Delaware Technology Education

Grades 3, 4, 5

Adopted 2007

Methodology of Technology Education

M1. Students will recognize The Nature, Impacts, and Evolution of Technology as they relate to the chronological human presence on Earth, as well as recognize the consequential influence of inventions and innovations that extend human capabilities. M1

01. Begin to realize that technology can have both negative and positive impacts and effects. M1.01

    01. Recognize and identify technological trade-offs and the impact of technology on individuals, families, communities, geographic areas, Earth, and more. M1.01.01

    05. Create models or pictorial representations of simple technological inventions. M1.01.05

    06. Compare, contrast, and classify collected information in order to identify patterns. M1.01.06

    07. Produce a written explanation of how various technological inventions work. M1.01.07

    08. Describe the evolution of technological concepts, including changes in the provision of food, clothing, and protection. M1.01.08

M2. Students will effectively communicate technological solutions by using Technology Education as an Interdisciplinary and Technological Link. M2

01. Recognize academic content areas as resources that can be used to help solve challenges within formal design briefs. M2.01

    01. Use academic content areas as resources to help solve challenges. M2.01.01

    02. Show how technologies are combined. M2.01.02

    03. Show evidence of the Design Process in academic content-area work. M2.01.03

    04. Identify the relationships between technology and other fields of study. M2.01.04

M3. Students will develop and apply a practical understanding of The Use and Management of Technological Resources and Systems. M3

01. Begin to investigate, design, test, and evaluate creative solutions to technological problems. M3.01

    01. Recognize that technological resources vary with geographic location and with such things as the industrialization, economic strength, and import activity of a community or nation. M3.01.01

    02. Employ technological resources while generating solutions to a specific challenge. M3.01.02

    03. Recognize that requirements act as limits on the design of a product or system. M3.01.03

    04. Follow step-by-step directions to assemble a product. M3.01.04

    06. Demonstrate, through oral and visual presentations, an understanding of how technological resources, systems, and subsystems affect the world in which they live. M3.01.06

    07. Understand that technology affects the environment in good and bad ways and that waste must be appropriately recycled or disposed to prevent unnecessary environmental harm. M3.01.07

    08. Design and test multiple solutions to stated challenges using available resources, and select and safely use tools, products and systems in the process of constructing and assessing their solutions. M3.01.08

    09. Use computers to access and organize information and common symbols to communicate key ideas. M3.01.09

M4. Students will demonstrate technological problem solving by applying The Design Process and The Systems Model. M4

01. Begin to investigate, design, test and evaluate creative solutions to technological challenges. M4.01

    01. Evaluate creative models and solutions according to established design criteria. M4.01.01

    02. Identify and collect information and test and evaluate the effectiveness of their solutions, and if necessary, the need for modification. M4.01.02

    03. Combine experience and knowledge to use the design process to generate sketches and models. M4.01.03

    04. Use tools and materials safely and effectively in order to build and modify their models. M4.01.04

    07. Investigate how things are made and the ways in which they can be improved. M4.01.07

M5. Students will develop an operational awareness of Technological Concepts through focused invention and subsequent innovation. M5

01. Begin to understand technological concepts and their relationships to the design of solutions. M5.01
    01. Investigate the applications of technological concepts. M5.01.01
    02. Understand technological concepts and apply these concepts through the use of appropriate presentation models. M5.01.02
    03. Begin to identify simple technological systems and components. M5.01.03
    04. Apply and demonstrate technological concepts through the use of appropriate research methods and materials. M5.01.04

M6. Students will explore technology-related skills, leadership skills, personal growth, and careers through opportunities provided by Active Participation in the Technology Student Association (TSA). M6

01. Begin to explore technology through TSA activities. M6.01
    01. Participate in class work designed according to TSA activities. M6.01.01
    02. Demonstrate leadership during small group activities. M6.01.02
    03. Work in groups to solve basic design problems. M6.01.03

Technical and Practical Application of Technology Education

TPA1. Students will develop an understanding of The Design Process and be able to apply and transfer the related knowledge and skills to solve technological problems. TPA1

01. Understand the design process as a purposeful method of planning practical solutions to technological problems. TPA1.01
    01. Requirements for a design include factors such as desired elements and features, the limits placed on the design, and more. TPA1.01.01
    04. The engineering design process involves defining a problem, generating ideas, selecting a solution, testing the solution, making and evaluating the product, and presenting the results. TPA1.01.04
    05. It is important to be creative and open to all ideas during the design process. TPA1.01.05
    06. Models are used to communicate ideas and test design processes. TPA1.01.06
    08. Troubleshooting is a way to find out the cause of problems in order to fix those problems. TPA1.01.08
    09. Invention and innovation are creative methods to turn ideas into real things. TPA1.01.09
    10. The process of experimentation, which is common in science, can be used to solve technological problems. TPA1.01.10

TPA2. Students will develop an understanding of Agricultural, Bio-related, and Medical Technologies and be able to apply and transfer the related knowledge and skills. TPA2

01. Begin to explore agricultural, bio-related, and medical technologies. TPA2.01

    01. Artificial ecosystems are man-made environments that are designed to function as a unit composed of humans, plants, and animals. TPA2.01.01

    03. Many processes used in agriculture require different procedures, products, or systems. TPA2.01.03

    08. Vaccines are designed to prevent diseases from developing and spreading, while medicines are designed to relieve symptoms and stop the progression of diseases. TPA2.01.08

    09. There are many products specifically to help people care of themselves. TPA2.01.09

TPA3. Students will develop an understanding of Information and Communication Technologies and be able to apply and transfer the related knowledge and skills. TPA3

01. Begin to explore information and communication technologies. TPA3.01

    01. Humans use technology to process information, make decisions, and solve problems. TPA3.01.01

    02. Information is sent and received by electronic and print devices. TPA3.01.02

    03. Human or machines can send messages over long distances by using communication technology. TPA3.01.03

    04. Signs and symbols are used to communicate ideas and information. TPA3.01.04

TPA4. Students will develop an understanding of Drafting, Design, and CADD and be able to apply and transfer the related knowledge and skills. TPA4

01. Begin to explore Drafting, Design, and CADD. TPA4.01

    01. It is possible to generate and convey two-dimensional solutions to technological challenges. TPA4.01.01

    02. Shapes are the basic building blocks in the world of design. TPA4.01.02

    03. Unit measurement relates to size differences. TPA4.01.03

TPA5. Students will develop an understanding of Energy, Power, and Transportation Technologies and be able to apply and transfer the related knowledge and skills. TPA5

01. Begin to explore Energy, Power, and Transportation Technologies. TPA5.01
    01. Energy comes in different forms. TPA5.01.01
    02. Tools, machines, products, and systems use energy in order to perform work. TPA5.01.02
    06. Transportation helps people and goods move from place to place. TPA5.01.06
    07. A transportation system may lose efficiency or fail if just one part is missing or if one part or subsystem malfunctions. TPA5.01.07

TPA6. Students will develop an understanding of Construction and Manufacturing Technologies and be able to apply and transfer the related knowledge and skills. TPA6

01. Begin to explore Construction and Manufacturing Technologies. TPA6.01
    01. Construction and manufacturing systems convert natural materials to products. TPA6.01.01
    02. Construction and manufacturing enterprises exist because of a consumption of goods. TPA6.01.02
    03. Construction and manufacturing processes include many steps (all of which help to yield products), such as creating designs, gathering resources, and using tools to separate, form, and combine materials. TPA6.01.03
    07. Modern communities are usually planned according to specific guidelines. TPA6.01.07
    08. It is necessary to maintain structures. TPA6.01.08