FUTURE PATHWAYS

TECHNOLOGY SAMPLER 11

Resource Guide

Developed 2025 by a NVSD44 Curriculum Design Team

Project Leads: Greg Hockley and Jen Kinakin

Module Design Team: Scott Bentley, Murray Bulger, Magali Chemali, Alysia Francis, Ella Mayer, Stephanie Reynolds, Luke Smeaton, and Simon Worley

North Vancouver School District
the natural place to learn®

LAND ACKNOWLEDGEMENT

This package was created by a group of educators who respectfully acknowledge the original peoples of these lands and waters — the səl̓ilwətaɬ (Tsleil-Waututh), Skwxwú7mesh Úxwumixw (Squamish), and xʷməθkʷəy̓əm (Musqueam) — on whose unceded ancestral territories we live, learn, and work. We are grateful for the opportunity to collaborate, reflect, and grow together on these lands.

Future Pathways Technology Sampler 11

Resource Guide

Prepared by

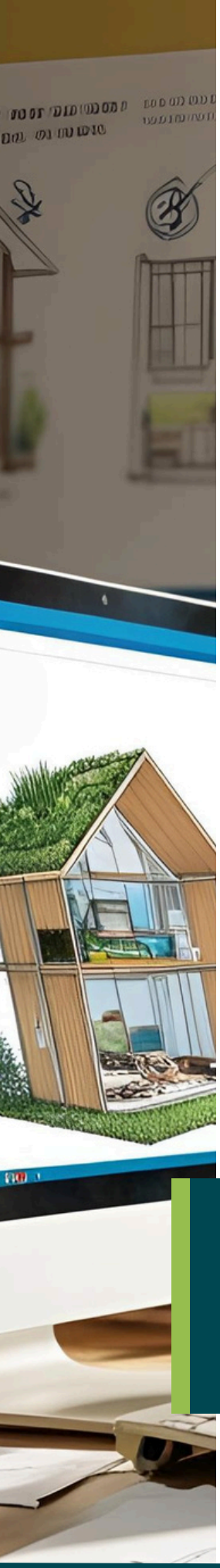
Greg Hockley

Jen Kinakin

NVSD44 Curriculum Design Team

Table of Contents

Resource Guide developed by the NVSD44 Curriculum Design Team
Project Leads: **Greg Hockley** and **Jen Kinakin**
Module Design Team Members: **Scott Bentley, Murray Bulger, Magali Chemali, Alysia Francis, Ella Mayer, Stephanie Reynolds, Luke Smeaton,** and **Simon Worley**



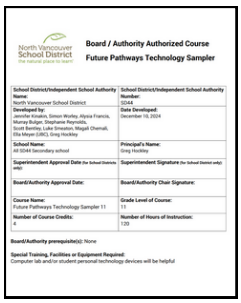
About this Resource Guide

This Resource Guide is designed to provide **flexible support** to educators while ensuring that **key learning outcomes** are met during implementation of the course curriculum. It offers a **starting point** and a range of ideas to **help educators plan and deliver** this course in ways that work best for their students. It is not a prescribed or mandated design for the course.

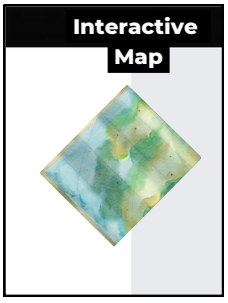
This **Resource Guide includes**:

- **Module Overviews** – Big ideas, essential questions, and learning standards for each unit.
- **Module Planners** – Pacing suggestions and sample learning activities.
- **Sample Lesson Plans** – Ready-to-use or adaptable to your context.
- **Resources & Links** – Curated digital tools, videos, and articles.
- **Industry Connections** – Real-world applications and future career possibilities.

Click the Framework iimage here to access the **Full Board Authorized Authority Course Curriculum Framework** document


North Vancouver School District

Board / Authority Authorized Course
Future Pathways Technology Sampler



Click this icon to access the **Interactive Map with Industry connections** and **links** (Added regularly)

"Today's students are preparing for jobs that have not yet been created, using technologies that have not yet been invented."

OECD, "The Future of Education and Skills"

Course Synopsis

This course provides students with an engaging opportunity to explore the dynamic world of in-demand high technology industries. Participants will discover their passions and identify key 21st century skills necessary to shape their future career paths. The course emphasizes the development of essential competencies critical for thriving in tomorrow's evolving job market.

Through inquiry-based project learning and active exploration, students will delve deeply into areas that could ignite personal passions and apply their learning in meaningful and practical ways to gain real-world insights and experiences.

The Future Pathways Technology Sampler is designed as a flexible and engaging 'sampler' style course. The curriculum begins and is anchored throughout with the 'core' module, which establishes the foundational framework for the course. Educators are then encouraged to select three of the six 'optional' modules to complete the program. These optional modules over a wide range of in-demand high technology industries, allowing for a tailored learning experience that aligns with local contexts and student interests.

Course Goals and Rationale

Many of the careers students aspire to today will evolve — or even transform — by the time they enter the workforce. Some jobs that will be available to them upon graduation may not yet exist. To prepare students for a rapidly changing and somewhat uncertain future, this course focuses on equipping them with the skills and knowledge needed to bridge today's world with tomorrow's opportunities.

Students are eager to explore industries that will shape their future. This course empowers them to investigate current, in-demand technology sectors while thinking critically about how these industries might grow or shift over time. By the end of the course, students will gain a more complete picture of their personal interests and potential career pathways.

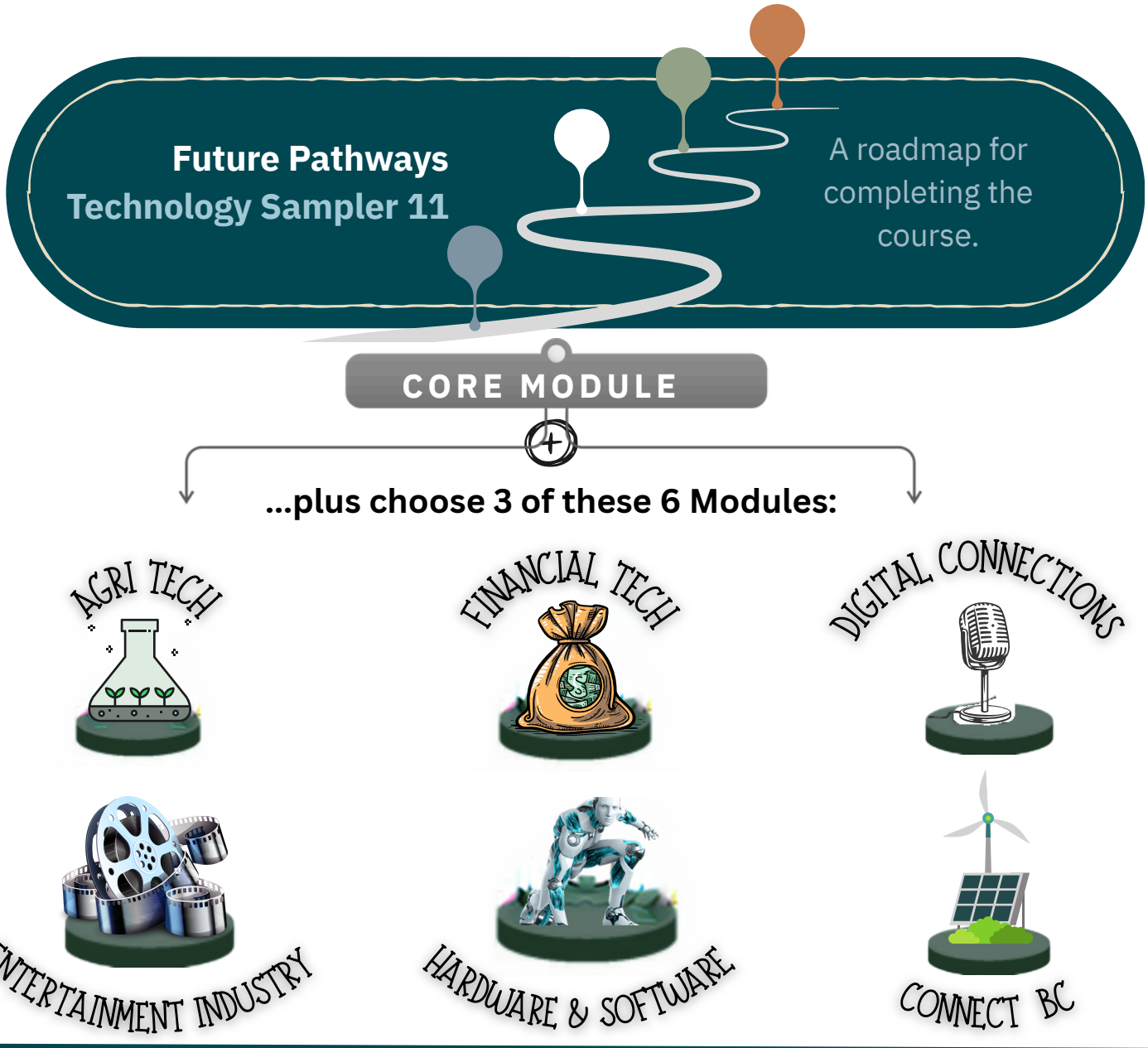
Planning Your Course

Begin with the CORE Module

- Introduces the foundational skills and knowledge relevant to all career pathways.
- Builds essential competencies that will be applied throughout the course.

Select THREE additional Modules

- Choose from six technology-focused modules.
- Selection should align with student interests, teacher expertise, school context, and local industry relevance.
- Each module explores a distinct technology sector, providing flexibility and variety.
- A complete course contains four modules: the Core module plus three selected optional modules.



A closer look at the Modules

This module explores how technology is transforming food production, distribution, and sustainability. Students investigate precision farming, vertical agriculture, and food security. The module highlights Indigenous knowledge systems and global efforts toward sustainable agriculture. It encourages learners to think critically about their own food systems and how careers in agritech can address climate and food challenges.

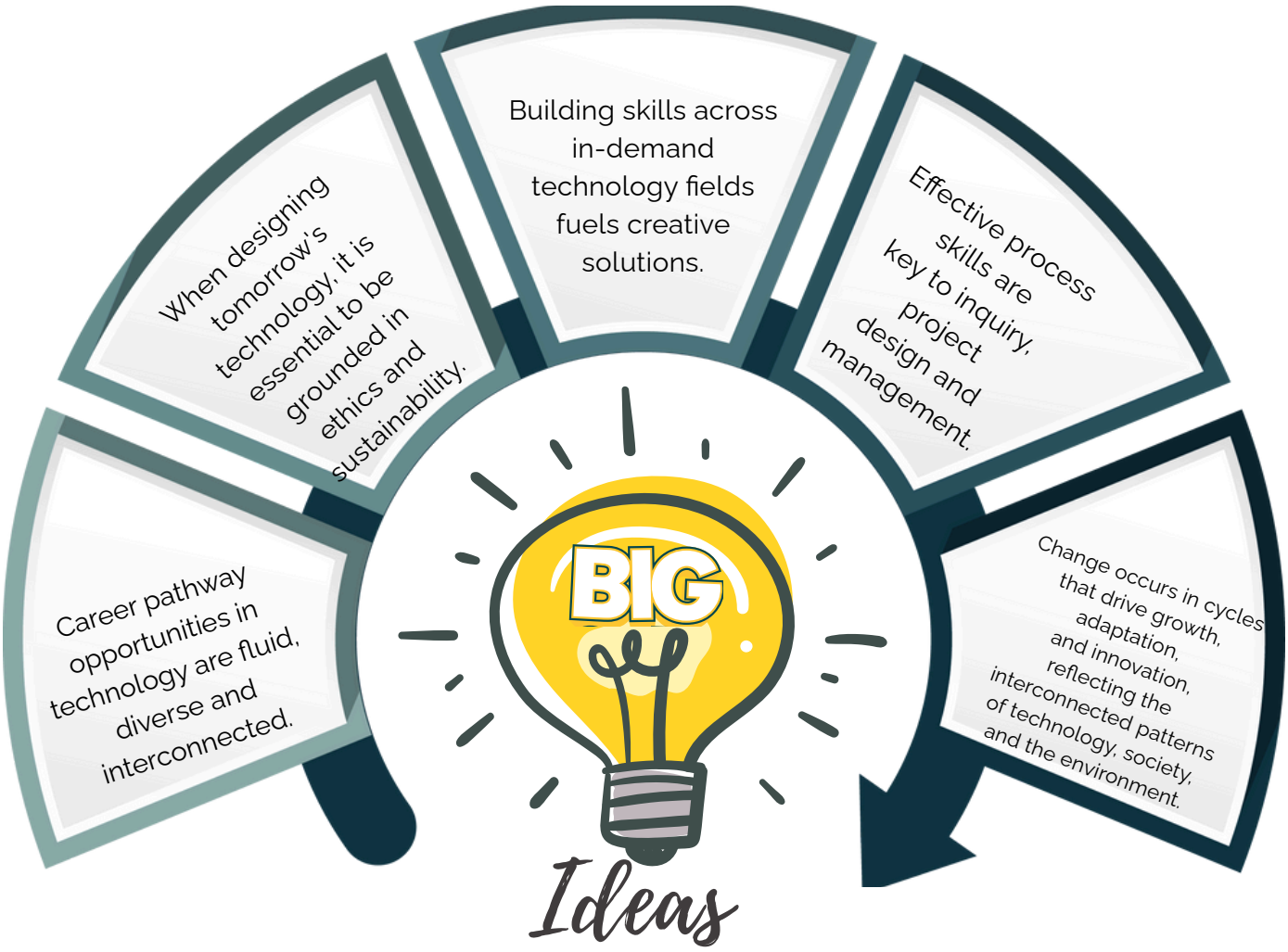
Focusing on the evolving world of finance, this module examines innovations such as digital banking, blockchain, and ethical investing. Students explore how technology shapes financial literacy, equity, and access. They'll look at emerging roles like cryptocurrency advisors and AI investment analysts. The module challenges learners to consider their own values around money and investment.

This module examines how technology reshapes communication, relationships, and social influence. From AI-powered translation to the ethics of digital citizenship, students analyze how tools like social media, messaging apps, and digital platforms affect connection, expression, and belonging. It emphasizes inclusion and accessibility by exploring how communication technologies can empower marginalized voices and remove barriers. Careers in content creation, moderation, accessibility design, and digital engagement are explored.

This module dives into careers in gaming, film, sports, and digital storytelling. Students explore how technology drives creation, performance, and consumption in entertainment. They'll consider how identity and culture are expressed and marketed through play and media. Ethical questions, such as representation and AI-generated content, are key components.

Students explore the physical and digital tools behind innovation—from circuit boards to code. The module introduces robotics, computer engineering, and software development as career pathways. Learners build awareness of how computing powers everything from everyday devices to complex problem-solving systems. Accessibility and user-centered design are also emphasized.

This module centers on how technology connects communities, particularly in British Columbia. Students explore smart infrastructure, green technology, and digital equity across urban and rural settings. It emphasizes Indigenous innovation, access to services, and local solutions to global challenges. Careers in urban planning, climate action, and civic tech are highlighted.


When designing tomorrow's technology, it is essential to be grounded in ethics and sustainability.
Building skills across in-demand technology fields fuels creative solutions.
Effective process skills are key to inquiry, project design and management.
Change occurs in cycles that drive growth, adaptation, and innovation, reflecting the interconnected patterns of technology, society, and the environment.
Career pathway opportunities in technology are fluid, diverse and interconnected.
BIG
Ideas


common themes
EMPLOYMENT SKILLS
ETHICAL IMPLICATIONS
LEVERAGING TECHNOLOGY TOOLS (INCLUDING A.I.)
INDIGENOUS WAYS OF KNOWING AND BEING
SUSTAINABLE PRACTICES

Alignment with other BC Curriculum

ADST (Applied Design, Skills and Technologies) 11/12	
BIG IDEAS	Social, ethical, and sustainability considerations impact design. Complex tasks require different technologies and tools at different stages.
Curricular Competencies:	Ideating and prototyping technology-based solutions. Understanding impacts of technology on society and the environment. Incorporating First Peoples perspectives in design.
Content Overlap:	Digital communication, ethics in technology, algorithmic bias. Robotics, AI, green tech, sustainability, and automation Software-hardware integration and accessibility.
Career Life Connections 11/12 (CLC)	
BIG IDEAS	Career-life decisions influence and are influenced by internal and external factors. Cultivating networks and reciprocal relationships can support and broaden career-life awareness and options.
Curricular Competencies:	Self-assessment of personal strengths and interests. Career and education planning and goal setting. Reflection and networking (guest speakers, mentorship).
Content Overlap:	Career pathway planning, education and credential research. Creation of personal portfolios. Workplace readiness skills including collaboration and professionalism.
Environmental Science 11 / Earth Sciences 11	
Content Overlap:	Environmental sustainability in agriculture, energy systems, and green tech. Resource management and environmental impacts of human systems. Indigenous knowledge of land stewardship and sustainable practices.

Alignment with other BC Curriculum

Social Studies: Explorations in Social Studies 11 / Human Geography 11	
Content Overlap:	Urban planning, impact of technology on communities and development. Ethical and social implications of innovation. Economic systems and societal structures related to technology access and equity.
Media Arts / Film & Television / New Media 11	
BIG IDEAS	Media artworks reflect personal, social, cultural, and historical contexts. Collaboration is essential in the creative process
Curricular Competencies:	Applying design principles. Creating meaningful digital content and media campaigns. Understanding bias, digital footprint, and ethical storytelling.
Content Overlap:	AI in media, digital storytelling, interactive design, visual communication. First Peoples' stories and ethics in media production.

CORE MODULE

Future Pathways
Technology Sampler 11

Table of Contents

MODULE OVERVIEW

CORE MODULE

Future Pathways Technology Sampler 11

This core module introduces students to the dynamic world of technology careers in British Columbia, emphasizing the interconnectedness of innovation, ethics, sustainability, and cultural perspectives. Students will explore emerging tech sectors while investigating how these fields respond to global challenges and impact modern life.

Career opportunities in British Columbia's tech sector are as diverse as they are dynamic, spanning fields such as software and hardware development, clean technology, engineering, agri-tech, fintech, creative media, and digital communications. This module empowers students to explore these pathways through a personalized lens—using self-assessment tools to uncover their strengths, interests, and aptitudes that align with specific sectors. Learners will investigate the qualifications, certifications, and post-secondary options relevant to each field, while gaining insight into major employers and the evolving demands of the tech workforce. Through guided industry research and meaningful networking opportunities, students will develop a real-world understanding of the innovation-driven, interconnected nature of tech careers in B.C., preparing them to make informed decisions about their future.

Throughout the module, students will reflect on how technology influences communication, culture, and the economy. They will build digital literacy, professionalism, and networking skills which will ultimately support the development of a summative course project and/or personal portfolio that showcases their learning journey of this course while outlining a personalized career action plan.

By the end of the module, students will be equipped with the knowledge, skills, and mindset to navigate diverse, fluid, and interconnected pathways in B.C.'s evolving tech landscape.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 1: Career and Industry Awareness 8 Hours	**Understand:** • Technology careers are fluid, diverse, and shaped by global challenges and innovation. • Education, certifications, and ethics guide tech career paths. • Equity, inclusion, sustainability, and Indigenous perspectives drive responsible innovation and growth. **Do:** • Research and compare tech careers, required credentials, and trends in BC's tech industry. • Analyze education, certification, and training paths for specific roles and emerging sectors. • Match personal strengths and interests to tech careers through surveys and industry networking. **Know:** • Major BC tech employers (e.g., Hootsuite, D-Wave). • Typical job titles and career paths (e.g., UX designer, cloud engineer, data analyst). • Key terms: microcredential, portfolio, transferable skills, digital literacy, CV, professionalism. • Essential skills: communication, teamwork, networking, project management.	**1. Career Profile Deep Dive** Activity: Students select one of the following tech sectors: Agritech, Financial Tech, Digital Connections, Entertainment History, Hardware and Software or Connect BC. Then research one career path within that sector and then research the following: • Skills and credentials required • Job duties and sector (e.g., clean tech, biotech) • Related post-secondary programs or certifications • Companies in BC hiring for that role Assessment: Create a one-pager career profile (poster or slide) that includes a job description, a sample job posting, and a post-secondary pathway. Include a personal reflection on "Is this a good fit for me? Why or why not?" The posters will be put up for a gallery walk to inspire peer conversations. **2. BC Tech Sector & Employer Explorer** Activity: Students work in teams to research a BC-based tech company or sector (Agritech, Financial Tech, Digital Connections, Entertainment History, Hardware and Software or Connect BC). Each team will: • Describe what the company or sector does • Identify roles available, required skills/certs • Reflect on the company's impact (social, environmental, cultural) • Include Indigenous contributions or initiatives Assessment: Teams present a short pitch or slide deck (5 min) on their company/sector, including career options and future trends. **3. My Tech Pathway Map** Activity: Students identify one or two possible future tech careers they're interested in. Using personal strengths and interests, they use a digital platform to map out and showcase: • Connections personal survey results • Courses to take in high school • Volunteer or work experience ideas • Certifications or micro credentials to pursue • Post-secondary options (college/university/bootcamps) Assessment: Submit a visual "Tech Pathway Map" and a written reflection to be revisited at the end of the course: • What excites me about this career? • What is one challenge I might face? • What's one action I'll take this year to explore this more? 4. **Speed Networking or "Ask a Pro" Event (Optional Live or Virtual)** Activity: Invite local tech professionals (or use pre-recorded interviews). Students prepare 3 questions and take notes. Afterward, they reflect on insights gained. Assessment: Write a "3 Things I Learned" reflection or submit a 1-minute video response summarizing takeaways and any advice received.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 2: Professional and Career Readiness 8 Hours	**Understand:** • How professional skills like communication, collaboration, and adaptability are essential in tech workplaces. • Why digital literacy and project management are foundational for working in or managing tech-based projects. **Do:** • Use digital tools (e.g., collaborative platforms, portfolio builders) to organize and present information professionally. • Practice project planning, including task breakdowns, timelines, and success criteria. • Build a personal job toolkit (resume, cover letter, digital profile). • Connect with a mentor or industry professional, virtually or in person, to discuss their experience and job-readiness skills. **Know:** • Encryption basics, cloud computing concepts, security protocols. • Roles like cybersecurity analyst, ethical hacker. • Case examples of breaches (e.g., Equifax).	1. **Resume Remix & Job Post Analysis** Activity: Students refer back to job postings they found in Unit 1, or examine 2–3 new real job postings in the BC tech sector (entry-level roles). Then identify: • Required hard and soft skills • Education/certifications listed • Keywords used in the description After, they will draft or revise their own resume using relevant keywords and structure. Assessment: Submit a 1-page tailored resume and a short paragraph explaining how it aligns with a selected job posting. 2. **Mini Project Sprint – Plan & Pitch** Activity: In teams, students plan a short tech-related class project (e.g., building a simple website, proposing a tech solution to a local issue). Use a simple project planning tool: • Define goals and timeline (1–2 weeks) • Assign roles • Present the project plan using a visual format (e.g., Trello board, slide deck, or paper Gantt chart) • Assessment: Submit a project planning document and group presentation. Reflect on teamwork and project challenges in a post-project journal entry. 3. **Workplace Communication Challenge** Activity: Using real-life scenarios or case studies, students role-play or write out responses (e.g., writing a professional email, giving peer feedback, responding to conflict). Focus on tone, clarity, and professionalism. Assessment: Complete 3 short scenarios with written or recorded responses. Self-assess using a rubric that measures tone, appropriateness, and clarity.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 3: Technology's Purpose 7 Hours	**Understand:** • How the purpose of technology evolves to meet societal, environmental, and economic needs—now and in the future. • The relationship between product design and functional use across different industries (e.g., healthcare, agriculture, education, entertainment). • The impacts of technology—both intended and unintended—on people, communities, cultures, and the environment. **Do:** • Investigate and compare the intended purposes and real-world impacts of various technologies. • Analyze how design choices influence user experience and function in real-world products or systems. • Reflect on the role of technology in your own life and its potential in solving and potentially creating future challenges (product design vs. functional use) **Know:** • Definitions of key concepts: user-centered design, accessibility, sustainability, design vs. function. • Examples of technology that have positive or negative social/environmental impacts. • Industry examples where design innovation drove function (e.g., prosthetics, vertical farming, EVs, adaptive gaming tools). • What different worldviews (including Indigenous perspectives) guide responsible innovation.	1. **Tech with a Purpose Gallery Walk** Activity: Students research and present a technology that was created to solve a specific problem (e.g., clean water systems, wearable medical devices, smart farming tools) and one example where technology has led to challenge, barrier or societal hardship. Include: • The original purpose or challenge • How it was designed • Its impact—both positive and negative Assessment: Create a visual display or digital slide/poster. Participate in a gallery walk where students reflect on at least 3 other projects, commenting on design vs. impact. 2. **Function vs. Form Analysis** Activity: In small groups, students select a familiar product (e.g., smartphone, VR headset, wheelchair, bike-sharing app) and evaluate: • Its functional use vs. its aesthetic or design appeal • Who benefits from it—and who might be excluded • How the design could be improved for sustainability or accessibility Assessment: Complete a Function vs. Form worksheet and submit a group reflection: What trade-offs exist between design and usability? 3. **Innovation Discussion** Activity: Working in small teams, students brainstorm a future societal or environmental problem (e.g., food insecurity, aging population, disaster response) and propose a tech-based solution. Emphasize: • Purpose and who it serves • Ethical and cultural considerations • Function vs. user needs Assessment: Create a concept sketch in your group and share a summary describing the potential benefits and challenges of the innovation.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 4: Social, Ethical and Cultural Contexts 8 Hours	**Understand:** • Technology is shaped by ethical, social, legal, and cultural contexts, not just function. • Data privacy, digital security, and intellectual property impact individuals and society. • Sustainability must be considered in how technology is designed, used, and disposed of. • Indigenous knowledge systems contribute to ethical, inclusive, and sustainable innovation. **Do:** • Reflect on ethical and environmental impacts of technology, including risks in digital spaces. • Investigate and discuss Indigenous contributions and perspectives on responsible tech use. • Apply ethical reasoning to real-world or case-based tech scenarios. **Know:** • Definitions of key terms: data privacy, consent, intellectual property, open source, algorithmic bias, green tech, e-waste, cultural protocol. • Environmental costs and sustainability challenges in the tech industry (e.g., rare earth mining, device disposal). • Indigenous knowledge systems and examples of Indigenous-led innovation and stewardship in tech and sustainability (7th Generation Principle).	**1.Data Dilemma Case Study** Activity: Students work in pairs to explore a real-world tech ethics case (e.g., Facebook/Cambridge Analytica, facial recognition and policing, smart devices collecting private data). They identify: • What happened and who was impacted • What ethical principles were challenged • How it could have been handled differently Assessment: Present a case summary and group opinion (e.g., slide, poster, or 2-minute video). Include at least one proposed ethical guideline or solution. 2. **Sustainability Audit: My Tech Footprint** Activity: Students analyze the lifecycle of a personal or common tech device (e.g., phone, laptop, game console). Research includes: • Materials used and how they're sourced • Environmental costs of production and energy use • Disposal or recycling options Assessment: Create a digital infographic titled "What's the Cost of My Tech?" showing environmental impacts and 3 suggestions for more sustainable tech choices. 3. **Indigenous Innovation Spotlight** Activity: Students research and present an example of Indigenous-led innovation or a traditional knowledge system that informs sustainable technology use (e.g., Indigenous drone mapping, land monitoring, architecture, or energy practices). Assessment: Submit a short research report or slideshow presentation that highlights: • The innovation and who developed it • How Indigenous knowledge shaped the approach • Why it's an example of ethical or sustainable tech Assessment: Create a concept sketch in your group and share a summary describing the potential benefits and challenges of the innovation. 4. **Tech Ethical Discussion Circles** Activity: Facilitate small group "ethics circles" where students respond to prompts like: • Should companies be allowed to collect and sell user data? • Can an AI ever be truly unbiased? • What responsibility do tech developers have for the environment? Assessment: Students complete a short reflection after the discussion, summarizing one ethical dilemma and their evolving opinion.

LESSON plan

DATE: text

COURSE: text

TEACHER: text

GRADE: text SUBJECT: Tech Sampler 2-3 HOURS

STAGE 1-DESIRED RESULTS

Big Idea:

Career pathway opportunities in technology are fluid, diverse, and interconnected.

- **Communicating**: Sharing ideas and information effectively.
- **Social Awareness and Responsibility:** Interacting respectfully with others and the environment and contributing to inclusive communities.

Curricular Competencies:

Explore and Analyze: Investigate technology sectors in relation to emerging careers.
Assess, Adapt, and Iterate: Research industry trends and job requirements.
Connect and Reflect: Connect personal strengths and interests to careers in technology.
Create and Demonstrate: Present findings in a clear, concise, and visually engaging format.

Content Learning Standards:

Career and Industry Awareness: Qualifications, education pathways, BC employers.
Professional Readiness: Career research techniques, reflective learning, and personal alignment.

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Students will:

- Investigate a tech-sector career in BC.
- Identify necessary credentials, skills, and duties associated with the career.
- Explore post-secondary and employment pathways.
- Reflect on the alignment between the career and their personal values and interests.
- Communicate their findings in an engaging format.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

- Accurately describe a tech career and its required training
- Identify employers and industry trends in BC
- Present a polished visual profile
- Reflect meaningfully on their personal interest and fit
- Demonstrate awareness of broader social, environmental, or cultural issues in tech

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative: (options)

- Research planning template check-in
- Teacher/peer conferencing to clarify goals and sources
- Draft feedback on content and reflection
- Self-assessment rubric during creation of final piece

Summative:

Career Profile One-Pager Rubric (based on BC Core Competencies + Curricular Competencies):

- Clarity and accuracy of career research
- Relevance and realism of sample job posting
- Connection to sector and BC opportunities
- Visual design and presentation
- Thoughtfulness of personal reflection
- Integration of ethical, environmental, or Indigenous perspectives

LESSON intro

In this lesson, students will explore a growing B.C. tech sector by researching a real-world career. Students will learn about job duties, required skills, and local opportunities, while considering ethical, environmental, and Indigenous perspectives. Their findings will be shared in a one-page career profile that connects to their personal goals.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Students will:

1. Select one of the following tech sectors - used in your :sampler
   - Agritech
   - Financial Tech
   - Digital Connections
   - Entertainment Industry
   - Hardware and Software
   - Connect BC
2. Research one career within that sector and gather information on:
   - Job description and daily duties
   - Required skills, certifications, and education pathways
   - BC companies hiring for this role
   - The sector's link to clean tech, biotech, or other fields
   - Ethical or environmental considerations (including Indigenous approaches or innovations)
3. Create a one-pager career profile (poster, Canva slide, Google Slide, infographic, etc.) to include:
   - A sample job posting
   - Educational and certification pathway
   - Career description and sector fit
   - Reflection: “Is this a good fit for me? Why or why not?”

LESSON closure

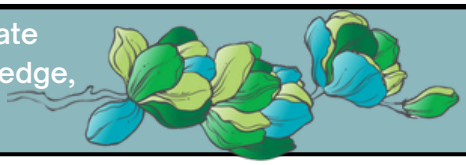
This lesson aims to help students make meaningful connections between emerging tech sectors and their own career interests. It also supports the development of research, critical thinking, and reflection skills aligned with BC’s Career Education competencies.

.

MATERIALS / RESOURCES

- Brainstorm board
- Computer Lab
- Templates/Organizers
- List of reliable website
- Assessment Rubric

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

- Learning embedded in memory, history, and story: Students tell their personal and professional story through the lens of career exploration.
- Identity and self-awareness: Personal reflection allows students to explore who they are and how that connects with their potential future roles.
- Honouring traditional knowledge systems: Students may explore Indigenous-led companies or initiatives within the tech sector and highlight these in their career profile.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Multiple access points: Students choose a tech sector of interest and format (poster, slide, audio-visual option).
Scaffolded instruction: Provide templates, graphic organizers, and sentence starters.
Assistive tech tools: Text-to-speech, dictation, captioned videos.
Flexible groupings: Options for peer or solo work, differentiated roles in collaborative research.
Guided instruction on using reliable career websites (e.g., WorkBC, EducationPlannerBC)
Templates available for students needing support with layout or written reflections

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE: text

COURSE: text

TEACHER: text

GRADE: text | SUBJECT: text | LESSON PLAN DURATION: 2-3 hours

STAGE 1-DESIRED RESULTS

Big Idea:

Designing tomorrow's technology is grounded in ethics and sustainability.

Social Responsibility:
Contributing to the community and caring for the environment:

Curricular Competencies:

Assess how Indigenous worldviews inform sustainability and innovation

Content Learning Standards:

Social, Ethical and Cultural Contexts
Environmental sustainability in tech development
Indigenous knowledge systems

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Students will:

- Examine environmental sustainability through lifecycle analysis of devices—materials, energy consumption, e-waste, and green alternatives.
- Research sustainable practices in technology - responsible use, maintenance, and disposal methods to reduce environmental impact.
- Understand Indigenous Knowledge Systems & Contributions -how Indigenous innovation, values, and systems of knowledge promote sustainability, stewardship, and relational thinking in technology.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

- Identify key aspects of a tech device's lifecycle, including the materials used, energy consumed, and how it is disposed of or recycled.
- Create a clear and engaging digital infographic that shows the environmental impact of their device.
- Suggest three realistic and sustainable alternatives to reduce the environmental footprint of tech use.
- Explain how Indigenous knowledge and Western science can work together to support sustainable technology solutions.

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative: (options)

- With the teacher, use a planning sheet to discuss student ideas and ensure a clear direction.
- Research planning submission with a brief outline on next steps.
- Students share thinking in group discussion on prompts like:
- "Why include both Western and Indigenous approaches to innovation?"
- Rough infographics are shared for peer feedback using prompts:
- What works? What's unclear? One suggestion to improve.

Summative:

- Create an infographic (Canva, Google Slides, Adobe Spark, etc.) that analysis the lifecycle of a common tech device. Students will consider the materials used and how they're sourced, environmental costs of production, and disposal options
- Infographic may have an accompanying voiceover or written rationale

LESSON intro

Technology plays a major role in our daily lives, but it also has hidden environmental and ethical costs. In this lesson, you'll investigate the full lifecycle of a personal tech device—from the materials it's made from to how it's disposed of. You'll also explore how combining Indigenous knowledge with Western science can lead to more sustainable and responsible tech choices.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Students will:

1. Select a Personal Tech Device
    - Choose a device you currently use (e.g., smartphone, laptop, gaming console, tablet).
2. Research the Lifecycle of the Device, including:
    - Materials: What raw materials are used? Where are they sourced from?
    - Energy Use: How much energy does the device consume during production and use?
    - Disposal/Recycling: What happens at end-of-life? Is it recyclable, reusable, or e-waste?
    - Environmental Impact: What pollution, emissions, or resource use are involved?
3. Create a Digital Infographic titled "What's the Cost of My Tech?" Please include:
    - Lifecycle analysis (materials, energy use, disposal)
    - At least 3 sustainable alternatives or personal action ideas
    - A visual and well-organized design (Canva, Google Slides, or another digital tool)
    - Optional: Include a short rationale or voiceover explaining your choices
4. Engage in Peer Review and Teacher Feedback
    - Share your draft with a peer for constructive feedback
    - Use feedback to improve clarity, accuracy, and design
5. Submit Final Infographic + Short Reflection
    - Reflect on your personal tech habits and what changes you might make.
    - Respond to the prompt: "How can Indigenous and Western approaches work together to improve sustainability in technology?"

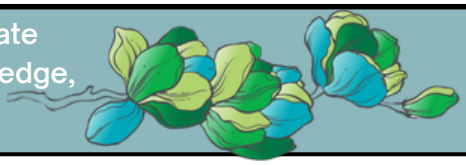
LESSON closure

Conclude the lesson by summarizing key insights about the environmental, ethical, and cultural impacts of personal technology use. Reinforce the connection between students' research findings, Indigenous perspectives, and the importance of critical thinking in shaping sustainable tech habits and future career pathways.

MATERIALS / RESOURCES

- Student devices with internet access
- List of reliable websites
- Templates/graphic organizers
- Task sheet with steps
- Assessment rubric

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

- Highlight Indigenous views on sustainability and connection to land.
- Use Two-Eyed Seeing to compare Indigenous and Western approaches.
- Reflect on ethical impacts and Indigenous contributions to tech.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Flexible Output Formats: Allow students to present their learning through different media—infographic, slide deck, video, poster, or oral presentation

Scaffolded Research Tools: Provide graphic organizers, sentence starters, curated resource lists, or research templates to support students who need structure or language support

Choice of Device and Focus: Let students choose a tech device they are familiar with and allow flexibility in the depth of focus (e.g., emphasize environmental impact, or cultural/ethical aspects, depending on interest and readiness)

Peer and Teacher Support: Use structured peer feedback and conferencing to guide progress and check understanding at multiple stages

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE: text

COURSE: text

TEACHER: text

GRADE: text | SUBJECT: text | LESSON PLAN DURATION: 2-3 hours

STAGE 1-DESIRED RESULTS

Big Idea:

Effective process skills are key to project design and management

Connect and Reflect:
Reflect on personal communication style and areas for growth

Curricular Competencies:

Connect personal strengths and explore professional skills in relation to careers in technology

Content Learning Standards:

- Workplace communication norms (etiquette, feedback, conflict resolution)
- The impact of tone, clarity, and professionalism on workplace dynamics
- Social and cultural perspectives on respectful communication
- Indigenous ways of knowing that inform respectful, relational, and community-centered communication

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Students will:

- Understand the importance of tone, clarity, and professionalism in workplace communication
- Practice responding to different workplace scenarios in an appropriate and respectful manner
- Reflect on their communication strengths and areas for growth
- Consider how cultural perspectives, including Indigenous worldviews, shape respectful and relational communication

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Students can:

- Use professional and respectful tone in written or spoken responses
- Clearly and accurately respond to different workplace situations (e.g., giving feedback, addressing conflict, writing an email)
- Adapt language and tone based on audience and context
- Show awareness of cultural values and respectful relationship-building in communication

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative: (options)

- Teacher observations during role-plays or writing tasks
- Peer feedback using checklists or sentence starters
- In-process conferencing or small-group check-ins

Summative:

- Submit 3 completed communication scenario responses (written or recorded)
- Complete a self-assessment rubric
- Short written reflection on learning and communication growth

LESSON intro

In this lesson, students will practice professional communication skills using real-life workplace scenarios. They will explore how tone, clarity, cultural awareness, and professionalism influence how messages are received in a workplace context. Students will respond to three communication challenges in writing or through recorded role-play, followed by a self-assessment and reflection.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Step 1: Introduction to Professional Communication

- Mini-lesson on tone, clarity, and professionalism
- Class brainstorm: What does respectful workplace communication look/sound like?

Step 2: Scenario Practice

- Students are given 3 workplace communication challenges (e.g., responding to peer conflict, writing a professional email, giving constructive feedback)
- For each, students choose to either:
  - Write a short response
  - Record a role-play or spoken response
  - Complete a guided response template if support is needed

Step 3: Peer Collaboration

- Partner or small-group role-play with peer feedback
- Model feedback using sentence starters and examples of professional tone

Step 4: Self-Assessment & Reflection

- Students assess their own work
- Final reflection:
  - What did I learn about my communication style?
  - What strengths do I bring to a team?
  - How can I show respect in all workplace situations?

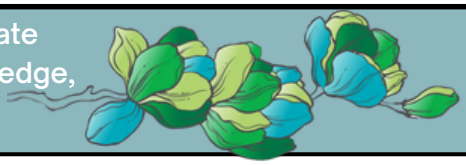
LESSON closure

Conclude the lesson by summarizing key insights about the role of tone, clarity, and professionalism in workplace communication. Reinforce the connection between students' scenario responses, Indigenous perspectives on respectful and relational communication, and the importance of adaptability and cultural awareness in building positive career pathways.

MATERIALS / RESOURCES

- Printed or digital scenario cards (3 workplace situations)
- Pencil and paper
- Task sheet and rubric
- Optional: Response templates with sentence starters or structure guides (for emails, feedback, conflict response)

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Encourage students to reflect on whose stories are being told and how they are told opens space for identity exploration.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

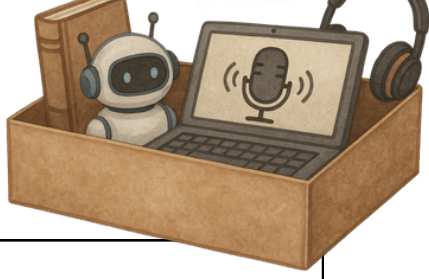
How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Choice of format: Written or oral responses to accommodate different communication strengths
Scaffolding: Provide sentence starters, response templates, or checklists for students who need extra structure
Assistive Technology: Use speech-to-text tools or recording apps for students who prefer verbal expression
Small-group or partner support for practicing scenarios

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

RESOURCE LINKS



Unit 1 – Career and Industry Awareness

EducationPlannerBC - A personalized, interactive education and career planning tool that allows users to choose an area of interest, and easily navigate different paths.

Find Your Path | WorkBC - a personalized, interactive education and career planning tool.

Industry Job Boards | WorkBC - This is an index of industry job boards in British Columbia

Career Trek | Career Education Resources – lesson plans, videos and more resources on career exploration, inclusive of information on programs and supports for Indigenous Peoples seeking ways to engage in work and learning.

Skills for Success - Canada.ca – Video and online skills assessment: Discover the nine essential skills for success in learning, work, and life—and explore practical ways to strengthen them

Free Personality Test | 16Personalities – Myers -Briggs based personality test

Holland Code Assessment - a system to classify jobs into job categories, interest clusters, or work personality environments. In the Holland Model, these categories represent work personalities.

True Colours – personality test

Unit 2 - Professional and Career Readiness

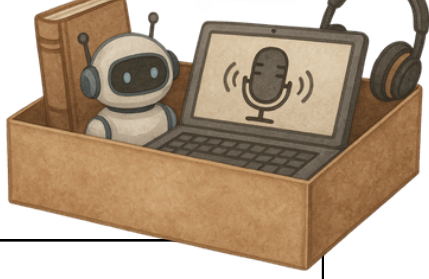
BCtechjobs.ca – job searching, cover letter builder, events, sample interview questions

Green Jobs Toolkit - BCCIC - The Green Jobs Matching Quiz helps guide our youth towards a green career path. Results are based on the student's interest, skills, preferences, education and lifestyle goals

Gantt Chart: A Complete Guide (Definition & Examples) | Canva – project management tool

ABOUT - JABC TechWorks - Free career exploration program for B.C. high school students—offered in-person and online. Educators can register their classes to explore tech-driven careers and learn about the skills and education needed for future jobs.

RESOURCE LINKS



Unit 3 - Technology's Purpose

Teaching for Humane Technology - Center for Humane Technology – Youth Toolkit, Discussion-based tools for teens to reflect on tech's impact.

Unit 4 – Social, Ethical and Cultural Contexts

Welcome to MediaSmarts | MediaSmarts - Find games, quizzes and other tools to teach digital and media literacy.

Digital Literacy - Province of British Columbia - experiences with technology and digital resources are examples of learning activities in which students might engage during Grades 10–12

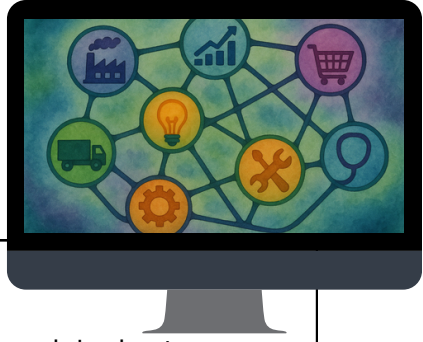
Home | First Nations Technology Council - First Nations Technology Council – An Indigenous-led non-profit in BC focusing on Indigenous tech innovation, digital literacy, and community connectivity. Great source for authentic innovation examples like drone mapping.

Video - "The Social Dilemma" (Netflix)+ The Social Dilemma - Classroom Resources, Critically examines how big tech manipulates users through data and behavioral design. Comes with an educator discussion guide.

MIT's "Moral Machine" Project - http://moralmachine.net - An interactive tool asking users to make ethical decisions in self-driving car scenarios.

DigCit Curriculum | Common Sense Education -Common Sense Media – Digital Citizenship Curriculum, Lessons on privacy, cyberbullying, and data ethics for K–12.

INDUSTRY CONNECTIONS



People or organizations that may offer support

Organizations:

wearebctech.com - BC Tech Association: Career fairs, mentorship, school-industry partnerships, TechConnect, Lunch & Learns, student events.

innovatebc.ca - Innovate BC: Funding and outreach programs, especially for tech education and innovation

scienceworld.ca - Science World – Tech-Up & Future Science Leaders: Student workshops, career nights, teacher resources on tech/STEM, Girls and STEAM, Tech-Up coding and AI workshops.

bccie.bc.ca - BC Council for International Education (BCCIE): Career exploration with global connections, industry-academic collaboration.

geeringup.apsc.ubc.ca - UBC Geering Up Engineering & STEM Outreach:: Hands-on workshops, teacher PD, summer camps, AI/robotics programs, K–12, including strong rural and Indigenous outreach.

technologycouncil.ca - First Nations Technology Council: Digital skills development for Indigenous youth, industry bridging programs.

Please note that the list was created in the Spring of 2025 and may or may not be current. Please join the LinkedIn network where people may update their successful connections.

AGRITECH

How We Eat

Table of Contents

AGRITECH

Agriculture is no longer just about fields and farming—it's about innovation, science, and solving some of the world's biggest challenges. In the Agricultural Technology Careers module, students explore how technology is transforming the way we grow food, manage land, and protect our environment. From drones and robotics to data analytics and climate-smart tools, today's agri-tech careers blend cutting-edge science with the essential work of feeding the world.

At the heart of this module are some big picture ideas: careers are constantly evolving, and so is agriculture. Students will discover that agricultural technology is not a single career but a wide and dynamic sector. It spans fields like engineering, business, environmental science, and information technology. This exploration invites students to reflect on their own interests and strengths while connecting to real-world opportunities that support both local communities and global sustainability.

In-demand sectors in agricultural technology include precision agriculture, biotechnology, sustainable crop management, food processing automation, and agri-business development. Roles such as precision ag technicians, agricultural drone pilots, soil scientists, and agri-tech entrepreneurs are growing as the industry adapts to climate change, population growth, and evolving food systems. These careers often require a combination of STEM skills, problem-solving, and a commitment to innovation.

Throughout the module, students will uncover common themes such as the use of digital tools to collect and analyze data, the importance of sustainable practices, and the role of collaboration across disciplines. Agri-tech careers often sit at the intersection of traditional knowledge and modern innovation—providing a unique space where science, community, and environment come together.

Ultimately, this module encourages students not only to explore potential jobs but also to think deeply about their role in a changing world. Whether they're passionate about technology, the environment, food systems, or entrepreneurship, there is a place for their interests in agricultural technology. It's not just about choosing a career—it's about envisioning a future they want to help build.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
UNIT 1: Food Security and Sustainable Agriculture	Understand: • How global challenges like climate change, population growth, and soil degradation impact food production and security. • The importance of sustainable agriculture and how emerging technologies can address food system challenges. • The interdependence between technology, environment, and human needs in modern farming systems. Do: • Analyze and map global agricultural challenges and their regional impacts. • Engage in role-play to explore stakeholder perspectives and develop arguments. • Design a sustainable farming solution using agritech innovations. • Investigate and communicate findings from real-world agritech case studies. Know: • Key challenges in modern agriculture: climate change, soil degradation, and population pressure. • Types of agritech: vertical farming, hydroponics, precision agriculture, AI, and drought-resistant crops. • Real-world examples of agritech solutions and their role in improving sustainability, efficiency, and food access. • The roles and interests of various stakeholders in the food system (farmers, scientists, governments, consumers).	Part 1: Challenges in Modern Agriculture Student Activity: Interactive Mapping + Debate In small groups, students create a global map highlighting regions most affected by one of the three major challenges. Then, they participate in a role-play debate representing different stakeholders (farmers, scientists, government, consumers) about which challenge is the most urgent to address. Assessment: Position Paper or Reflection Each student writes a 1-page position paper or personal reflection outlining their stakeholder's perspective, the challenge they think is most urgent, and why a potential solution using evidence from their research Part 2: Role of Agritech in Food Sustainability Student Activity: Design Challenge Students work in pairs to design a small-scale sustainable farm (on paper or using digital tools like Canva or Tinkercad) that incorporates at least two agritech innovations. They must consider limited space, water efficiency, and crop choice. Assessment: Project Presentation Students present their designs to the class, explaining how their system addresses a food sustainability issue, and how the design could scale up or be used in urban areas Part 3: Case Studies in Agritech Student Activity: Case Study Investigation + Gallery Walk Each group investigates one real-world agritech case study, creates a poster or infographic, and participates in a gallery walk where they explore each other's work and ask questions. Assessment: Case Study Summary Report Each group submits a 2-page written report that includes: - Overview of the company or project - Problem being addressed - How technology is used - Benefits, risks, and potential for scale-up

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
UNIT 2: Smart Farming and Precision Agriculture	**Understand** • How modern digital tools—such as sensors, robotics, and AI—transform agricultural practices. • The role of data and technology in optimizing farming decisions and minimizing resource waste. • The connection between innovation and environmental stewardship in agriculture. **Do** • Analyze and map a smart farm using data from videos, demos, or simulations. • Interpret real crop images to diagnose agricultural challenges and suggest interventions. • Design a robotic farming solution tailored to a local agricultural need. • Examine and interpret agricultural datasets using spreadsheet tools, and propose AI enhancements. **Know** • Key technologies in smart farming: sensors, GPS, Internet of Things (IoT), drones, satellite imaging, robotics, big data, and AI. • Practical applications of smart tech in the field—monitoring soil, predicting yields, managing resources. • Benefits and challenges of adopting precision agriculture techniques. • The role of data in decision-making and sustainable farming practices.	Part 1: Introduction to smart farming: sensors, GPS, IoT in the field · *Student Activity*: Video analysis + building a map. Classroom demo or video analysis of how IoT devices like soil moisture sensors and GPS work in a farm setting. Students then map a theoretical smart farm setup. · *Assessment*: Short report or infographic Students submit a short report or infographic explaining how different smart devices are used together for efficient farm management. Part 2: Drones and satellite imaging for crop monitoring · *Student Activity*: Analyzing image and detecting patterns Students analyze drone or satellite images of crop fields to detect patterns or issues (e.g., pest infestations, drought areas). · *Assessment:* presentation Students prepare a presentation or written analysis explaining their findings and suggesting interventions. Part 3: Robotics in planting and harvesting · *Student Activity*: designing your own agribot Watch a video or engage in a simulation showing robotic systems used in agriculture. Students design a simple concept for a robot that could solve a local farming challenge. · *Assessment*: concept proposal Students submit a concept sketch and description outlining their robot's features, function, and expected benefits.

LESSON plan

DATE:

COURSE: TECH SAMPLER COURSE

TEACHER:

GRADE: 10-12 SUBJECT: Agritech Careers LESSON PLAN DURATION: 60-90 minutes

STAGE 1-DESIRED RESULTS

Big Idea:

Careers evolve with technological and societal change. Exploring career possibilities expands awareness of opportunities.

Communication – Sharing and presenting findings
Critical Thinking – Analyzing career details and self-reflection
Personal Awareness – Understanding personal strengths and goals

Curricular Competencies:

Explore trends in technology and the labour market.
Identify career options aligned with personal interests and skills.

Content Learning Standards:

History of food systems, agriculture practices, and products
Environmental impacts of agriculture and opportunities to use technology for better environmental outcomes
Indigenous perspectives
Current examples of applied technologies in agriculture
Agritech uses sustainable farming practices, such as crop rotation guided by data analytics.
Agritech faces ethical issues in the development and deployment
Examples of hardware, software, robotics, automation, AI, data science
Career paths in agricultural technology

Learning Intentions:

I can explore and describe careers in Agricultural Technology.

I can connect personal interests and strengths to future job possibilities.

I can identify the education, skills, and tools required for agri-tech jobs.

Success Criteria:

Students will know they are successful when they can...

Identify at least one career in agricultural technology with accurate details.

Explain how technology is used in that role.

Describe required education, skills, and training.

Reflect on how their own interests and strengths relate to the chosen career.

Participate actively in discussions and group sharing.

Complete the worksheet with clear, thoughtful, and complete answers.

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

Participation in discussion and research

Completion of worksheet with relevant details

Summative:

Career Path Plan marked for:

Research depth

Personal reflection

Planning detail

LESSON intro

Technology is changing the way we grow food, care for the environment, and feed the world. Agriculture isn't just about tractors and farming—it's a high-tech, fast-growing industry full of exciting career opportunities. In this lesson, you'll explore a wide range of careers in agricultural technology, understand the skills and training they require, and reflect on how your own interests and strengths might connect to the future of food.
By the end, you'll know more about how tech is transforming agriculture—and where you might fit in.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Lesson Launch / Brainstorm (15 minutes)

- Begin with a class discussion: "What is Agricultural Technology?" to activate prior knowledge and build interest.
- Video Clip
- Watch a short video showcasing technology in modern agriculture to ground students in real-world examples.

Career Exploration on thinkAG.ca (30–45 minutes)

- Students research agri-tech careers using the website and complete a Career Exploration Worksheet, focusing on tools, skills, training, and job descriptions.

Group Reflection & Writing (15–20 minutes)

- Students share key findings and write a short reflection connecting a career to their strengths and interests.

Optional Extension: Career Path Mini-Plan

- Students design a personalized path toward an agri-tech career, outlining education, certifications, work/volunteer experience, and goals.

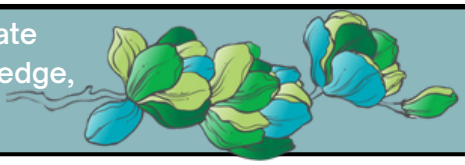
LESSON closure

Wrap up the lesson by guiding students to reflect on what they've learned and how it connects to their future:
Quick class roundtable: "What surprised you most about agri-tech careers?"
Revisit learning intentions and success criteria as a class
Encourage students to share their reflections or career picks on a classroom board, online whiteboard (ex. Padlet)

MATERIALS / RESOURCES

- Devices with internet access for student research
- Projector or screen for video and website demo
- Career Exploration Worksheet (print or digital)
- Access to thinkAG.ca

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Learning is experiential and reflective
Learning involves personal responsibility and growth
Learning recognizes interconnectedness with community and environment

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

Support Learners: Provide sentence starters, visual aids, and audio instructions; allow verbal or video reflections as alternatives to writing.
Scaffold Tasks: Offer a short list of suggested careers on thinkAG.ca; use peer partners or small group support.
Extend Learning: Invite advanced students to design a new agri-tech job, pitch a solution to a farming challenge, or research global innovations.

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE:

COURSE:

TEACHER:

GRADE: SUBJECT: LESSON PLAN DURATION:

STAGE 1-DESIRED RESULTS

Big Idea:

Building skills across in-demand technology fields fuels creative solutions.

C – Communication
Collaborate in pairs to design and explain a technical concept.
Present design ideas clearly and persuasively to peers.
T – Thinking
Generate and develop a realistic sustainable farm concept using technological tools.
Apply design thinking to solve problems related to food sustainability.
PS – Personal & Social
Take responsibility for decision-making in a collaborative setting.
Show awareness of social and environmental responsibility in farm design choices.

Curricular Competencies:

- Assess the impact of farming practices on soil health, biodiversity, and water resources.
- Solve agricultural problems by integrating scientific principles with technological innovations.

Content Learning Standards:

Sustainable Practices: Crop rotation, vertical farming, aquaponics, closed-loop systems.

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Students will:

- Understand how agritech tools (e.g., hydroponics, vertical farming, precision agriculture) contribute to sustainable food production.
- Apply knowledge creatively to design a food production system adapted to space and resource constraints.
- Present their designs and explain their reasoning clearly and persuasively.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Students will demonstrate success if they:

- Create a design that includes at least two relevant agritech innovations.
- Explain how their farm addresses a food sustainability issue (e.g., water use, land space, crop resilience).
- Clearly describe how their farm could be adapted or scaled up in an urban environment.
- Use visuals effectively and communicate clearly in their presentation.
- Show creativity, environmental awareness, and technical understanding.

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

- Teacher checks in during the design phase, asking probing questions:
  - "What sustainability issue are you focusing on?"
  - "How do your chosen technologies help solve that issue?"
  - "What limitations might your system face?"

Peer feedback: Students briefly share draft designs with another pair and give one piece of positive feedback and one suggestion.

Summative:

Student Presentations (project-based assessment):
Each pair presents their design to the class or in a gallery-style walkthrough. Presentation includes:

- A labelled sketch or digital rendering
- A clear explanation of their chosen technologies and sustainability goals

Ideas for scalability or real-world implementation

LESSON intro

"Imagine you are tasked with feeding 1,000 people using only the space of a classroom. What would your system need to be successful?"

- Show 2-minute clip or images of urban vertical farms and hydroponics systems (e.g., Bowery Farming or Infarm).
- Brief class discussion: "What problems do these systems solve? What limits might they have?"

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Phase 1: Planning & Research (10–15 min)

- In pairs, students choose a real-world constraint (e.g., limited space,
- poor soil, drought conditions).
- Brainstorm potential agritech tools (vertical farming, hydroponics, drip
- irrigation, sensors, etc.) and how they might help.

Phase 2: Design Challenge (25–30 min)

- Students sketch or digitally build their small-scale sustainable farm:
  - Use drawing tools, paper, or platforms like Canva, Tinkercad, or Google Drawings.
  - Include labels for each major component and its purpose.
- Teacher circulates to provide feedback and ask guiding questions.

Phase 3: Presentations (15–20 min)

- Pairs present their designs in front of the class or do a gallery walk where others rotate to hear or read short explanations.
- Classmates give feedback via sticky notes or brief peer reflection sheets.

LESSON closure

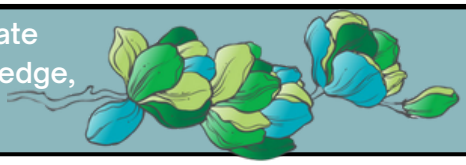
Ask students to take one minute to reflect on the following questions (in a journal or aloud):

- "What was one sustainability problem your farm design addressed?"
- "How did technology help you solve it?"
- "What would you improve or add next time?"

MATERIALS / RESOURCES

Digital Tools : Canva, Tinkercad, Google Drawings, Jamboard (for visual farm designs)

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Respect for the land and resource use: Encourage students to consider long-term stewardship of the environment in their designs, aligning with Indigenous values of sustainability and balance.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Allow choice of tools: students can work on paper, use digital tools, or verbally describe their design.
Provide visual supports: show clear examples of sustainable farms, offer templates for farm layouts, or scaffolded brainstorming sheets.

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE:

COURSE:

TEACHER:

GRADE: SUBJECT: LESSON PLAN DURATION:

STAGE 1-DESIRED RESULTS

Big Idea:

Building skills across in-demand technology fields fuels creative solutions.

Thinking
- Apply creative thinking to design a robot for a specific farming task.
- Analyze farming challenges and propose technological solutions.

Personal & Social
- Work collaboratively, listen to peer input, and adapt ideas.
- Consider environmental and ethical implications of robotic farming.

Curricular Competencies:

- Solve real-world agricultural problems by integrating scientific principles and technological innovations.
- Work collaboratively on projects, sharing roles and responsibilities to achieve common goals.

Content Learning Standards:

Current examples of applied technologies in agriculture

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Students will:
- Understand how robotics is used in agriculture to improve productivity and reduce labour.
- Analyze a local agricultural issue that could benefit from automation.
- Apply creative and critical thinking to design a farming robot (agribot).
- Communicate their concept using sketches and written explanations.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Students will demonstrate success if they:
- Identify a clear farming problem or task for their robot to solve.
- Explain how the robot works, what sensors or mechanisms it might use, and its purpose.
- Include a labelled sketch that matches the written description.
- Show consideration for local conditions (terrain, crop type, climate, etc.) and sustainability.
- Present or submit a clear, coherent concept proposal.

t

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

- Teacher circulates during brainstorming and sketching to offer feedback and prompt further thinking:
  - "What problem are you solving?"
  - "How will your robot know what to do?"
  - "What power source or materials might it use?"
- Peer feedback or think-pair-share about early design ideas.

t

Summative:

Students submit:
- A concept sketch (hand-drawn or digital) of their agribot
- A written description (half to one page) explaining:
  - The robot's task
  - Main features and how they work

The expected benefits (e.g., saved time, less water, reduced pesticides)

LESSON intro

Video & Prompt:

- Show a short video of robotic farming equipment in action
- (e.g., strawberry-picking robots, self-driving seeders, lettuce-harvesting bots)

Ask:

- "What task is this robot doing that a human used to do?"
- "Why might a robot be better or worse for this job?"

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Phase 1: Inspiration & Analysis (10–15 min)

- Watch a short clip or review 2–3 examples of agribots (teacher-curated or
- student-selected).
- Discuss: What features make them effective? How are they powered? What sensors do they use?

Phase 2: Design Brainstorm (10 min)

- Students brainstorm local or regional farming issues (e.g., weed control, fruit picking, planting in rocky terrain).
- Choose a specific problem and begin ideating solutions.

Phase 3: Concept Sketching & Writing (30 min)

- Students sketch their robot and begin writing the concept proposal.
- Include labels for important components (arms, sensors, wheels, solar panels, etc.).

LESSON closure

Reflection Circle or Quick Write:

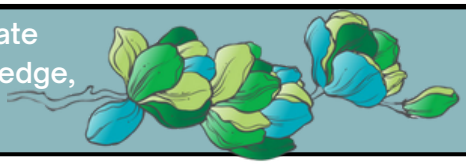
- Ask students to respond to one of the following prompts:
- "What part of your agribot design are you most proud of?"
- "What challenge did you encounter in the design process, and how did you solve it?"
- "How could your robot help make farming more sustainable in your community?"

MATERIALS / RESOURCES

Videos and Examples:

- Short clips of agricultural robots (e.g., Ecorobotix, Agrobot, Naïo Technologies)
- Images or infographics of sensors, actuators, GPS-guided systems, etc.

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Ethical consideration and respect: Guide students to reflect on whether a robot replaces or assists human labor, and whether it respects the balance between technology and the natural world—a key value in Indigenous worldviews.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Cognitive & Learning Accessibility:

- Provide templates for robot sketches (with boxes to label parts).
- Offer sentence starters for the written portion (e.g., "The robot's task is…").
- Allow students to record audio/video descriptions instead of writing.

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

Curriculum & Lesson Plans

1. Journey 2050 – Lesson 7: Technology and Innovations (Grades 9–12)
Students explore new technologies impacting the future of farming and understand the role of developing countries in food security
2. High-Tech Farming (Grades 6–8)
Students discover technologies used on farms to increase efficiency and yields while decreasing costs and environmental impact
Technology in Agriculture – NC State Libraries: A lesson plan focusing on technological changes in agriculture between 1950 and 1980, using primary source materials
3. Agricultural Power and Technology (APT)
Hands-on curriculum exposing students to mechanics, power, technology, and career options in agriculture ()
4. Agricultural Technology Projects, Lessons, Activities – Science Buddies
Science projects and lesson plans exploring innovations that improve farming practices and feed the world ()
5.Technology and Agriculture – Cool.org
Students generate ideas for technologies designed to help farmers produce food and care for the environment
6. Agriscience & Technology – CTE Resource Center
Curriculum exploring fields of agriculture, food, and natural resources, including emerging technologies ()
7. Teaching Resources – Florida Farm to School
Guides focusing on developing school gardens and using them to teach core subjects, including technology and engineering
8. Curriculum Development – Agriculture Teacher's Resource
Inquiry-based, STEM-enriched teaching strategies for agricultural science education ()
9. Agricultural Technology – NCCER
Curriculum covering construction principles, safety practices, and essential skills for careers in agriculture and construction

RESOURCE LINKS

Interactive Tools & Teaching Aids

1.Realityworks Agriculture Education Tools
Interactive animal and plant models paired with curriculum and student activities
2. Teaching With Tech – National FFA Organization
Resources demonstrating how technology can be integrated into agricultural education
3. Educator Resources – National FFA Organization
Lesson plans, curriculum sets, and classroom resources for agricultural education
4. Educator Recommended Resources – Global Teach Ag Network
Lessons incorporating affordable microcontroller technology like Arduino for prototyping automated smart devices in agriculture
5. MN Agriculture In The Classroom Educator Resources – Lakeland PBS
Video shorts and lesson plans to help students discover career avenues in agriculture
6. Agritech Jobs - Exciting Career Opportunities in Agriculture: An article detailing various agritech jobs in demand, including roles in sales, operations, software engineering, and data analysis. Xpheno
7. Agriculture, Food & Natural Resources - Tech-Labs: Provides information on various careers in agriculture, food, and natural resources, including educational resources and training tools. Tech-Labs

Academic & Research Articles

1. Unmanned Aerial Vehicles in Smart Agriculture
Explores applications, requirements, and challenges of using UAVs in smart farming
2. Artificial Intelligence for Digital Agriculture at Scale
Discusses techniques, policies, and challenges in applying AI to digital agriculture
3. Intelligent Agricultural Greenhouse Control System
Presents a system based on IoT and machine learning for greenhouse environment control
4. Automated Pest Detection with DNN on the Edge
Describes an embedded system using machine learning for continuous pest detection in orchards
5. Nanotechnology in Agriculture
Overview of how nanotechnology is applied in agriculture, including nanosensors for soil health monitoring

INDUSTRY CONNECTIONS

People or organizations that may offer support

C**areer Profiles & Job Listings**

- Indeed: Agriculture Technologies Jobs in Vancouver, BC: A listing of current job openings in agriculture technologies within the Vancouver area. Indeed (https://ca.indeed.com/q-agriculture-technologies-l-vancouver%2C-bc-jobs.html?vjk=56a6edb2357558b4)
- LinkedIn: Career Opportunities in Agri-Tech Innovation: An article discussing the rise of agri-tech and the numerous career opportunities emerging in this field. LinkedIn (https://www.linkedin.com/advice/1/heres-how-you-can-explore-career-opportunities-6tg9f)
- AgHires: 13 Tech Jobs in Agriculture To Consider: An overview of various technology-driven roles in agriculture, highlighting job responsibilities and required skills. blog.aghires.com (https://blog.aghires.com/13-tech-jobs-in-agriculture-to-consider)
- AgriTech: Revolutionising Agriculture and Employment Opportunities: An article exploring how agri-tech is transforming agriculture and creating new employment opportunities. agrirs.co.uk (https://www.agrirs.co.uk/blog/2024/03/agritech-revolutionising-agriculture-and-employment-opportunities)

C**areer Exploration Platforms**

- AgCareers.com: A comprehensive job board and resource hub for agriculture-related careers, including agritech roles. agcareers.com (https://www.agcareers.com)
- thinkAG by BC Agriculture in the Classroom: An award-winning platform offering resources to ignite interest in agriculture and food career journeys for students in grades 5-12. bcaitc.ca (https://www.bcaitc.ca)
- AgCentric Career Pathways: Provides students with pathways to successful careers in agriculture, food, and natural resources, including agritech. AgCentric (https://www.agcentric.org/)
- CareerOneStop: Agriculture, Food & Natural Resources Cluster: Offers detailed information on various careers within the agriculture sector, including job descriptions and required skills. careeronestop.org (https://www.careeronestop.org/ExploreCareers/Learn/CareerClusters/agriculture-food-natural-resources-career-cluster.aspx?)
- AgExplorer by National FFA Organization: An interactive platform that helps students explore agricultural careers that match their interests and skills. National FFA Organization (https://www.ffa.org/the-feed/cultivate-a-career-in-agriculture-feature/)

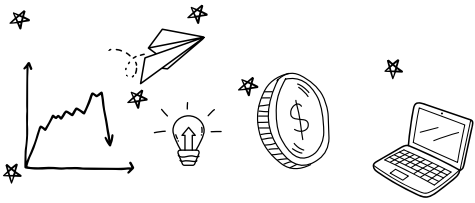
Please note that the list was created in the Spring of 2025 and may or may not be current. Please join the LinkedIn network where people may update their successful connections.

Financial Tech

How We Invest

Table of Contents

MODULE OVERVIEW



FINANCIAL TECH

How We Invest

The Financial Tech – How We Invest module introduces students to the evolving landscape of financial technology and its growing influence on personal and global finance. This module is designed to engage students in critical inquiry around how emerging tools, such as blockchain, digital banking, mobile wallets, and cryptocurrencies are transforming the way individuals and organizations manage, invest, and make decisions about money. Emphasizing the importance of both technical literacy and ethical responsibility, this module encourages students to investigate how these technologies can increase access to financial systems, improve transparency, and address global challenges such as financial inclusion and environmental sustainability.

Students will explore the foundations of financial systems, including the infrastructure of banking, investment strategies, and the use of digital platforms to manage personal finances. Through hands-on experiences with budgeting tools, financial simulations, and case studies, learners will develop practical financial literacy skills that can be applied to real-life scenarios. In addition, students will examine the social and ethical implications of fintech, such as algorithmic bias, data privacy, and the role of AI in financial decision-making. They will be encouraged to reflect on their own financial values and habits, and to assess how technology can support or challenge their financial goals.

A key component of this module is the integration of Indigenous perspectives on finance and stewardship. Students will investigate traditional and community-based financial models that prioritize sustainability, ecological balance, and social well-being. These perspectives are used to inspire thoughtful approaches to modern financial system design and to promote long-term, community-centered thinking in the development of financial technologies.

Career exploration is embedded throughout the module, introducing students to roles such as data analysts, blockchain developers, financial advisors, and fintech entrepreneurs. As students build their understanding of the fintech sector, they will be encouraged to consider pathways into post-secondary programs and future professions. By the end of the module, students will have developed a stronger sense of their own financial identity, a practical understanding of emerging financial technologies, and the critical thinking skills needed to navigate and shape the future of finance.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES & ASSESSMENT
UNIT 1: Financial Systems and Technologies. 5 hours	**Understand:** • Financial systems manage the flow of money in society. • Technology is transforming how people save, spend, and invest. • Fintech creates both opportunities and ethical challenges. **Do:** • Compare traditional and digital financial systems. • Explore fintech tools and their real-world applications. • Analyze the impact of new technologies on finance. **Know:** • Key terms: digital wallets, online banking, blockchain. • How fintech tools function and differ from traditional systems. • The benefits and risks of digital financial platforms.	**1) Fintech Tools Investigation – Explore and Compare** *Activity:* Students investigate platforms like PayPal, Google Pay, or Bitcoin. *Assessment:* Create a visual comparison (e.g., infographic or chart) that highlights features, pros/cons, and security details. **2) Case Study Analysis – Evolution of Finance** *Activity:* Research a major shift in financial tech (e.g., rise of mobile banking or blockchain). *Assessment:* Submit a short report or video explaining the change and its social impact. **3) Personal Finance Tool Walkthrough** *Activity:* Explore an app like Mint or YNAB and simulate budgeting. *Assessment:* Submit a reflection or screen recording showing how the app works and how it could support personal finance goals.
UNIT 2: Ecommerce and Retail Technology 5 hours	**Understand:** • E-commerce is reshaping how people buy and sell goods. • AI and data drive personalization and efficiency in online shopping. • Retail technology affects consumer behavior and business strategy. **Do:** • Analyze how digital payment systems and platforms operate. • Explore the role of AI in shaping retail experiences. • Evaluate the benefits and drawbacks of online shopping innovations. **Know:** • Key systems: online transactions, digital payments, subscription models. • How AI is used for product recommendations, fraud detection, and inventory. • Trends and challenges in modern retail technology	**1) Platform Deep Dive – How It Works** • *Activity:* Students choose an e-commerce platform (e.g., Amazon, Shopify, Etsy) and research how it operates, including payment systems and AI use. • *Assessment:* Create a slide deck or infographic explaining the platform's backend technology and user experience features. **2) Online Shopping Experience Audit** • *Activity:* Students analyze their own or a family member's experience with an online purchase. Consider personalization, payment process, and product delivery. • *Assessment:* Submit a reflection comparing two e-commerce sites and evaluating their use of technology to influence consumer behavior. **3) AI in Retail Case Study** • *Activity:* Research a company using AI in retail (e.g., Zara's inventory systems, Netflix's recommendation engine, Amazon Go stores). • *Assessment:* Write a short case study explaining how AI enhances business outcomes and customer experience. Include at least one ethical or privacy concern.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES & ASSESSMENT
UNIT 3: Financial Literacy 5 hours	**Understand:** • Managing money is a key life skill that builds independence. • Technology can support better financial habits and decisions. • Financial tools must be used responsibly to avoid risk. **Do:** • Use digital tools to track spending, saving, and budgeting. • Reflect on personal financial habits and set future goals. • Evaluate how fintech supports or complicates financial choices. **Know:** • Key concepts: budgeting, saving, interest, debt, and investing. • How apps like Mint, YNAB, and robo-advisors support financial planning. • The risks of poor financial decisions and how to avoid them.	**1) Budgeting Simulation – My Monthly Plan** • Activity: Students use Google Sheets, Mint, or another app to create a mock monthly budget based on a sample income and expense scenario. • Assessment: Submit a digital budget and reflection explaining key choices, goals, and trade-offs made in the plan. **2) Financial Habits Self-Assessment** • Activity: Students track personal or fictional financial behavior over a week (spending, saving, wants vs. needs). • Assessment: Write a brief reflection identifying patterns, areas for improvement, and how tech tools might help change habits. **3) Robo-Advisor Research Project** • Activity: Investigate how digital investing tools (e.g., Wealthsimple, Questrade, Betterment) help users grow wealth. • Assessment: Create a short presentation or video explaining how robo-advisors work, their pros/cons, and who might benefit most from using them.
UNIT 4: Stocks and Cryptocurrency 5 hours	**Understand:** • Stocks and cryptocurrencies are tools for growing wealth and taking financial risks. • Technology plays a key role in how markets operate and how people invest. • Investment decisions require critical thinking and ethical awareness. **Do:** • Explore how trading platforms work and simulate investment strategies. • Compare traditional stock markets with digital assets like cryptocurrency. • Analyze risks, rewards, and ethical issues tied to investing. **Know:** • Key terms: stocks, shares, dividends, cryptocurrency, blockchain. • How trading apps (e.g., Wealthsimple, Robinhood, Binance) function. • The risks of investing, including volatility, scams, and environmental impact.	**1) Stock Market Simulation – Build a Portfolio** • Activity: Students use a free stock simulator (e.g., Investopedia, MarketWatch) to build and track a mock investment portfolio over time. • Assessment: Submit a portfolio summary with reflections on stock choices, changes made, and gains/losses over the period. **2) Cryptocurrency Explainer Project** • Activity: In pairs or small groups, students research a cryptocurrency(e.g., Bitcoin, Ethereum, Solana) and its underlying technology. • Assessment: Create an explainer video, slideshow, or infographic that covers how the currency works, its purpose, and its pros/cons. **3) Debate: Crypto – Future of Finance or Risky Hype?** • Activity: Host a class debate where students take positions on the long-term value and ethical implications of cryptocurrency. • Assessment: Students write a short argumentative paragraph summarizing their position, using evidence from their research.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES & ASSESSMENT
UNIT 5: Ethics and Social Responsibility 5 hours	**Understand:** • Financial technologies impact people and communities in complex ways. • Ethical design and use of technology promotes fairness and trust. • Accessibility and inclusion are essential in financial systems. **Do:** • Investigate real-world ethical challenges in fintech. • Analyze how data privacy and algorithmic bias affect users. • Reflect on how financial tools can either support or exclude people. **Know:** • Key concepts: data privacy, algorithmic bias, digital inclusion. • Examples of ethical concerns in fintech (e.g., AI-driven lending). • Strategies for making financial technologies more transparent and fair.	**1) Case Study Analysis – Ethics in Action** • Activity: Students examine a real-world fintech case (e.g., biased lending algorithms, data breach at a crypto platform). • Assessment: Write a short report summarizing the ethical issue, who was affected, and how it could be addressed or prevented. **2) Fintech Ethics Poster or PSA** • Activity: Students create a visual campaign or PSA (poster, slideshow, or video) promoting ethical fintech practices—such as user consent, data protection, or financial access for underserved communities. • Assessment: Submit the final product along with a short artist's statement explaining its message and target audience. **3) Role-Play: Ethics Council** • Activity: In small groups, students take on roles (e.g., fintech developer, consumer, ethics officer, investor) and debate the approval of a new financial technology with ethical risks. • Assessment: Each student submits a written reflection on their role, their position, and what the group learned about balancing innovation and responsibility.
UNIT 6: Dynamic Nature of Technology and Careers 5 hours	**Understand:** • Fintech careers are constantly evolving with new technologies. • Lifelong learning and adaptability are essential in the modern workforce. • Technology can both create and replace jobs, requiring resilience and foresight. **Do:** • Research emerging careers in fintech and related industries. • Reflect on personal strengths and how they align with future opportunities. • Explore the impact of automation and AI on job markets. **Know:** • Key trends: AI, machine learning, big data, automation. • Examples of growing careers (e.g., blockchain developer, fintech analyst, cybersecurity specialist). • The importance of transferable skills like problem-solving, communication, and collaboration.	**1) Career Profile – Fintech Futures** • Activity: Students research a specific fintech-related career (e.g., data analyst, UX designer for financial apps, crypto compliance officer). • Assessment: Create a one-page profile or slide deck outlining required skills, education pathways, typical job tasks, and future outlook. **2) Automation Impact Debate** • Activity: Host a structured class debate on whether emerging technologies will improve or threaten job security in finance. • Assessment: Students write a reflection summarizing both sides of the debate and stating their own position with evidence. **3) My Future Path – Self-Assessment and Plan** • Activity: Students complete a career interest inventory (e.g., Holland Codes, MyBlueprint) and identify areas in fintech that match their strengths. • Assessment: Submit a short personal reflection or visual roadmap outlining possible career paths, learning goals, and next steps.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES & ASSESSMENT
UNIT 7: Sustainability and GreenTech 5 hours	**Understand:** • Financial technology can support environmental and social sustainability. • Green investing and eco-conscious financial tools are part of the climate solution. • Technology choices have long-term impacts on people and the planet. **Do:** • Explore how fintech tools promote or hinder sustainability. • Analyze real-world examples of green investing and eco-finance platforms. • Propose ways fintech can reduce environmental impact. **Know:** • Concepts: green bonds, carbon offsetting, ethical investing. • Examples of sustainable fintech platforms and initiatives. • Environmental concerns tied to fintech (e.g., crypto mining, data centers)..	**1) Sustainable Finance Case Study** • Activity: Students research a fintech company or platform (e.g., Aspiration, Carbon Collective, Green Bitcoin Mining) focused on sustainability. • Assessment: Create a case study report or infographic outlining how the company integrates sustainability, its impact, and any trade-offs. **2) Eco-Friendly Investment Challenge** • Activity: Students use mock funds to build an ethical investment portfolio focused on sustainability (e.g., green bonds, clean energy stocks). • Assessment: Submit a brief rationale and impact analysis explaining their investment choices and projected outcomes. **3) Fintech Footprint Audit** • Activity: Students investigate the environmental impact of a specific fintech tool (e.g., energy use of blockchain, data center emissions). • Assessment: Present findings as a short report or digital presentation, including suggestions for making the technology more sustainable.
UNIT 8: Indigenous perspectives on financial technology. 5 hours	**Understand:** • Indigenous financial systems emphasize community, sustainability, and long-term wellbeing. • Indigenous knowledge can inspire more equitable and ethical financial practices. • Financial technology can support or undermine cultural and environmental values. **Do:** • Explore traditional and community-based financial models. • Reflect on how Indigenous approaches can inform future financial systems. • Incorporate Indigenous principles into a financial design or proposal. **Know:** • Concepts: community-based lending, stewardship, shared wealth models. • Examples of Indigenous-led finance and clean energy initiatives. • The role of cultural values in shaping financial priorities and systems.	**1) Indigenous Finance Research Project** • Activity: Students research a real-world example of Indigenous financial innovation (e.g., First Nations Credit Unions, Indigenous Clean Energy projects). • Assessment: Present findings as a short essay, slideshow, or video explaining the initiative's goals, structure, and social or environmental impact. **2) StoryMapJS – Traditional Knowledge in Modern Finance** • Activity: Using a digital storytelling tool like StoryMapJS or Canva, students create a visual map or narrative showing how Indigenous values (e.g., land stewardship, reciprocity) can shape ethical financial practices. • Assessment: Submit a completed digital story and a short reflection connecting the content to modern fintech challenges. **3) Design Challenge – Community-Centered Fintech** • Activity: Students design a fintech solution (app, service, or concept) that incorporates Indigenous values such as sustainability, inclusion, and shared benefit. • Assessment: Submit a concept pitch or prototype with a rationale explaining how it reflects Indigenous perspectives and supports community wellbeing.

LESSON plan

DATE:

COURSE:

TEACHER:

GRADE: SUBJECT: Cryptocurrency LESSON PLAN DURATION: 60-75 minutes

STAGE 1-DESIRED RESULTS

Big Idea:

Effective process skills are key to inquiry, project design and management.

Communication: Expressing ideas clearly in group and individual settings
Critical Thinking: Evaluating sources, analyzing impacts, questioning assumptions
Personal Awareness and Responsibility: Reflecting on financial and ethical choices

Curricular Competencies:

Analyze financial systems and technology and evaluate their positives and negatives.
Apply financial literacy concepts and build practical financial plans.

Content Learning Standards:

Basics of cryptocurrency and blockchain
Risks and rewards of investing in digital assets
Environmental concerns related to crypto (e.g., energy use in mining)

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Students will be assessed on their ability to:
Clearly explain what cryptocurrency is and how it works
Analyze and articulate both positive and negative impacts of cryptocurrency
Make connections between technology and ethical or cultural perspectives
Participate thoughtfully in discussion or debate
Present ideas in a clear, creative, and supported format

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Clearly presents researched arguments and counters opposing views
Uses relevant examples and vocabulary from the unit
Demonstrates respectful debate behavior and collaboration
Shows personal reflection and understanding of the topic

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

Completed cryptocurrency infographic or visual explainer
Group discussion participation
Peer feedback form (optional)

Summative:

Written or oral reflection connecting cryptocurrency to personal values or Indigenous perspectives

LESSON *intro*

Hook/Intro (10–15 min)
Begin with a short video: "What is Cryptocurrency in 5 Minutes?"
Class brainstorm: "What words or ideas come to mind when you hear 'Bitcoin' or 'crypto'?" (record ideas on board)
Ask: Would you invest in something you can't physically hold? Why or why not?

LESSON *structure*

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

L**esson Structure (60–70 min):**
Mini-Lesson (10–15 min):
Teacher provides a quick, clear explanation of cryptocurrency, blockchain, and how it's used.
Show visuals (flow charts, simple animations) to explain mining, transactions, and wallets.

Station Activity or Small Group Inquiry (30–35 min):
Divide class into 4–5 stations or inquiry groups. Topics could include:
How Bitcoin works
Pros and cons of crypto investing
Environmental impact of crypto mining
Crypto and global financial inclusion
Indigenous perspectives on wealth and long-term planning
Groups research their topic and create a visual explainer (infographic, chart, poster, or digital slide).

Gallery Walk or Group Share (10–15 min):
Students rotate to view other group visuals or present to the class.
Class discussion: What surprised you? What concerns or opportunities do you see?

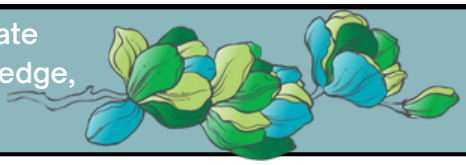
LESSON *closure*

Lesson Closure (10 min)
Reflection prompt (written or oral):
What's one thing you learned about cryptocurrency that changed your opinion or gave you a new perspective?
How do your personal values (or cultural/community values) influence how you view financial technologies like this?
Optional exit ticket: One thing I learned… One question I still have…

MATERIALS / RESOURCES

- Access to computers or tablets
- Internet access for guided research
- Projector for showing videos/slides
- Printed or digital worksheets for analysis
- Chart paper and markers
- Optional: printed articles or case studies

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

The lesson invites students to reflect on how technological systems (like cryptocurrency) influence communities and the environment and how these systems contrast with Indigenous values around shared wealth, long-term sustainability, andcommunity wellbeing.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

Engagement:

- Cooperative group work
- Movement (gallery walk or station activity)
- Discussion and debate
- Choice in presentation format

Representation:

- Graphic organizers
- Short videos explaining cryptocurrency
- Teacher mini-lecture with visuals
- Infographics and real-world case studies

Action & Expression:

- Students choose between written summary, visual infographic, or short oral/video presentation
- Small group presentations
- Reflection journaling

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE:

COURSE:

TEACHER:

GRADE: SUBJECT: E-commerce LESSON PLAN DURATION: 50-55 minutes

STAGE 1-DESIRED RESULTS

Big Idea:

Change occurs in cycles that drive growth, adaptation, and innovation, reflecting the interconnected patterns of technology, society and the environment.

Creative Thinking: Generating solutions to real-world challenges
Social Responsibility: Recognizing the ethical impact of digital systems
Communication: Sharing ideas clearly in visual or oral formats

Curricular Competencies:

Analyze financial systems and technology and evaluate their positives and negatives.
Evaluate the dynamic nature of technology in finance and career opportunities.

Content Learning Standards:

AI-driven recommendations, personalization, and targeted ads
Online transactions and payment systems
Ethical use of data in retail systems

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Students will be assessed on their ability to:
Explain how AI and recommendation systems work in e-commerce
Identify and analyze the impact of data collection on consumers
Engage in discussion and present information in a clear and supported way
Reflect on ethical implications using personal and global perspectives

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Accurately identifies how AI is used in a selected platform
Demonstrates ability to assess ethical concerns thoughtfully
Participates meaningfully in group and class discussions
Completes reflection with clear personal insight and critical thinking

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

Personal reflection paragraph on data collection and consumer choice
Optional peer review or self-assessment checklist

Summative:

Completed AI analysis graphic organizer
Group-created presentation or poster on a chosen platform's use of AI

LESSON intro

Hook/Intro (10–15 min)
Ask: "Have you ever noticed how your social media or shopping app seems to know what you want?"
Show a short video or animation: "How AI Recommends What You Buy" (e.g., from Common Sense Media, YouTube, or Crash Course).
YouTube: How Spotify's AI recommendations Work
YouTube: What is an AI recommendation Engine?
How YouTube knows what you should watch: Crash Course AI #15
Brainstorm with the class: Where have you seen personalized ads or product suggestions? What did you think or feel?

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Lesson Structure (50–55 min)
Mini-Lesson (10–15 min):
Teacher explains how AI works in retail—recommendation engines, product suggestions, and targeted ads.
Use simple visuals or flowcharts to show how consumer data feeds into these systems.

Group Investigation (25 min):
In groups of 2–4, students choose an e-commerce or streaming platform (e.g., Amazon, YouTube, Netflix, Shein).
Using a guided graphic organizer, they analyze:

- What kind of data the platform collects
- How it personalizes suggestions
- The potential pros and cons for consumers and businesses
- Ethical issues (e.g., overconsumption, privacy, manipulation)

Presentation & Gallery Walk (10–15 min):
Groups share their findings in a poster or short slideshow.
Class does a gallery walk or brief presentations, taking notes on similarities/differences across platforms.

LESSON closure

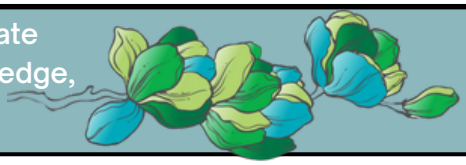
Lesson Closure (5–10 min)
Ask: Do you think personalization in online shopping helps or harms consumers? Why?
Exit ticket: Students write a short reflection on what they learned, how their perspective may have changed, and one question they still have.
Optional extension: Students debate "Should online retailers be allowed to use your data to influence your purchases?"

MATERIALS / RESOURCES

- Internet-enabled devices (laptops, tablets)
- Slide deck or video on AI in retail
- Printed graphic organizer
- Chart paper and markers
- Example online shopping platforms (e.g., Amazon, YouTube, Netflix, Shein)

Optional: access to Canva, Google Slides, or other design tools for presentations

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Students will consider how digital retail systems affect community values such as respect, honesty, and responsibility.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Engagement:

- Group or partner work
- Hands-on analysis of real-world apps
- Discussion and ethical debate
- Choice in presentation format

Representation:

- Video and slideshow for direct instruction
- Graphic organizer for analysis
- Case study examples of real platforms
- Diagrams and product recommendation screenshots

Action & Expression:

- Group poster or digital presentation
- Written or oral reflection
- Think-pair-share discussion responses

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE:

COURSE:

TEACHER:

GRADE: SUBJECT: Data Collection LESSON PLAN DURATION: 50-55 Minutes

STAGE 1-DESIRED RESULTS

Big Idea:

When designing tomorrow's technology, it is essential to be grounded in ethics and sustainability.

Communication: Shares ideas clearly in a group setting and responds respectfully to others' viewpoints.
Personal Awareness: Reflects on personal opinions, values, and how they influence decision-making.
Social Responsibility: Recognizes the broader societal impact of data use and proposes ethical improvements.

Curricular Competencies:

Assess ethical considerations and social responsibilities in financial technologies.
Integrate sustainability practices in financial technology.

Content Learning Standards:

Ethics and social responsibility in financial technology, including issues of data privacy, algorithmic bias, and access
The dynamic nature of careers in fintech and the impact of technological change on society

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Students will explore and evaluate different viewpoints on ethical data use in fintech.
Students will build and present clear, supported arguments in a respectful way.
Reflect on how technology impacts financial inclusion and trust.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Builds logical arguments supported by facts and examples
Identifies ethical concerns clearly and proposes possible solutions
Demonstrates respectful engagement in the debate process
Reflects on the scenario with thoughtful personal insight

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

Students will complete a structured debate preparation worksheet to organize and support their arguments.
Students will actively participate in the debate by presenting and responding to points in a respectful and informed manner.

Summative:

Students will write a final personal reflection that demonstrates their understanding of the ethical dilemma.
Students' performance during the debate will be evaluated based on clarity, evidence use, respectful conduct, and critical thinking.

LESSON intro

Hook/Intro (10 min)
Quick class poll: "Have you ever noticed ads based on something you recently searched or bought?"
Share a short ethical case: e.g., "A budgeting app uses your financial data to recommend investment products — without telling you it's also profiting."
Ask: Is this helpful… or harmful?

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Lesson Structure (50–55 min)

Debate Prep (15–20 min):
Students split into two teams: Pro (yes, fintech companies should use personal data) and Con (no, this violates privacy and ethics).
Each group receives a structured planning sheet to prepare arguments, counterarguments, and examples.
Encourage the use of real-world platforms (e.g., Robinhood, Venmo, Wealthsimple) for case-based examples.

Structured Debate (25–30 min):
Opening statements from each team (2–3 min each)
Rebuttal rounds (1–2 min per speaker)
Audience questions or neutral judge questions
Closing statements
Option: A small group or teacher acts as a "community ethics board" to summarize arguments and deliver a decision

LESSON closure

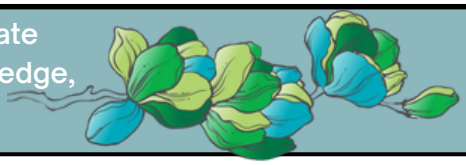
Individual written reflection:
"What argument did you find most convincing and why?"
"What responsibility do you think fintech companies have when using personal data?"

Optional exit ticket: One thing I learned… One ethical question I still have…

MATERIALS / RESOURCES

- Structured debate worksheet
- PennyWise ethical scenario
- Whiteboard
- Optional ethical case readings

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Highlights the importance of making choices that serve current and future generations, with attention to community values and long-term impacts.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Engagement:
- Cooperative group prep
- Debate structure
- Ethical case study

Representation:
- Case narrative
- Group dialogue
- Visual debate tracking

Action & Expression:
- Oral argumentation
- Written reflection
- Group planning

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

RESOURCE LINKS

General Fintech Resources (All Units)
Khan Academy – Personal Finance
Free lessons on saving, investing, budgeting, and understanding financial systems.
Investopedia
A go-to resource for student-friendly definitions, tutorials, and real-time examples in all areas of finance and investing.
Next Gen Personal Finance (NGPF)
Excellent curriculum hub with ready-to-use activities, videos, simulations, and case studies.
What is Fintech - CNBC Explains
Easy-to-understand introduction to how fintech is changing money management.

Unit 1: Financial Systems and Technologies
"What is Blockchain?" by Simply Explained (YouTube – 6 min)
Great intro video with visual explanations of blockchain's core principles.
The Evolution of Banking – Visual Capitalist
A timeline and infographics showing how financial systems evolved.
PayPal and Venmo: How They Work – NerdWallet
Quick breakdown of common fintech platforms.

Unit 2: E-Commerce and Retail Technology
The Personalization Trap – Article (MIT Technology Review)
Addresses ethical concerns around e-commerce targeting.
Shopify Blog – Future of Retail Tech
Explore how retail businesses are using AI, AR, and personalization tools.

Unit 3: Financial Literacy
Mint Budgeting Tool
Students can explore budgeting tools or use screenshots to simulate tracking expenses.
Next Gen Personal Finance Budgeting Simulation
Interactive scenario-based budgeting game.

RESOURCE LINKS

Unit 4: Stocks and Cryptocurrency
How the Stock Market Works – TED-Ed (YouTube – 5 min)
Easy intro to stock markets and how they function.
Cryptocurrency 101 – Common Sense Education
Balanced lesson and video on how cryptocurrency works and why it matters.
Coinbase Learn – Guide to Crypto
Simple, student-accessible lessons on blockchain, tokens, and digital wallets.
Investopedia Simulator
Free stock trading simulation to use in class or over time.

Unit 5: Ethics and Social Responsibility
AI and Algorithmic Bias – CrashCourse AI #18
A student-friendly overview of bias in data and algorithms.
EFF – Electronic Frontier Foundation
Up-to-date articles on digital rights, privacy, and data ethics.
Harvard's "Moral Machine"
While focused on AI ethics in self-driving cars, it sparks great ethical discussions about algorithmic decision-making.

Unit 6: The Dynamic Nature of Technology and Careers
Canada Job Bank
Fintech Career Outlook: Updated trends in fintech-related careers in Canada.
MyBlueprint.ca or WorkBC.ca
For career exploration tools, assessments, and resume builders.
What is a Blockchain Developer?
Simplilearn Article Career snapshot written for beginners.

Unit 7: Sustainability and Green Tech
How does Bitcoin Mining actually work – CoinGecko
A look into energy use in crypto and efforts to make it more sustainable.
Ethical Investing for Beginners | How To Do Socially Responsible Investing - YouTube – The Simple Dollar
Explains what green investing is and how it works.
Carbon Collective – Sustainable Investment Platform
Real-world example of a platform offering eco-conscious investing.

Unit 8: Indigenous Perspectives on Financial Technology
First Nations Bank of Canada
Great resource to explore Indigenous-owned and operated banking models.
"Indigenomics" – The Tyee Article
Overview of Indigenous approaches to economics and long-term well-being.
StoryMapJS - UBC
Tool students can use to build storytelling projects that combine land, finance, and tradition.

INDUSTRY CONNECTIONS

People or organizations that may offer support

WEST COAST CANADIAN CONNECTIONS

Wealthsimple - Toronto and Vancouver
Canada's leading robo-advisor and digital investing platform. They often engage in public education around FinTech, accessibility, and modern investing tools.
Possible support: Guest speakers, virtual tours of investing platforms, insights into algorithmic investment strategies.

FrontFundr - Vancouver
An equity crowdfunding platform enabling everyday Canadians to invest in startups. A great example of democratized finance.
Possible support: Live investment walkthrough, exploring how digital platforms broaden access to capital markets.

Canadian Fintech Summit & MaRS Fintech Hub
Fintech Cadence is Canada's FinTech innovation hub, with outreach programs for youth. MaRS supports startups including in blockchain and sustainable finance.
Possible support: Mentorship, workshops, founder guest speakers, innovation competitions.

Koho (Toronto & Vancouver)
A modern app-based bank focused on low-fee banking and financial inclusion—aligned with your unit's equity & ethics lens.
Possible support: Partnerships around responsible banking, budgeting, and tech-for-good.

Sauder School of Business (FinTech Program) - University of British Columbia
Runs FinTech research and certification programs. Ideal for connecting with professors or grad students to share expertise.
Possible support: Classroom visits, guest lectures on blockchain, crypto, machine learning in finance.

WEST COAST U.S. CONNECTIONS

Ripple - San Francisco
A major blockchain-based payment platform. Known for education partnerships and student blockchain clubs.
Possible support: Blockchain demos, global payments insights, ethical finance discussions.

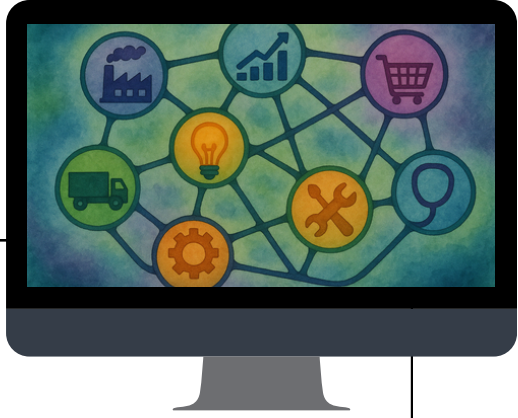
Robinhood - Menlo Park
Widely used stock/crypto app. Known for mobile investing and driving awareness of FinTech among young users.
Possible support: Case studies in gamification, risk vs reward, financial literacy in app design.

Plaid - San Francisco
The API behind many FinTech tools. Connects apps to users' bank data. Key for lessons around data ethics, transparency, and security.
Possible support: Educator toolkits, guest speakers on financial data..

Please note that the list was created in the Spring of 2025 and may or may not be current. Please join the LinkedIn network where people may update their successful connections.

INDUSTRY CONNECTIONS

People or organizations that may offer support



GLOBAL & CROSS-BORDER SUPPORT

FinLit4Youth Program - CFA Institute Vancouver

CFA Vancouver offers financial literacy support, often with a FinTech lens. Global CFA education initiatives exist across North America.

Possible support: Finance careers info, classroom visits, financial ethics modules.

UNDP – Digital Finance for the SDGs

Global case studies and tools showing how digital finance empowers communities, supporting Unit 5 and 8 on equity and Indigenous perspectives.

Possible support: Content for lessons on financial inclusion and global FinTech applications.

Fintech Girls & Technovation Global

Non-profit global platforms encouraging underrepresented students to build FinTech solutions.

Possible support: Curriculum connections, competitions, mentorship.

Please note that the list was created in the Spring of 2025 and may or may not be current. Please join the LinkedIn network where people may update their successful connections.

DIGITAL CONNECTIONS

How We Communicate

Table of Contents

DIGITAL CONNECTIONS

The Digital Connections module explores the rapidly evolving world of digital communication, where technologies like artificial intelligence (AI), virtual reality (VR), augmented reality (AR), and social media platforms are transforming how people connect, share, and collaborate. This module emphasizes the critical role of technology in shaping human interaction and expression, preparing students for a future where digital fluency is essential.

Students will examine the impact of emerging technologies on communication, from instant messaging and live streaming to AI-driven content creation and immersive virtual experiences. They will also reflect on the ethical challenges these technologies present, including algorithmic bias, misinformation, and digital citizenship, while exploring strategies to promote responsible and inclusive technology use.

This module highlights the importance of accessibility in digital communication, encouraging students to consider how advancements like speech-to-text software, multilingual AI translators, and assistive technology can break down barriers and create more equitable digital spaces. Students will also reflect on the long-term effects of living in a hyperconnected world, including the digital footprints they leave behind and the impact of their online presence on personal and professional opportunities.

Digital communication is a rapidly growing sector, offering diverse career paths in areas like content creation, digital marketing, UX/UI design, data analysis, and strategic communication. As companies increasingly rely on digital platforms to connect with audiences, the demand for digital communication specialists continues to expand.

By the end of this module, students will have developed a deeper understanding of digital literacy, ethical media practices, and the evolving role of technology in human connection. They will be equipped to navigate the digital world with confidence, creativity, and critical awareness, ready to become the next generation of digital communicators.

MODULE PLANNER

UNIT TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 1: The Evolution of Digital Communication 5 hours	**Understand:** Career pathway opportunities in technology are fluid, diverse, and interconnected. (How technology has transformed communication, shaping personal and professional interactions.) **Do:** Analyze case studies on communication evolution. Compare traditional and modern communication tools. Reflect on how digital advancements affect their daily interactions. **Know:** The historical progression of communication technologies (print, radio, television, internet, AI). The role of AI in digital communication (e.g., chatbots, automated transcription). The impact of social media on global connectivity.	1. **Timeline Activity** – Create a visual timeline of key communication advancements (print, radio, TV,internet, AI). 2. **Compare & Contrast** –Analyze old vs. new communication methods (e.g.,handwritten letters vs. instant messaging). 3. **Case Study Analysis** –Examine a major shift in communication technology (e.g., the rise of social media). 4. **Interview Project** – Interview family members about how communication has changed over generations. Assessment: Create a visual or digital timeline showcasing key communication advancements. Include short reflections on how each innovation changed the way people connect. Submit a one-page analysis comparing traditional and modern communication methods, or record a short video discussing a major communication shift. Share an interview summary or audio clip highlighting generational changes in communication.
Unit 2: Digital Literacy & Responsible Media Consumption 10 hours	**Understand:** When designing tomorrow's technology, it is essential to be grounded in ethics and sustainability. (The importance of critical thinking in evaluating digital content and media bias.) **Do:** Digital footprints, online identity, and privacy considerations. How misinformation, deepfakes, and algorithmic bias affect public perception. Ethical issues in AI-driven content creation. **Know:** Conduct a digital footprint self-audit. Analyze and fact-check real-world media examples. Debate ethical issues in AI-generated media.	1. **Digital Footprint Audit** –Students analyze their own online presence and discuss privacy settings. 2. **Fake News Challenge** –Identify real vs. fake news using fact-checking tools. 3. **Deepfake Debate** – Watch deep fake examples and discuss the ethical concerns. 4. **Echo Chamber Simulation** –Use different social media algorithms to see how digital bubbles form. Assessment: Complete a digital footprint self-audit and submit a personal reflection on privacy, identity, and data sharing. Create a fact-checking infographic or PSA that explains how to identify misinformation online. Watch and analyze a deepfake video, then contribute to a class debate on AI and ethics. Participate in an "echo chamber simulation" and submit a short reflection on how algorithms influence online perspectives.

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 3: AI & Emerging Technologies in Communication 5 Hours	**Understand:** *Change occurs in cycles that drive growth, adaptation, and innovation, reflecting the interconnected patterns of technology, society, and the environment.* **Do:** Experiment with AI tools for translation or content generation. Assess the pros and cons of VR/AR in communication. Explore how AI influences social media and personal interactions **Know:** The role of AI in communication (real-time translation, automated content creation). How virtual reality (VR) and augmented reality (AR) change interactions. The ethical challenges of AI-generated media.	1. **Lost in Translation?** - *Put AI translators to the test!* - Compare Google Translate, DeepL, and speech-to-text tools. See which one best handles slang, idioms, or emotion — and decide: Can machines really capture meaning? 2. **Reality Check** - *A Trip Through the Virtual World- What happens when real and digital worlds collide?* Explore a VR or AR experience using tools like Robot Lab Expeditions or MetaHorizon. Reflect on how immersive media could change how we learn, communicate, or even empathize. 3. **Fact or Fiction** - *Can AI Be Trusted with the Truth* - Put ChatGPT or another generative AI chatbot to work — and then check its homework. Use a generative AI tool to create a short article, story, or explanation… then analyze it. What's accurate? What's off? How do you verify AI-generated content? 4. **The AI Trial -** *Who Controls the Code?: Tech Ethics Panel Step into the shoes of lawmakers, users, and tech execs-* Hold a mock ethics panel where students role-play different stakeholders debating the future of AI — from privacy to deepfakes to digital equity. Assessment: Compare two or more AI translation tools and submit a written or video reflection analyzing accuracy, clarity, and meaning. Create a short story or article using an AI tool, then annotate or critique the final product for errors or bias. Participate in a mock ethics panel on AI, presenting from a stakeholder perspective and responding to peer questions. Submit a written summary or infographic explaining how AR/VR could impact how we learn or communicate.

UNIT TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 4: Media Design & Digital Storytelling 10 Hours	**Understand:** *Building skills across in-demand technology fields fuels creative solutions.* **Do:** Create a digital project (e.g., infographic, video, blog post). Apply design principles to multimedia content. Analyze Indigenous digital storytelling projects. **Know:** Principles of effective media design (contrast, hierarchy, balance). The role of storytelling in digital media. Indigenous perspectives on storytelling and digital representation.	1. **Create a Digital Story** –*Stories That Connect: How We Communicate in the Digital Age*- Students will create a short digital story (film, podcast, or animation) that explores an aspect of how digital communication shapes our lives. Their final product will use strong design principles (visual/audio) and storytelling techniques to inform, reflect, or persuade. 2. **Infographic Design** –*Designing Design: How to Make Your Media Message Pop!* -Create an infographic that teaches others how to design powerful digital media, including layout, storytelling, visuals, and emotional appeal. 3. **Indigenous Digital Storytelling Exploration** –*Voices in Motion: Indigenous Storytelling in the Digital Age*- Students will explore how Indigenous creators use digital tools (film, podcasts, animation, interactive media) to share stories, reclaim narratives, and connect across generations and territories. 4. **Story Remix Challenge** –*Story Remix Challenge: What If They Had Wi-Fi?*-Students will choose a well-known story and retell it using a digital format, imagining how the message, tone, or impact might shift if the characters had access to modern digital communication tools (texting, memes, vlogs, social media, AI, etc.). Assessment: Create a short digital story (podcast, video, or animation) that explores a theme related to digital communication. Present it to the class or publish it in an online gallery. Design an infographic that teaches others about effective media design principles. Submit a short visual or written reflection after exploring an Indigenous digital storytelling project. Participate in a creative remix challenge and present a reimagined version of a traditional story using a digital format.

LESSON plan

DATE:

COURSE: Technology Sampler Course 11

TEACHER:

GRADE: 11 SUBJECT: Digital Connections LESSON PLAN DURATION: 70 minutes

STAGE 1-DESIRED RESULTS

Big Idea:

Effective process skills are key to inquiry, project design, and management.

Personal & Social

- Demonstrate empathy and respectful awareness of others' perspectives
- Identify personal and social responsibility in digital spaces

Curricular Competencies:

Assess, Adapt, and Iterate: Evaluate how tools like screen readers, closed captions, and translation services reduce ability-related barriers.
Explore and Analyze: Examine how inclusive technologies respond to diverse societal needs.
Connect and Reflect: Consider how inclusive design aligns with values of equity.
Create and Demonstrate: Share insights through a visual or multimedia presentation that highlights the impact of inclusive tools.

Content Learning Standards:

Accessibility solutions in digital communication
Digital literacy and ethical communication
Design principles for inclusive media
Impact of algorithmic bias and digital divides

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

The "Accessibility Challenge" provides a hands-on, reflective, and design-focused activity that meets several of these competencies, especially around inclusion, evaluation of communication technologies, and ethical reflection. It's an excellent entry point into broader conversations around UDL, digital design, and equity in tech.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Gather authentic, observable evidence of their understanding—rooted in both their experience of using assistive technologies and their ability to reflect, evaluate, and communicate what they learned.
Acceptable evidence should show that students can:

- Recognize what assistive technologies are and how they function
- Evaluate their impact on accessibility and inclusion
- Reflect on the user experience and draw thoughtful conclusions
- Communicate their insights clearly and meaningfully

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

- Challenge Log

Students take notes at each station, describing the tool, user experience, and its effectiveness. Shows recognition and evaluation in real time

- Class Discussion

Students share what they noticed, what surprised them, and what could be improved. Demonstrates critical thinking and empathy through dialogue

Summative:

Final Reflection (Choose one format):

Paragraph, poster, or video including:

- One insight on accessibility
- One challenge or surprise
- One suggestion for improvement
- Must show synthesis, personal reflection, and clear communication.

LESSON intro

Prompt (10 min)

What does "accessible" mean to you? Think beyond physical spaces—what about the digital world? Have students turn and talk in pairs, then share 2–3 responses with the class. Show a short video clip (e.g., with and without captions) to demonstrate what assistive tech can change.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Challenge Set-Up (10 min)

Introduce the Accessibility Challenge:

Students will rotate through 3 mini-tasks designed to simulate how different assistive tools work:

- Screen Reader – Use Immersive Reader in Microsoft Word or a web browser on a news article
- Closed Captions – Watch a short YouTube video with captions on
- Alt Text Navigation – News Sites (e.g. **CBC, BBC**) – Use article preview images and headlines with alt text to infer the news story. **Spotify** – Choose songs based only on album cover alt text and skip audio.

Each student gets a Challenge Log with space to:

- Note what the tool is and what it does
- Rate the experience from 1–5 (usability, clarity, ease)
- Write a short reflection on how the tool helps or could be improved

Accessibility Challenge Stations (30 min)

Students spend 10 minutes per station, either rotating physically or working through links on a shared document.

Optional: pair students so one "navigates" and one "records" during each station to encourage collaboration.

LESSON closure

Wrap-Up and Reflection (15 min)

Bring students back together. Facilitate a class discussion:

- What surprised you?
- Which tool would you use if you had to rely on it?
- What did you notice about websites or platforms that did this well—or poorly?

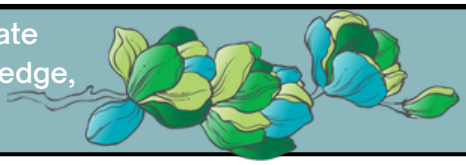
Then, have students complete one of the following:

- A TikTok-style video reflection
- A digital poster/slideshow with one key takeaway
- A short written paragraph summarizing their top insight and one recommendation for improvement

MATERIALS / RESOURCES

- Devices (laptops or tablets with internet access)
- Headphones
- Access to websites or apps that feature screen readers, closed captions, and alt text
- Reflection worksheet on a share template (optional)
- Access to Microsoft Word Immersive Reader, YouTube (for captions), and a site like Instagram or Wikipedia for alt text testing

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Holistic Understanding of Inclusion
Indigenous worldviews emphasize community, interconnectedness, and care for all members, including those with diverse needs. This aligns directly with the goal of the lesson to recognize how technology can support equitable access for everyone.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Multiple Access Points
- Students experience assistive tools firsthand (screen readers, captions, alt text), making the learning tactile and relatable.
- Tasks are structured so students can enter the lesson through observation, exploration, or personal reflection, depending on their strengths.

Supports for Diverse Learners
- Instructions and activities are visually supported (station guides, icons, sentence frames).
- Students may work individually or in pairs to support peer interaction or reduce social pressure.
- Challenge logs can be completed by typing, voice notes, or drawing, depending on learner preference.

Accessible Demonstration of Understanding
- Students choose how to demonstrate their learning: video, poster, or short paragraph—supporting multiple forms of expression.
- Clear criteria and examples are provided in advance.
- Teacher checks in during the stations to offer real-time support or clarification.

The entire lesson models inclusive design by centering accessibility—not just as content, but as practice.

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE:

COURSE: Technology Sampler Course 11

TEACHER:

GRADE: 11 | SUBJECT: Digital Connections: Truth or Trick? Understanding Deepfakes and Misinformation | LESSON PLAN DURATION: 70 minutes

STAGE 1-DESIRED RESULTS

Big Idea:

When designing tomorrow's technology, it is essential to be grounded in ethics and sustainability

Critical Thinking :Students evaluate media content and assess credibility using a deep fake detection checklist.

Communication: Communicate complex ideas clearly through visual elements, icons, layout, and brief text in their infographic.

Curricular Competencies:

- Explore and Analyze: Investigate how AI tools like ChatGPT and synthetic media (e.g. deepfakes) are transforming digital communication.
- Assess, Adapt, and Iterate: Examine ethical concerns including misinformation, echo chambers, and algorithmic bias.
- Connect and Reflect: Reflect on how these challenges impact media consumption.
- Create and Demonstrate: Share findings in a thoughtful, engaging format that highlights both opportunities and risks.

Content Learning Standards:

Elements and principles of media design
Common terminology used in media and digital communication

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

- Explain how deepfakes and algorithms affect what people see and believe online.
- Identify signs of manipulated media and misinformation.
- Reflect on how personal digital habits shape bias and perception.
- Create an infographic that teaches others how to spot deepfakes.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Students will show they've met the learning goals if they:

1. Explain the impact of deepfakes and algorithms on public perception using accurate terminology.
2. Identify at least 3-5 clear signs of misinformation or media manipulation.
3. Reflect on their personal digital experience in a short class discussion or exit prompt.
4. Create an infographic that:
   - Uses media design principles (layout, icons, hierarchy)
   - Includes 3–5 tips or checklist items
   - Is accurate, informative, and accessible to a student audience
   - Contains at least one real or fictional example of a deepfake or misleading content

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

- Observe student responses during "Real or Fake?" warm-up to gauge initial understanding.
- Check comprehension during mini-lesson through student explanations of the deepfake checklist.
- Monitor student engagement and application of concepts while circulating during infographic creation.
- Use peer feedback from the gallery walk to assess how students interpret and evaluate each other's work.

Summative:

- Evaluate final infographic for clarity, accuracy, design principles, and ability to inform a peer audience.
- Collect short written or verbal exit reflections to assess personal understanding of digital bias and misinformation.
- Use a simple rubric or success criteria checklist to determine if learning intentions were met.

LESSON intro

Hook: Spot the Deepfake (10 min)

Play two short video clips: one real, one deepfake.
Ask students: *Which do you think is real? What clues did you notice?*
Quick whole-class share-out. Introduce the terms deepfake, algorithmic bias, and echo chamber with student-friendly definitions.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Mini-lesson: Misinformation & Manipulated Media (10 min)
Slide deck or video + discussion covering:

- What is a deepfake?
- How algorithms personalize content (and trap us in echo chambers)
- Real-world consequences of misinformation (e.g., elections, public health)

Provide a checklist for spotting deepfakes (e.g., facial distortions, odd lighting, lack of blinking, source credibility).

Design Task Setup: Create an Infographic (5 min)
Create an infographic that teaches other students how to spot and think critically about deepfakes.
Must include:

- A title and 3–5 tips/checklist items
- At least one example (image, fake quote, or headline)
- Use of clear visuals, icons, and layout
- Ethical message or takeaway

Tools: Canva, Adobe Express, Google Slides

Creation Time (30 min)
Students create infographics individually or in pairs.
Teacher circulates to guide, clarify, and prompt deeper thinking.
Differentiation:

- Offer pre-built templates for students who need structure
- Allow oral explanation alongside visuals for ELL or neurodiverse students

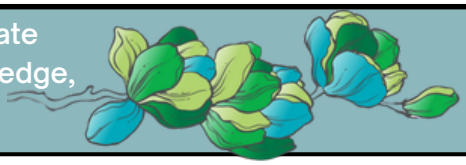
LESSON closure

Share & Reflect (15 min)
Host a digital or printed gallery walk. Students review at least 2 peer infographics and respond with:
One thing that was clear, one suggestion or question.
Wrap up with a brief reflection:
What will you do differently next time you scroll?

MATERIALS / RESOURCES

- Connected devices
- Design tool (ex. Canva or Adobe Express)
- Sample deepfake video clips and headlines (curated in advance)
- Handout or slides on "How to Spot a Deepfake" checklist
- Templates or examples of effective infographics

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Highlighting co-creation and representation: Students analyze how digital tools can amplify or misrepresent voices. Indigenous-led digital media projects are introduced as examples of responsible and community-based storytelling.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

- Multimodal input: Key concepts are introduced through video, discussion, visuals, and examples, supporting visual, auditory, and verbal learners.
- Scaffolded tools: Guided questions, checklists, and infographic templates support students who need structure or additional language support.
- Flexible output: Students can demonstrate understanding through infographics, short written reflections, or verbal explanations, allowing for choice in how they communicate learning.
- Collaborative learning: Group analysis and peer feedback provide opportunities for students to clarify thinking and support one another.
- Built-in tech supports: Accessibility tools such as closed captions, Immersive Reader, and screen readers are modeled and encouraged for all students to use.
- Teacher support: Ongoing check-ins allow for real-time differentiation and accommodations as needed.

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON intro

Prompt (5 min)
Ask students: How would your life change if social media disappeared overnight?
Show a short video (2-3 minutes) on the evolution of social media (e.g., MySpace to TikTok).
Discussion Questions: How has social media changed how we communicate?What are some advantages and disadvantages of digital communication? How do businesses, news outlets, and individuals use social media differently?

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Case Study Activity (25 minutes)
Step 1: Read & Discuss (10 min)
Provide a case study on Meta's role in shaping digital communication (or another platform).
Highlight key moments: rise in popularity, use in political campaigns, misinformation issues, and AI-driven algorithms.

Step 2: Small Group Analysis (15 min)
Students form small groups and answer guided questions:

- What problem did social media originally aim to solve?
- How has AI-driven content affected communication?
- How has social media impacted democracy, business, and personal relationships?

Groups present their answers in a quick-share format.

Step 3: Compare & Contrast Activity (10 min):

- Students create a **T-chart** comparing **pre-social media vs. modern social media communication.**

LESSON closure

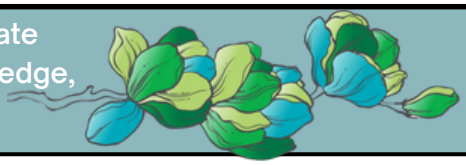
Exit Reflection (10 min)
Students write a short reflection answering:

- How has social media impacted your own communication?
- Do you think social media is more beneficial or harmful to global communication?

MATERIALS / RESOURCES

- Laptop/Device
- Handouts
- Exit Ticket Prompt
- Rubric

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Learning involves recognizing the consequences of one's actions.
In this lesson, students move from critical analysis to personal agency as they explore the ethical impact of digital communication. Through reflection on their digital footprint and the influence of algorithms and misinformation, they begin to understand how their choices shape online culture, relationships, and the broader digital landscape.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Multiple Access Points

- Offer choice of case study platform (e.g., Meta, TikTok, X) to increase relevance and interest
- Use a short video or meme to activate prior knowledge and spark discussion before the case study
- Assign flexible roles in small groups (e.g., discussion leader, recorder, timekeeper) to support autonomy and reduce anxiety
- Encourage collaborative discussion and peer support to build confidence and social connection
- Provide varied prompts (e.g., ethical, economic, personal impact) so students can respond from multiple perspectives

Supports for Diverse Learners

- Provide the case study in multiple formats: print, digital (with Immersive Reader), and audio
- Offer a simplified or summary version of the text for students who benefit from reduced reading load
- Use visual supports like timelines, infographics, or short explainer videos to clarify complex ideas
- Pre-teach key vocabulary (e.g., algorithm, bias, misinformation) using images or real-world examples
- Highlight and model key moments in the case study using a projector or shared screen for whole-class guidance

Accessible Demonstration of Understanding

- Allow students to record audio or video responses instead of writing
- Provide sentence starters or discussion stems to support verbal expression
- Use structured graphic organizers (e.g., T-charts, Venn diagrams) for the compare/contrast activity
- Let students share ideas through drawing, bullet points, or digital tools (Canva, Padlet, PowerPoint)
- Offer multiple options for group sharing: verbal summary, visual poster, or brief slide presentation

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

Ethical Discussion Prompts

Do social media companies have a responsibility to prevent misinformation?
Who owns your personal data online? Should users be paid for the data they generate?
Are social media algorithms making people more informed or more divided?
What ethical responsibilities do influencers and digital creators have when sharing content?

RESOURCE LINKS

Unit 1: The Evolution of Digital Communication

- The Evolution of Small. Business and Office Technology
- Smithsonian SSEC – Communication Through History Timeline –
- A History of Communication Through the Ages [Infographic]
- Sample Interview Worksheet

Unit 2: Digital Literacy & Responsible Media Consumption

- Meta News Ban in Canada
- Trapped in the Bubble; How Social Media Creates Echo Chambers
- Deepfakes in School: Risks and Readiness
- How do you prevent AI from creating Deepfakes?
- How To Manage Your Digital Footprint for 2025: 20 Tips for Students

Unit 3: AI & Emerging Technologies in Communication

- Google's New AI Glasses are the Future of AI
- How Scientists Are Using AI to Talk To Animals
- Can AI Let Us Chat with Dolphins?
- Blog Augmented vs. Virtual Reality: Comparing AR/VR
- Robot Lab VR Expeditions
- Realtime Translation with GPT-4o
- PBS Lesson plan: AI Unlocked — ethical considerations of AI usage
- Debating the Ethics of Generative AI

Unit 4: Media Design & Digital Storytelling (including Indigenous Perspectives)

- Design Process Poster
- What is digital storytelling?: Reading & YouTube Video
- Native-Land
- Decolonial AI & Indigenous Perspectives | Introduction | Aimee van Wynsberghe
- Can AI save endangered Indigenous languages? | The Take

Unit 5: Accessibility & Inclusivity in Digital Spaces

How digital tools have opened up the world to more learners and empower people with diverse abilities

- Video of AI Ability Summit (includes case studies)
- Podcast Making Workplace Digital Communication Accessible

Unit 6: Digital Collaboration & Global Connectivity

- Social Activism with Digital Media
- Marketing Campaign Reflections: Nike
- Creating Musical Playlists for the Classroom
- Blog: Inclusive Emojis and The Politics of Digital Accessibility
- The Emoji Code: Communication, Misuse, and Digital Identity in the Age of AI

INDUSTRY CONNECTIONS

People or organizations that may offer support

Unit 1: The Evolution of Digital Communication

- Museum of Vancouver – "That Year in Vancouver" exhibit - For timelines of communication and technology shifts.
- CBC Vancouver (Broadcast History & Archives) - A look at radio/TV history in BC.
- TELUS Archives / TELUS Spark (Calgary) - Historical and emerging communication technologies.
- Retired journalists or radio hosts who can speak to how tools and formats have changed. or BC Archives specialists who curate communication artifacts.

Unit 2: Digital Literacy & Responsible Media Consumption

- MediaSmarts.ca (Canada's Centre for Digital and Media Literacy)- Offers toolkits, workshops, and classroom visits.
- UBC School of Journalism, Writing, and Media- Ethics in journalism and digital literacy research.
- Disinformation researchers from SFU's Disinformation Project
- Digital safety professionals from BC RCMP's cyber crime unit.

Unit 3: AI & Emerging Technologies in Communication

- Microsoft Vancouver (Downtown Tech Hub) -Offers talks on AI ethics, accessibility tools, and generative AI.
- Animikii Indigenous Technology (Victoria)- Indigenous-led tech company focused on AI, ethical data, and digital sovereignty.

Unit 4: Media Design & Digital Storytelling

- The Cinematheque Youth Media Program (Vancouver)- Offers student storytelling and media design workshops.
- Emily Carr University of Art + Design – Digital + Interactive Media
- Indigenous Story Studio (formerly Healthy Aboriginal Network)- Specializes in graphic novels, media campaigns, and storytelling workshops.
- Local content creators (YouTubers, animators, TikTokers) based in BC.

Unit 5: Accessibility & Inclusivity in Digital Spaces

- Neil Squire Society (Burnaby)- Experts in assistive tech and digital inclusion.
- BCIT's Centre for Applied Research and Innovation- Projects related to Inclusive Design and digital accessibility.
- Ethos Lab- programming to encourage inclusion, acceptance, and representation.
- Creators of "Access Now" app – A crowdsourced accessibility map platform.

Unit 6: Digital Collaboration & Global Connectivity

- Mozilla Foundation (remote collaboration opportunities)- Open-source advocacy, global connectivity, and ethics.
- Fridays for Future Vancouver- How students organize digitally for global action.
- Digital Public Square (Toronto-based but works across Canada)- Digital tools for civic engagement and misinformation resilience.
- Youth Climate Lab (virtual)- Explore how global youth collaborate using digital tools.

Please note that the list was created in the Spring of 2025 and may or may not be current. Please join the LinkedIn network where people may update their successful connections.

Entertainment Industry

How We Play

Table of Contents

ENTERTAINMENT INDUSTRY

The 'Entertainment Industry – How We Play' module introduces British Columbia secondary students to the evolving intersection of creativity, technology, and storytelling that defines today's entertainment landscape. This unit is designed to immerse learners in the technical and artistic processes behind the media they engage with—films, games, animations, and interactive experiences —while fostering critical thinking, ethical awareness, and cultural sensitivity.

At the core of this module is hands-on engagement with industry-standard tools and workflows used in animation, modeling, game design, and visual effects. Students will explore coding practices that drive these creative outputs using platforms such as Blender, Unity, and Unreal Engine. They will also experiment with motion capture technologies, including accessible tools like smartphone apps and DIY rigs, to understand how real-world movement is translated into digital performance.
This experiential learning supports the BC Applied Design, Skills, and Technologies (ADST) curriculum by encouraging students to explore, create, and iterate through real-world design challenges.

Students will learn about production pipelines—structured workflows that guide the development of entertainment products from concept to completion. Whether working on a short animation or an interactive prototype, students will plan, iterate, and refine their projects using collaborative, process-oriented approaches that mirror industry practices. These activities build competencies in project management, teamwork, and adaptability.

The module emphasizes the ethical and societal dimensions of media creation. Students will explore topics such as cultural appropriation, intellectual property, and digital citizenship, with a focus on respecting Indigenous knowledge and perspectives. They will also examine how emerging technologies like AI are transforming communication, collaboration, and innovation in the entertainment sector.

Through reflective tools like Gibb's Reflective Cycle and career exploration activities, students will identify their strengths, interests, and potential pathways into BC's growing creative technology sector. They will investigate roles in animation, game design, VFX, sound design, and more, connecting their learning to post-secondary opportunities and industry trends.

By integrating storytelling, cultural understanding, and technical fluency, this module prepares students to be thoughtful, innovative contributors to the evolving world of entertainment media—both locally and globally.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 1 -How We Play – Exploring the Entertainment Industry 4-5 hours	**Understand**: How reflective practice fosters personal growth, ethical awareness, and collaborative effectiveness in creative industries. How creativity and technology intersect in entertainment careers and how innovation drives new opportunities. The importance of informed decision-making and goal setting in navigating future opportunities. **Know**: Elements of reflective frameworks (e.g., Gibb's Cycle); terminology related to media production and collaboration. Post-secondary programs, certifications, and industry expectations. Career roles and pathways in digital media and communication; industry terminology. **Do**: Explore and analyze career opportunities and emerging roles shaped by technological innovation. Create and demonstrate a personalized career pathway map. Assess, adapt, and iterate on personal and group projects using structured reflection	**Activities** 1. Timeline Activity: Evolution of Entertainment Technology (1.5 hours) 2. Case Study Exploration: Technology in Film or Games (2 hours) 3. Career Pathways Gallery Walk (1.5 hours) **Assessment** **Formative**: - Peer review of timeline activity for clarity and completeness. - Rubric-based evaluation of case study analysis. - Reflective journal entry on career pathways. **Summative:** - Final project submission including timeline, case study analysis, and career pathways reflection. - Presentation of findings and reflections to the class.
Unit 2- How We Play – Tools of the Trade 8 hours	**Understand**: How coding empowers creators to build and control digital experiences. Industry-standard tools like Blender, Unity, and Unreal Engine integrate coding with visual design. The creative potential of coding in shaping immersive and expressive media. The synergy between visual design and technical implementation in media production. **Know** Coding terminology and logic; how code integrates with media tools. Principles of animation and effects; how code influences visual outcomes. Features and functions of industry-standard software. **Do**: Create and demonstrate interactive or animated media using code. Explore and analyze how tools support design and development workflows. Integrate and iterate on code to enhance digital storytelling.	**Activities** 1. Software Exploration & Demo (1 hour) 2. Guided Coding Challenge (2 hours) 3. Mini Project: Design Your Own Scene (1.5 hours) 4. Reflection & Peer Showcase (0.5 hour) **Assessment** **Formative:** Observation of student participation in coding and motion capture activities. Peer feedback on coding projects and motion capture animations. **Summative:** Rubric-based evaluation of coding projects.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 3 - How We Play – Movement and Performance with MOCAP 5 hours	**Understand:** Motion capture (mocap) is a powerful tool in both film and game development for creating realistic character movement. With accessible technology, students can experiment with mocap using smartphones and free software. Understanding mocap helps students bridge performance, animation, and technology. The interdisciplinary nature of mocap and its role in storytelling. **Know:** Mocap terminology, tools, and techniques. Affordable mocap tools and platforms. The role of mocap in the production pipeline. **Do:** Create and demonstrate character animations using mocap data. Explore and analyze DIY mocap workflows. Integrate mocap into animation projects.	**Activities** 1. Introduction to Motion Capture (1 hour) 2. DIY Mocap Demo & Practice (1.5 hours) 3. Mini Project: Animate a Character (2 hours) 4. Reflection & Group Discussion (0.5 hour) **Assessment** **Formative** Observation of student participation in motion capture activities. Peer feedback on motion capture animations. **Summative** Rubric-based evaluation of motion capture animations.
Unit 4 - How We Play – How We Plan and Collaborate 5 hours	**Understand**: How coding empowers creators to build and control digital experiences. Industry-standard tools like Blender, Unity, and Unreal Engine integrate coding with visual design. The creative potential of coding in shaping immersive and expressive media. The synergy between visual design and technical implementation in media production. **Know** Coding terminology and logic; how code integrates with media tools. Principles of animation and effects; how code influences visual outcomes. Features and functions of industry-standard software. **Do**: Create and demonstrate interactive or animated media using code. Explore and analyze how tools support design and development workflows. Integrate and iterate on code to enhance digital storytelling.	**Activities** 1. Software Exploration & Demo (1 hour) 2. Guided Coding Challenge (2 hours) 3. Mini Project: Design Your Own Scene (1.5 hours) 4. Reflection & Peer Showcase (0.5 hour) **Assessment** **Formative:** Observation of student participation in coding and motion capture activities. Peer feedback on coding projects and motion capture animations. **Summative:** Rubric-based evaluation of coding projects.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 5 - How We Play – Responsibility in Creation 5 hours	**Understand**: Media creators have a responsibility to respect cultural, legal, and ethical boundaries. Issues such as plagiarism, cultural appropriation, and intellectual property rights are central to modern media production. The impact of ethical decision-making in media production. How ethical awareness shapes respectful and responsible media creation. The role of media in shaping cultural narratives and societal values. **Know**: Copyright, moral rights, and cultural sensitivity principles. Definitions and examples of ethical and legal issues. Indigenous perspectives and inclusive design practices. **Do**: Assess and adapt projects to align with ethical standards. Analyze case studies and conduct an ethics audit. Connect and reflect on personal values and digital citizenship.	**Activities** 1. Case Study Carousel (1.5 hours) 2. Group Discussion: Cultural Appropriation vs. Appreciation (1 hour) 3. Creative Ethics Audit (1.5 hours) 4. Guest Speaker or Video Resource (1 hour) **Assessment** **Formative**: - Observation and feedback during activities. - Peer and teacher feedback on project plans and presentations. **Summative:** - Rubric-based evaluation of project plans and presentations. - Completion of reflective journal entries.
Unit 6- How We Play – Storytelling and Innovation 5 hours	**Understand:** Storytelling is at the heart of every successful entertainment product. That a compelling pitch combines narrative, visuals, and technical understanding to communicate a creative vision. Learning to pitch helps develop communication, planning, and creative thinking skills. How storytelling connects audiences and conveys meaning. **Know:** Narrative structures and storytelling techniques. Elements of a pitch (logline, visuals, audience). Presentation strategies and feedback processes. **Do** Create and demonstrate story-driven media projects. Develop and present a multimedia pitch. Practice and refine pitches through peer-led workshops	**Activities** 1. Introduction to Pitching (1 hour) 2. Story Development Workshop (1.5 hours) 3. Pitch Creation & Practice (2 hours) 4. Pitch Presentation & Reflection (0.5 hour) **Assessment** **Formative** Peer feedback on pitch drafts. Teacher observations during pitch practice. **Summative** Final pitch presentation evaluated using a rubric. Reflective journal on the pitching process.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 7 - How We Play – Looking Forward 5 hours	**Understand**: Reflective practice helps students grow as creators and collaborators. Understanding educational and professional pathways empowers students to make informed decisions about their futures. How reflection supports continuous learning and collaboration. How innovation shapes future opportunities in entertainment. **Know**: Reflective models and self-assessment tools. Career pathways and industry trends. Post-secondary options and industry expectations. **Do**: Connect and reflect on personal growth and project outcomes. Explore and analyze roles in emerging media fields. Create and demonstrate a personalized career plan.	**Activities** 1. Reflective Practice Workshop (1.5 hours) 2. Career Pathways Research (1.5 hours) 3. Pathway Mapping Activity (1 hour) 4. Group Discussion & Goal Setting (1 hour) **Assessment** **Formative** Peer feedback on pitch drafts. Teacher observations during pitch practice. **Summative** Final pitch presentation evaluated using a rubric. Reflective journal on the pitching process.

LESSON plan

DATE:

COURSE: Technology Sampler Course 11

TEACHER:

GRADE: 11 SUBJECT: Introduction to the Entertainment Industry & Emerging Technologies LESSON PLAN DURATION: 5 hours

STAGE 1-DESIRED RESULTS

Big Idea:

Change occurs in cycles that drive growth, adaptation, and innovation, reflecting the interconnected patterns of technology, society, and the environment.

- Communication: Students will effectively communicate their ideas and findings through presentations and discussions.
- Creative Thinking: Students will use creative thinking to develop innovative solutions and concepts in their projects.
- Critical Thinking: Students will analyze and evaluate the impact of emerging technologies on the entertainment industry.
- Personal and Social Responsibility: Students will reflect on the societal and environmental impacts of media technologies.

Curricular Competencies:

-Analyze the impact of emerging technologies on storytelling and production.
-Reflect on how technological shifts influence society and culture.
-Reflect on possible career pathways and educational opportunities in entertainment technology.

Content Learning Standards:

-The main technical and creative entertainment sectors in the film and interactive design industries.
-The main sectors of the entertainment industry (film, games, interactive media).
- Awareness of how and where the entertainment industry leverages the use of recent technologies.
- The use of pipelines in the development of entertainment products such as films and games.
- The roles of emerging technologies such as AI in transforming communication, collaboration, and innovation.

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

By the end of this lesson, students will understand the evolution of technology in the entertainment industry and be able to:
- Identify and describe the main sectors of the entertainment industry.
- Analyze the impact of emerging technologies on storytelling and production.
- Reflect on how technological shifts influence society and culture.
- Explore career pathways and educational opportunities in entertainment technology.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Students have successfully achieved the intended learning if they can:
- Create a complete and creative timeline of technological advancements in entertainment.
- Conduct in-depth analysis and present findings on a case study involving technology in film or games.
- Reflect on potential career interests and required skills in the entertainment industry.

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

- Peer review of timeline activity for clarity and completeness.
- Rubric-based evaluation of case study analysis.
- Reflective journal entry on career pathways.

Summative:

- Final project submission including timeline, case study analysis, and career pathways reflection.
- Presentation of findings and reflections to the class.

LESSON intro

This lesson introduces students to the dynamic intersection of creativity and technology that defines today's entertainment landscape. Students will explore the evolution of technology in the entertainment industry, analyze the impact of emerging technologies on storytelling and production, and reflect on how technological shifts influence society and culture. The lesson aims to help students envision future career pathways in entertainment technology.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

1. Timeline Activity: Evolution of Entertainment Technology (1.5 hours)
- Students create a visual timeline highlighting key technological advancements in entertainment (e.g., silent film, CGI, VR, AI).
- Include visuals and short descriptions.
- Assessment: Peer review for clarity and completeness.

2. Case Study Exploration: Technology in Film or Games (2 hours)
- Students choose a case study (e.g., Avatar, The Mandalorian, Fortnite) and analyze how technology was used in its production.
- Present findings in a short video, infographic, or slide deck.
- Assessment: Rubric-based evaluation of research depth, presentation, and analysis.

3. Career Pathways Gallery Walk (1.5 hours)
- Set up stations with profiles of professionals in the industry (e.g., VFX artist, game designer, technical director).
- Students rotate, take notes, and reflect on which roles interest them and why.
- Assessment: Reflective journal entry on potential career interests and required skills.

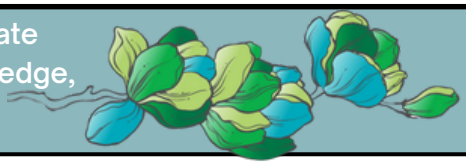
LESSON closure

Students will use Gibb's Reflective Cycle to guide a written reflection on what they learned about the industry and their own interests. As an extension activity, invite a guest speaker from the local film or game industry to discuss their career path and current projects. Students will summarize their reflections and insights in a final journal

MATERIALS / RESOURCES

- Internet access for research
- Presentation tools (Canva, PowerPoint, Google Slides)
- Sample case studies and career profiles (teacher-provided or curated from industry websites)

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

This lesson incorporates Indigenous perspectives by:
- Including discussions on the ethical use of cultural elements in media production.
- Exploring the impact of media technologies on Indigenous communities.
- Highlighting the contributions of Indigenous artists and creators in the entertainment industry.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Hands-on labs or creative builds
- Inquiry-based simulations
- Lecture with guided note-taking
- Expert talks with reflective follow-up
- Small group investigations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations
- Use Gibb's Reflective Cycle to guide a written reflection on what students learned about the industry and their own interests.
- Extension: Invite a guest speaker from the local film or game industry to discuss their career path and current projects.

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE:

COURSE: Technology Sampler Course 11

TEACHER:

GRADE: 11 SUBJECT: Coding for Animation, Modeling, and Visual Effects LESSON PLAN DURATION: 8 hours

STAGE 1-DESIRED RESULTS

Big Idea:

Building skills across in-demand technology fields fuels creative solutions.

Creative Thinking: Students will experiment with different technologies and strategies that might support their creative work.
Critical Thinking; Students evaluate whether their results and solutions make sense, and they can reflect on their thinking.

Curricular Competencies:

Explore and analyze coding in industry-standard software within the areas of animation, modeling, and visual effects and understand the main technical and creative entertainment sectors and how they use coding in film and interactive design industries. Engage with the roles of emerging technologies such as AI to understand how these technologies are transforming communication, collaboration, and innovation.

Content Learning Standards:

Coding practices in industry-standard software.
Technical and creative sectors in the entertainment industry.
AI assisted coding and their impact on work and collaboration.

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Students will understand the role of coding and AI assisted coding in animation, modeling, and visual effects.
Students will explore the technical and creative sectors of the entertainment industry.
Students will analyze the impact of coding and AI assisted coding on the entertainment industry.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Students can demonstrate coding skills or the use of AI assisted coding in animation and visual effects.

Students can analyze and discuss the impact of coding and AI assisted coding in the entertainment industry.

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

Observation of student participation in coding activities.
Peer feedback on coding projects

Summative:

Rubric-based evaluation of coding projects.

LESSON intro

This lesson focuses on introducing students to coding practices in industry-standard software used in animation, modeling, and visual effects. Students will learn to identify and use basic coding functions in software such as Blender (Python scripting) or Unity (C#), understand how code drives animation and effects, and apply coding to create a simple interactive or animated scene. The lesson aims to empower students to become creators, not just consumers.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

1. Software Exploration & Demo (1 hour)
- Teacher-led walk through of Blender or Unity interface.
- Explore the use of AI to assist coding objectives
- Demonstrate how code is used to animate or trigger effects.
- Students follow along with a basic script (e.g., rotating an object, triggering a light effect).

2. Guided Coding Challenge (2 hours)
- Students complete a scaffolded coding task with direct or AI assisted coding:
 - In Blender: Use Python to animate a bouncing ball.
 - In Unity: Use C# to create a simple interactive object (e.g., click to change color).
- Assessment: Completion of the task and ability to explain what the code does.

3. Mini Project: Design Your Own Scene (1.5 hours)
- Students design a very short animation or interactive scene using code.
- They can choose a theme (e.g., sci-fi, fantasy, nature).
- Assessment: Rubric-based evaluation on creativity, functionality, and code clarity.

4. Reflection & Peer Showcase (0.5 hour)
- Students present their scenes to peers.
- Use a reflective prompt: “What did you learn about the role of coding in entertainment?”

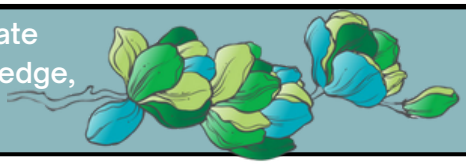
LESSON closure

Students will write a short reflection on how coding connects to roles in animation, VFX, or game design. As an extension activity, students can explore AI-assisted coding tools (e.g., GitHub Copilot) and discuss their impact on the industry. Students will summarize their reflections and insights in a final journal entry.

MATERIALS / RESOURCES

- Computers with, the free software, Blender or Unity installed
- Sample scripts and tutorials for programming and AI assisted programming (GitHub)
- Access to online documentation (e.g., Blender Python API, Unity Learn)

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Learning is holistic, reflexive, reflective, experiential, and relational.

- The hands-on creation process (modeling, animating, coding) mirrors experiential learning.
- The showcase and reflection portion encourages relational and reflective thinking.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Visual anchors: Provide illustrated guides or flowcharts showing the coding workflow in Blender or Unity (e.g., "Code → Apply → Preview").

Templates for scaffolding: Provide editable coding templates or pseudocode for students who need help with syntax but understand logic.

Gamified challenge: Turn the guided coding task into a "level-up" challenge (e.g., basic rotation = Level 1, light trigger = Level 2, full scene = Level 3).

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE:

COURSE: Technology Sampler 11

TEACHER:

GRADE: SUBJECT: Exploring Motion Capture with DIY Tools LESSON PLAN DURATION: 8 hours

STAGE 1-DESIRED RESULTS

Big Idea:

Career pathway opportunities in technology are fluid, diverse, and interconnected.

Communication: Students are communicating ideas visually through movement and animation. They interpret motion data and express meaning through digital performance, then reflect on and discuss their work with peers.

Curricular Competencies:

Explore and experiment with motion capture by employing accessible tools such as smartphone apps or DIY systems for game and film applications and understand the main technical and creative entertainment sectors in the film and interactive design industries that use motion capture.
Engage with the roles of emerging technologies such as AI to understand how these technologies are transforming communication, collaboration, and innovation.

Content Learning Standards:

Motion capture techniques and tools.
Technical and creative sectors in the entertainment industry that use mocap and how they use it.
Emerging technologies and their impact on communication and collaboration.

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Students will be able to use motion capture tools to create realistic character movements.
Students will analyze the impact of Mocap on the entertainment industry.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Students can successfully use motion capture tools to create animations.

Students can identify and describe the main sectors of the entertainment industry that use Mocap.

Students can analyze and discuss the impact and value of Mocap on the entertainment industry.

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

Observation of student participation in motion capture activities.
Peer feedback on motion capture animations.

Summative:

Rubric-based evaluation of motion capture animations.

LESSON intro

This lesson introduces students to motion capture using accessible tools like smartphone apps and DIY systems. Students will learn to explain the purpose and process of motion capture in entertainment, use smartphone-based mocap tools to record and apply motion data, and create a short-animated sequence using captured motion data. The lesson aims to help students bridge performance, animation, and technology.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

1. Introduction to Motion Capture (1 hour)
- Teacher presentation on the history and evolution of mocap in film and games.
- Show examples from productions like The Lord of the Rings, Avatar, or The Last of Us.
- Discuss the difference between optical, inertial, and video-based mocap systems.

2. DIY Mocap Demo & Practice (1.5 hours)
- Students use a smartphone app (e.g., DeepMotion or Move.ai) to record simple movements (e.g., walking, jumping, waving).
- Export motion data and import into Blender or Unity.
- Assessment: Students demonstrate a successful capture and import.

3. Mini Project: Animate a Character (2 hours)
- Students apply their mocap data to a 3D character rig in Blender or Unity.
- Create a short animation (5–10 seconds) showing the character performing a simple action.
- Assessment: Rubric-based evaluation on technical execution and creativity.

4. Reflection & Group Discussion (0.5 hour)
- Students reflect on the process: What worked? What was challenging? How could this be used in a real production?
- Discuss how mocap is evolving with AI and real-time rendering.

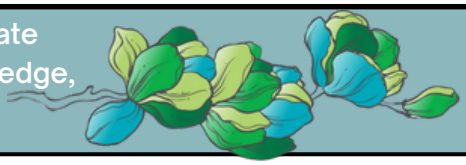
LESSON closure

Students will write a short reflection on how mocap could be used in a game or film idea they have. As an extension activity, students can explore AI-enhanced mocap tools and discuss their implications for accessibility and creativity. Students will summarize their reflections and insights in a final journal entry.

MATERIALS / RESOURCES

- Smartphones or devices with mocap apps installed
- Computers with Blender or Unity
- Sample 3D character rigs
- Internet access for tutorials and documentation

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

- Use the storytelling element of mocap as a way to discuss how movement and gesture have been central to oral traditions, ceremonies, and knowledge transmission.
- Invite reflection: "How does capturing human movement allow us to tell stories? What stories deserve to be told with care and accuracy?"
- If possible, share examples of Indigenous creators using digital media to share culture (e.g., Métis artist Amanda Strong's animated stop-motion work, or Indigenous-led games).

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Offer tiered tasks: Let students choose between a basic mocap animation (e.g., walk cycle) and a more advanced one (e.g., a short scene with emotion or multiple actions).
Use accessible formats: Ensure all tutorials are captioned and any written steps are available in multiple formats (visual flowcharts, step-by-step cards, or spoken instructions).
I**ntegrate visual rubrics** with screenshots or sample frames to show levels of quality (e.g., "motion is fluid," "character is centered," "import is successful").

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE:

COURSE: Technology Sampler Course 11

TEACHER:

GRADE: 11 SUBJECT: From Concept to Screen: Pipelines in Entertainment Production LESSON PLAN DURATION: 5 hours

STAGE 1-DESIRED RESULTS

Big Idea:

Effective process skills are key to inquiry, project design, and management.

Personal and Social: Social Responsibility
The pipeline lesson emphasizes teamwork, clear roles, and shared responsibility, all essential aspects of social responsibility in a collaborative project. It also opens the door for respectful conversations around cultural representation in media.

Curricular Competencies:

Assess and analyze pipeline use in the areas of animation, modeling, and visual effects.
Understand the role and pipelines in the entertainment industry planning and processes.
Explore motion capture by employing accessible tools such as smartphone apps or DIY systems for game and film applications.

Content Learning Standards:

The main technical and creative entertainment sectors in the film and interactive design industries.
Awareness of how and where the entertainment industry leverages the use of pipelines
The use of pipelines in the development of entertainment products such as films and games.

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Students will understand the main technical and creative entertainment sectors in the film and interactive design industries.
Students will be aware of how and where the entertainment industry makes use of pipelines.
Students will understand the use of pipelines in the development of entertainment products such as films and games.
Students will engage with the roles of emerging technologies such as AI to understand how these technologies are transforming communication, collaboration, and innovation by improving pipelines.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

- Students will demonstrate understanding by successfully completing activities and assessments related to the lesson objectives.
- Students will be able to explain the stages of a production pipeline and identify key roles and responsibilities.
- Students will create and present a project plan using pipeline thinking.
- Students will reflect on the importance of iteration and collaboration in production.

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

Observation and feedback during activities.
Peer and teacher feedback on project plans and presentations.

Summative:

Rubric-based evaluation of project plans and presentations.
Completion of reflective journal entries.

LESSON intro

Activity: Begin with a flipped classroom approach. Assign students a short video (e.g., Pixar's production pipeline or Ubisoft's game dev process) to watch before class.
In-Class Kickoff:

- Use a concept map to visually brainstorm what students learned from the video.
- Facilitate a guide

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

1. Pipeline Breakdown Presentation (1 hour)
- Teacher-led overview of a standard pipeline:
- Film: Pre-production → Production → Post-production
- Games: Concept → Design → Development → Testing → Launch
- Use visuals and real-world examples (e.g., EA Sports, Pixar, ILM, Ubisoft).
- Discuss how pipelines vary depending on the project and technology used.

2. Interactive Pipeline Mapping (1.5 hours)
- Students work in small groups to map out a pipeline for a hypothetical project (e.g., short film, mobile game).
- Include roles, tools, and deliverables at each stage.
- Assessment: Groups present their pipeline and explain their choices.

3. Mini Project Planning (2 hours)
- Students begin planning their own media product (animation, game, or VFX sequence).
- Use a simplified pipeline template to outline their process.
- Include timelines, tools, and checkpoints.
- Assessment: Submission of a project plan with clear stages and responsibilities.

4. Reflection & Peer Feedback (0.5 hour)
- Students exchange plans and provide feedback on clarity and feasibility.
- Reflect on how pipelines help manage complexity and support collaboration.

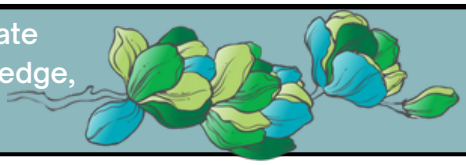
LESSON closure

Peer Review: Students exchange project plans and give feedback using a rubric.
Reflection Prompt: "How does pipeline thinking help manage creative complexity?"
Extension: Compare traditional pipelines (rendering farms) with real-time workflows (e.g., Unreal Engine).

MATERIALS / RESOURCES

- Sample pipeline diagrams (film and game)
- Project planning templates (digital or printed)
- Access to collaborative tools (e.g., MS Planner, Trello, Miro)
- Video links, whiteboard or digital concept mapping tool (e.g., Miro, Padlet)

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Learning involves recognizing the consequences of one's actions.

- The pipeline lesson includes discussions around roles, collaboration, and cultural representation in media. When students plan their projects, they must think critically about how choices in storytelling, casting, or visuals can impact others. It's a chance to address ethical responsibility—especially in a global media landscape where cultural appropriation or misrepresentation can have real consequences.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

- Use visuals, analogies, and storytelling to explain pipelines. Compare them to a school project workflow, a relay race, or building a house—something familiar.
- Create a visual anchor chart showing the pipeline stages and key roles, accessible throughout the lesson.
- Pre-load key vocabulary with images and examples (e.g., rigging, rendering, QA).
- Offer graphic organizers for pipeline planning and group work.
- Allow multiple modes of presentation: a visual diagram, a narrated video walkthrough, a written report, or a digital board.

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

RESOURCE LINKS

Unit 1: Exploring the Entertainment Industry
Reel Opportunities: Career profiles and videos for over 100 roles in Canadian film and TV.
WorkBC Career Profiles: Explore job outlooks, salaries, and required skills in BC's creative tech sector.
NFB Interactive: Analyze Canadian interactive storytelling projects.
MediaSmarts: Careers in Media: Career exploration activities with a focus on media literacy and ethics.

Unit 2: Tools of the Trade (Coding & Software)
Unity Learn Pathways: Structured learning paths for game development, animation, and interactive storytelling.
Blender AI tools: how blender uses AI for texturing and coding many functions with Python
Beginner Blender: Official YouTube playlist for mastering Blender basics and beyond.
Canada Learning Code: Teens: Coding tutorials and challenges tailored for high school students.
GitHub Copilot for Students: Access AI-assisted coding tools and GitHub repositories for creative coding.

Unit 3: Movement and Performance with Mocap
DeepMotion Animate 3D: Upload video and generate mocap data; includes export to Blender/Unity.
Mixamo: Free 3D character rigging and animation library for use in Blender and Unity. ()
Rokoko Video: Free browser-based mocap tool with tutorials for animation pipelines. ()
YouTube: Blender Mocap Workflow: Advanced community tutorials for importing and refining mocap data.

Unit 4: Planning and Collaboration (Pipelines)
Pixar in a Box – Production Pipeline: Learn how professional animation studios structure their workflows.
Trello: Use for project planning, assigning roles, and tracking production stages.
Miro: Visual collaboration tool for mapping out production pipelines and creative workflows.
Unity DevOps Tutorials: Understand how teams manage assets, code, and collaboration in real-time production.

Unit 5: Responsibility in Creation (Ethics, Copyright, and Culture)
MediaSmarts: Intellectual Property: Canadian-focused lessons on copyright, remix culture, and fair use.
CIPO Youth Portal: Learn how to protect your creative work in Canada.
Indigenous Screen Office: Guidelines for respectful collaboration and representation in media.

Unit 6: Storytelling and Innovation
Storyhive Creator Toolkit: Support for student storytellers and film creators.
Storyboarder by Wonder Unit: Free tool for creating professional storyboards.
Pixar Storytelling – Khan Academy: Learn narrative structure and visual storytelling techniques.
NSI Storytelling Resources: Free guides on writing, pitching, and producing media content.

Unit 7: Looking Forward (Careers & Reflection)
MyBlueprint: Career and education planning platform used in BC schools.
CareerWise by CERIC: Articles and tools for career development and reflection.
Gibb's Reflective Cycle: Step-by-step guide for structured reflection. ()
LinkedIn Career Explorer: Discover emerging roles in media and tech based on your interests and skills.

INDUSTRY CONNECTIONS

People or organizations that may offer support

Post Secondary:
Vancouver Film School - VFS
Think Tank – Think Tank
Capilano university – BOSA
SIAT (SFU) - SIAT
Van Arts – Van Arts
Emily Carr University of Art + Design - Emily Carr

Game:
EA Sports - Electronic Arts
Relic - Relic Entertainment
Treyarch - Treyarch

VFx:
Industrial Light and Magic – Home | Industrial Light & Magic
DNEG - DNEG
Sony Pictures Imageworks- Sony Pictures Imageworks
Scanline VFx - Scanline VFX
Method Studios - Method Studios
Zoic - Z O I C

Animation:
Atomic Cartoons - Atomic Cartoons Inc
Bardel - Atomic Cartoons Inc
Cinesite - Cinesite

Please note that the list was created in the Spring of 2025 and may or may not be current. Please join the LinkedIn network where people may update their successful connections.

Hardware & Software

How We Compute & Innovate

Table of Contents

HARDWARE & SOFTWARE

This module introduces students to the evolving world of high-tech systems and the essential interplay between hardware and software. Through real-world examples and critical inquiry, students will examine how robotics, AI, autonomous vehicles, and quantum computing are integrated with cloud platforms and cybersecurity to power modern innovations. They will explore how different components, such as sensors, processors, and software, work together to enable functionality and adaptability.

A strong emphasis is placed on the structure of IT systems and the growing importance of cybersecurity and data protection. Students will simulate system designs and explore best practices in encryption, secure access, and cloud storage. The environmental impact of high-tech infrastructure is also explored, with attention to energy use, green technologies, and sustainable innovations in computing.

The module also investigates ethical and social concerns, including algorithmic bias, privacy, and access to technology. Students will use real case studies to reflect on how these issues affect individuals and society at large. Indigenous perspectives are woven throughout, offering insight into sustainable design, land stewardship, and community-centered innovation.

By the end of the module, students will have a solid foundation in digital systems and a deeper understanding of the social, environmental, and ethical considerations that accompany them. They will also gain exposure to emerging career paths in engineering, cybersecurity, and technology development, preparing them to navigate and contribute to an increasingly digital world.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 1: High-Tech Hardware and Software Systems 10 Hours	**Understand**: • How software controls and communicates with hardware components. • The function of integrated systems (e.g., robotics, AI-driven tools). • The significance of design thinking in system development. **Do:** • Analyze how modern tech systems (e.g., drones, smart devices) are built. • Deconstruct a device or system into hardware and software layers. • Compare emerging technologies like quantum vs classical computing. **Know**: • Definitions of key terms: actuator, sensor, controller, OS. • Examples of high-tech systems used in society. • Roles in system engineering and robotics careers.	1.**System Deconstruction Lab – What's Inside My Device?** • Activity: Students disassemble a common device (e.g., keyboard, smartphone) and identify key hardware components and how they interact with embedded software. • Assessment: Submit a labelled diagram and written explanation of the hardware-software relationship. 2. **Technology Timeline Project – Mapping the Tech Evolution** • Activity: Students create a visual timeline highlighting major hardware and software milestones from the 1950s to today. • Assessment: Present a poster or slideshow showcasing at least 8 key developments with short explanations of their significance. 3. **AI System Concept Map – Connecting the Parts** • Activity: Students research how an AI-powered system (e.g., smart home device) works and build a concept map showing the roles of sensors, processors, and software. • Assessment: Submit a digital or hand-drawn map and a reflection on the system's functions.
Unit 2: IT Systems, Cybersecurity, and Cloud Storage 8 Hours	**Understand:** • Why cybersecurity and cloud architecture are essential in digital spaces. • The risks of data breaches and insecure systems. • The value of responsible data handling. **Do:** • Simulate a cloud-based login with two-factor authentication. • Evaluate IT platforms for strengths/weaknesses in security. • Analyze real cyberattacks for causes and solutions. **Know:** • Encryption basics, cloud computing concepts, security protocols. • Roles like cybersecurity analyst, ethical hacker. • Case examples of breaches (e.g., Equifax).	1.**Password Challenge – Build a Better Login** • Activity: Students create strong passwords and test them using security tools. Then, they create an infographic of dos and don'ts. • Assessment: Submit the infographic and a written explanation of their security logic. 2.**Cyberattack Case Study – When It All Went Wrong** • Activity: Students investigate a real data breach (e.g., Equifax, Target) and analyze causes, response, and outcomes. • Assessment: Write a one-page report or record a video explaining what was learned and how it could've been prevented. 3.**Cloud Access System Design – Blueprint of Security** • Activity: Students design a secure user login system using paper or digital prototyping tools. • Assessment: Submit annotated mockups and a short paragraph explaining how their system keeps data safe.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 3: Energy Usage and Sustainability 8 Hours	**Understand:** • The carbon footprint of digital tech (servers, mining, production). • Importance of energy-efficient computing. • Lifecycle of hardware devices. **Do:** • Compare energy usage in different data systems. • Propose a green upgrade to a school tech lab. • Debate energy trade-offs of high-demand tech like crypto mining. **Know**: • What defines a green data center. • Role of tech in climate solutions (e.g., smart grids). • Environmental certifications and innovations (e.g., LEED).	1.C**arbon Footprint Calculator – Tech Impact Audit** • Activity: Students use an online calculator or spreadsheet to estimate the carbon footprint of a personal or school device. • Assessment: Submit the results and a one-paragraph reflection on sustainability strategies. 2. **Green Tech Redesign – Reimagine a Low-Energy System** • Activity: Students redesign a common classroom tech setup to be more eco-friendly. • Assessment: Present a poster or slide deck proposing improvements and rationale. 3.**Sustainable Company Profile – Who's Leading the Way?** • Activity: Students research a tech company with green initiatives (e.g., Apple, HP, Google). • Assessment: Create a short presentation or video summarizing the company's efforts and their effectiveness.
Unit 4: Ethics and Social Responsibility 8 Hours	**Understand**: • How bias and inequity can be embedded in algorithms. • The role of social values in designing tech tools. • Ethical concerns related to surveillance and data tracking. **Do**: • Role-play a tech ethics debate. • Write a response to a controversial technology issue. • Design a socially responsible app concept. **Know**: • Definitions: algorithmic bias, facial recognition, digital equity. • Examples of ethical dilemmas in the tech world. • Career roles in policy, UX, or ethical design.	1.**Ethics Debate – Should AI Make Hiring Decisions?** • Activity: Students prepare arguments and participate in a structured debate about AI in recruitment. • Assessment: Submit debate prep notes and a final reflection on the opposing arguments. 2.**Algorithm Bias Exploration – What Does the Algorithm Show You?** • Activity: Students test a search engine or recommendation algorithm and reflect on patterns in results. • Assessment: Write a short reflection on bias, personalization, and ethical concerns. 3.**Design Challenge – Build an Ethical App** • Activity: Students sketch or prototype an app designed with accessibility, privacy, and social impact in mind. • Assessment: Present app features in a digital slide or drawing with a short rationale.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 5: Indigenous Perspectives on Technology and Sustainability 6 Hours	**Understand**: • Indigenous worldviews on land, community, and balance. • How tech can align with stewardship values. • The relevance of storytelling and relational thinking in design. **Do**: • Research a community-led energy initiative. • Create a StoryMap connecting tech and stewardship. • Reflect on how Indigenous principles can guide ethical design. **Know**: • Indigenous-led innovations in energy and communication. • Concepts such as intergenerational responsibility. • Regional examples from local nations.	1.**Guest Speaker Reflection – Voices of Indigenous Innovation** • Activity: Students listen to an Indigenous speaker (in person or recorded) discussing tech and sustainability. • Assessment: Submit a reflection highlighting key takeaways and how Indigenous values shaped the work. 2. **Community Lens Map – Seeing a Local Project Differently** • Activity: Students map the impacts of a local tech project (e.g., solar panel installation) from ecological, social, and cultural perspectives. • Assessment: Submit the map and a reflection on how Indigenous values might guide decision-making. 3. **Design Sketch – Inspired by Traditional Knowledge** • Activity: Students brainstorm and sketch a tech tool inspired by Indigenous knowledge or sustainability practices. • Assessment: Submit annotated sketches and an explanation of how it reflects community values.

LESSON plan

DATE:

COURSE: Career Pathways: Technology Sampler 11

TEACHER:

GRADE: SUBJECT: Exploring the relationship between hardware and software in modern tech devices LESSON PLAN DURATION: 130 minutes, 2 classes

STAGE 1-DESIRED RESULTS

Big Idea:
Effective process skills are key to inquiry, project design and management

Communication: Share findings clearly using appropriate vocabulary
Thinking: Apply logic to break down complex systems
Personal and Social: Develop collaborative skills and responsibility for shared materials

Curricular Competencies:

Examine how high tech systems create innovative solutions for everyday problems.
Investigate the role of advanced hardware in promoting sustainability and supporting green technologies.

Content Learning Standards:

Basic architecture and function of hardware and software systems
Relationship between input/output devices and processing units
Applications of design thinking in creating technological solutions

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Identify the key hardware and software components of a digital device
Analyze how the device functions through the interaction of its components
Communicate how hardware and software work together to fulfill a task

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Name and describe at least three key hardware components in the device
Explain how software controls or responds to hardware input/output
Communicate my understanding through a labeled diagram and oral explanation
Work respectfully and collaboratively with group members

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

Observation of group collaboration and discussions
Exit slip: One thing I learned about hardware/software today
Peer-to-peer explanation check (paired review of diagrams)

Summative:

Labeled system diagram of deconstructed device
Short reflection paragraph connecting components to function
Optional oral walkthrough or video recording of system explanation

LESSON intro

Hook/Intro (10–15 min)
Begin by showing the YouTube video: "Do you know what's actually inside your phone?" (Duration: ~6 mins)
Ask: "What surprised you most? How many parts can you name in your own phone or device?"
Discuss how tech feels invisible—until you open it up.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Part 1: Device Disassembly and Exploration (35–40 minutes)
Begin by reviewing safety protocols for device disassembly (e.g., no powered devices, wear gloves if needed, be cautious of sharp edges).
Divide students into small groups (3–4 per group) and assign or allow them to select a device (e.g., old keyboard, mouse, remote, small printer, smartphone).
Distribute a Device Disassembly Worksheet that includes the following sections:

- Sketch of internal components and labels for visible parts (processor, sensor, buttons, etc.)
- Function column: "What do you think this part does?"
- Software connection: "What app or software might control or receive data from this?"

Circulate to ask guiding questions: "Where does the input come from?" "How do these parts communicate?"

Part 2: System Diagram & Analysis (45 minutes)
Groups use their findings to build a labeled system diagram of the device (digitally in Google Slides or Canva, or drawn on large paper). Must include at least 5 hardware components, arrows showing flow of data or commands, and an example of software interaction (e.g., button triggers sound file).
Prompt: "How does the user input travel through the device? What hardware components are involved before a response is triggered?"

Part 3: Mini-Presentations & Peer Review (20 minutes)
Each group presents a 2–3 minute walkthrough of their diagram and reflection, answering:

- What is this device? How does software interact with this hardware to create a response?

Classmates fill in a simple Peer Feedback Slip with: One strength of the explanation and one follow-up question they have.

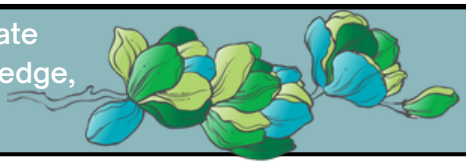
LESSON closure

Lesson Closure (10–15 minutes):
Individual exit reflection: "What component was most interesting to you and why?"
Preview: Next class will examine design trade-offs and system improvements (upgrades, sustainability, accessibility)

MATERIALS / RESOURCES

- Access to computers or tablets
- Internet access for research and diagram design
- Projector for hook video and slides
- Old electronic devices (safe for disassembly – pre-checked by teacher)
- Disassembly tools (small screwdrivers, pliers, etc.)
- Printed or digital worksheets for part observation and labeling
- Optional: magnifying glasses, gloves for handling sharp edges

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

As students deconstruct devices, the class will discuss the origins of raw materials (e.g., rare earth metals in batteries), labor conditions in manufacturing, and the environmental impact of technological waste. This introduces stewardship values, reinforcing the idea that technology should be designed and used responsibly, in line with the First Peoples Principle of sustainability and respect for the land.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

Engagement:

- Hands-on disassembly activity
- Cooperative small group work
- Student choice in device and presentation method

Representation:

- Video demonstration of internal components
- Teacher modeling with sample device
- Worksheet scaffolds and part glossary

Action & Expression:

- Labeled system diagrams (paper or digital)
- Optional oral presentation or short video explanation
- Written reflection for closure

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE:

COURSE:

TEACHER:

GRADE: SUBJECT: Unit 2 – IT Systems, Cybersecurity, and Cloud Storage LESSON PLAN DURATION: 150 minutes, 2 classes

STAGE 1-DESIRED RESULTS

Big Idea:

Building skills across in-demand technology fields fuels creative solutions.

Communication: Articulate ideas and information effectively using appropriate digital tools.
Critical Thinking: Analyze and evaluate information to make reasoned judgments.
Personal Awareness and Responsibility: Demonstrate responsibility in digital environments.

Curricular Competencies:

Evaluate the transformative impact of AI and automation on industries.
Reflect on the impact of hardware and software systems in daily life.

Content Learning Standards:

Understand the importance of cybersecurity in digital systems.
Recognize strategies for protecting personal information.
Identify components of secure login systems, including multi-factor authentication.

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Students will be assessed on their ability to:
Understand the components that make up a secure login system.
Design a prototype of a secure login interface incorporating best practices in cybersecurity.
Evaluate the effectiveness of my design based on predefined criteria.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Design includes at least two layers of authentication.
Design addresses user privacy and data protection.
Prototype is clearly presented with annotations explaining each feature.
Reflection demonstrates understanding of cybersecurity principles.

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

Observation of group discussions and brainstorming sessions.
Feedback on initial design sketches.

Summative:

Final prototype of the secure login system.
Written reflection evaluating the design against success criteria.

LESSON intro

Hook/Intro (10–15 min)
Begin by showing the YouTube video "What is Multi-Factor Authentication (MFA)?"
Discussion: Facilitate a class discussion on the importance of secure login systems and common vulnerabilities.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Lesson Structure (Expanded – 120 minutes over 2 class periods):
Part 1 – Introduction to Cybersecurity and Authentication (30 minutes)
Facilitate a class discussion about where students encounter secure login systems in daily life (e.g., school accounts, social media, banking).
Use a short slide presentation to introduce key terms: password strength, biometrics, 2FA, encryption.
Students complete a quick collaborative Jamboard or Padlet brainstorming session: "What makes a login system secure?"
Part 2 – Research and Case Studies (30 minutes)
In pairs, students choose a real-life security breach to investigate (e.g., Equifax, Yahoo, Facebook).
Provide a case study worksheet guiding their research (questions include: What caused the breach? How could it have been prevented? What were the consequences?).
Pairs share key takeaways with another group in a quick 3-minute peer discussion round.
Part 3 – Login System Design Challenge (45 minutes)
Students are given a fictional app scenario (e.g., a health-tracking app or school portal).
In pairs, they brainstorm and sketch a secure login system, including two layers of protection and explaining the rationale behind each feature.
Use either paper-based templates or a simple digital design tool (e.g., Canva, Figma, or Google Slides).
Part 4 – Peer Review and Self-Reflection (15 minutes)
Students swap their designs with another pair and complete a peer feedback checklist based on the success criteria.
Individually, students complete a short reflection:

- "What did I learn about creating secure systems?"
- "How did our design protect user data?"

LESSON closure

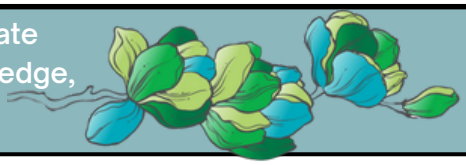
Lesson Closure (15 minutes):
Students write a reflection addressing:

- What did you learn about designing secure systems?
- How does your design protect user data?
- What would you improve in your design?

MATERIALS / RESOURCES

- Access to computers or tablets
- Internet access for guided research and digital design tools (e.g., Canva, Google Slides, Figma)
- Projector for showing instructional slides and hook video
- Printed or digital worksheets for:
- Case study analysis
- Peer feedback checklist
- Student self-reflection
- Chart paper and markers for brainstorming or group presentations

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Emphasize the principle that "learning involves recognizing the consequences of one's actions."
Discuss the importance of trust and responsibility in digital spaces, relating to community well-being.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

Engagement:

- Cooperative group and partner work during research and design challenge
- Brainstorming on digital whiteboards (Padlet/Jamboard)
- Peer feedback and collaborative critique
- Choice in login system scenario or app focus

Representation:

- Slide deck with visuals and definitions of key cybersecurity terms
- Hook video on multi-factor authentication
- Case study articles presented in accessible language or summary format
- Teacher mini-lecture paired with visual examples of login systems

Action & Expression:

- Students choose between paper-based or digital design tools for prototype
- Peer feedback forms provide scaffolded support
- Reflection journaling after design review
- Optional oral explanation or short video walkthrough of final design

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE:

COURSE:

TEACHER:

GRADE: SUBJECT: Unit 5 – Indigenous Perspectives on Technology and Sustainability LESSON PLAN DURATION: 75 minutes

STAGE 1-DESIRED RESULTS

Big Idea:

Change occurs in cycles that drive growth, adaptation, and innovation, reflecting the interconnected patterns of technology, society and the environment.

Communication: Express understanding through reflective discussion and digital storytelling.
Thinking: Analyze how sustainability and innovation intersect using Indigenous knowledge systems.
Personal & Social: Develop awareness of ethical, cultural, and community-centered approaches to technology.

Curricular Competencies:

Investigate the role of advanced hardware in promoting sustainability and supporting green technologies.
Incorporate Indigenous perspectives into project designs, emphasizing respect for natural resources and long-term environmental health.

Content Learning Standards:

Indigenous knowledge systems: community-based solutions, sustainability, and ethical land use
Examples of Indigenous-led tech innovations (energy, communication, mapping, etc.)
Stewardship, intergenerational responsibility, and respectful integration of traditional knowledge

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

Explore how Indigenous communities use technology in ways that align with cultural values.
Assess how principles like reciprocity and sustainability can influence design thinking.
Reflect on how my views about innovation and responsibility are shaped by new perspectives.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Describe a real example of Indigenous-led technology or sustainable innovation.
Explain how this project reflects values of stewardship, community, or long-term planning.
Reflect thoughtfully on how Indigenous perspectives offer alternatives to mainstream tech development.
Communicate my understanding through collaborative discussion and a digital or visual format.

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

Participation in small group discussion
Completion of case study reflection notes
Contribution to class brainstorm

Summative:

Creation of a visual or digital "tech values map" that illustrates how Indigenous principles influence sustainable design
Reflective paragraph on how this learning affects their understanding of innovation and responsibility

LESSON intro

Hook/Intro (10 minutes)
Begin with APTN News, CBC Indigenous short, or "Sacred Earth Solar" video channel]
Prompt discussion:

- "What stood out to you in the video?"
- "How is this different from what you typically see in tech news?"

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Lesson Structure (50 minutes)
Part 1: Mini-Exploration – Indigenous Tech Profiles (20 minutes)
Students work in pairs or small groups to review short case study profiles (print or digital), such as:

- Sacred Earth Solar (solar energy in First Nations)
- Indigenous Mapping Workshop
- Traditional knowledge apps (e.g., language, harvesting, navigation)

Students complete a Reflection Notes Worksheet, focusing on:

- What the tech innovation is? / What values or principles it reflects? / Who benefits and how?

Part 2: Value Mapping – Indigenous Worldviews and Design Thinking (15 minutes)
Class builds a shared list on chart paper or Padlet:
"What values are embedded in these innovations?" (e.g., community care, long-term planning, stewardship, accessibility)
Students then create a "Tech Values Map" that shows how an innovation is rooted in Indigenous values (visually or digitally)
Part 3: Individual Reflection (15 minutes)
Students respond to the following prompts in a paragraph or audio recording:

- "How did this learning shift your understanding of what innovation means?"
- "What values would you want to include in any technology you design or use?"

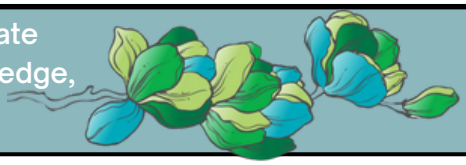
LESSON closure

Closure (5 minutes)
Invite 2–3 volunteers to share one takeaway or value that resonated with them.
Wrap with a reflection: "What can mainstream tech industries learn from Indigenous-led innovation?"

MATERIALS / RESOURCES

- Access to computers or tablets
- Internet access for guided research
- Projector for video viewing and slides
- Printed or digital worksheets for reflection notes
- Chart paper and markers for value mapping
- Printed articles or profiles of Indigenous tech innovators

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Understand how Indigenous communities use technology in ways that care for the environment and support community needs.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

Engagement:

- Cooperative group research
- Movement-based brainstorming (e.g., "values wall")
- Choice in format of final reflection (digital, written, visual)

Representation:

- Short video explaining Indigenous innovation
- Infographics and real-world case studies
- Teacher slide deck with examples and discussion prompts

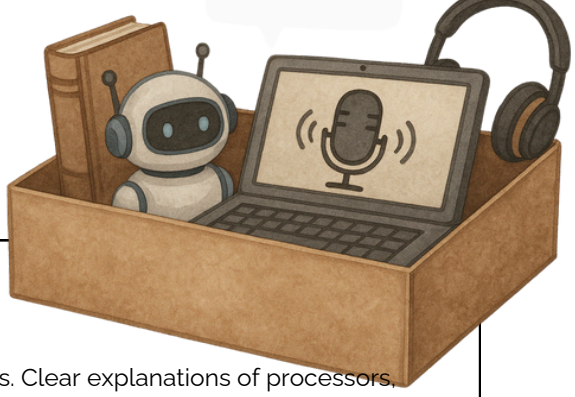
Action & Expression:

- Tech values map (drawing, slideshow, infographic)
- Reflective writing or audio response
- Group discussion and peer feedback

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

RESOURCE LINKS



Unit 1: High-Tech Hardware and Software Systems
How Computers Work (YouTube, by Code.org)
Engaging video series that breaks down hardware and software basics for beginners. Clear explanations of processors, memory, and software layers. Features some famous coders, such as Bill Gates
TinkerCAD Circuits
Free online simulator where students can build and test basic circuits, helping visualize how hardware components interact.
Computers and the Internet (Khan Academy)
Videos and activities explaining how computers and the internet run, offering context for real-world integration.

Unit 2: IT Systems, Cybersecurity, and Cloud Storage
Cybersecurity Lab (PBS LearningMedia Game)
Interactive game that simulates hacking scenarios and helps students learn password protection, phishing threats, and secure communication.
Google's Interland – Be Internet Awesome
Kid-friendly but conceptually useful interactive tool for learning digital citizenship and basic online safety.
CrashCourse: Computer Science – Cybersecurity
Concise and well-produced video that explains cyberattacks, encryption, and firewalls.

Unit 3: Energy Usage and Sustainability
How Green is Our Data? (Interactive from BBC)
How Green is AI? (BBC Podcast)
Podcast and article about the toll our data collection and AI usage take on the environment. Encourages critical thinking about tech use.
Google's Data Center Tour
Virtual tour that shows how one of the largest companies runs efficient, sustainable cloud services.
Green Tech Podcast Series – Wood Mackenzie, formally GreenTechMedia
Audio clips and articles exploring how the tech industry is responding to climate challenges.

Unit 4: Ethics and Social Responsibility
The Social Dilemma (Netflix or trailer on YouTube)
Powerful documentary that explores the ethical issues in digital design and social media algorithms. Great conversation starter.
Common Sense Media – Digital Citizenship Curriculum
Includes lesson plans, videos, and activities related to online ethics, digital well-being, and equity.
AI Bias Explained - Gender Shades (MIT Media Lab Video)
Short video explaining bias in facial recognition and algorithmic systems.

Unit 5: Indigenous Perspectives on Technology and Sustainability
Sacred Earth Solar - YouTube Video Channel
Profiles Indigenous-led solar projects and the values behind them. Highlights community innovation and land stewardship.
Indigenous Mapping Collective
Features digital mapping tools used by Indigenous communities to preserve culture, assert land rights, and drive innovation.
Indigenous Clean Energy (ICE) Social Enterprise
Real-world examples of how Indigenous communities lead in renewable energy, tech training, and sustainability practices.

INDUSTRY CONNECTIONS

People or organizations that **may** offer support

Unit 1: Hardware & Emerging Tech
BC Tech Association
Vancouver-based industry group that supports tech growth and education. Offers school partnerships, speaker events, and curriculum-aligned outreach programs.
Mechatronics Systems Engineering Department.- Simon Fraser University
Offers school outreach and engineering student mentors who can help with robotics, AI systems, and sustainable hardware design.
MistyWest - Vancouver Office
A hardware engineering and industrial design firm focused on sustainability and innovation. Known to support STEM outreach and education partnerships.

Unit 2: Cybersecurity & IT Systems
Fortinet Canada - Burnaby Headquarters
A global cybersecurity leader with its Canadian operations in Burnaby. Offers cybersecurity education programs and school engagement initiatives.
Palo Alto Networks – Cyber A.C.E.S. Program
A free high school-level program teaching students the basics of cybersecurity, risk, and digital safety. Can be offered virtually.

Unit 3: Green Tech & Sustainability
Power Smart for Schools - BC Hydro
Offers energy conservation kits, digital literacy resources, and workshops for students learning about green tech and smart infrastructure.
CleanTech Alliance - Pacific Northwest (Seattle Based)
Based in Washington State, connects schools with clean energy innovators, start-up leaders, and industry professionals.

Unit 4: Ethics, Equity, and Digital Citizenship
Internet Health & Ethics - Mozilla Foundation
Global leader in responsible technology and open web. Offers digital equity research, toolkits, and potential mentorship opportunities.

Unit 5: Indigenous Innovation & Technology
First Nations Technology Council - BC
Supports digital skills and tech capacity building in Indigenous communities. Excellent connection for guest speakers, curriculum enrichment, and mentorship.
Animikii Indigenous Technology - Victoria, BC
Social enterprise developing websites and tools for Indigenous organizations. May offer virtual visits or speak to Indigenous perspectives in ethical tech design.

Please note that the list was created in the Spring of 2025 and may or may not be current. Please join the LinkedIn network where people may update their successful connections.

Connect BC

How We Live

Table of Contents

CONNECT BC

CONNECT BC- How We Live is designed to explore core systems and technologies that have developed our communities and connections. It will cover the following six units: Transport, Design, Construction, Natural Resource Management and Mitigation (NRMM), Urban Planning, and Energy Systems.

Within each unit, students will explore Indigenous Perspectives and land stewardship principles, sustainability and environmental impact, and ethical considerations. The incorporation of automation and Smart technologies within existing and new projects will be discussed and give students opportunity to debate, research, and innovate.

Students will explore levels of human community (provincial, regional, municipal, neighborhood, and home) and the infrastructure required to support each one. Rural VS urban community needs are compared and contrasted to broaden student perspectives on BC's communities. The benefits and drawbacks of a variety of energy production technologies will be compared, alongside their resiliency against external pressures or system requirements.

Across all modules, students will be asked to critically examine the intersections of core systems (energy, transport, construction, etc.) and how high level, big picture understanding can result in better overall outcomes. In this vein, students will also examine lifecycles of technologies and the sum total effects of each. They will critically engage with current practices and propose solutions to address identified shortcomings. To support their own projects, students will learn principles of project management, the engineering design cycle, and relevant technologies. Universal centered design, accessibility, and iterative solutions will all be incorporated into their projects.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 1: Technology in Transport (5 hours)	**Understand:** There are many methods of transport within BC (highway, air, water, train, etc) and the stability of the supply chain relies on their interconnection. Technology can improve or enhance existing systems to be more sustainable and efficient. Mobility as a service can connect people and communities. **Do:** Examine the use of autonomous VS human-controlled vehicles. Map out the BC supply chain to understand how communities are connected and supplied. Examine ease of mobility for citizens in different communities. **Know:** Key terms: Supply chain, functional design, route assignment, intelligent transport systems, mobility as a service	1. **Coding a robot vehicle** a. **Activity:** Using Arduinos, servo motors, or other robotics components, program a small vehicle to complete a given task in a supply chain b. **Assessment:** An autonomous robot that completes a specific task (i.e., moves material from one place to another, operates a small crane, crosses a body of water, etc.) 2. **Mapping BC: how are communities connected?** a. **Activity**: Choose 1 rural and 1 urban community. Compare methods of transport to and within each community. Consider the sustainability and durability of the existing systems. b. **Assessment**: A brief written or visual explainer comparing urban and rural communities, as well as possible suggestions or new technologies that would make the community more resilient. 3. **Mobility as a service.** a. **Activity**: Investigate mobility services (rideshare, micromobility, autonomous vehicles, etc.) and the use of technology within it b. **Assessment**: A case study of the use, pros, and cons of a specific mobility service. How has this service utilized technology/software/innovation to succeed?
Unit 2: Technology in Design (5 hours)	**Understand:** Technology has improved our ability to make long-lasting, sustainable structures. Technology allows for improved collaboration and enhanced design workflows. Computer simulation allows designers to analyze and optimize the performance of buildings before they are constructed. How natural systems and features can inspire the design of systems and products that solve human problems. **Do:** Explore building performance simulation tools. Investigate biomimicry and how "asking nature" can inspire innovation in building and infrastructure design. **Know:** Key words: biomimicry, smart technology, embodied carbon, data driven design, Human Centered Design, digital twins	1. **Multigenerational thinking for building** a. **Activity:** In groups, map the lifecycle of a material (origin, years of use, disposal, recyclability, etc.). Suggest ways to make this more sustainable, and how to use technology to improve the system. b. **Assessment**: Create a poster to show the existing lifecycle of the material, as well as suggested changes or improvements. 2. **Building Performance Optimization** a. **Activity:** Students research building performance simulation tools, e.g. daylight-analysis software, energy modelling, thermal comfort analysis, computational fluid dynamics, and acoustic modelling. Students then choose one real-world design challenge (e.g. balancing material costs with thermal comfort) and explain how the selected tool could be applied to address that challenge. b. **Assessment**: Submit a summary presentation that describes the chosen design challenge, lists at least two modelling tools and their specific roles, and explains how they can inform design decisions. 7 3. **Drawing Inspiration from Nature** a) **Activity**: Students explore the concept of biomimicry and examine how nature can be used as a source of inspiration for design and technological innovation. b) **Assessment**: Create a short presentation highlighting how lessons from a natural system can be used to inform building design.

MODULE PLANNER

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 3: Technology in Construction (5 hours)	**Understand:** How technology has shaped the evolution of construction practices over the course of human history. How emerging technologies support more efficient and affordable home building. **Do:** Compare natural and synthetic materials for different aspects of construction (including Indigenous building practice and materials). Compare traditional "stick frame" and/or "site-built" structures with prefabricated and/or off-site construction. Analyze new technologies in construction and design and what innovations have resulted from them. Explore Smart Home technology and its ethical implications for both individual buildings and cities **Know:** Current and emerging trends in construction. 3D printed structures, prefabrication, mass-timber, and modular structures.	1. **3D Printing in construction** a. **Activity:** Investigate the usage of 3D printing (should we call it "additive manufacturing"?)techniques in modern buildings. b. **Assessment:** Write a short proposal for either 1) an innovative use of an existing 3D printing software or 2) suggest a new material that could be 3D printed to improve buildings 2. **Evolution of Construction** a. **Activity:** Research traditional building methods and evaluate relevant qualities (tensile strength, insulation abilities, water resistance, etc.) What would it take to recreate those qualities synthetically? How do the two processes compare in their impact? b. **Assessment:** Create a visual model (diorama, poster, slides, etc) that highlight innovative approaches. 3. **Digital Twins (DT) and Building Information Modelling (BIM)** a. **Activity:** Explore digital systems used in planning renovations to or construction of structures. Consider other systems that would benefit from similar technologies b. **Assessment:** A reflection paragraph of how DTs or BIM would benefit another system (infrastructure, products, large cities, complexes, etc.)
Unit 4: Natural Resource Management and Mitigation (NRMM) (5 hours)	**Understand:** BC has a wide variety of natural resources that support our communities and economy. When managed correctly, natural resources are renewable and sustainable options for building, energy, and more. Indigenous communities have long been land stewards of BC's landscape. Natural disasters can sometimes be mitigated by effective planning. **Do:** Analyze the use of robotics and autonomous machines in natural resource industries. Compare industry centric resource management to traditional land stewardship. Discuss natural disasters in BC and investigate how we can monitor and mitigate using technology **Know:** Key words: natural resource, conservation, land stewardship, traditional ways of knowing, biodiversity, autonomous machines, natural disaster	1. **Day (or week) in the life: resource review** a. **Activity**: students review an average day in their life and note which resources they use at different times. Include suggestions of what could be possibly more sustainable via technology in this summary b. **Assessment**: a weekly summary of their consumption of different resources and notes for improvement or change 2. **Natural disaster case study** a. **Activity:** students work in small groups to conduct a case study on a natural disaster in BC. They will suggest how technology could be used to mitigate or prevent this event repeating b. **Assessment:** a short presentation sharing their research and proposed solutions 3. **Drawing Inspiration from Traditional Knowledge** a. **Activity**: Students research traditional ecological knowledge and key principles of Indigenous land stewardship (holism, reciprocity, seasonal cycles), then explore how integrating technologies (e.g., remote sensing, IoT sensors, AI modeling) can enhance sustainable management of a selected resource. b. **Assessment**: create a poster that links an Indigenous stewardship principle with a modern technology and presents a strategy for a addressing a resource management challenge.

The course framework contains the detailed Curricular Competencies, Contents and Elaborations.

UNIT + TIMEFRAME	BIG IDEA(S) Theme(s)	STARTER ACTIVITIES AND ASSESSMENT
Unit 5: Urban Planning (5 hours)	**Understand:** Community exists in multiple structured levels (provincial, regional, municipal, neighborhood, etc) There are risks posed to citizens by thoughtless or inequitable urban design. Technology can support urban planning to foster stronger communities **Do:** - Investigate the use of technology in neighborhoods -Compare infrastructure requirements in urban VS rural communities -Reflect on Indigenous community structure and homes. **Know:** Key Terms: population density, urban and rural, urbanization, infrastructure, GIS	1. **City Design Project** a. **Activity:** Using a chosen design framework (smart buildings, traditional ways of knowing, 15-minute city, etc), design a community b. **Assessment:** build the example community in a game framework (Minecraft Educational, etc) 2. **Case study:** Implementation of tech in a community a. **Activity**: Identify a new technology being used in a community or suggest a possible new technology that is not being used (to your best knowledge). Compare benefits and potential issues of this tech implementation. b. **Assessment**: Write a short case study of this tech and the social, ethical, economic, etc pros and cons of its usage. 3. **Ethical considerations of Smart Technology in Cities** a. **Activity**: Group discussion about pros, cons, and ethical implications of different Smart Technologies. This can include storage of personal data, bias in technology, reinforcing inequalities, and more. Possible examples to use here b. **Assessment:** Written personal reflection on the ethics of smart technologies to innovate cities for good
Unit 6: Energy Systems (5 hours)	**Understand:** Energy in BC is produced in a variety of ways. Each method comes with its own benefits and drawbacks. Sustainable energy sources are vital to ensuring long-term health of both the environment and communities. **Do:** Examine BC's power landscape: Where does our power come from? Model different types of power production **Know:** Key terms: hydropower, solar power, renewable energy source, turbine, nuclear power, energy grid	1. **BC's Energy Landscape** a. **Activity**: Students research BC's energy system and compare/contrast with other provinces and territories. Compare centralized VS distributed grids and discuss their future implications. b. **Assessment**: Reflection on the currently diversity of energy sources, and suggestions for types of power production BC is not currently investing in. 2. **Microgrids** a. **Activity:** Investigate the use of microgrids or off-grid power by Indigenous or rural communities b. **Assessment:** A short research piece on existing microgrid usage in community. Critically consider motivations behind microgrid development 3. **Build a power source** a. **Activity**: create a dam/wind turbine/waterwheel/solar panel/etc. That is used to power a small item b. **Assessment**: a working model of a type of sustainable energy production, and a short, written assignment on how this produces energy, what benefits it provides, and possible drawbacks to this system

LESSON plan

DATE:

COURSE: Future Pathways Technology Sampler

TEACHER:

GRADE: 11 SUBJECT: Careers LESSON PLAN DURATION: 60-75 min

STAGE 1-DESIRED RESULTS

Big Idea:

When designing tomorrow's technology, it is essential to be grounded in ethics and sustainability

Communication:

- Group collaboration
- Establishing common goal
- Sharing findings
- Peer review (sharing information)
- Holistic world view, and responsibility in choice

Curricular Competencies:

Connect and Reflect on the intersection between urban development, natural resource management, and various fields of engineering and processes.

Content Learning Standards:

Understand the lifespan of different materials: how do we source them? How does it get to its destination? Once it has been decommissioned, how do we dispose of it? What is the environmental impact of this lifecycle? What improvements could we seek to make? How can we plan for our lifetimes AND the next?

Learning Intentions:

I understand where building materials come from and what is required to create them.

I can think critically about the impact of using certain materials.

I can effectively research, synthesize, and express new information about built systems.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

- Students will clearly communicate their findings to peers and teachers in a visual presentation that highlights their findings.
- Students will share an adequate number of resources to compile research and clearly articulate synthesized information.
- Students will show their understanding by showing how they can apply critical thinking to their own research, as well as their peers.

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

Day 1:
Group participation in creation of project

Peer review of other's work

Summative:

Day 2:
Presentation of poster

LESSON intro

How long does a material last? What processes determine something being used in your community? Watch this video on Embodied Carbon to help set tone for lesson.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

1. Defining embodied carbon, life cycle assessment, and multi-generational thinking.
2. Use visuals to break down all the different materials that go into a building. Give a guided
3. example of a given material (concrete, rebar, etc.) to show:

- Extraction of raw material
- Embodied carbon in each step
- The distance covered by a material
- Time that a material is used for
- Recycling VS disposal of the material
- Innovation along the lifespan
- Ways to enhance this process with technology
- Ideas for further improvement via tech

2. Divide class into groups and give students a variety of options of materials (Concrete, framing wood, windows glass, insulation, pipes, etc.) Students will investigate the material and create a visualization of its lifecycle with notes for possible improvement or alternatives. Ask the following questions:

- How could technology assist in the improvement of this material's lifespan?
- What tools exist that support more sustainable/improved options?

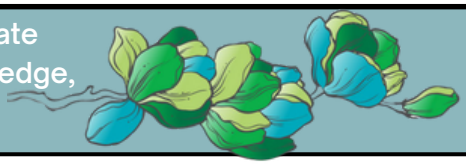
LESSON closure

What new materials did you learn about? Was there something surprising or unexpected about a very common material that you learned about?

MATERIALS / RESOURCES

- Internet-connected device
- Paper and pens/pencils

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Consider extractive VS stewardship approaches to materials. Consider the distances travelled: Are there things natural to the place you are in that suit your needs?

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Scaffold instructions: provide templates, graphic organizers, etc.
Flexible groupings: Options for peer or solo work, differentiated roles in collaborative research
Guided instructions on using reliable websites
Templates available for students needing support with layout or written reflections

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE:

COURSE:

TEACHER:

GRADE: SUBJECT: Technology in Urban Planning LESSON PLAN DURATION: 2 x 60 minutes

STAGE 1-DESIRED RESULTS

Big Idea:

Change occurs in cycles that drive growth, adaption, and innovation, reflecting the interconnected patterns of technology, society and the environment.

Thinking:

- Evaluating the complexity of communities and overlap of infrastructure
- Weighing stakeholder needs and trade-offs

Curricular Competencies:

Explore and analyze existing urban planning practices. Analyze the social impact of existing practices using technology. Is it accessible? Equitable? What barriers does it lower? What does it heighten?

Content Learning Standards:

Understand how smart tech address urban sustainability challenges. Analyze trade-offs between high-tech solutions and traditional approaches, consider potential integration. Design a community project proposal that considers feasibility and equity.

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

I understand that urban environments consist of many overlapping and intersecting infrastructure systems.

I can effectively understand the viewpoints of different members of the community regarding energy systems.

I can effectively research, synthesize, and express new information about urban environments.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Students will clearly communicate their perspectives to others in the class and thoughtfully incorporate new information into their arguments.

Students will clearly articulate synthesized information and think critically about the sources of information.

Students will show their understanding by having meaningful conversations and asking thoughtful questions to other participants.

Students will take adequate notes to summarize the town hall and make appropriate suggestions based on the discussion.

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

Day 1 & during Day 2 discussion

- Prepared Questions / Information: student-generated role briefs for town hall
- Participation: quality of contributions during structured town-hall Q&A

Summative:

End of Day 2

- Synthesized Notes & Suggestions: each student submits two well-justified recommendations based on the town-hall dialogue

LESSON intro

Prompting question: "What makes a community truly sustainable—and how can technology help?" Invite students to jot one example of a city problem (e.g., congestion, power outages, unequal service) that they think smart tech could address.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Day 1

1. Intro to Urban Tech (10 min)
   - Brief overview of GIS, digital twins, microgrids/smart grids, EV-charging networks (show 2–3 short clips).
2. Role Assignment & Research (15 min)
   - Students form role teams (2 per role) - developer, first nations, energy company, city planner, mayor, construction firm, citizens, business owners, landowners.
   - Each team reviews a brief on their stakeholder's priorities/concerns and the tech tools most relevant to them.
3. Town-Hall Prep (20 min)
   - Teams draft 3–5 key points or questions they will raise at tomorrow's town hall, focusing on:
     - Tech benefits & constraints
     - Equity and community impact
     - Cost and feasibility
4. Share & Refine (15 min)
   - Rapid "gallery walk": teams circulate, read each other's draft points, and leave sticky-note feedback.
   - Teams revise their talking points based on peer input.

LESSON closure

Exit Ticket: On a sticky note, write one key insight about how a chosen technology could address a community challenge and one remaining question you have for your role.

Share Out: Volunteers read their insights/questions to the class so we can spot common themes and prepare for tomorrow's town hall.

LESSON intro

Display five key talking points collected from Day 1's gallery walk. Frame today's town hall: "You are the decision-makers balancing technology, cost, equity, and community needs—how will you persuade others to support your priorities?" Assign each role a minute to highlight their top concern before open discussion begins.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Day 2:

1. Structured Town Hall (45 min)
    - Moderator (teacher) facilitates Q&A: each role presents its top point or question (≈1 min each).
    - Open floor for cross-role questions and tech trade-off discussions.

2. Synthesis & Recommendations (15 min)
    - Individually, students take concise notes summarizing the town-hall's key tensions and agreements.
    - Each writes two actionable suggestions (e.g., "Pilot a microgrid at the community center to improve resilience," or "Use GIS analysis to prioritize EV-charger locations in underserved neighborhoods").
    - Collect submissions.

LESSON closure

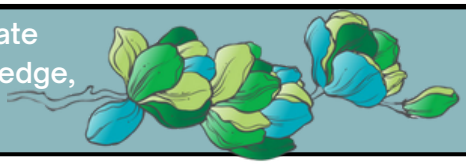
Reflection Prompt: In your notes, answer: "Which two stakeholder perspectives most influenced your final recommendations, and why?"

Next Steps: Collect reflections and suggestions; preview that we'll use today's findings to draft a policy brief in the next module.

MATERIALS / RESOURCES

- Internet-connected device
- Role-briefing sheets (explaining perspectives of each stakeholder)
- Handouts on key technologies: GIS, digital twins, microgrids, smart grids, EV charging

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

Indigenous worldviews and knowledge systems are woven into the town hall process. One of the town-hall roles represents a local First Nation or Indigenous community, with briefings that highlight their priorities—such as protecting sacred sites, stewarding resources through reciprocity, and applying traditional place-based knowledge to infrastructure planning.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Scaffold instructions: provide templates, graphic organizers, etc.
Flexible groupings: Options for peer or solo work, differentiated roles in collaborative research
Templates available for students needing support with layout or written reflections, guided note-taking,
Varied Assessment mode: oral explanation or short video walk through

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

LESSON plan

DATE:

COURSE:

TEACHER:

GRADE: SUBJECT: Unit 5 - Natural Resource Management LESSON PLAN DURATION: 60 minutes

STAGE 1-DESIRED RESULTS

Big Idea:
When designing tomorrow's technology, it is essential to be grounded in ethics and sustainability

Thinking:

- Analyze case studies and draw connections between principles and solutions
- Evaluate trade-offs between ecological, social, and technological factors

Curricular Competencies:

Explore and analyze current and future resource-management challenges and integrate an examination of traditional ecological knowledge and natural systems. Propose policy or design concepts grounded in nature-based and traditional knowledge

Content Learning Standards:

Basics of natural resource management challenges, traditional ecological knowledge, and biomimicry.

Learning Intentions:

Clearly state what students will understand and be able to do by the end of this lesson.

I understand how natural systems and Indigenous stewardship can guide sustainable resource management.

I can think critically about resource-management challenges and opportunities.

I can research, synthesize, and communicate new information about biomimicry and traditional knowledge.

Success Criteria:

How do we know that the students have successfully achieved the intended learning? What determines acceptable evidence? How will students demonstrate understanding?

Students clearly communicate their findings in a visual presentation that highlights key insights.

Students gather and share relevant resources to support their research and explanations.

Students demonstrate their understanding by applying critical thinking to both their own research and peer discussions.

STAGE 2-ASSESSMENT EVIDENCE

Assessment: How will you gather evidence of student learning?

Formative:

Observe each group's 3-minute presentation to check their understanding of the case study, identification of management challenges, and initial connection to modern policy or design.

Collect written feedback that students provide on two other groups' posters, focusing on clarity, feasibility, and cultural respect, to gauge their analytical skills and depth of reflection.

Summative:

Evaluate the final poster or slide itself—its accuracy in summarizing the case study, the relevance of the two challenges highlighted, and the strength of the proposed modern policy or design—as concrete proof of each student's ability to synthesize and apply learning.

LESSON intro

Hook/Intro (10 minutes)
Question Prompt: "What solutions might nature itself, and the people who have lived here for millennia, offer for managing our forests, waters, and wildlife?"
Video Clips: Biomimicry – Innovation Inspired by Nature and "Since Time Immemorial": How Indigenous People Are Reviving Traditional Stewardship
Think–Pair–Share: Students jot one insight from each clip and share with a partner.

LESSON structure

Integrated Instructional Strategies

- Blended learning stations
- Flipped classroom discussions
- Experiential field studies
- Case-based group work
- Direct instruction with graphic organizers
- Project-based inquiry
- Independent learning tasks
- Collaborative role play
- Socratic circles
- Hands-on labs or creative builds
- Jigsaw reading and synthesis
- Inquiry-based simulations
- Lecture with guided note-taking
- Class debates and structured discussions
- Expert talks with reflective follow-up
- Small group investigations
- Practical skill-building stations
- Cooperative case analysis
- Visual thinking with concept maps
- Peer-led workshops or presentations

See Appendix # for more details.

Mini-Lesson

Biomimicry Fundamentals

- Definition & examples (Velcro from burrs, passive cooling from termite mounds, whale-fin turbine blades)
- Guided slide illustrating 2–3 concrete examples

Traditional Knowledge Highlights

- Principles of Indigenous stewardship: controlled burning, salmon habitat enhancement, seasonal resource rotation
- Emphasis on "living systems" worldview and interconnection

Group Investigation

Divide into groups and assign each group one case study using the handout and provided links/readings, each group will:

1. Summarize the natural or traditional practice.
2. Identify two management challenges it addresses (e.g., erosion, wildfire, habitat loss).
3. Propose how that insight could inform a modern resource-management policy or technology.

Poster Creation: Each group creates a single poster or digital slide that includes:

- Title and brief description of the case study
- Two management challenges and corresponding traditional solutions
- One concrete policy or design proposal inspired by their example

Group Presentations: Each group presents their poster covering:

1. Overview of their case study
2. One "lesson learned" for today's resource managers
3. One policy or design suggestion inspired by their example

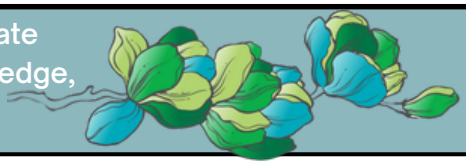
LESSON closure

Reflection: "Which idea—biomimicry or traditional knowledge—resonates most with you, and how might you apply it to a local environmental issue?"

MATERIALS / RESOURCES

- Internet-connected device, paper, pens/pencils
- Online resource: Biomimicry for Educators — AskNature
- Case-study packets (digital or printed) on:
  - Mangrove-inspired water filtration
  - Riparian planting and basket-layer stabilization
  - Coastal First Nations clam gardens
  - BC Indigenous controlled-burn practices
  - Traditional salmon-stewardship techniques on the Fraser River
  - Cedar harvest/forest health approaches of Coastal First Nations
- Screen or projector for video clips

How will this lesson incorporate Indigenous perspectives, knowledge, and ways of knowing?



INDIGENOUS PERSPECTIVES

This entire lesson is grounded in Indigenous perspectives by centering Traditional Ecological Knowledge as the primary lens through which students explore natural systems and resource management. The lesson engages students directly with stewardship principles such as holism, reciprocity, and seasonal cycles.

DESIGNING INSTRUCTION FOR ALL STUDENTS (DIFFERENTIATION)

How will you design the instruction to ensure ALL learners have access points, you support diverse learners, and ensure accessibility?

Visual supports: graphic organizers or note taking prompts
Flexible grouping: Options for peer or solo work, differentiated roles in collaborative research
Flexible output formats: allow students to present their learning through different media - journalistic approach, slide decks, video, poster, oral presentation

TEACHER REFLECTIONS / NOTES

Post-lesson notes on successes, challenges, and adjustments needed.

RESOURCE LINKS

Unit 1: T**echnology in Transportation**

What is telematics? – This video offers a concise overview of telematics, demonstrating how vehicle and asset data is collected, transmitted, and leveraged to optimize fleet performance and management.
TransLink Tomorrow | TransLink - This page details TransLink Tomorrow's New Mobility Lab initiative, which pilots and studies innovative transportation technologies and services to shape the future of transit in the Metro Vancouver region.
Route Maps for Commercial Transport - Province of British Columbia - This BC Government page provides official route maps for oversized and overweight vehicle permits, helping carriers plan compliant and safe transport corridors across British Columbia.
Port of Vancouver 2024 Key Facts - This brochure from the Port of Vancouver presents key facts (as of May 2025) on cargo volumes, infrastructure capabilities, and the port's economic impact on the region.
GTFS Realtime | TransLink - GTFS Realtime is a feed specification that allows public transportation agencies to provide real-time updates about their fleet to application developers.
Blog: Introducing Navigation SDK - This blog introduces Google's new Navigation SDK, showcasing how developers can integrate customizable, real-time turn-by-turn navigation and routing features directly into their apps using Google Maps.

Unit 2: Design

Building Pathfinder – This site introduces Building Pathfinder, a cloud-based platform that leverages real-time building system data to monitor, analyze, and optimize facility performance for continuous commissioning and operational efficiency.
We Are Not Alone – This Report from AskNature explores how biomimicry principles can inspire innovative design solutions by showcasing diverse case studies of nature-inspired inventions.
What We Can Learn From gloos – This article analyzes traditional Inuit igloo architecture—its dome form, insulating snow blocks, and thermal mass—and draws lessons for enhancing modern passive house design and building performance.
What is Digital Twin? – This video defines "digital twins" as real-time, virtual replicas of physical assets or systems—illustrating how sensor data and simulation are combined to monitor performance and predict future behavior.

Unit 3: Construction

How Does Nature Build a Home? - This AskNature collection showcases how various organisms—from bees and wasps to termites and birds—construct their homes, highlighting natural building strategies that can inspire sustainable architectural design.
What is 3D printing in construction (and is it worth the hype)? – This article explores how 3D printing is transforming construction, detailing the technologies, materials, and potential benefits—such as faster build times, cost savings, and design innovation—in modern building practices.
GIGANTIC 3D Printed Building - This video documents Walmart's pioneering 3D-printed store addition, showcasing the use of large-scale additive construction techniques in a commercial retail setting.
3D-Printed Houses: 12 Top Examples - This article explores the rise of 3D-printed homes, detailing the construction methods, materials, and pilot projects driving innovation in affordable, sustainable housing.

Unit 4: Natural Resource Management and Mitigation

Combatting tire toxins that harm salmon - This video from the Pacific Salmon Foundation highlights how the tire-derived toxin 6PPD-quinone jeopardizes salmon survival and outlines research-backed methods to mitigate its impact in freshwater ecosystems.
Salmon Habitat Restoration in the Lower Fraser River - This interactive ArcGIS StoryMap showcases Indigenous-led salmon habitat restoration along the Lower Fraser River, highlighting traditional ecological indicators and community-driven methods to revive and sustain vital salmon populations.
Green infrastructure: innovative use of indigenous ecosystems and knowledge - This article examines how Indigenous ecosystems and traditional knowledge can inform innovative green infrastructure designs to enhance ecological resilience and sustainability.
Restoring Ancient Clam Gardens in the Pacific Northwest - This article explores the restoration of ancient clam gardens by Pacific Northwest Indigenous communities, detailing traditional cultivation techniques and their ecological benefits for shoreline ecosystems.
Green Infrastructure furthers Indigenous Reconciliation - This project showcases how Vancouver's green-infrastructure initiatives—like rain gardens and bioswales—are co-designed with Indigenous communities to support reconciliation while improving urban stormwater management.
Introduction to Cultural Burning & Prescribed Fire - This video demonstrates Indigenous-led controlled burning practices in Interior BC, highlighting how cultural fire stewardship reduces wildfire risk, enhances biodiversity, and strengthens community resilience.
"Since Time Immemorial": How Indigenous People Are Reviving Traditional Stewardship - This video highlights Indigenous-led initiatives that revive and apply traditional stewardship practices to manage and protect local ecosystems.

Unit 5: Urban Planning

An Overview of the Smart City - This PDF presents the UNCRD's "Smart Cities Transforming the World" 2023 Session 2 Part 1 proceedings, offering frameworks and case studies on integrating digital technologies and green infrastructure for sustainable urban development.
What is a Smart City? | IBM - This IBM Think article explores how smart city technologies—such as IoT, AI, and data analytics—are applied to optimize urban infrastructure, enhance citizen services, and drive sustainable development.
Metro Vancouver Open Data Portal - This portal provides Metro Vancouver's open data—GIS layers and downloadable datasets on regional planning, transportation, environment, and infrastructure—for mapping and analysis.
Procedural City Generator | 3D City Maker | ArcGIS CityEngine - This page provides an overview of Esri CityEngine, a 3D urban modeling software that enables planners and designers to generate, visualize, and analyze detailed city environments for smarter urban development.
BC Guidance on Rain Harvesting – Comprehensive information regarding the collection, storage, usage, and safety considerations for rainwater in BC.

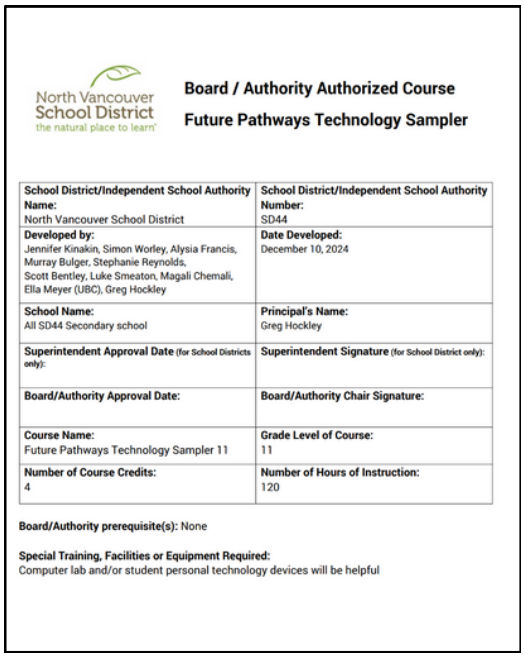
Unit 6: Energy Systems

BC Energy System Backgrounder - This BC Government backgrounder outlines British Columbia's energy system, detailing the province's generation mix, transmission infrastructure, and policies guiding sustainable energy development.
BC Hydro Power Smart for Schools - curriculum-aligned lesson plans and activities on energy fundamentals, production, and conservation tailored for secondary students.
Grade 10 Energy unit | BCHydro Power Smart for Schools
Science 11 Electric vehicles | BCHydro Power Smart for Schools
Energy transformations | BCHydro Power Smart for Schools

Energy British Columbia - This site serves as an educational hub on energy in British Columbia, explaining how various sources—hydro, thermal, renewables—are produced, distributed, and consumed across the province.
CER – Provincial and Territorial Energy Profiles – British Columbia - This CER profile provides comprehensive data on British Columbia's energy production, consumption, and trade across multiple fuel sources, offering insights into the province's energy market dynamics.
Worker Profiles - Canadian Renewable Energy Association - This page from the Canadian Renewable Energy Association features detailed worker profiles, showcasing diverse career paths, roles, and skillsets within Canada's renewable energy sector.
Photovoltaic Potential and Solar Resource Maps of Canada- This NRCan ArcGIS Web App provides interactive mapping of Canada's renewable energy resources—such as solar, wind, hydro, biomass, and geothermal potential—allowing users to visualize and analyze spatial energy data across the country.
Building Benchmark BC – This interactive map visualizes energy and carbon benchmarking results for over 1,300 buildings in British Columbia—letting users explore performance metrics by region and building type.
Energy in Nature - AskNature - This AskNature collection explores how organisms capture, convert, and store energy—from photosynthesis to microbial fuel cells—offering bio-inspired insights for sustainable energy solution.
Career Connections | BCHydro Power Smart for Schools - Real stories, career ideas, and special activities exploring careers at BC Hydro.

The Course Framework (BAA Curriculum)

Click the Image to the right to see the Full **Board Authorized Authority Course Curriculum Framework** document



North Vancouver School District
the natural place to learn

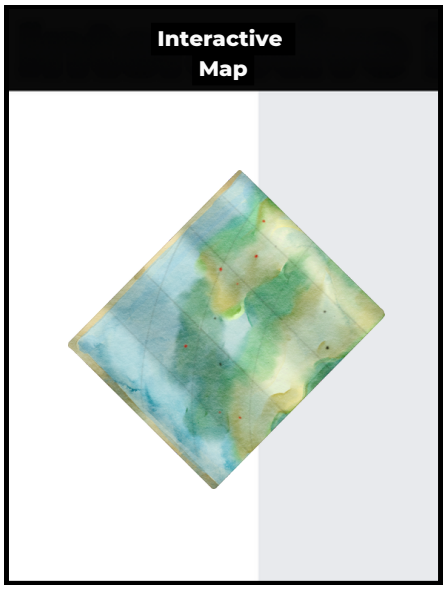
Board / Authority Authorized Course
Future Pathways Technology Sampler

School District/Independent School Authority Name: North Vancouver School District	**School District/Independent School Authority Number:** SD44
Developed by: Jennifer Kinakin, Simon Worley, Alysia Francis, Murray Bulger, Stephanie Reynolds, Scott Bentley, Luke Smeaton, Magali Chemali, Ella Meyer (UBC), Greg Hockley	**Date Developed:** December 10, 2024
School Name: All SD44 Secondary school	**Principal's Name:** Greg Hockley
Superintendent Approval Date (for School Districts only):	**Superintendent Signature** (for School District only):
Board/Authority Approval Date:	**Board/Authority Chair Signature:**
Course Name: Future Pathways Technology Sampler 11	**Grade Level of Course:** 11
Number of Course Credits: 4	**Number of Hours of Instruction:** 120

Board/Authority prerequisite(s): None

Special Training, Facilities or Equipment Required:
Computer lab and/or student personal technology devices will be helpful

Interactive Map of Industry Connections



Click the Image to the left to see the **Interactive Map with Industry connections** and **links** (Added to regularly)