

BIG IDEAS

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

Personal design choices require self-exploration, collaboration, and 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"> • Conduct user-centred research to determine technology design opportunities and barriers <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 inferences about premises and constraints that define the technologies <p><i>Ideating</i></p> <ul style="list-style-type: none"> • Identify gaps to explore a design • 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 • Work with users throughout the design process 	<p><i>Students are expected to know the following:</i></p> <ul style="list-style-type: none"> • design opportunities • evolution of computer technology, including hardware, software, networks, and the Internet • lab procedures, electrical safety, and appropriate tool use • internal and external components of computer systems, including peripheral devices • computer troubleshooting, including the incorporation of digital tools to aid and assist with research and diagnostics • computer assembly and disassembly best practices • ongoing preventive maintenance, including data security and online/offline backup solutions • installation and configuration of operating systems • proprietary versus open-source applications • software installations and configurations • use of correct terminology to describe the units, rates, and encoding of data communication • network planning, setup, and diagnostics • key aspects of network protocols and standards

Learning Standards (continued)

Curricular Competencies	Content
<p>Prototyping</p> <ul style="list-style-type: none"> Analyze the design for life cycle and evaluate its impacts 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 most appropriate feedback and possible sources of feedback Develop an appropriate test of the prototype Collect feedback to critically evaluate design and make changes to product design or processes Iterate the prototype or abandon the design idea <p>Making</p> <ul style="list-style-type: none"> Identify appropriate tools, technologies, materials, processes, and time needed for production, and where/how these could be available Use project management processes when working individually or collaboratively to coordinate production <p>Sharing</p> <ul style="list-style-type: none"> Share progress while creating to increase opportunities for feedback Critically reflect on their design thinking and processes, and identify new design goals Assess ability to work effectively both as individuals and collaboratively while implementing project management processes <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 	<ul style="list-style-type: none"> laptops and mobile device technology design for the life cycle careers in information and communication technology (ICT), including roles and responsibilities of ICT professionals future technologies and potential societal impacts appropriate use of technology, including digital citizenship, etiquette, and literacy

Learning Standards (continued)

Curricular Competencies	Content
<p>Applied Technologies</p> <ul style="list-style-type: none"> • Explore existing, new, and emerging tools, technologies, and systems to evaluate their suitability for their design interests • Evaluate impacts, including unintended negative consequences, of choices made about technology use • Analyze the role technologies play in societal change 	