## The Nature of Technology

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

**Students will understand that:**

- **TECH7.1.1** 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.
- **TECH7.1.2** The development of technology is a human activity and is a result of individual or collective needs and the ability to be creative.
- **TECH7.1.3** Technology is closely linked to creativity, which has resulted in innovation.
- **TECH7.1.4** Corporations can often create demand for a product by bringing it onto the market and advertising it.

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

**Students will understand that:**

- **TECH7.2.1** Malfunction of any part of a system may affect the function and quality of the system.
- **TECH7.2.2** Requirements are the parameters placed on the development of a product or system.
- **TECH7.2.3** Trade-off is a decision process recognizing the need for careful compromises among competing factors.

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

**Students will understand that:**

- **TECH7.3.1** Technological often interact with one another.
- **TECH7.3.2** A product, system, or environment developed for one setting may be applied to another setting.

## Technology and Society

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

**Students will understand that:**

- **TECH7.4.1.** Technology, by itself, is neither good nor bad, but decisions about the use of products and systems can result in desirable or undesirable consequences.
- **TECH7.4.2.** The development and use of technology poses ethical issues.
- **TECH7.4.3.** 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:**

- **TECH7.5.1** Technologies can be used to repair damage caused by natural disasters and to break down waste from the use of various products and systems.
- **TECH7.5.2** 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:**

- **TECH7.6.1** The use of inventions and innovations has led to changes in society and the creation of new needs and wants.
- **TECH7.6.2** Social and cultural priorities and values are reflected in technological devices.
- **TECH7.6.3** 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:**

- **TECH7.7.1** Many inventions and innovations have evolved by using slow and methodical processes of tests and refinements.
- **TECH7.7.2** The specialization of function has been at the heart of many technological improvements.
- **TECH7.7.3** In the past, an invention or innovation was not usually developed with the knowledge of science.

### Design

### Standard 8: Develop an understanding of the attributes of design

**Students will understand that:**

- **TECH7.8.1** Design is a creative planning process that leads to useful products and systems.
- **TECH7.8.2** There is no perfect design.
- **TECH7.8.3** Requirements for a design are made up of criteria and constraints.

### Standard 9: Develop an understanding of engineering design

**Students will understand that:**

- **TECH7.9.1** Design involves a set of steps, which can be performed in different sequences and repeated as needed.
- **TECH7.9.2** Brainstorming is a group problem-solving design process in which each person in the group presents his or her ideas in an open forum.
- **TECH7.9.3** 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:**

- **TECH7.10.1** Troubleshooting is a problem solving method used to identify the cause of a malfunction in a technological system.
- **TECH7.10.2** 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.
- **TECH7.10.3** 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:**

- **TECH7.11.1** Apply a design process to solve problems in and beyond the laboratory-classroom.
- **TECH7.11.2** Specify criteria and constraints for the design.
- **TECH7.11.3** Make two-dimensional and three dimensional representations of the designed solution.
- **TECH7.11.4** Test and evaluate the design in relation to pre-established requirements, such as criteria and constraints, and refine as needed.
- **TECH7.11.5** 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:**

- **TECH7.12.1** Use computers and calculators in various applications.
### Standard 13: Develop an understanding of and be able to assess the impact of products and systems

Students will be able to:

| TECH7.13.1 | Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology. |

---

### 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:

| TECH7.14.1 | The use of symbols, measurements, and drawings promotes clear communication by providing a common language to express ideas. |
| TECH7.14.2 | Governmental regulations often influence the design and operation of transportation systems. |
| TECH7.14.3 | Chemical technologies are used to modify or alter chemical substances. |
| TECH7.14.4 | Marketing a product involves informing the public about it as well as assisting in selling and distributing it. |