

The Nature of Technology

Standard 1: Develop an understanding of the characteristics and scope of technology

Students will understand that:

- TECH6.1.1** New products and systems can be developed to solve problems or to help do things that could not be done without the help of technology.
- TECH6.1.2** The development of technology is a human activity and is a result of individual or collective needs and the ability to be creative.
- TECH6.1.3** Technology is closely linked to creativity, which has resulted in innovation.

Standard 2: Develop an understanding of the core concepts of technology

Students will understand that:

- TECH6.2.1** Technological systems include input, processes, output, and at times feedback.
- TECH6.2.2** Systems thinking involves considering how every part relates to others.
- TECH6.2.3** An open-loop system has no feedback path and requires human intervention, while a closed-loop system uses feedback
- TECH6.2.4** Technological systems can be connected to one another.
- TECH6.2.5** Controls are mechanisms or particular steps that people perform using information about the system that causes systems to change.

Standard 3: Develop an understanding of the relationships among technologies and connections between technology and other fields of study

Students will understand that:

- TECH6.3.1** Technological often interact with one another.
- TECH6.3.2** Knowledge gained from other fields of study has a direct effect on the development of technological products and systems.

Technology and Society

Standard 4: Develop an understanding of the cultural, social, economic, and political effects of technology

Students will understand that:

- TECH6.4.1** The use of technology affects humans in various ways, including their safety, comfort, choices, and attitudes about technology's development and use.
- TECH6.4.2** Technology, by itself, is neither good nor bad, but decisions about the use of products and systems can result in desirable or undesirable consequences.
- TECH6.4.3** The development and use of technology poses ethical issues.
- TECH6.4.4** Economic, political, and cultural issues are influenced by the development and use of technology.

Standard 5: Develop an understanding of the effects of technology on the environment

Students will understand that:

- TECH6.5.1** The management of waste produced by technological systems is an important societal issue.
- TECH6.5.2** Decisions to develop and use technologies often put environmental and economic concerns in direct competition with one another.

Standard 6: Develop an understanding of the role of society in the development and use of technology

Students will understand that:

- TECH6.6.1** Throughout history, new technologies have resulted from the demands, values, and interests of individuals, businesses, industries, and societies.
- TECH6.6.2** The use of inventions and innovations has led to changes in society and the creation of new needs and wants.
- TECH6.6.3** Social and cultural priorities and values are reflected in technological devices.
- TECH6.6.4** Meeting societal expectations is the driving force behind the acceptance and use of products and systems.

Standard 7: Develop an understanding of the influences of technology in history

Students will understand that:

- TECH6.7.1** Many inventions and innovations have evolved by using slow and methodical processes of tests and refinements.

Design

Standard 8: Develop an understanding of the attributes of design

Students will understand that:

- TECH6.8.1** Design is a creative planning process that leads to useful products and systems.
- TECH6.8.2** There is no perfect design.
- TECH6.8.3** Requirements for a design are made up of criteria and constraints.

Standard 9: Develop an understanding of engineering design

Students will understand that:

- TECH6.9.1** Design involves a set of steps, which can be performed in different sequences and repeated as needed.
- TECH6.9.2** Brainstorming is a group problem-solving design process in which each person in the group presents his or her ideas in an open forum.
- TECH6.9.3** Modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.

Standard 10: Develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem-solving

Students will understand that:

- TECH6.10.1** Troubleshooting is a problem solving method used to identify the cause of a malfunction in a technological system.
- TECH6.10.2** Invention is a process of turning ideas and imagination into devices and systems. Innovation is the process of modifying an existing product or system to improve it.
- TECH6.10.3** Some technological problems are best solved through experimentation.

Abilities for a Technological World

Standard 11: Develop abilities to apply the design process

Students will be able to:

- TECH6.11.1** Specify criteria and constraints for the design.
- TECH6.11.2** Make a product or system and document the solution.

Standard 12: Develop abilities to use and maintain technological products and systems

Students will be able to:

- TECH6.12.1** Use information provided in manuals, protocols, or by experienced people to see and understand how things work.
- TECH6.12.2** Use computers and calculators in various applications.

Standard 13: Develop an understanding of and be able to assess the impact of products and systems

This standard does not apply.

The Designed World**Standard 14: Develop an understanding of and be able to select and use communications, manufacturing, construction, transportation, energy and power technologies**

Students will know and understand:

- TECH6.14.1** Energy is the capacity to do work.