

Paving the Way to a Better Tomorrow

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Grade Level and Subjects

This project is intended for Grade 9 students and can touch on any combination of the following subjects: Français Langue Première or Français Langue Seconde - Immersion, Mathematics, Science, and Applied Design, Skills & Technologies.

Central Question

How can mobility in my neighborhood be transformed in ways that lead to a more environmentally sustainable community?

Rationale

This is an interdisciplinary, design thinking project where students will explore the historical development of their community or city and how this development has impacted the environment as well as its society. The increased use of cement in urban society has led to heat propagation and an increased use of motor vehicles, which have a negative impact on the environment. This has also impacted how members of a society move: using cars to get around means that small businesses can often go unnoticed. Because choice and the development of empathy is extremely important, students will decide on a part of their community or city to transform. The goal is to improve walkability while ensuring more environmentally friendly methods of construction. Improving walkability is also important in order to support and grow the local economy (i.e., small businesses). For this project, teachers will need to be familiar with the design thinking process. This project will allow students to access and use multiple means of representation, expression and engagement to ensure all students can participate in the lesson and engage in it in their own ways (principles of [Universal Design for Learning](#)).

Curriculum and Assessment Overview

Curricular Competencies	Content	Assessment
<p>Applied Design, Skills and Technologies</p> <p>Big Idea: Social, ethical and sustainability considerations impact design.</p>		
<p>Understanding Context: Engage in a period of research and empathetic observation in order to understand design opportunities</p> <p>Defining: Choose a design opportunity; Identify potential users and relevant contextual factors; Identify criteria for success, intended impact, and any constraints</p> <p>Ideating: Critically analyze and prioritize competing factors, including social, ethical, and sustainability considerations, to meet community needs for preferred futures</p> <p>Prototyping: Identify and use sources of inspiration and information; Choose a form for prototyping and develop a plan that includes key stages and resources</p> <p>Testing: Identify sources of feedback</p> <p>Making: Make a step-by-step plan for production and carry it out, making changes as needed</p> <p>Sharing: Demonstrate their product to potential users, providing a rationale for the selected solution, modifications, and procedures, using appropriate terminology</p>	<p>Drafting: Virtual creation using CAD/ CAM OR digital output devices (depending on student or teacher choice)</p>	<p>Formative:</p> <ul style="list-style-type: none"> » Assessment of the design process, step-by-step for the prototype (teacher check-ins)

Curricular Competencies	Content	Assessment
<p>Mathematics</p> <p>Big Idea: Analyzing the validity, reliability and representation of data enables us to compare and interpret.</p>		
<p>Engage in problem-solving experiences that are connected to place, story, cultural practices, and perspectives relevant to local First Peoples communities, the local community, and other cultures</p>	<p>» Statistics in society</p>	
<p>Sciences</p> <p>Big Idea: The biosphere, geosphere, hydrosphere and atmosphere are interconnected, as matter cycles and energy flows through them.</p>		
<p>Consider social, ethical, and environmental implications of the findings from their own and others' investigations</p> <p>Contribute to finding solutions to problems at a local and/or global level through inquiry</p>	<p>» Sustainability of systems</p>	
<p>Français Langue Première</p> <p>Big Idea: To express oneself well, it is essential to follow language conventions, use a rich vocabulary, and pay attention to text organization.</p>		
<p>Write texts following the characteristics of the types of texts and language conventions studied</p> <p>Improve own texts, being mindful of the quality of form and expression</p>	<p>Text Organization: comparative essay</p>	<p>Formative:</p> <p>» During the design process, when sharing ideas and providing feedback to peers (teacher)</p>

Curricular Competencies	Content	Assessment
Français Langue Seconde – immersion Big Idea: Improving communication skills in a language helps us define ourselves and affirm our ideas.		
Apply strategies for enriching a text to improve its coherence, flow and quality	» Communication strategies: registers of language, speaking to an audience, clarification and explanation	Formative: » During the design process, when sharing ideas and providing feedback to peers (teacher)

Core Competencies

Communication:

- » Acquire, interpret and present information (includes inquiries)

Creative Thinking:

- » Novelty and Value
- » Generating Ideas
- » Developing Ideas

Critical Thinking:

- » Analyze and Critique
- » Question and Investigate
- » Develop and Design

Social Responsibility:

- » Contributing to Community and Caring for the Environment
- » Solving Problems in Peaceful Ways

Student Experience

- » Develop empathy for people living in modern rural and urban (cement) communities
- » Develop awareness of one's community through observation of how it is currently designed
- » Understand how changes to these communities alter how people travel
- » Create surveys for their community members
- » Apply the design process to prototype and test proposed changes to a specific location in their community, leading to improved walkability and biodiversity
- » Create a video for community councillors explaining their prototype (Who? What? When? Where? Why? How?).
- » Français Langue Première will also focus on comparing the before and after designs.

Learning Experience

Before beginning the project

- » Teacher should explore different resources that promote walkability, particularly the Canada Walks website (see resources below), to increase their familiarity with the topic.
- » Teacher should invite guest speakers including local city planners and/or local business owners to discuss this topic with their students.
- » Teacher should create a student-friendly document that simplifies the concepts presented in the [Design for Walkability](#) website. This will help students during their project.



Strategies for fostering inclusion:

- » Provide visuals to aid comprehension.
- » Provide a list of keywords and concepts.
- » Record reading materials and arrange for a reader or make use of assistive technologies (i.e. text to speech) for students who require reading support.
- » Ensure that all print materials are provided in a way that is legible depending on needs (e.g., appropriate colors and contrast, appropriate font size and style).

Students will be able to identify different places in their community.

- » Teacher provides students with a challenge: take five different pictures of the community, one every day. The pictures should demonstrate variety as much as possible.
- » Students will take pictures and share them with the teacher.
- » Teacher will print the pictures and post them on a bulletin board or around the class, to be used in a future activity.

Develop Empathy: Students will have developed an awareness of the issues surrounding walkability in their community.

- » Teacher provides video resources and articles on the topic of walkability and city planning to the students. (See resources.)
- » Students choose three resources (at least one video and one article and their observations). This can be done alone or in partners. This allows students to choose resources that they deem to be at their level.
- » Using this information, students must answer the following question: Why is improving environmental sustainability in communities important? This response can be prepared in different ways, at the discretion of the teacher and depending on the student (e.g., video response, blog post, written response, etc.)
 - **Formative Assessment:** Design Thinking Process



Strategies for fostering inclusion:

- » Offer guided note-taking sheets for students who need clear reading or researching goals.
- » Divide this activity into sub-tasks, as needed, and include teacher check-in after each task.

Defining

- » Teacher will host a discussion with the class. Part of this discussion will involve students identifying problems they found in the resources they reviewed, ensuring that walkability is mentioned and discussed (alongside other ideas the students might identify).
 - **Formative Assessment:** Class Discussions
- » During this discussion, students will look at the pictures they took of their community and identify the extent of this problem within their community. This would be an excellent opportunity to present the central question. How can mobility in my neighborhood be transformed in ways that lead to a more environmentally sustainable community?
 - **Formative Assessment:** Class Discussions
 - **Formative Assessment:** Design Thinking Process
- » Moving forward, this would be an opportunity for guest speakers to visit the classroom to help develop student knowledge on this topic.
- » Students will create a survey for members of the community in an attempt to identify walkability needs in their community.
 - **Peer Assessment:** Students will provide feedback to their peers on their surveys before they are finalized.
- » Each student will send their survey to members of the community to get their feedback. They should have at least 10 members complete the survey to provide a more complete picture.



Strategies for fostering inclusion:

- » Students can work individually or in small groups for support.
- » Provide flexibility with regards to the format of the survey (single answer questions, open-ended questions, interview instead of written survey, etc.) to ensure all students can participate in the activity.
- » Use think-pair-share to encourage all students to be part of the discussions.

Ideating

- » Using the data from the survey and their personal interests, students will choose an area of the community they would like to modify.
 - **Formative Assessment:** Survey Analyses
- » Students will brainstorm answers to the question: How could we improve walkability in this area? To help with this step, they should use their survey answers, the document created by the teacher inspired from the Design for Walkability website, as well as any other resources they find in their searches. The teacher can also provide information outlined in the Resources section.
 - **Formative Assessment:** Design Thinking Process



Strategies for fostering inclusion:

- » Provide more time to complete the steps.
- » Make parents/families aware of the project and the steps their child will need to take to complete it so they can provide some support at home.
- » Provide opportunities for teacher, peers and community feedback.

Prototyping, Testing and Making

- » Students will create a detailed plan for how they propose to modify the area they chose.
 - **Peer Assessment:** Once the plan is created, students will collect feedback from 2 students and 2 members of the community (including a Subject Matter Expert, if possible). Key sentence starters to help with the feedback stage can be: I like... and I wonder...
- » Students will critically assess the feedback they have received and make changes to their plan as they see fit.
 - **Formative Assessment:** Design Thinking Process
- » Students will build their design using a tool of their choice (e.g., Sketchup, a model, etc.).
 - **Self-Assessment:** Students will review their work using a checklist to ensure they have completed the task requirements.
 - **Formative Assessment:** Design Thinking Process



Strategies for fostering inclusion:

- » To better support all students, the teacher could create a video clip of the step-by-step instructions that students can refer to at any time instead of providing oral instructions only.
- » Provide students with exemplars of completed work.
- » Make the project open-ended to allow students to go beyond curricular expectations (for students who would benefit from an additional challenge)

Sharing and Reflecting

- » Students will create a proposal in the medium of their choice (e.g., letter, video...). The proposal will be sent to the city council outlining the problem and the proposed plan. The plan should be explained as a step-by-step, 3-year plan.
 - **Peer/Self-Assessment:** Students will self-assess and provide feedback to their peers on their scripts before the video is finalized.
 - **Formative Assessment:** Design Thinking Process
- » Students will practice their presentation and create their video.
 - **Summative Assessment:** Proposal to Council



Strategies for fostering inclusion:

- » Provide rubric to students ahead of time; this will help review their proposal (rubrics can be co-created with students).
 - » Allow flexibility regarding the complexity of the details needed for the proposal based on each student.
 - » Provide choices for the presentation format to support multiple means of expression.
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- » Teacher or the students can send the proposal to their council member.
 - » Students will provide an answer to a modified version of the central question: How did I improve the sustainability in my community to have a positive influence on mobility? Students can provide an answer to this question in their format of choice.
 - **Summative Assessment:** Reflection

Assessment Details

FORMATIVE			
	Design Thinking Process	Class Discussions	Survey Analyses
Learning Area	Applied Design, Skills and Technologies	Français Langue Première or Français Langue Seconde - Immersion	Sciences / Mathematics
Evidence and Purpose	Students will follow the design process in the creation of their prototype. They will conference with their teachers at predetermined steps in the process for feedback.	Students will apply appropriate studied communication skills during classroom discussions. They will be observed by the teacher and receive feedback.	Students will analyze their survey data to respond to the following question: "What problems can you identify when reviewing your survey results?" This answer will help the students with their summative video. They will conference with their teachers to receive feedback.
Self-Assessment of Core Competencies	Students can self-assess their ability to ideate (Creative Thinking).	Students can self-assess their ability to communicate their ideas and their findings clearly and effectively (acquire, interpret and present information).	Students can self-assess their ability to come to meaningful conclusions using data (analyze and critique).

SUMMATIVE		
	Individual Art Piece and Description	Reflection
Learning Area	Français Langue Première or Français Langue Seconde - Immersion, Mathematics, Sciences, and Applied Design, Skills & Technologies.	Sciences
Evidence and Purpose	<p>Applied Design, Skills and Technologies</p> <ul style="list-style-type: none"> » Students will be able to apply the design process and it is evidenced in their final prototype. <p>Mathematics</p> <ul style="list-style-type: none"> » In the video, students will demonstrate how their survey data helped them identify a problem and solution. <p>Sciences</p> <ul style="list-style-type: none"> » In the video, students will demonstrate how their survey data helped them identify a problem and solution. <p>Français Langue Première</p> <ul style="list-style-type: none"> » Students follow the characteristics of a comparative essay in their video to council while also respecting studied language conventions. <p>Français Langue Seconde - Immersion</p> <ul style="list-style-type: none"> » Students will apply speech enrichment strategies to have a clear and effective communication. » They will apply appropriate registers of language and speak appropriately for the intended audience (council member). 	<ul style="list-style-type: none"> » To answer the central question, students explain how their proposed solution improves the sustainability of the chosen area and how they successfully solved a problem using the inquiry process.

SUMMATIVE		
	Individual Art Piece and Description	Reflection
Self-Assessment/ Peer Feedback of Curricular Competencies	<p>Applied Design Skills & Technologies</p> <ul style="list-style-type: none"> » Students will provide feedback to their peers on their plans. » Students will review their work using a checklist to ensure they have completed the task requirements. <p>Mathematics</p> <ul style="list-style-type: none"> » Students will provide feedback to their peers on their surveys before they are finalized. <p>Mathematics / Sciences / Français Langue Première / Français Langue Seconde - Immersion</p> <ul style="list-style-type: none"> » Students will review their script using a checklist to ensure they have included all the necessary information. » Students will provide feedback to their peers on the script for their videos before they are finalized. 	
First People's Principles of Learning	<ul style="list-style-type: none"> » Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits and the ancestors. 	<ul style="list-style-type: none"> » Learning involves recognizing the consequences of one's actions.

SUMMATIVE		
	Individual Art Piece and Description	Reflection
Place-Based Learning	<ul style="list-style-type: none"> » Learning takes place on-site in the school yard, and in the local community and environment. » Learning experiences contribute to the community's vitality and environmental quality and support the community's role in fostering global environmental quality. » Learning is supported by strong and varied partnerships with local organizations, agencies, businesses, and government. » Learning is grounded in and supports the development of a love for one's place. 	<ul style="list-style-type: none"> » Learning takes place on-site in the school yard, and in the local community and environment. » Learning is personally relevant to the learner. » Local learning serves as the foundation for understanding and participating appropriately in regional and global issues.
Place-Based Learning	<ul style="list-style-type: none"> » Learning is personally relevant to the learner. » Learning is interdisciplinary. » Learning is based on local heritage and is used as a foundation for studying subject areas. 	<ul style="list-style-type: none"> » Learning is personally relevant to the learner. » Learning is based on local heritage and is used as a foundation for studying subject areas.

RESOURCES



People

- » Inviting a local city/town planner
- » Invite local businesses
- » Invite or reach out to the Canadian Communities Improve Walkability (plan a walk in your community)



Videos

- » ÉcoQuartiers: Un label pour construire la ville durable
- » Les éco-quartiers
- » Nos maisons de demain - C'est pas sorcier
- » Adam Ruins Everything, Season 1, Episode 3 - Adam Ruins Cars
- » The Urban Green - WWF International
- » Most Eco-Friendly Cities in the World (Part 1)



Articles

- » Votre ville est-elle marchable?
- » 7 ways towns and cities are turning from grey to green
- » Cities Cover More of Earth than Realized
- » How Slightly Better Concrete Could Save the Planet
- » Transforming Ugly Concrete Walls Into Beautiful Vertical Gardens - Vancouver Sun
- » Vancouver is becoming the greenest city, inside and out

Books

- » Concrete Planet

Other

- » Ambiance et marchabilité dans les nouveaux écoquartiers. Les Berges du Lac – quartier Ginko (Bordeaux) et Les Berges de Saône – quartier Confluence (Lyon) (PDF)
- » <https://villedurable.org/>
- » Marchabilité et potentiel piétonnier
- » La demande de marchabilité insatisfaite : disparités entre les préférences et les choix réels de cadres de vie à Toronto et Vancouver
- » Cement Association of Canada
- » Design for Walkability Initiative and Getting to Great Places - How better urban design can strengthen San Jose's future (PDF)
- » Communities Improve Walkability - Canada Walks
- » Creating Walkable Communities in Alberta
- » Free course on Greening the Economy - Sustainable Cities



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LEARNING IN FRENCH TOGETHER

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