

BIG IDEAS

Design for the life cycle includes consideration of social and **environmental impacts**.

Personal design interests require the evaluation and refinement of skills.

Tools and technologies can be adapted for specific purposes.

Learning Standards

Curricular Competencies	Content
<p><i>Students are expected to be able to do the following:</i></p> <p>Applied Design</p> <p><i>Understanding context</i></p> <ul style="list-style-type: none"> Engage in a period of user-centred research and empathetic observation to understand design opportunities <p><i>Defining</i></p> <ul style="list-style-type: none"> Establish a point of view for a chosen design opportunity Identify potential users, intended impact, and possible unintended negative consequences Make decisions about premises and constraints that define the design space, and develop criteria for success Determine whether activity is collaborative or self-directed <p><i>Ideating</i></p> <ul style="list-style-type: none"> Critically analyze how competing social, ethical, and sustainability considerations impact design Generate ideas and add to others' ideas to create possibilities, and prioritize them for prototyping Evaluate suitability of possibilities according to success criteria and constraints Work with users throughout the design process <p><i>Prototyping</i></p> <ul style="list-style-type: none"> Identify, critique, and use a variety of sources of inspiration Choose an appropriate form, scale, and level of detail for prototyping, and plan procedures 	<p><i>Students are expected to know the following:</i></p> <ul style="list-style-type: none"> complex woodworking and design creation and use of working pictorial and written plans wood-related materials selection of wood based on its characteristics and properties layout and use of materials to minimize waste and conserve material operation, maintenance, and adjustment of stationary power equipment types and purposes of joinery analysis and identification of defects in wood methods for preparing wood surfaces for application of finish identification and analysis of building codes for applicable projects sequence of steps when working with power equipment sharpening procedures types, purposes, and application of finishes design for the life cycle ethics of cultural appropriation in design process future career options and opportunities in woodworking contexts interpersonal and consultation skills to interact with clients

Learning Standards (continued)

Curricular Competencies	Content
<ul style="list-style-type: none"> • Analyze the design for the life cycle and evaluate its impacts • Visualize and construct prototypes, making changes to tools, materials, and procedures as needed • Record iterations of prototyping <p>Testing</p> <ul style="list-style-type: none"> • Identify and communicate with sources of feedback • Develop an appropriate test of the prototype, conduct the test, and collect and compile data • Evaluate design according to critiques, testing results, and success criteria to make changes <p>Making</p> <ul style="list-style-type: none"> • Identify appropriate tools, technologies, materials, processes, cost implications, and time needed • Create design, incorporating feedback from self, others, and testing prototypes • Use materials in ways that minimize waste <p>Sharing</p> <ul style="list-style-type: none"> • Decide how and with whom to share or promote design, creativity, and processes • Share the product with users and critically evaluate its success • Critically reflect on their design thinking and processes, and identify new design goals • Identify and analyze new design possibilities, including how they or others might build on their concept <p>Applied Skills</p> <ul style="list-style-type: none"> • Apply safety procedures for themselves, co-workers, and users in both physical and digital environments • Identify and assess skills needed for design interests, and develop specific plans to learn or refine them over time • Demonstrate competency and proficiency in skills at various levels involving manual dexterity and complex woodworking techniques <p>Applied Technologies</p> <ul style="list-style-type: none"> • Explore existing, new, and emerging tools, technologies, and systems to evaluate suitability for their design interests • Evaluate impacts, including unintended negative consequences, of choices made about technology use • Examine and analyze the role that changing technologies play in woodworking contexts 	

Big Ideas – Elaborations

- **environmental impacts:** including manufacturing, packaging, disposal, and recycling considerations

Curricular Competencies – Elaborations

- **user-centred research:** research done directly with potential users to understand how they do things and why, their physical and emotional needs, how they think about the world, and what is meaningful to them
- **empathetic observation:** aimed at understanding the values and beliefs of other cultures and the diverse motivations and needs of different people; may be informed by experiences of people involved; traditional cultural knowledge and approaches; First Peoples worldviews, perspectives, knowledge, and practices; places, including the land and its natural resources and analogous settings; experts and thought leaders
- **constraints:** limiting factors, such as task or user requirements, materials, expense, environmental impact
- **sources of inspiration:** may include personal experiences, First Peoples perspectives and knowledge, the natural environment, places, cultural influences, social media, and professionals
- **impacts:** including the social and environmental impacts of extraction and transportation of raw materials; manufacturing, packaging, transportation to markets; servicing or providing replacement parts; expected usable lifetime; and reuse or recycling of component materials
- **iterations:** repetitions of a process with the aim of approaching a desired result
- **sources of feedback:** may include peers; users; First Nations, Métis, or Inuit community experts; other experts and professionals both online and offline
- **technologies:** tools that extend human capabilities
- **share:** may include showing to others, use by others, giving away, or marketing and selling

Content – Elaborations

- **wood-related materials:** for example, plywood, oriented strand board (OSB), medium density fibreboard (MDF), composite, and veneer
- **characteristics and properties:** for example, softwood, hardwood, grain pattern, knots, weathering
- **maintenance, and adjustment:** for example, changing blades, changing bits, blade heights, blade types, feeds, speeds, and positioning guard
- **types and purposes of joinery:** for example, spline, mortise and tenon, biscuit, dovetail, fingers
- **sharpening procedures:** how to test and sharpen tools/equipment
- **finishes:** for example, oil, stain, clear coat, wax to prevent warping or protect surface
- **design for the life cycle:** taking into account economic costs, and social and environmental impacts of the product, from the extraction of raw materials to eventual reuse or recycling of component materials
- **cultural appropriation:** using or sharing a cultural motif, theme, “voice,” image, knowledge, story, or practices without permission or without appropriate context or in a way that may misrepresent the real experience of the people from whose culture it is drawn
- **interpersonal and consultation skills:** for example, professional communications, collaboration, follow-ups, courtesies, record keeping, ways to present visuals