THE UNIVERSITY OF BRITISH COLUMBIA

Vancouver Campus

Master of Educational Technology

Primary/Junior/Intermediate/Senior Lesson Planning Template

Grade(s): 9-12	**Date(s):** July 12	**Duration:** 80 mins	**Lesson Topic/Title:** Prototyping
Subjects: Social Justice, ADST		**Number of Students:** 20-30	

Big Ideas:

Social justice (EDIDA) frameworks paired with making and design learning can be used to address real-world social, ethical, and sustainability issues.

Curricular Competencies:

- Use Social Studies inquiry processes and skills to ask questions; gather, interpret, and analyze ideas; and communicate findings and decisions.
- Make reasoned ethical judgments about controversial actions in the past or present after considering the context and standards of right and wrong (ethical judgment)
- Explain different perspectives on past and present people, places, issues, and events, and distinguish between worldviews of the past or present (perspective)
- Utilizing design based learning and the liberatory design process to create, design and assess a final product.
- Applied Design – the phases of the design process, from inception to completion (these are described in further detail below)
- Applied Skills – the skills used to facilitate the design process (e.g., co-operation and collaboration, interview skills, workflow analysis, research skills, task flows)

- Applied Technologies – the skills needed to access technologies that help facilitate design thinking and the design process; these differ according to the area of application (e.g., the technologies used in Home Economics will differ from those in Computer Programming and those in Woodworking)

Content Objectives

General Objectives:	**Specific Objectives :**
● Set goals for prototyping ● Ask critical questions as a part of the iteration process ● Incorporate empathy in iterating ● Understand and learn how to use the EDIDA framework in making	● Learn how to use Twine ● Learn to self-regulate emotions and take on a growth mindset ● Learn to write a design journal ● Learn to keep a prototyping log detailing the change and the reason for the change

21st CENTURY COMPETENCIES: *Which COMPETENCIES will be addressed and how?*
Critical thinking and Problem Solving/Creativity and Innovation/Collaboration/Communication/Global Citizenship/Metacognition and Reflection

Critical thinking, Global Citizenship, Problem-solving, Creativity, and Innovation: through prototyping, making iterations, and asking critical questions to guide the whole process.

Collaboration and Communication: through group work, discussions, round-robin learning/teaching, and giving/receiving feedback.

Metacognition and Reflection: through making prototype log charts and design journals.

LEARNING GOAL(S) I can… I will….

Learners will:

1. Research, learn, reflect, empathize with, and advocate for social justice issues
2. Explore and utilize inquiry-based learning.
3. Incorporate liberatory design thinking.
4. Use iterative design to provide a solution to a social justice issue of choice and take action on real-world problems.
5. Set SMART goals for the prototype
6. Build social-emotional self-regulation skills
7. Ask critical questions and discuss how to assess the impact
8. Make a Twine as a summative assessment

PRIOR KNOWLEDGE *Prior to this lesson, students will be able to…*

- Share what they know about prototyping through a KWLFLSD and opening discussion (Diagnostic)

Equity, Diversity, Inclusion, Decolonization, Anti-Racism (EDIDA) Frameworks-

- Use EDIDA frameworks to create an inclusive space for students by offering a variety of inclusive materials/ways to make.
- Use EDIDA frameworks to guide the prototyping process
- Decolonize the classroom by ensuring all voices are included and heard through a variety of discussions and activities for everyone to share.
- Recognize and identify the lens through which the content will be delivered, and highlight the need to bring in more narratives.

DIFFERENTIATED INSTRUCTION *What will I do to assist and/or differentiate instruction for individual learners? (Materials, Delivery, Outcome)*

Materials: laptops, microphones, headphones, fidget spinners, iPads, translation apps, other assistive technologies, low-tech materials, signage

Delivery: digital resources also in printable version, audio inputs, visible inputs, extra time, printable instructions, low tech- high tech

Outcome: use the EDIDA framework to engage all individuals in learning the process of prototyping/ iteration and offer autonomy in addressing a real-world problem.

MATERIALS*:*

- Laptops, microphones, headphones, fidget spinners, iPads, translation apps, other assistive technologies, low-tech materials, high-tech materials, large tables, open space, and signage.

INTRODUCTION/MINDS-ON	**CRITICAL GUIDING QUESTIONS:**
(This information would all be in a powerpoint presentation) **Introduction:** (20 mins)	● EDIDA- is everyone represented? ● decolonizing systems ● Who will be using this creation? Who is this designed for? Does this

Show the short film Soar to get students thinking about persistence and resilience. Ask students to define what they saw and felt.

- Not giving up and having a **growth mindse**t
- Having empathy for others, empathy as **motivation**
- **SEL**: Address that frustration is a part of the process. How can we identify and regulate emotions ourselves and help others do the same? (Take a break, do breathing exercises, switch gears, and seek others perspectives)
- Yes, this is **Prototyping**!

Prototyping overview: (15 mins)

What is prototyping about?

- Prototyping is making improvements to your design, over and over and over until it is the best version of the working model.

Steps:

1. Define your goals and product vision: Revisit your problem/ issue and clearly outline what you aim to achieve through prototyping. Identify the key issue you want to answer or the specific aspects of your product you want to test or validate.
2. Conceptualize and sketch: Begin by brainstorming and sketching rough ideas for your prototype. Visualize the form, functionality, and features of your product. This step helps to explore different design possibilities and generate multiple concepts. Research what already exists.
3. Select materials and tools: Determine the materials and tools you need to create your prototype. Consider factors such as cost, availability, and suitability for your specific requirements. You might choose to use materials like cardboard, foam, wood, 3D printing, or others, depending on the complexity of your design.
4. Create a basic prototype: Start by building a basic version of your prototype that focuses on the core functionality or key features. This “sketch” prototype allows you to quickly test and iterate without investing too much time or resources. It can be digital (eg. TinkerCAD prototype) or physical (eg. sketches and diagrams)
5. Test and gather feedback: Conduct user testing and gather feedback from your target audience. Observe how people interact with your prototype and collect their opinions, suggestions, and insights. This feedback will help you refine your design and make necessary improvements.

creation impactfully address the problem and people?

- What problem or need does your idea solve?
- How are users solving this problem currently?
- Can your target market think of another product that does something similar?
- How have previous solutions failed?
- Do users understand what this product or service does?
- How would members of various communities feel about your product?

6. Iterate and refine: Based on the feedback received, analyze the strengths and weaknesses of your prototype. Identify areas for improvement and iterate on your design. Make necessary adjustments, modifications, or additions to enhance the functionality, usability, and overall experience of your product.	
ACTION-LEARNING EXPERIENCES: **A) EXPERIENCE 1 (Provocation) ~**25 mins Give students an example of a prototype (using www.makersmakingchange.com) and describe who it is intended for. ● In groups, students come up with a list of critical guiding questions to guide their prototyping process using these frameworks: EDIDA, social justice. *Students will need to go back to their research on their target audience to identify their needs and priorities* ● As a group, students will compile questions onto a class Padlet. Allow for 10-15 mins for the class to answer each other's questions. How should we assess the answers to these questions? How do we address our own inherent biases in this list of questions? How is something like "impact" measured? (Consider the goal, context, environment, people, systems, etc.) ● Watch this video on Measuring Social Impact ● Think-Pair-Share **B) EXPERIENCE 3 (Make Challenge)** ~45 mins+ Theme: If, then/ causes and consequences chart. Use twine (to demonstrate the impact this creation can have down the road, and what other factors to consider that might become obstacles) Impact of Equality vs. Accommodation vs. Accessibility	**CRITICAL GUIDING QUESTIONS:** ● How can we identify and regulate emotions ourselves and help others do the same? ● How should we critically assess our prototype? ● How can we address our own inherent biases in the solutions we come up with? ● How is "impact" measured? ● Who is the target audience and how can we make sure their needs are **fully** met through our design? ● What are the offerings of equality vs. accommodation vs. accessibility based on this illustration and how are they different?

Students will create 3 narratives (equality, accommodation, accessibility) in a scenario (of choice) where an individual may have different experiences depending on how impactful the design is and how it can affect their lives down the line. Apply the real-world issue and imagine its butterfly effect.

Low-tech options for this maker challenge:

- Fortune teller origami
- Choose your own adventure via Google Forms

CONSOLIDATION/CONCLUSION:

Summarize the prototyping process as a class, popcorn style.
Send kids off to MAKE with an anecdote to encourage them to persist and think outside the box!

CRITICAL GUIDING QUESTIONS:

- What makes a design inclusive?

ASSESSMENT (STRATEGIES, TOOLS) - DIAGNOSTIC, FORMATIVE, SUMMATIVE

Diagnostic

- Observations
- KWLFLSD

Formative

- The group's list of questions for their specific product
- **Prototype log chart**- what were the tweaks and the reason for it?

Summative

- The final product and documented process of prototyping.
- A design **reflection** at the end of the process.

EVALUATION OF THE LESSON

Will be conducted by the teacher upon completion of the lesson. The evaluation should focus on student engagement and understanding from the lesson and how they responded to the provocation/ maker challenge.

REFLECTION:

1. Were my students successful in meeting the learning goals? How do I know?

2. Did my instructional decisions meet the needs of all students? If not, what are my next steps?

3. What worked well? Why?

4. What will I do differently
   a. When teaching this lesson again?

   b. For the subsequent lesson?

5. What are the next steps for my professional learning?