BIG IDEAS

Design for the life cycle includes consideration of social and **environmental impacts**.	Services and products can be designed through consultation and collaboration.	Tools and **technologies** can be adapted for specific purposes.

Learning Standards

Curricular Competencies	Content
Students are expected to be able to do the following: **Applied Design** ***Understanding context*** • Conduct **user-centred research** to understand opportunities and barriers ***Defining*** • 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 ***Ideating*** • Identify and analyze gaps to explore possibilities for innovation • Take creative risks • Generate ideas and enhance others' ideas to create a range of possibilities, and prioritize the possibilities for prototyping • Critically analyze how competing social, ethical, and sustainability factors impact designed solutions to meet global needs for preferred futures • Work with users throughout the design process	*Students are expected to know the following:* • recognition of entrepreneurial **opportunities** • types of business ventures and **social entrepreneurship** • factors that can promote innovation and entrepreneurial success, including networking, product/service knowledge, and market analysis • characteristics of the global market and local economic trends • components of starting a small business, including registration and **financial considerations** • **ways to protect** intellectual property • **design for the life cycle** • **interpersonal and presentation skills** to promote products and/or services and to interact with clients • emerging career options for young entrepreneurs • ethics of **cultural appropriation** and plagiarism

Learning Standards (continued)

Curricular Competencies	Content
Prototyping • Identify, critique, and use a variety of **sources of inspiration** and **information** • Choose an appropriate form and level of detail for prototyping • 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 ***Testing*** • Obtain and evaluate critical feedback from multiple **sources**, both initially and over time • Develop an **appropriate test** of the prototype • Based on feedback received and evaluated, make changes to product and/or service plan or processes as needed ***Making*** • Identify tools, technologies, materials, processes, cost implications, and time needed for development and implementation • Use **project management processes** when working individually or collaboratively to coordinate or create processes or products • **Share** progress to increase opportunities for feedback, collaboration, and, if applicable, marketing ***Sharing*** • Decide on how and with whom to share or promote their **product or service**, their creativity, and, if applicable, their **intellectual property** • Critically reflect on their design thinking and processes, and identify new design goals, including how they or others might build on their concept • Critically evaluate their ability to work effectively, both individually and collaboratively	

Learning Standards (continued)

Curricular Competencies	Content
Applied Skills • Evaluate **safety issues** for themselves, co-workers, and users in both physical and digital environments • Identify and critically assess skills needed related to the project(s) or design interests, and develop specific plans to learn or refine skills over time • Evaluate and apply a framework for problem solving **Applied Technologies** • Explore existing, new, and emerging tools, technologies, and systems and evaluate their suitability for design and production interests • Evaluate impacts, including unintended negative consequences, of choices made about technology use • Analyze the role and personal, interpersonal, social, and environmental impacts of technologies in societal change • Examine how cultural beliefs, values, and ethical positions affect the development and use of technologies on a national and global level	

Big Ideas – Elaborations

- **environmental impacts:** including manufacturing process, packaging, disposal, and recycling considerations
- **technologies:** tools that extend human capabilities

APPLIED DESIGN, SKILLS, AND TECHNOLOGIES – Entrepreneurship
Grade 12

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
- **constraints:** limiting factors, such as available technologies, expense, space, environmental impact
- **sources of inspiration:** may include personal experiences; First Peoples perspectives and knowledge; the natural environment and places, including the land, its natural resources, and analogous settings; people, including users, experts, and thought leaders
- **information:** may include professionals; First Nations, Métis, or Inuit community experts; secondary sources; collective pools of knowledge in communities and collaborative atmospheres both online and offline
- **impacts:** including social and environmental impacts of extraction and transportation of raw materials; manufacturing, packaging, and 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:** may include peers; users; First Nations, Métis, or Inuit community experts; other experts and professionals both online and offline
- **appropriate test:** includes evaluating the degree of authenticity required for the setting of the test, deciding on an appropriate type and number of trials, and collecting and compiling data
- **project management processes:** setting goals, planning, organizing, constructing, monitoring, and leading during execution
- **Share:** may include showing to others or use by others, giving away, or marketing and selling
- **product or service:** for example, a physical product, process, system, service, designed environment
- **intellectual property:** creations of the intellect such as works of art, inventions, discoveries, design ideas to which one has the legal rights of ownership
- **safety issues:** for example, viruses, phishing, privacy (digital); ergonomics, lifting, repetitive stress injuries (physical)

Content – Elaborations

- **opportunities:** identification of gaps where entrepreneurial opportunities might exist; experimentation with small-scale entrepreneurial ventures
- **social entrepreneurship:** focuses on developing and implementing solutions for social, cultural, and environmental challenges
- **financial considerations:** may include:
  - budgeting
  - ways to access outside sources of funding and support for a venture
  - ways to control and manage cash flow and track expenses
  - taxation
- **ways to protect:** for example, copyrights, trademarks, patents
- **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
- **interpersonal and presentation skills:** for example, professional communications, collaboration, follow-ups, and courtesies; technological or visual supports to accompany marketing or demonstrations at conferences
- **cultural appropriation:** use of a cultural motif, theme, "voice," image, knowledge, story, song, or drama, shared 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