

## BIG IDEAS

Social, ethical, and sustainability considerations impact design.

Complex tasks require the sequencing of skills.

Complex tasks require different technologies and tools at different stages.

## Learning Standards

Curricular Competencies	Content
<p><i>Students are expected to be able to do the following:</i></p> <p><b>Applied Design</b></p> <p><i>Understanding context</i></p> <ul style="list-style-type: none"> <li>Engage in a period of <b>research</b> and <b>empathetic observation</b> in order to understand design opportunities</li> </ul> <p><b>Defining</b></p> <ul style="list-style-type: none"> <li>Choose a design opportunity</li> <li>Identify potential users and relevant contextual factors</li> <li>Identify criteria for success, intended impact, and any <b>constraints</b></li> </ul> <p><b>Ideating</b></p> <ul style="list-style-type: none"> <li>Take creative risks in generating ideas and add to others' ideas in ways that enhance them</li> <li>Screen ideas against criteria and constraints</li> <li>Critically analyze and prioritize competing factors, including social, ethical, and sustainability considerations, to meet community needs for preferred futures</li> <li>Choose an idea to pursue, keeping other potentially viable ideas open</li> </ul> <p><b>Prototyping</b></p> <ul style="list-style-type: none"> <li>Identify and use <b>sources of inspiration</b> and information</li> <li>Choose a form for prototyping and develop a <b>plan</b> that includes key stages and resources</li> <li>Evaluate a variety of materials for effective use and potential for reuse, recycling, and biodegradability</li> <li>Prototype, making changes to tools, materials, and procedures as needed</li> <li>Record <b>iterations</b> of prototyping</li> </ul>	<p><i>Students are expected to know the following:</i></p> <ul style="list-style-type: none"> <li>drafting <b>terminology</b></li> <li>drawing <b>standards</b> and <b>conventions</b></li> <li>scales for different <b>types</b> of drawings</li> <li>drafting styles, including perspective, mechanical drafting, and architectural drawing</li> <li>modelling using computer-aided design (CAD) and computer-aided manufacturing (CAM) software</li> <li>coding for creating 3D representations of design solutions</li> <li><b>equipment</b> and <b>tools</b> for manual and computer-aided drafting</li> </ul>

Learning Standards (continued)

Curricular Competencies	Content
<p><i>Testing</i></p> <ul style="list-style-type: none"> <li>Identify <b>sources of feedback</b></li> <li>Develop an <b>appropriate test</b> of the prototype</li> <li>Conduct the test, collect and compile data, evaluate data, and decide on changes</li> <li>Iterate the prototype or abandon the design idea</li> </ul> <p><i>Making</i></p> <ul style="list-style-type: none"> <li>Identify and use appropriate tools, <b>technologies</b>, materials, and processes for production</li> <li>Make a step-by-step plan for production and carry it out, making changes as needed</li> <li>Use materials in ways that minimize waste</li> </ul> <p><i>Sharing</i></p> <ul style="list-style-type: none"> <li>Decide on how and with whom to <b>share</b> their <b>product</b> and processes</li> <li>Demonstrate their product to potential users, providing a rationale for the selected solution, modifications, and procedures, using appropriate terminology</li> <li>Critically evaluate the success of their product, and explain how their design ideas contribute to the individual, family, community, and/or environment</li> <li>Critically reflect on their design thinking and processes, and evaluate their ability to work effectively both as individuals and collaboratively in a group, including their ability to share and maintain an efficient co-operative work space</li> <li>Identify new design issues</li> </ul> <p><b>Applied Skills</b></p> <ul style="list-style-type: none"> <li>Demonstrate an awareness of precautionary and emergency safety procedures in both physical and digital environments</li> <li>Identify the skills and skill levels needed, individually or as a group, in relation to specific projects, and develop and refine them as needed</li> </ul> <p><b>Applied Technologies</b></p> <ul style="list-style-type: none"> <li>Choose, adapt, and if necessary learn about appropriate tools and technologies to use for tasks</li> <li>Evaluate the personal, social, and environmental impacts, including unintended negative consequences, of the choices they make about technology use</li> <li>Evaluate how the land, natural resources, and culture influence the development and use of tools and technologies</li> </ul>	