BRITISH
COLUMBIA
Ministry of Education

BIG IDEAS

User needs and interests drive the design process.	Social, ethical, and sustainability considerations influence design.	Complex tasks require different technologies and tools at different stages.	Multi-stage design projects benefit from collaborative work environments.

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	• relationship between web structure and content, HTML, style and design, cascading style sheets (CSS), and website **functionality and interactivity**
• Engage in a period of **research** and **empathetic observation**	
Defining	• advantages/disadvantages of websites and **content management systems** (CMS)
• Identify potential users, societal impacts, and other relevant contextual factors for a chosen design opportunity	• website design **planning tools**
• Identify criteria for success, intended impact, and any **constraints** or possible unintended impacts	• HTML text editing software, WYSIWYG HTML editors user interface (**UI**) and user experience (**UX**)
Ideating	• World Wide Web Consortium (**W3C**) standards and **responsive** and **optimized** web design
• Take creative risks in generating ideas and add to others' ideas in ways that enhance them	• **domain and hosting options**
• Screen ideas against criteria and constraints	• copyright, Creative Commons, fair use protocols for media and content, and ethics of **cultural appropriation**
• Collaborate on idea generation and maintain an open mind about potentially viable ideas	• **accessibility** and **functionality** in web design
Prototyping	• **writing** for the web
• Identify and use **sources of inspiration** and information	• principles of creative web design
• Choose a form for prototyping and develop a **plan** that includes key stages and resources	• **security and privacy** implications
• Prototype, making changes to tools, designs, and procedures as needed	• principles of **database** creation and management
• Record **iterations** of prototyping	• **career options** in web development and the **interpersonal skills** necessary for success in this field

Learning Standards (continued)

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**, 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 selected solution, modifications, and procedures, using appropriate terminology • Critically reflect on design thinking and processes, and identify new design goals • Assess ability to work effectively both as individuals and collaboratively in a group, including ability to share and maintain an efficient cooperative work space **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	

- **research:** may include traditional cultural knowledge and approaches of First Peoples and others, secondary sources, collective pools of knowledge in communities and collaborative atmospheres, both online and offline
- **empathetic observation:** may include experiences; traditional cultural knowledge and approaches of First Peoples and those of other cultures; places, including the land and its natural resources and analogous settings; people, including users, experts, and thought leaders
- **constraints:** limiting factors such as task or user requirements, materials, expense, environmental impact
- **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 and experts
- **plan:** for example, pictorial drawings, sketches, flow charts
- **iterations:** repetitions of a process with the aim of approaching a desired result
- **sources of feedback:** may include First Nations, Métis, or Inuit community experts; keepers of other traditional cultural knowledge and approaches; peers, users, and other experts
- **appropriate test:** consider conditions, number of trials
- **technologies:** tools that extend human capabilities
- **share:** may include showing to others or use by others, giving away, or marketing and selling; consider Creative Commons attributions
- **product:** for example, a digital product, a process, a system, a service, a designed environment
- **impacts:** personal, social, and environmental

- **functionality and interactivity:** for example, JavaScript, jQuery (JavaScript library), PHP
- **content management systems:** applications (usually web-based) that provide capabilities for multiple users with different permission levels to manage (all or a section of) content, data, or information of a website project
- **planning tools:** for example, wireframe mock-ups, site maps
- **UI:** user interface: focus on functionality, consistency of style and layout, effective operation, and control of the technology from the human (user) end
- **UX:** user experience: focus on the flow, feel, and end-user experience of the product
- **W3C:** using online World Standards Cooperation (WSC) validators to check for any errors in the HTML and cascading style sheets (CSS)
- **responsive:** consideration of how content will be displayed across multiple devices, cross-browser compatibility
- **optimized:** for speed of loading, minimal bandwidth requirements, and appropriate image compression types (jpg, gif, png)
- **domain and hosting options:** for example, web hosting options, file transfer protocols (FTP), use of web hosting control panels for website administration, Freedom of Information and Protection of Privacy Act (FOIPPA) concerns; geographical implications of host servers
- **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
- **accessibility:** removing barriers that prevent interaction with or access to websites by all users; ensuring that there is equity of access for all potential users
- **functionality:** for example, colours, layout, contrast, typography, navigation, information design (ID), usability, accessibility, CRAP (contrast, repetition, alignment, and proximity)
- **writing:** for example, user experience, calls to action, concise and persuasive writing, simple language, hyperlinking, bold words, lists and bullets for ease of scanning, keywords, tags, copywriting, metadata, search engine optimization, keyword analytics
- **security and privacy:** for example, secure socket layer (SSL), encryption, password management, data storage, permissions, server locations, geographical impacts of data storage and security
- **database:** for example, structured query language (SQL)
- **career options:** for example, account managers, user experience (UX) and user interface (UI) designers, web developers, quality assurance testers, development and operations (dev ops) project manager, content manager
- **interpersonal skills:** for example, having the teamwork and collaborative skills necessary to succeed in project-based environments, pair-programming, effective communication