BIG IDEAS

Design for the life cycle includes consideration of social and **environmental impacts**.	Personal design interests require the evaluation and refinement of skills.	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*** • Engage in a period of **user-centred research** and **empathetic observation** to understand design opportunities ***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, and develop criteria for success • Determine whether activity is collaborative or self-directed ***Ideating*** • Identify, critique, and use a variety of **sources of inspiration** • Critically analyze how competing social, ethical, and sustainability considerations impact creation and development of solutions • Generate ideas and enhance others' ideas to create a range of possibilities, and prioritize the possibilities for prototyping • Evaluate suitability of possibilities according to success criteria and constraints • Work with users throughout the design process	*Students are expected to know the following:* • traditional and modern techniques in jewellery design and creation • use of **artistic elements** and image design to create emotional response and convey ideas • concepts related to the creation of art with the primary medium of metal and alloys • incorporation of **other materials** to enhance the final product • use, purpose, and traditions of **high-value materials** • various forms of **casting** • detail-oriented **welding** • material selection for specific applications • application and purpose of **finishes and polishes** • **carving media** for transfer to metal • layout and use of materials to minimize waste and conserve material • uses of **power** and **non-power** tools • design for the life cycle

Learning Standards (continued)

Curricular Competencies	Content
Prototyping • Choose an appropriate form, scale, and level of detail for prototyping, and develop a **plan** that includes key stages and resources • Analyze the design for the life cycle and evaluate its **impacts** • Visualize and 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, conduct the test, and collect and compile data • Evaluate design according to critiques, testing results, and success criteria to make changes ***Making*** • Identify appropriate tools, technologies, materials, processes, cost implications, and time needed • Create design, incorporating feedback from self, others, and results from testing of the prototypes • Use materials in ways that minimize waste ***Sharing*** • Decide how and with whom to **share** creativity, or share and promote design and processes • Share the product with users and critically evaluate its success • Critically reflect on plans, products and processes, and identify new design goals • Evaluate new possibilities for plans, products and processes, including how they or others might build on them	• ethics of **cultural appropriation** in design process • future career options and opportunities in metalworking and jewellery creation • **interpersonal and consultation skills** to interact with clients

Learning Standards (continued)

Curricular Competencies	Content
Applied Skills • Apply safety procedures for themselves, co-workers, and users in both physical and digital environments • Individually or collaboratively identify and assess skills needed for design interests • Demonstrate competency and proficiency in skills at various levels involving manual dexterity and metalworking and jewellery making techniques • Develop specific plans to learn or refine identified skills over time **Applied Technologies** • Explore existing, new, and emerging tools, technologies, and systems to evaluate suitability for their design interests • Evaluate impacts, including unintended negative consequences, of choices made about technology use • Examine and analyze the role that changing technologies play in metalworking and jewellery design contexts	

Big Ideas – Elaborations

APPLIED DESIGN, SKILLS, AND TECHNOLOGIES – Art Metal and Jewellery
Grade 12

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

Curricular Competencies – Elaborations

APPLIED DESIGN, SKILLS, AND TECHNOLOGIES – Art Metal and Jewellery
Grade 12

- **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
- **empathetic observation:** aimed at understanding the values and beliefs of other cultures and the diverse motivations and needs of different people; may be informed by experiences of people involved; traditional cultural knowledge and approaches; First Peoples worldviews, perspectives, knowledge, and practices; places, including the land and its natural resources and analogous settings; experts and thought leaders
- **constraints:** limiting factors, such as task or user requirements, materials, expense, environmental impact
- **sources of inspiration:** may include personal experiences, First Peoples perspectives and knowledge, the natural environment, places, cultural influences, social media, and professionals
- **plan:** for example, pictorial drawings, sketches, flow charts
- **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
- **share:** may include showing to others, use by others, giving away, or marketing and selling

Content – Elaborations

- **artistic elements:** for example, line, shape, space, texture, colour, form, tone, pattern, repetition, balance, contrast, emphasis, rhythm, movement, variety, proportion, magnification, reversal, fragmentation, distortion
- **other materials:** for example, glass, gems, jewels, plastics
- **high-value materials:** for example, gold, silver, brass, bronze
- **casting:** for example, sand, investment, spin
- **welding:** for example, brazing, soldering, wire-feed welding, gas welding
- **finishes and polishes:** for example, brushed, satin, matte, hammered, textured, flame, plating
- **carving media:** for example, soapstone, cuttlebone, foam
- **power:** for example, rotary tool, ultrasonic cleaner/polisher, engraver, soldering iron
- **non-power:** for example, file, jeweller's saw, flat-nosed pliers, bead crimper, ring gauge, polisher, tumbler, burnisher, roller
- **cultural appropriation:** using or sharing a cultural motif, theme, "voice," image, knowledge, story, or practices 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 and consultation skills:** for example, professional communications, collaboration, follow-ups, courtesies, record keeping, ways to present visuals