

BIG IDEAS

The **design cycle** is an ongoing reflective process.

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 understand 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 decisions about premises and constraints that define the design space <p><i>Ideating</i></p> <ul style="list-style-type: none"> • Identify gaps to explore a design space • Generate ideas and add to others' ideas to create possibilities, and prioritize them for prototyping • Critically analyze how competing social, ethical, and sustainability considerations impact designed solutions to meet global needs for preferred futures • 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 • design cycle • advanced programming structures • standardized source code documentation • self-documenting code • collaboration tools for programming • advanced pair programming • User interface design • error handling • debugging tools • management of complexity • uses of pre-built data structures • bug reports and feature requests from users • appropriate use of technology, including digital citizenship, etiquette, and literacy • interpersonal skills necessary to work effectively within the IT sector

Learning Standards (continued)

Curricular Competencies	Content
<p>Prototyping</p> <ul style="list-style-type: none"> • Identify and apply sources of inspiration and information • Choose an appropriate form, scale, and level of detail for prototyping, and plan procedures for prototyping multiple ideas • Analyze the design for the 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 feedback most needed 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 • 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 feedback, collaboration, and, if applicable, marketing • Decide on how and with whom to share or promote their product, creativity, and, if applicable, intellectual property • Consider how others might build upon the design concept • 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 	

Learning Standards (continued)

Curricular Competencies	Content
<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 <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 • Examine how cultural beliefs, values, and ethical positions affect the development and use of technologies 	