SKILLS EXPLORATION DAYS DESIGN CHALLENGE
Future-Friendly Transportation

Overview

How would your day change if cars, buses, and bikes disappeared tomorrow? You might still be able to reach school or a friend's house if they're nearby, but the number of places you could go and people you could see would shrink significantly.

Transportation is essential to our everyday lives; it connects us to the people, places, and things we rely on. Communities need reliable transportation to access essential services that support health, jobs, education, and recreation. Adequate transportation also allows people to connect with a wider range of community members to support their social network and overall sense of belonging. [1] Ultimately, the farther we're able to go, the more opportunities and services become available to us.

Design Rationale

Personal and public modes of transportation have come a long way since the invention of the wheel, but many ways we travel today come with problems that affect people and the planet. In highly populated cities, increasing numbers of cars lead to traffic jams, long travel times, stressful commutes, and an increase in fuel consumption. In 2021, transportation was responsible for 28 percent of Canada's greenhouse gas emissions, with the largest proportion coming from road transportation.[2] These emissions harm the climate by contributing to global warming and can also pose health risks by polluting the air people breathe.

Beyond environmental and efficiency concerns, transportation systems also raise issues of accessibility and equity. Not all transportation is designed for everyone, leaving many without access to safe, comfortable, and affordable options to get from place to place. As of 2022, access to convenient public transportation was only available to half of our world's urban population [3] and transport issues remain a critical concern for many rural and low to middle-income communities. [4] It can be extremely expensive to implement new transportation options and in busy cities, there is often limited space for new infrastructure without disrupting people's homes, businesses, and the natural environment.

Engineers and inventors are working on more sustainable and inclusive ways to move people. Driverless electric vehicles and solar-powered buses have already hit the roads, while exciting innovations such as flying taxis are being explored.

But there's still room for improvement and that's where you come in. This challenge asks you to imagine the future of transportation. How can we make traveling cleaner, easier, and safer for everyone?

Problem Scenario

Your team has been selected to design or redesign a personal or public mode of transportation that is unique to your community. This challenge will require your team to create a prototype or scale model of your design that addresses the following concerns:

- **Sustainable:** Primarily uses sustainable building materials/techniques/design principles
- **Eco-friendly**: Uses cleaner or renewable energy that reduces harm to the environment
- **Innovative**: Has features or technology that don't exist yet or improve what we already use
- **User-Friendly**: Is easy, safe, and comfortable for the intended user

Success Determinants

Success will be determined by the degree to which your design solution:
- ☐ Addresses the design challenge
- ☐ Addresses an identifiable need
- ☐ **Is original** (not an exact copy of something that already exists) **and as realistic as possible**.
- ☐ Utilizes the tools and materials provided in a creative and safe manner
- ☐ Aligns to the design motto: *Make it smaller, stronger, do more, be easier to use, be cheaper.*

*Prototype: a model that illustrates the functionality of an idea or design. It may be life sized or scaled to a model that fits in your hand.

*Sustainable Transportation: transportation methods that minimize environmental impact while still safely and efficiently moving people and goods [5]

SUGGESTED RESOURCES TO GET YOU STARTED

[6 Reasons Why Access to Transport is so Important](#)[1]
[Canadians' commutes: Still car-heavy, but some lighter footprints](#)[2]
[Sustainable Development Goals: Sustainable Cities and Communities](#)[3]
[Introducing Reshaping Transport, a Virtual Design Challenge](#)[4]
[Sustainable Transportation: A Comprehensive Overview](#)[5]
[When is Public Transport Really Accessible?](#)
[Transportation 101 (video)](#)
[An Animated History of Transportation (video)](#)
[Sustainable Transportation](#)
[National Geographic: Transportation Infrastructure](#)
[Future transportation: These emerging technology trends will transform our roads and skies](#)
[12 Future Transportation Technologies to Watch](#)
[Would you travel by flying taxi? Here's everything you need to know](#)

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