Technology Education - Grade 8

For each of the sections that follow, students may be required to analyze, recall, explain, interpret, apply, or evaluate the particular concepts being taught.

CREATING TECHNOLOGY

- Identify several major events in technology history
- Predict future technological trends and discuss their genesis
- Differentiate between inventors, and their inventions, from innovators and their innovations
- Describe entrepreneurs and entrepreneurships

PRACTICE CLASSROOM/LAB SAFETY

- Identify potentially hazardous conditions and actions in the lab
- Develop a sense of responsibility
- Demonstrate the safe use of applicable tools, machines, and materials
- Practice computer etiquette
- Practice respect, responsibility and courtesy in the classroom / lab environment

RECYCLING

- Identify the advantages of recycling (wood dust and fibers, OSB, MDF)
- Discuss various ways of recycling scrap and waste generated by the model enterprise (wood dust and fibers, OSB, MDF)

TECHNICAL SKETCHING AND DRAWING IN MANUFACTURING

- Define technical drawing
- Describe technical drawing as a career
- Describe the significance of technical sketching
- Practice technical sketching using basic technical drawing tools
- Identify the tools and procedures of basic technical drawing and sketching
- Apply the tools and procedures of technical drawing to produce a technical sketch for the purpose of CNC manufacturing
- Practice measurement accuracy to 1/16th inch
- Practice design for the purpose of CNC manufacturing based upon written criteria

EXPLORING MANUFACTURING

- Apply the system model to describe manufacturing technology
- Describe various forms of manufacturing (continuous and intermittent mass-production)
- List the proper names of applicable tools and materials
- Identify the safe use of applicable tools and materials
- Read and interpret technical drawings and sketches used in manufacturing
- Safely use tools and materials to produce a product
- Practice measurement accuracy to 1/16th inch
- Perform applicable separating, combining, and forming processes
- Identify and apply finishes to a product
- Describe the history, use, and basic operation of computer numerical control (CNC) machining
- Apply CNC manufacturing to produce a custom-designed product
- Define the Cartesian coordinate system
- Describe incremental and absolute dimensioning methods
- Practice the application of computer skills necessary to operate CNC equipment
- Apply advance computer applications:
  - Practice the design application, Corel Draw to produce a custom design with a .cdr file extension
  - Export the .cdr file to a .dxf file for use on CNC equipment
  - Import into the CNC application, Velocity CNC
  - Apply Velocity CNC to manufacture a custom engraved product

CREATING A MODEL MANUFACTURING/PRODUCTION SYSTEM

- Practice research and development (R&D) while participating in the model enterprise
- Discuss design criteria during the model enterprise
- Practice sketching
- Develop a mock-up
- Develop and test a prototype
- Practice measurement to 1/16th inch accuracy

THE ENTERPRISE SYSTEM

- Describe the role of enterprise in our society
- Discuss various inputs, outputs, and impacts of an enterprise
- List the three main types of enterprise ownership
- Differentiate between skilled, semi-skilled, and unskilled workers
- Describe the three main types of financing an enterprise
- Organize and participate in a model enterprise
- Participate in the financial component of a model enterprise by: (1) calculating a break-even analysis, payroll, and dividend, (2) creating a balance sheet, and (3) creating an income statement report

MARKETING

- Describe the role of market research for the model enterprise

- Conduct market research for the model enterprise
- Generate advertising for the model enterprise

CREATING A MANUFACTURING / PRODUCTION SYSTEM

- Describe the relationship between product cycle time and productivity
- Create process charts
- List the three types of plant layout
- Practice quality control engineering
- Discuss plant layout, materials handling, and tooling
- Differentiate between various types of manufacturing systems
- Identify and qualify applicable consumable resources such as wood, metal, plastics, ceramic, and composite materials
- Perform applicable forming, separating, and combining processes

CAREERS

- List and describe careers in manufacturing/production industries
- List and describe careers in the communication industry

ENVIRONMENTAL ISSUES

- Discuss possible future developments in manufacturing / production and communication systems
- Discuss the positive and negative impacts of various manufacturing/ production and communication systems now and in the future

COMPUTER NUMERICAL CONTROL (CNC)

- Define the Cartesian System
- Design a basic CNC product
- Participate in a CNC production

COMPUTER ETIQUETTE

- Discuss the proper operation and application of computers in a communication system and a manufacturing system
- Responsibly setup and operate a personal computer, PC and Mac platforms
- Identify and apply network resources

CREATING A COMMUNICATION SYSTEM, DIGITAL MEDIA

- Define and discuss communication systems, applying the systems model: Sender, Message, Receiver and Feedback
- Describe the history of various communication systems and their impacts
- Discuss and make future predictions for various communication systems and possible unknown communication systems
- Define and describe video production, its history and its impacts on society
- List and describe the three phases of video production:
    - Pre-production
    - Production
    - Post-production
- Conduct research, both on-line and off-line, on an educational video topic sentence randomly chosen and then produce handwritten research notes to share with a student co-producer
- Brainstorm a written script with a student co-producer applying precise written criteria
- Produce a handwritten, rough draft of a video script with a co-producer
- Produce, individually, a formal educational video production script using a computer, a network printer and MS Word
- Discuss the significance and structure of storyboarding as a pre-production process in video production
- Produce, individually, a storyboard to accompany the educational video production script using pre-printed storyboard templates, pencil and colored markers or pencils
- Apply costume design and prop creation for an educational video production
- Describe, practice and apply a basic non-linear editing process, iMovie
- Describe and list the basic tools necessary for basic video production: 1. Digital cameras, (Panasonic AGDVC-7 and Canon GL2) and their accessories, 2. Computer (Apple) and non-linear editing software and support software (iMovie, iTunes, I DVD , iPhoto), 3. Audio devices and techniques, 4. Illuminating devices and techniques, and 5. Presentation, archival software and devices (i DVD and Apple's DVD Super Drive)
- Discuss and apply basic video production nomenclature and techniques to produce an educational video
- Apply basic non-linear editing software (iMovie) options: capturing and editing clips, creating titles, video effects, audio effects, and transitions to enhance an educational video.
- Discuss and apply basic video presentation, archival processes (iDVD) and equipment (Apple super drive) to produce (burn), individually, a DVD -R of a custom educational video
- Perform critical peer evaluation of educational video productions using a written criteria