BIG IDEAS

The **design cycle** is an ongoing reflective process.	Personal design choices require self-exploration, collaboration, and evaluation and refinement of skills.	Design and content can influence the lives of others.

Learning Standards

Curricular Competencies	Content
Students are expected to be able to do the following:	*Students are expected to know the following:*
Applied Design	• design opportunities
Understanding context	• design cycle
• Conduct **user-centred research** to determine design opportunities and barriers	• **2D**, **3D**, **audio**, and **video** digital media editing tools, including paid, freeware, open source, and cloud-based solutions
Defining	• **principles of 2D graphic design**
• Establish a point of view for a chosen design opportunity	• tools and techniques for **image manipulation**
• Identify potential users, intended impact, and possible unintended negative consequences	• methods and **principles of 3D graphic design**
• Make decisions about premises and **constraints** that define the design space	• **methods for digital animation**
Ideating	• **methods for 3D modelling**
• Identify gaps to explore a design space	• **digital sound** and **audio data compression**
• Generate ideas and add to others' ideas to create possibilities, and prioritize them for prototyping	• computer-assisted versus computer-generated
• Critically analyze how competing social, ethical, and community factors may impact design	• principles of **desktop video production**
• Prioritize ideas for prototyping	• principles of user-centred design
• Work with users throughout the design process	• appropriate use of technology, including digital citizenship, etiquette, and literacy
	• ethics of **cultural appropriation**
	• **interpersonal skills**, including ways to interact with clients

Learning Standards (continued)

Curricular Competencies	Content
Prototyping • 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 ***Testing*** • Identify and communicate with **sources of feedback** • Develop an **appropriate test** of the prototype • Apply critiques to design or processes throughout • Iterate the prototype or abandon the design idea ***Making*** • Identify appropriate tools, technologies, materials, processes, and time needed for production • Use **project management processes** when working individually or collaboratively to coordinate production ***Sharing*** • **Share** progress while creating to increase opportunities for critique, 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
Applied Skills • 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 **Applied Technologies** • 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	

Big Ideas – Elaborations	APPLIED DESIGN, SKILLS, AND TECHNOLOGIES – Digital Media Development Grade 12

- **design cycle:** includes updating content, tools, and delivery. The design process can be non-linear.

Curricular Competencies – Elaborations	APPLIED DESIGN, SKILLS, AND TECHNOLOGIES – Digital Media Development Grade 12

- **user-centred research:** research done directly with potential users to understand needs and requirements
- **constraints:** limiting factors, such as available technology, expense, environmental impact, copyright
- **sources of inspiration:** may include aesthetic experiences; exploration of 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, 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 of feedback:** 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, use by others, giving away, or marketing and selling
- **intellectual property:** creations of the intellect such as works of art, invention, discoveries, design ideas to which one has the legal rights of ownership
- **technologies:** tools that extend human capabilities

- **2D:** raster and vector image creation and editing software
- **3D:** animation software that supports modelling, animation, and rendering
- **audio:** for example, sound editing software that supports import, export, and editing multiple types of audio formats
- **video:** multi-format video editing software capable of developing basic editing, transitions, and titling
- **principles of 2D graphic design:** for example, proximity, alignment, rhythm/repetition, balance, contrast, white space, vector/raster images, guides and rulers (grid systems), cyan magenta yellow black (CMYB) and red green blue (RGB) colour systems, fonts and typography
- **image manipulation:** for example, adjustment and resizing, resolution, cropping, masking, soft light adjustment, layers, cloning, retouching, filters, painting, managing text
- **principles of 3D graphic design:** for example, harmony, contrast/variety, rhythm/repetition, emphasis, continuity, balance (asymmetrical/symmetrical), proportion
- **methods for digital animation:** squash and stretch (exaggerating body formations for a comedic effect), anticipation (e.g., guiding the audience's eyes toward upcoming action), staging (e.g., using the characters' poses to set the mood of a scene), straight-ahead action or pose-to-pose action (two techniques for moving the action forward), follow-through and overlapping action (e.g., showing detail by giving characters' reactions), slow-in and slow-out (acceleration and retardation of a scene for effect), arcs (moving characters in curved paths for a more realistic look), secondary action (e.g., using smaller motions to complement the main action, using layers), timing (the precise amount of time spent on an action), exaggeration (e.g., squash and stretch), solid modelling and rigging (originally called solid drawing, this emphasizes a clear representation of the shapes), character personality (creating a personality that will connect with the audience)
- **methods for 3D modelling:** polygonal modelling (points in 3D space, called vertices, are connected by line segments to form a Polygon mesh), curve modelling (surfaces are defined by curves, which are influenced by weighted control points), digital sculpting (displacement, volumetric and dynamic tessellation)
- **digital sound:** for example, sampling, sampling rates, aliasing, bit depth, bit rate, microphones
- **audio data compression:** for example, MP3, WAVE format (WAV), advanced audio codec (AAC), Ogg Vorbis, free lossless audio codec (FLAC), loss versus lossless, binary format, analog-to-digital conversion
- **desktop video production:** pre-production (e.g., storyboarding, script writing), production (e.g., lighting, green screen techniques, videography), post-production (e.g., compositing, sound editing and video editing, titling, special effects, over-dubbing)
- **cultural appropriation:** using and sharing 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
- **interpersonal skills:** for example, people skills, social skills, communication, attitudes, collaboration, follow-ups, courtesies, record keeping