Unit 4: Cutting and Shaping

Content Area: **Applied Technology**
Course(s):
Time Period: **Marking Period 1**
Length: **7-8 Weeks**
Status: **Published**

Brief Summary of Unit

Students will learn about the many types of cutting and shaping tools available to today's woodworker. They will learn about personal safety while using tools and how to be safety conscience. Students will learn about the various types of saws and be able to use them for their intended purpose.

Standards

LA.RST.11-12.1	Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.
LA.RST.9-10.2	Determine the central ideas, themes, or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
LA.RST.11-12.2	Determine the central ideas, themes, or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
LA.RST.9-10.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
LA.RST.11-12.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
LA.RST.11-12.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
LA.RST.9-10.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.
LA.RST.11-12.5	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
LA.RST.9-10.5	Analyze the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).
LA.RST.9-10.6	Determine the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.
LA.RST.11-12.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
LA.RST.9-10.7	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
LA.RST.11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and

	media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
LA.RST.9-10.8	Determine if the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.
LA.RST.11-12.8	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
LA.RST.11-12.9	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
LA.RST.9-10.9	Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.
LA.RST.11-12.10	By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently.
LA.RST.9-10.10	By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.
HPE.2.1.12	All students will acquire health promotion concepts and skills to support a healthy, active lifestyle.
SOC.6.1.12	U.S. History: America in the World: All students will acquire the knowledge and skills to think analytically about how past and present interactions of people, cultures, and the environment shape the American heritage. Such knowledge and skills enable students to make informed decisions that reflect fundamental rights and core democratic values as productive citizens in local, national, and global communities.
VPA.1.1.12	All students will demonstrate an understanding of the elements and principles that govern the creation of works of art in dance, music, theatre, and visual art.
TECH.8.1.12	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.2.12	Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

Transfer

Essential Questions

- What is safety consciousness?
- Why are accurate cutting and shaping skills important to the quality of a wood project?
- Why is it important to use the correct tool for a specific job?

Essential Understandings

- all power machines are inherently dangerous, but most accidents are not caused by the machine but by the operator.
- all tools as well as operators have their limitations.
- although wood can be shaped using a variety of hand and power tools, there is a specific and correct tool for each job.
- care must be exercised not to exceed the design limits of a tool.
- concentration and caution must be exercised when operating all machinery.
- tools that are properly used and maintained will make the job easier, safer, more cost effective, and will result in a better quality outcome.
- using the correct tool makes the job easier, safer, and will result in a better quality outcome.
- when purchasing tools, invest in quality.

Students Will Know

- how to care for and maintain cutting and shaping hand tools.
- how to use cutting and shaping tools safely and effectively.
- key terms and tool names including but not limited to: ripping, jig, crosscut saw, ripsaw, jigsaw, coping saw, backsaw, dovetail saw, keyhole saw, single cut file, double cut file, rasp, etc.
- safety practices for using cutting and shaping hand held power tools.
- types of cutting and shaping hand tools and their uses.

Students Will Be Skilled At

Evidence/Performance Tasks

- actively and meaningfully participate in all classroom activities, and discussions.
- answer the essential questions.
- be able to explain the dangers of wearing jewelry while working near a machine.
- demonstrate proper use of single cut, double cut files, and the rasp.
- demonstrate proper use of the use of both the rip and crosscut saws.
- demonstrate the ability to correctly identify several handsaws, including the panel saw, coping saw, backsaw, dovetail saw and the keyhole saw.
- demonstrate the proper procedure for plugging in and unplugging an electric tool as well as how to store it safely.
- demonstrate the proper use of both the crosscut saw and the ripsaw.

Learning Plan

- Allow students to work independently drilling the holes on their projects.

- Allow students to work independently to drill the required holes in their project.
- Demonstrate the procedures for attaching jigs and fixtures to the drill press table.
- Demonstrate the safe and proper use of a drill.
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- Discuss the use of the drill press in industry today.
- Display and have students examine the various types of drill bits available in the shop and have students pair them with the corresponding drill.
- Have students demonstrate the insertion and removal of drill bits into the manual and electric drill.
- Have students present their comparisons to the class using the SmartBoard.
- Introduce key vocabulary.
- Present and discuss the video on operating the drill press safely.
- Present lesson on drilling and boring tools.
- Present lesson on using the drill press.
- Preview the essential questions and connect to learning throughout the unit.
- Read and answer questions in the relevant sections of the woodworking textbook.
- Read and discuss relevant selections from the woodworking textbook.
- Using the SmartBoard and the Internet, have student's research the features of various drill presses on the market and prepare a price comparison.

Materials

Suggested Strategies for Modifications

- additional time on task
- alternative outcome options
- assessment based on individual development in the area of study
- audio tape of instruction
- cooperative learning groups
- handouts of notes, procedures, processes, diagrams, etc.
- images and visual aids
- one-to-one instruction and assistance
- preferential seating
- reading material modified to student level
- revised techniques, use of tools and media in hands-on activity
- study partners
- testing materials appropriate to student level