

## Michigan Content Standards - Middle School Benchmarks - Sample Report

### **Technology Standard 1 - Using and Transferring - Use and transfer technological knowledge and skills for life roles (family member, citizen, worker, consumer, lifelong learner).**

#### **TCH.1.MS.1: Identify a need and create or develop a new technology for the home.**

Identifies areas in the home which computers can be used in.

#### **TCH.1.MS.2: Use technology to create a message that promotes a product/service.**

Explores the impact of advertising on smoking.

Explores the impact of advertising on drinking.

Designs an advertisement on smoking.

Creates an advertising flyer using a word processor, incorporating text and graphics.

Presents an effective advert.

Corrects spelling errors in an advert.

Speaking - presents an advert.

Describes publication production methods.

#### **TCH.1.MS.5: Use a variety of technological resources to explore career paths and identify areas of interest.**

Identifies jobs provided by the alternative energy industries.

Describes different careers in biomedical technology.

Defines career options in computer aided publishing.

Defines career roles in computer aided publishing.

Defines career roles associated with computer aided publishing.

Identifies experiences required for a digital photography based career.

Identifies the working situations of careers based on digital photography.

Extracts photographic career details from a newspaper advertisement.

Identifies careers and applications involving digital photography.

### **Technology Standard 2 - Using Information Technologies - Use technologies to input, retrieve, organize, manipulate, evaluate, and communicate information.**

#### **TCH.2.MS.2: Gather information about a given technological problem, develop possible solutions, and generate a best solution using multiple technologies.**

Analyzes data to select the most appropriate technology for the given problem.

Defines the energy problem.

Explains the energy problem.

Speaking - presents a solution to a bridge construction problem.

Explains weaknesses in a problem solution.

Solves problems involving an electronic alarm circuit.

States the differences between problems solved by invention and by innovation.

Describes the stages in the Design and problem solving loop.

Identifies the medical solutions to kidney failure.

Solves a car design problem using computer software.

Solves problems in aerodynamics to test a glider.

Identifies problems created by turbulence.

Identifies the problems with placing people in space.

Identifies the problems with protecting people in space.  
Presents a solution to a communication problem.  
Solves problems involving mechanical advantage.  
Evaluates proposed solutions to a pneumatic problem.  
Documents the technological advances in industrial control.  
Investigates the design problem and solution for a simulated TV animation.  
Solves problems in designing and producing an animation.  
Explains other potential solutions to the TV animation.  
Speaking - presents reasoning and solutions to the TV animation problem.

**TCH.2.MS.3: Retrieve, communicate and input information using a technological system (voice, data, video, graphics, etc.).**

Interprets data from a color reading chart.  
Analyzes data to select the most appropriate technology for the given problem.  
Explains how to analyze data and makes choices.  
Uses a computer to display localized weather data.  
Extracts a temperature reading from a table of weather data.  
Outlines how satellite technology is used to gather weather data.  
Interprets technical data.  
Uses digital sensors to monitor conditions and provide data to control systems.  
Uses a digital impact sensor to monitor conditions and provide data to the user.  
Plots weight and age data for infants on a growth chart.  
Interprets data from growth charts.  
Uses data to create a growth chart.  
Interprets basic information about vital signs.  
Uses IT to make predictions about model rockets.  
Uses software to manipulate data relating to model rockets.  
Sends voice signals along string.  
Describes the communication process of a string based communication system.  
Describes the basic process of radio communication.  
Demonstrates that voice messages can be sent across a microwave link.  
Extracts information about communications technology using a Web Browser.  
Explores the benefits of new technology on communication systems.  
Evaluates communication links.  
Presents a solution to a communication problem.

**Technology Standard 3 - Applying Appropriate Technologies - Apply appropriate technologies to critical thinking, creative expression, and decision-making skills.**

**TCH.3.MS.3: Use several technological methods to perform a given task and analyze advantages and disadvantages of each.**

Analyzes data to select the most appropriate technology for the given problem.  
Identifies methods for gathering weather data.  
Defines methods for monitoring weather.  
Outlines how satellite technology is used to gather weather data.  
Recognizes the impact of technology upon drafting.  
Interprets instructions for a specific task.  
Draws similarities and differences between model rocketry and space technology.  
Extracts information about communications technology using a Web Browser.

- Investigates radar technology.
- Explores the benefits of new technology on communication systems.
- Recognizes the advantages of hydraulic systems.
- Indicates some advantages and disadvantages in animation using a flickbook.

**Technology Standard 4 - Systematic Approach - Employ a systematic approach to technological solutions by using resources and processes to create, maintain, and improve products, systems, and environments.**

**TCH.4.MS.2: Presents technological solutions using scale and proportion in multi view sketches and drawings.**

- Creates a CAD drawing using coordinate systems.
- Determines the dimensions and settings for the drawing area.
- Completes a CAD drawing of a kitchen plan.
- Distinguishes between the different lines used in drafting.
- Determines the size of the drawing area.
- Identifies the drafting conventions used to draw an orthographic projection.
- Recognizes the impact of technology upon drafting.
- Examines the use of CAD in architectural drafting
- Identifies conventions used in drafting.
- Examines the use of CAD in component drafting.
- Translates 'real world' information into working drawings.
- Calculates proportion of colored pixels in a computer bitmap image.

**TCH.4.MS.5: Use industrial tools, materials, equipment, and processes to produce prototypes and technological solutions to problems.**

- Analyzes data to select the most appropriate technology for the given problem.
- Identifies equipment connected to the weather monitor console.
- Examines material properties.
- Uses test equipment.
- Identifies insulation as a property of construction material.
- Calculates structural material quantities.
- Speaking - presents a solution to a bridge construction problem.
- Demonstrates differences in material strength.
- Explains weaknesses in a problem solution.
- Solves problems involving an electronic alarm circuit.
- States the differences between problems solved by invention and by innovation.
- Describes the stages in the Design and problem solving loop.
- Identifies the properties of the materials used for making denture casts.
- Explains the importance of medical material properties.
- Solves a car design problem using computer software.
- Describes support processes related to space technology.
- Presents a solution to a communication problem.
- Identifies the tools used to perform specified operations using audio software.
- Recognizes processes required for speech processing.
- Identifies tools involved in digital speech synthesis.
- Creates an advertising flyer using a word processor, incorporating text and graphics.

### **Technology Standard 5 - Applying Standards - Apply ethical and legal standards in planning, using, and evaluating technology.**

**TCH.5.MS.2: Provide examples of situations where the use of technology might be affected by legal or ethical considerations.**

- Recognizes the contribution that electronics technology has made to society.
- States the changes Electronics Technology has made to society.
- States social, economic, ethical and moral issues raised by new technologies.
- Recognizes immoral uses and ethical issues of storing information on computers.

### **Technology Standard 6 - Evaluating and Forecasting - Evaluate the societal and environmental impacts of technology and forecast alternative uses and possible consequences to make informed civic, social, and economic decisions.**

**TCH.6.MS.1: Investigate the effects of the growth and development of technology on careers and occupations.**

- Describes different careers in biomedical technology.
- Defines career options in computer aided publishing.
- Defines career roles in computer aided publishing.
- Defines career roles associated with computer aided publishing.
- Identifies experiences required for a digital photography based career.
- Identifies the working situations of careers based on digital photography.
- Extracts photographic career details from a newspaper advertisement.
- Identifies careers and applications involving digital photography.

**TCH.6.MS.2: Analyze present and future job markets in specific technology related careers and occupations.**

- Identifies jobs provided by the alternative energy industries.
- Describes different careers in biomedical technology.
- Defines career options in computer aided publishing.
- Defines career roles in computer aided publishing.
- Defines career roles associated with computer aided publishing.
- Identifies experiences required for a digital photography based career.
- Extracts photographic career details from a newspaper advertisement.
- Identifies the working situations of careers based on digital photography.
- Identifies careers and applications involving digital photography.

**TCH.6.MS.5: Illustrate the social, environmental, civic, and economic consequences of a particular technology.**

- Indicates that the use of fossil fuels harms the environment.
- Identifies characteristics of the environment.
- Identifies the function of CAD within society.
- States the general uses of energy in society.
- Investigates the impact of orthotics and prosthetics on society.
- Evaluates the impact of space technology on society.
- Recognizes how environmental obstructions can block microwave signals.
- Recognizes the contribution that electronics technology has made to society.
- States the changes Electronics Technology has made to society.

**TCH.6.MS.7: Investigate current technological applications and present possible safe and unsafe consequences in the continued use of these applications.**

- States the safety procedures used when operating the maglev system.
- Describes safety guidelines when using model rockets.
- Describes the procedures to ensure a model rocket is launched safely.
- Describes safety procedure for launching dowel rods.
- Operates the mechanical systems trainer safely.
- Explains the importance of safety procedures when using mechanisms.
- Identifies safety procedures when working with pneumatic systems.
- Operates hydraulic equipment safely.
- Explains the importance of safety procedures when using hydraulics.
- Identifies procedures for using a thermoplastic injection molder safely and accurately.
- Identifies safety precautions needed when working with hazardous processes.

**TCH.6.MS.9: Recognize the historical impact on the development of technology in relationship to the production of tools, equipment, and products.**

- Recognizes the impact of technology upon drafting.
- Investigates the impact of technology on medical treatments.
- Recognizes the impact of technology on health.
- States the impact of technology on health.
- Explores the impact of advertising on smoking.
- Explores the impact of advertising on drinking.
- Investigates the impact of orthotics and prosthetics on society.
- Evaluates the impact of space technology on society.
- Identifies the tools used to perform specified operations using audio software.
- Identifies tools involved in digital speech synthesis.
- Recognizes the computer as a design tool.
- Defines elements of industrial control equipment.
- Identifies points in the origin and history of animation.
- Describes tools used to produce graphics.
- Identifies tools used in constructing a multimedia application.
- States the impact transistors have made to electronics technology.

*Partial report  
Updated March 31, 1999*