

Boat Building and Navigation Unit 2: Building the Boat

Unit Focus

In this unit, students select a plan and construct their own boat with available plans ranging from small plywood canoes to a 14' skiff. Full scale boat construction will be the major component of this unit. During the building process students will hone their ability to properly manipulate tools and understand the importance of proper preparation.

Stage 1: Desired Results - Key Understandings

Established Goals	Transfer		
<p>Connecticut Goals and Standards <i>Wood Technology: 12</i></p> <ul style="list-style-type: none"> Describe and demonstrate the procedures related to workplace and job site safety including personal protective equipment, machine safety, and material handling practices. <i>WM.02</i> Identify and describe the safe and appropriate use of various types of hand and power tools and machinery used for building. <i>WM.03</i> Describe and interpret technical drawings. <i>WM.04.01</i> Explain and prepare a cut list or bill of material from a basic plan and assembly drawing.(C15) <i>WM.04.03</i> Describe and identify fractional measurements from a basic plan and assembly drawings.*(C13) <i>WM.04.05</i> Extrapolate information from a set of plans. <i>WM.04.07</i> Measure accurately to a sixteenth of an inch.*(C16) <i>WM.04.08</i> Interpret a design to facilitate replication <i>WM.04.10</i> Prepare stock for use.*(G28) Consider the natural characteristics of grain, knots, and checks when laying out a board.*(C19) <i>WM.04.11</i> Identify and assemble the following types of joints: butt, miter, dado, rabbet, and lap.*(G27) <i>WM.04.12</i> Identify and select the proper cutting process based on grain direction.*(E23) <i>WM.04.13</i> 	<p>T1 Explore and hone techniques, skills, methods, and processes to create and innovate T2 Work together on a common goal to meet deadlines through addressing challenges and problems along the way both individually and collectively. T3 Demonstrate professionalism through exhibiting attentiveness, growing from feedback, and adhering to industry standards (safety).</p>		
	Meaning		
	Understandings	Essential Questions	
	<p>U1 Shop safety is a developed attitude through gaining understanding of general safety principles U2 The way people conduct themselves has a significant impact on the quality of the product and the safety in the environment. U3 Execution of a plan requires understanding of basic woodworking, attention detail, and time management.</p>	<p>Q1 How do I increase efficiency without sacrificing quality? Q2 What adjustments need to be made? Q3 How precise do I need to be based on the product (and the specs)? Q4 What design do I want to build? How do I plan on executing it? Q5 What am I focusing on right now? How does that fit into the bigger picture? (roles, timeline, task sequence) Q6 How do my behaviors and actions affect the safety of myself and others? Q7 How can I apply different hand and power tool skills in meeting the needs of my project?</p>	
	Acquisition of Knowledge and Skill		
	Knowledge	Skills	
<p>K1 All woodworking hand and power tools have a</p>	<p>S1 Demonstrate proper safety etiquette according to school</p>		

Stage 1: Desired Results - Key Understandings

- Identify how grain direction affects a material's strength. *(E24) *WM.04.14*
- Identify and describe the purpose and use of the following woodworking fasteners: common nails, round head screws, flat head screws, and oval head screws. *(H29) *WM.04.19*
- Identify, describe purpose of and use woodworking adhesives. * *WM.04.20*
- Identify and describe the purpose of the following clamping devices: bar clamp, c-clamp, parallel/hand screw clamp, and spring clamps. *(H30) *WM.04.21*
- Identify and apply various wood finishes for interior and exterior, with brush or wipe on, for the following: paint, stain, and clear coat. *(I31) *WM.04.22*
- Describe the abrasive grit numbering grading system. *(F26) *WM.04.23*
- Differentiate among various abrasive materials. *WM.04.24*
- Design and create cabinet and wood products *WM.05.03*

Student Growth and Development 21st Century Capacities Matrix

Collaboration/Communication

- Collective Intelligence: Students will be able to work respectfully and responsibly with others, exchanging and evaluating ideas to achieve a common objective. *MM.3.1*

Self-Direction

- Reflection: Students will be able to analyze their performance to evaluate progress toward learning goals in order to determine next step(s). *MM.4.1*
- Perseverance: Students will be able to identify problem(s) and use appropriate strategies to continue toward a desired goal. *MM.4.2*

- specific purpose in either manipulating or changing the shape in wood.
- K2** Imperial system of measurement
 - K3** School safety protocol.
 - K4** Lofting is a technique used to create full size templates and patterns in creating the different parts of a wooden boat.
 - K5** Structural components in wooden boat design
 - K6** Joinery and adhesives are the most common fastening techniques used in wooden boat construction.
 - K7** Boat finishes include varnish, coatings, oils, two-part finishes (Epoxy) and paint.
 - K8** Tortured Bending method allows parts of the boat hull to be bent of two different planes during assembly.

- safety expectations and procedures.
- S2** Demonstrating working as a team to build a boat - individual responsibility to do your part, investment in helping others on the team, interdependence to putting the parts together
 - S3** Identifying focus for the day and progress-monitoring
 - S4** Selecting and using tools appropriately to produce the desired outcome.
 - S5** Paying attention to detail (e.g., measurement, cuts, construction)
 - S6** Analyze several boat plans and evaluate them for compatibility to your needs and wants.
 - S7** Layout all the parts of a boat accurately using the Lofting process.
 - S8** Demonstrate proper fastening techniques in assembling components of the boat.
 - S9** Demonstrate proper finishing techniques used in to protect the wood surfaces of a boat.
 - S10** Apply the tortured bending method forming a symmetrical hull.