Arkansas CTE

Introduction to Technology and Engineering: Grades 7, 8

Adopted 2015

History of Technology

1.1 Describe technology and the role that technology plays in society, culture, and history

1. Comprehends ideas and concepts related to technology 1.1.1
2. Communicates thoughts, ideas, or facts in written form in a clear, concise manner 1.1.2

1.2 Define technology and technological literacy and describe how a society can become more technologically proficient

1. Comprehends ideas and concepts related to technology and technological literacy 1.2.1
2. Organizes information into an appropriate format 1.2.2

1.3 Identify and describe the unintended consequences of technology

1. Analyzes and applies what has been read to specific task 1.3.1
2. Comprehends ideas and concepts related to the unintended consequences of technology 1.3.2

1.4 Describe the core concepts and essential characteristics of technology

1. Analyzes and applies what has been read to specific task 1.4.1
2. Comprehends ideas and concepts related to the core concepts and characteristics of technology 1.4.2

1.5 Describe the innovations and contributions of significant inventors and innovators

1. Communicates thoughts, ideas, or facts in written form in a clear, concise manner 1.5.1
2. Prepares presentation based on subject research 1.5.2

The Engineering Design Process

2.1 Understand the importance of the design process

1. Comprehends ideas and concepts related to the design process 2.1.1
2. Uses available resources to acquire new skills or improve skills 2.1.2

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2.2 Identify the steps in the design process

1. Applies/Uses technical words and concepts 2.2.1
2. Applies rules and principles to a new situation 2.2.2

2.3 Recognize the importance of sketching in the design process

1. Uses basic geometric symbols, terms, principles, and formulas 2.3.1
2. Organizes and processes images – symbols, pictures, graphs, objects, etc. 2.3.2

2.4 Understand the importance of measuring accurately

1. Calculates different units of measurement. Reads measurements from common measuring devices. Applies new knowledge and skills to the design process 2.4.1

2.5 Demonstrate the ability to apply the steps of the design process to an invention, innovation, or design problem

1. Applies knowledge to complete a practical task. Comprehends ideas and concepts related to the design process. 2.5.1
2. Creates new design by applying specified criteria 2.5.2

Introduction to Information and Communication Technologies

3.1 Understand information and communication technologies using a systems model that includes inputs, processes, and outputs

1. Comprehends ideas and concepts related to technology. Communicates thoughts, ideas, or facts in written form in a clear, concise manner 3.1.1
2. Comprehends ideas and concepts related to technology 3.1.2

3.2 Explain that technological knowledge and processes are communicated using symbols, measurements, conventions, icons, graphic images, and languages that incorporate a variety of visual, auditory, and tactile stimuli

1. Comprehends ideas and concepts related to Technology. Communicates thoughts, ideas, or facts in written form in a clear, concise manner. Interprets charts, tables, graphs, and working drawings. 3.2.1
2. Interprets charts, tables, graphs, and working drawings. Comprehends ideas and concepts related to technology 3.2.2

3.3 Demonstrate the ability to communicate effectively using multiple types of media

1. Organizes information into an appropriate format 3.3.1
2. Communicates a thought, idea, or fact in spoken form. Prepares presentation based on subject research 3.3.2

3.4 Utilize a Technology Portfolio to record ideas, projects, presentations, and other written work

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1. Communicates thoughts, ideas, or facts in written form in a clear, concise manner. Uses logic to draw conclusions from available information 3.4.1

Introduction to Construction Technologies

4.1 Identify and describe the core concepts of human-built structures

1. Comprehends ideas and concepts related to technology 4.1.1
2. Communicates thoughts, ideas, or facts in written form in a clear, concise manner 4.1.2

4.2 Identify materials used in construction

1. Listens to and follow directions. Draws to scale. Visualizes a finished product 4.2.1

4.3 Identify and describe civil structural systems

1. Comprehends ideas and concepts related to Technology. Communicates thoughts, ideas, or facts in written form in a clear, concise manner 4.3.1
2. Comprehends ideas and concepts related to technology 4.3.2

4.4 Create a structural model, test a design, and optimize a design

1. Draws to scale. Reads measurements from common measuring devices 4.4.1
2. Constructs model to depict basic concept of construction. Creates new design by applying specified criteria 4.4.2

Introduction to Manufacturing Technologies

5.1 Understand that modern manufacturing technologies produce quality goods at low prices; therefore, enhancing the quality of life for many people

1. Comprehends ideas and concepts related to manufacturing. Communicates thoughts, ideas, or facts in written form in a clear, concise manner 5.1.1
2. Applies information and concepts derived from printed materials. Comprehends ideas and concepts related to manufacturing 5.1.2

5.2 Classify manufacturing systems as customized production and mass production

1. Comprehends ideas and concepts related to manufacturing. Applies information to new situations. Evaluates information/data to make best decision. 5.2.1

5.3 Describe the core materials used in manufacturing.

1. Comprehends ideas and concepts related to manufacturing. Applies information to new situations. 5.3.1
2. Comprehends ideas and concepts related to manufacturing. 5.3.2

5.4 Design and construct a class manufacturing project

1. Applies knowledge to complete a practical task. Uses equipment and techniques appropriate in the field of manufacturing. Applies new knowledge and skills to manufacturing. Contributes to group with ideas, suggestions, and effort. Works effectively with others to reach a common goal. 5.4.1

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Transportation

Define energy and power

Technologies

1. Comprehends ideas and concepts related to energy and power. Communicates thoughts, ideas, or facts in written form in a clear, concise manner. Applies information and concepts derived from printed materials. 6.1.1
2. Comprehends ideas and concepts related to energy and power 6.1.2

6.2 Differentiate between kinetic and Potential energy

1. Comprehends ideas and concepts related to energy and power. Performs experiment as specified. Tracks and evaluates results. 6.2.1

6.3 Identify and describe common sources of renewable and non-renewable energy

1. Composes and creates documents – letters, manuals, reports, proposals, graphs, flow charts, etc. Comprehends ideas and concepts related to energy and power. 6.3.1
2. See relationship between two or more ideas, objects, or situations. 6.3.2

6.4 Understand the role that transportation plays in the operation of other technologies

1. Comprehends ideas and concepts related to energy and power. Communicates thoughts, ideas, or facts in written form in a clear, concise manner. Applies information and concepts derived from printed materials. 6.4.1

6.5 Identify and describe different modes of transportation

1. Composes and creates documents – letters, manuals, reports, proposals, graphs, flow charts, etc. Contributes to group with ideas, suggestions, and effort. Combines ideas or information in a new way. 6.5.1

6.6 Design and Construct an air-powered vehicle

1. Applies scientific principles related to transportation. Calculates different units of measurement. Creates new design by applying specified criteria. 6.6.1
2. Demonstrates logical reasoning in reaching a conclusion. Draws conclusions from observations, evaluates conditions, and gives possible solutions. 6.6.2

Safety

7.1 Describe the need for safe work environments in the Engineering and Technology Educational classroom and laboratory

1. Imagines the flow of work activities from narrative descriptions. Applies new knowledge and skills to industrial safety. 7.1.1
2. Makes connections between seemingly unrelated ideas. 7.1.2

7.2 Describe specific procedures such as reporting illness, injuries, safety violations etc.

1. Listens and follows directions. 7.2.1

Use appropriate and required personal protection equipment

1. Devises and implements a plan of action to resolve a problem. 7.3.1

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7.4 Describe machine and tool safety practices and procedures

1. Demonstrates decision-making skills. Comprehends written specifications and applies them to a task. 7.4.1
2. Reads and follows instructions to operate technical equipment. 7.4.2
3. Uses standard occupational resource materials. Follows safety guidelines. 7.4.3
4. Participates in conversation, discussion, and group presentations. 7.4.4
5. Comprehends ideas and concepts related to machine and tool safety. 7.4.5