**Area of Learning: Applied Design, Skills, and Technologies — Computer Studies Grade 10**

**BIG IDEAS**

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| User needs and interests drive the design process. |  | Social, ethical, and sustainability issues are influenced by design. |  | Complex tasks require different technologies and tools at different stages. |

**Learning Standards**

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| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*Applied Design*Understanding context** Engage in a period of **research** and **empathetic** **observation**

*Defining** Identify potential users, societal impacts, and other relevant contextual factors for a chosen design opportunity
* Identify criteria for success, intended impact, and any **constraints** or possible unintended impacts

*Ideating** Screen ideas against criteria and constraints
* Critically analyze and prioritize competing **factors** to meet community needs for preferred futures
* Maintain an open mind about potentially viable ideas

*Prototyping** Identify and use **sources of inspiration** and information
* Choose a form for prototyping and develop a **plan** that includes key stages and resources
* Prototype, making changes to tools, materials, and procedures as needed
* Record **iterations** of prototyping
 | *Students are expected to know the following:** design opportunities
* **computer hardware**, peripherals, internal and external components, and standards
* distinctions between **software types**,cloud-based and desktop applications
* intermediate features of **business applications**, including word processing, spreadsheets, and presentations
* **operating system shortcuts** and **command line operations**
* **preventive maintenance** of hardware and software
* **computer security risks**
* hardware and software **troubleshooting**
* **wired and wireless computer networking**
* **evolution of digital technology** and the impact on traditional models of computing
* **risks and rewards** associated with big data, multi-device connectivity, and the Internet of Things
* principles of **computational thinking**
* introductory computer **programming concepts and constructs**
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**Learning Standards (continued)**

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| **Curricular Competencies** | **Content** |
| *Testing** Identify **sources of feedback**
* Develop an **appropriate test** of the prototype
* Conduct the test, collect and compile data, evaluate data, and decide on changes
* Iterate the prototype or abandon the design idea

*Making** Identify and use appropriate tools, **technologies**, materials, and processes for production
* Make a step-by-step plan for production and carry it out, making changes as needed

*Sharing** Decide on how and with whom to **share** **product** and processes
* Demonstrate the product to potential users, providing a rationale for the selected solution, modifications, and procedures
* Use appropriate terminology
* Critically reflect on their design thinking and processes, and identify new design goals
* Assess their ability to work effectively both as individuals and collaboratively in a group, including ability to share and maintain an efficient collaborative workspace

Applied Skills* Demonstrate an awareness of precautionary and emergency safety procedures in both physical and digital environments
* Identify the skills needed in relation to specific projects, and develop and refine them

Applied Technologies* Choose, adapt, and if necessary learn more about appropriate tools and technologies to use for tasks
* Evaluate **impacts**, including unintended negative consequences, of choices made about technology use
* Evaluate the influences of land, natural resources, and culture on the development and use of tools and technologies
 | * **planning and writing** simple programs, including games
* **impacts of computers and technology on society**
* **ethical considerations** of technology use, including **cultural appropriation** and **environmental sustainability**
* **digital literacy** and digital citizenship
* impacts of technology use on personal **health and wellness**
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