

Grades 3, 4

Adopted 2011

Engineering and technology impacts the world and humankind. ET1

1 (K-4). Demonstrate and identify reasons for the development of technology and its effects on humankind. ET1.1 (K-4)

1 (3-4). Students demonstrate an understanding of the nature of technology by: ET1.1 (3-4)

- 1a. comparing and contrasting life with and without current technology and how technology impacts everyday life.
- 1b. recognizing that technology has positive and negative outcomes utilizing specific examples.
- 1c. identifying natural (e.g. wood, fur, stone) vs. human-made objects (e.g. plastic, Styrofoam)

2 (K-4). Discuss and develop an understanding of technology and its relationship to the natural and designed (human-made) world in the local community. ET1.2 (K-4)

2 (K-2). Students demonstrate an understanding of the need for technology by: ET1.2 (K-2)

- 2a. understanding that technology can make life easier (e.g. clothes, telephone, automobile, microwave).
- 2b. discussing the purpose of technology and its relationship to the natural and designed world

2 (3-4). Students demonstrate an understanding of the need for technology by: ET1.2 (3-4)

- 2a. understanding that technology is any process or invention that affects society (e.g. impact of the tractor on farming, indoor plumbing).
 - 2b. discussing the purpose of technology and how it has affected humankind. (e.g. interview people from different generations to compare changes in lifestyles due to technological advancements).
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Effective design through engineering and technology is the outcome of a problem solving process involving the application of content knowledge, acquired skills, and creativity. ET2

1 (K-4). Explore and recognize the attributes of a design process. ET2.1 (K-4)

- 1 (3-4). Students demonstrate an understanding of the attributes of a design process by: ET2.1 (3-4)
- 1a. defining a problem and expressing design ideas for that problem to others.
 - 1b. solving problems through the creation of design solutions.
 - 1c. identifying the characteristics of being an effective team member and working together to complete a task.
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2 (K-4). Explore and recognize basic technological products and systems, as well as their tools. ET2.2 (K-4)

- 2 (3-4). Students demonstrate an understanding of technological products and systems by: ET2.2 (3-4)
- 2a. identifying and safely using the required tools (e.g. glue, scissors, tape) and information resources for a specific task.
 - 2b. using information to identify patterns within those systems.
 - 2c. following step by step procedures and identifying sequential actions.
 - 2d. identifying the effects of technology and comparing and contrasting tradeoffs (e.g. advantage of using scissors vs. paper cutter or tearing paper).
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3 (K-4). Explore the processes of research and development, invention and innovation, experimentation, and troubleshooting in planning practical solutions to problems. ET2.3 (K-4)

- 3 (3-4). Students demonstrate an understanding of effective design by: ET2.3 (3-4)
- 3a. exploring a process to solve a real world problem.
 - 3b. using age-appropriate construction materials based on specific properties (e.g. strength, hardness, flexibility) and tools (e.g. pliers, tape measure, hammer, nails) to build a model to solve a specific problem.
 - 3c. testing, troubleshooting, and evaluating a basic design solution.
 - 3d. documenting the advantages and disadvantages of multiple designs (e.g. various designs of can openers).
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The designed world community selects and uses appropriate technologies. ET3

1 (K-4). Recognize that there are various areas in engineering and technology. ET3.1 (K-4)

1 (3-4). Students demonstrate an understanding of the areas of engineering and technology by: **ET3.1 (3-4)**

- 1a.** identifying responsibilities of community workers in the areas of engineering and technology.
 - 1b.** specifying and explaining the connections within the areas of engineering and technology.
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2 (K-4). Select and utilize appropriate tools to measure, design, and implement specific technologies. ET3.2 (K-4)

2 (3-4). Students demonstrate an understanding of selecting appropriate tools by: **ET3.2 (3-4)**

- 2a.** identifying characteristics of appropriate tools within different technologies.
- 2b.** experimenting and selecting the optimal tool for a given task in a specific area of technology.