

Jun-97

## MA State Frameworks

### Strand 3 Technology - The Design Process (M)

#### Identify and work on their own problem or one developed by a peer.

Explains weaknesses in a problem solution.

#### Explore and illustrate possible solutions and from these propose one solution.

Evaluates proposed solutions to a pneumatic problem.

Identifies problems and solutions in animating a human walk.

Explains other potential solutions to the TV animation.

Speaking - presents reasoning and solutions to the TV animation problem.

Recalls some of the problems and solutions associated in producing a simulated TV sequence.

#### Make a plan for building a device considering the limitations of the material, and including multiple views.

Assembles and demonstrates a model hydroelectric power plant.

#### Evaluate designs, devices or solutions and develop measures of quality.

Evaluates the use of tutorials in software packages.

Evaluates proposed solutions to a pneumatic problem.

#### Communicate the process of technological design

Designs a bridge construction.

Follows a design brief to draw a mechanical component.

Applies the design process to complete a ladder logic program for sorting components.

Investigates the design problem and solution for a simulated TV animation.

### Strand 3 Technology - The nature and impact of technology (M)

#### Explain how technological progress has been the result of cumulative work over many centuries by men

##### and women from various cultures and races.

Recognizes the impact of technology upon drafting.

Investigates the impact of technology on healthcare products.

Evaluates the impact of space technology on society.

Explores the benefits of new technology on communication systems.

Examines changes in manufacturing technology.

Documents the technological advances in industrial control.

Describes how technology is used producing multimedia presentations.

Recognizes the contribution that electronics technology has made to society.

#### Describe ways that technological devices have improved the quality of life for individuals.

Explores the benefits of new technology on communication systems.

Recognizes the contribution that electronics technology has made to society.

### **Strand 3 - Technology - Technology yesterday, today and tomorrow**

**Explain how the evolution of technology led the change from an agricultural to an industrial to an information-based society.**

- Recognizes the impact of technology upon drafting.
- Investigates the impact of technology on healthcare products.
- Identifies the forces that are important in space technology.
- Explores the benefits of new technology on communication systems.
- Describes how technology is used producing multimedia presentations.
- Documents the evolution of Industrial Control.
- Documents the technological advances in industrial control.

### **Strand 3 - Technology - The tools and machines of Technology**

**Document ways that a range of tools and machines, such as measuring, hand and optical tools, are used to implement solutions to design problems.**

- Investigates the design problem and solution for a simulated TV animation.
- Explains other potential solutions to the TV animation.
- Recalls some of the problems and solutions associated in producing a simulated TV sequence.

**Use tools, materials, and machines safely and effectively.**

- Uses a simple word processor to read and write information to disk.
- Uses input devices to alter information in a graphics file.
- Uses software to write a simple program.
- Uses the computer as a control device to external equipment.
- Uses a computer to control a simulated set of traffic lights.
- Uses a CAM simulator to examine a CNC lathe program.
- Uses instruments to perform quality control checks.
- Uses the mechanical trainer to investigate pulley systems.
- Uses symbols to draw a pneumatic circuit diagram.
- Uses an infrared sensor for object recognition in a sample ladder logic program.

### **Strand 3 - Technology - Resources of Technology**

**Explain how the choice of materials depends upon their properties and characteristics and how they interact with other materials.**

- Demonstrate and explain the operating principle of the ignition coil

**Use the results of material tests (i.e., hardness, tensile strength, and conductivity), to suggest appropriate uses for materials.**

- Identifies the properties of the materials used for making denture casts.
- Identifies the materials used and their importance in CNC technology.

**Strand 3 Technology - Technological areas of communication, construction, manufacturing, transportation, and power technologies**

**Give examples that information can be communicated both graphically and electronically by a range of technological processes.**

- Translates 'real world' information into working drawings.
- Selects information about the stages of model rocket flight from a table.
- Extracts information about communications technology using a Web Browser.
- Explores the process of sending information across a microwave link.
- Uses a simple word processor to read and write information to disk.
- Locates information on printers from written text.
- Selects information in text, audio and visual formats.
- Extracts technical information from research material.
- Interprets information from flick book diagrams.

**Explain how a manufacturing enterprise produces a product by converting raw materials into goods.**

- Describes changes in manufacturing history.

**Identify the processes used in construction: site preparation, building, and finishing a structure.**

- Interprets the term Construction Technology.
- Identifies the role of Construction Technology.
- Identifies insulation as a property of construction material.
- Interprets the term 'Construction Technology'.
- Identifies the operation and construction of hydraulic cylinders.
- Investigates the operation and construction of hydraulic cylinders.

**Compare how transportation systems are devised to transport people and products on land, water, air, and in space.**

- Compares methods of travel using information in a table.

**Describe how power systems are used to convert and transmit mechanical, electrical, fluid, and heat energy. Describe limited (i.e., fossil fuels), unlimited (i.e., solar, gravitational) and renewable (i.e., bio-mass) energy sources.**

- Describe the generation of electricity from electromagnets
- Describe the need for electricity power stations
- Describe the action of different types of switch
- Describe how electrical energy can be stored in a capacitor.