Unit 7: Woodworking

Content Area: **Technology**
Course(s):
Time Period: **December**
Length: **4 weeks**
Status: **Published**

Enduring Understandings

- Safety standards and procedures must be followed to reduce the risk of injury.
- Personal protection equipment, such as safety goggles, reduces a person's risk of injury.
- Tools and machinery have specific guidelines for use and specific functions.
- Guidelines must be followed to reduce injury.
- Selecting the proper tool for a job reduces injury.
- Material selection, preparation and assembly effects product durability and quality.

Essential Questions

- Why is following safety procedures paramount in any work environment?
- What are safety considerations to be made when working with various tools, materials and equipment?
- What are the potential consequences of not following safety protocol?
- What is craftsmanship?
- What factors influence a product's value, durability and quality?
- How are raw materials converted to end products?
- How do earlier construction methods compare with today's methods?

Content

Skills

- Students will be able to demonstrate and describe safe handling practices of various hand tools and machinery.
- Students will be able to follow the universal design process to design and create a prototype and choice product.

Suggested Activity:

- Ping Pong Challenge
- Wood Burning Game Design

Resources

1. PC or Laptops with internet access, able to run Adobe Illustrator (or similar program) and the various 3D printer software platforms.

2. Laser Printer allows for printing capabilities from classroom computers.

3. TinkerCAD (or other equivalent solid modeling program). TinkerCAD is a free, web-based 3D modelling application which allows users to create objects utilizing constructive solid geometry applications.

4. 3D Printers allow students to realize their designs by producing physical objects from their three-dimensional digital models.

5. Adobe Illustrator & Photoshop are industry recognized graphic art software programs. Adobe presently offers a creative cloud suite for education.

6. Vacuum forming machine is a simplified version of thermoforming. In this process, a sheet of plastic is heated then stretched over a preformed mold. The plastic is then shaped into the shape of the mold. This machine allows for exciting project based learning opportunities in the Manufacturing and Production unit.

7. Drill press and bandsaw are presently located in the Technology Workshop, the machines are fixed and utilized only with teacher supervision and proper safety testing accomplished.

8. Consumable Materials such as bass and balsa wood, foam, hot glue, project kits, aluminum foil, wax paper, balloons, fishing line, cups and other materials are needed to support project based learning. Suggested projects include building a model architectural structure, room or facility, bridge, tower, aircraft and more.

9. Personal protection equipment such as safety goggles and gloves are required when students are at risk of injuring themselves while creating projects or utilizing tools and/or machinery.

10. Hand Tools various hand tools such as easy cutters, coping saws, craft knives, hot glue guns and hot wire cutting machine will be utilized within the classroom. Safety precautions and training will be taken and provided at all times.

Standards

TECH.8.2.8.C.3	Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer.
TECH.8.2.8.C.5a	Explain the interdependence of a subsystem that operates as part of a system.
TECH.8.2.8.C.5b	Create a technical sketch of a product with materials and measurements labeled.
TECH.8.2.8.D.3	Build a prototype that meets a STEM-based design challenge using science, engineering, and math principles that validate a solution.