.35.7
8. Apply tools, techniques, and materials in a safe manner as part of the design process. TED.35.8

History of Technology

1. Create representations of the tools people made, how they cultivated to provide food, made clothing, and built shelters to protect themselves. TEH.35.1

Impacts of Technology

1. Describe the helpful and harmful effects of technology. TEI.35.1
2. Judge technologies to determine the best one to use to complete a given task or meet a need. TEI.35.2
3. Classify resources used to create technologies as either renewable or nonrenewable. TEI.35.3
4. Explain why responsible use of technology requires sustainable management of resources. TEI.35.4
5. Predict how certain aspects of their daily lives would be different without given technologies. TEI.35.5

Influence of Society on Technological Development

1. Determine factors that influence changes in a society's technological systems or infrastructure. TES.35.1
2. Explain how technologies are developed or adapted when individual or societal needs and wants change. TES.35.2

Integration of Knowledge, Technologies, and Practices

1. Demonstrate how simple technologies are often combined to form more complex systems. TEK.35.1
2. Explain how various relationships can exist between technology and engineering and other content areas. TEK.35.2

Nature and Characteristics of Technology and Engineering

1. Compare how things found in nature differ from things that are human-made, noting differences and similarities in how they are produced and used. TEN.35.1
2. Describe the unique relationship between science and technology, and how the natural world can contribute to the human-made world to foster innovation. TEN.35.2
3. Differentiate between the role of scientists, engineers, technologists, and others in creating and maintaining technological systems. TEN.35.3
4. Design solutions by safely using tools, materials, and skills. TEN.35.4
5. Explain how solutions to problems are shaped by economic, political, and cultural forces. TEN.35.5