

## Time

2 class periods  
(approximately 60-75  
minutes in length)

## Grade level

4-8 (can be modified for older  
and younger grades)

## Learning Objectives

- Students will understand that living things are part of an ecosystem and that nutrients and energy flow through the circle of life.
- Students will understand that humans have adopted a linear waste system, with a start and an end.
- Students will learn about the concept of a circular economy.
- Students will learn about companies that participate in a circular economy.
- Students will reflect on how companies can change their manufacturing to fit a circular economy.

## Materials

- *Circular Economy* infographic and video (accessible at [10000changes.ca](http://10000changes.ca))
- Nature cards
- Machine-made cards
- Project Proposal worksheet
- Lined paper
- Video-making tools (e.g., mobile device or camera, free editing software)

## Focus Questions

How does the natural environment have a circular waste system? What kind of waste system do humans use? What is a circular economy? What role do companies play in circular economies? Which companies are currently supporting a circular economy? How can companies change to support circular economies?

## Lesson Description

### Minds on

Students will be given cards with pictures of different natural objects and asked to arrange them to show the circle of life. Students will then be given cards that show the process of machine-made objects and asked to create a circle as well. Since machine-made objects do not follow a circular process, there will be a discussion about how this is a linear process instead.

### Action

Students will watch the [10,000 Changes](#) video and examine the accompanying infographic focusing on the circular economy. Students will learn more about the importance of transitioning to a circular economy and will be introduced to companies that are currently focusing on this. Students will expand their learning by creating a project proposal for a company with which they are familiar. They will explain how that company can incorporate the circular economy into their product development. Students will then write a letter to the company summarizing their project proposal.

### Conclusion

Students will share their project proposals with the class and vote on which one they would like to focus on. As a class, students will create a public service announcement video directed to the company on what a circular economy is and how the company can participate.

## Lesson Implementation

### Minds on

Divide students into small groups and hand out a set of Nature cards to each group. Instruct students to create a circular process with these cards, and give students approximately five minutes to complete and discuss this. The circular process in nature is: grass (resource) → ant (primary consumer) → bird (secondary consumer) → snake (tertiary consumer) → eagle (apex predator) → mushroom (decomposer) and back to grass.

Have a discussion with students about the circle of life, and how energy and waste flow through the circle, as one species' waste is another species' food. Each member in this circle of life provides nutrients and energy to the next. After this discussion, hand out the Machine-made cards. Instruct the students to arrange them to show the life cycle of a water bottle, from production to disposal. Give them approximately five minutes to discuss this. Provide students with support and, if necessary, explain how plastic is produced as they may be unfamiliar with certain steps in the process (e.g., crude oil is used to create petroleum products which end up in plastics).

Ask the class if this process is circular, like the circle of life. It is not a circular process, even though some plastics are recycled (nine per cent of all plastic is recycled). Most products are disposed of and become waste that ends up in landfills. The linear process is: resource →

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# CIRCULAR ECONOMY

10000  
CHANGES™

factory ➔ shipping ➔ store ➔ use ➔ disposal. Unlike the natural world, humans have adopted a linear waste system, where there is a beginning and an end to a product.

## Action

Play the **10,000 Changes Circular Economy** video and show students the accompanying infographic. This will introduce students to the concept of a circular economy, which is a process that aims to mimic the circle of life. Instead of products having a start and an end, the products will be repurposed, reused or upgraded to keep them from landfills. Some companies are paving the way for others, and have begun investing in the circular economy, or in other words, they are trying to close the loop on waste. Provide students with the following examples of well-known companies who have invested in a circular economy:

- **Timberland:** The shoe company, Timberland, has partnered with a company called Omni United to create a line of tires for cars that are designed to be recycled into Timberland shoes after their life on the road has come to an end. The tires are designed specifically to be repurposed instead of disposed of.
- **H&M:** The clothing store H&M is working its way toward a circular economy, with a focus on recycling clothing and garments. They have The Garment Collection Program, which is a global initiative to encourage people to bring in their old clothes to be properly recycled. For every bag of clothes that you bring in, you get a 10 per cent discount thank-you-treat!
- **Levi Strauss:** Levi Strauss is partnered with a company called Blue Jeans Go Green, and will collect your old clothes and shoes and then Blue Jeans Go Green will recycle and repurpose them, along with repurposing old Levi jeans into new ones. Levi Strauss is also partnered with a company called Evrnu to make new jeans out of old ones.
- **Dell:** Dell is partnered with various organizations to close the loop on plastics by using more repurposed plastic in their technology.
- **Energizer:** Energizer has made the world's first AA battery that includes four per cent recycled battery material. This is just the beginning, as they project that by 2025 they will have a battery made from 40 per cent recycled battery materials.
- **TerraCycle:** TerraCycle is a company that has programs that help other companies recycle everything. These recycling programs are funded by different brands, manufacturers and retailers to provide this service at no cost.

After the students have been introduced to different companies, inform them that they will be coming up with a project proposal for a well-known company of their choice. This project proposal will give their chosen company suggestions for how to close the loop on plastics to create a circular economy. Hand out the Project Proposal worksheet attached. Students will work in their small groups to brainstorm ideas.

Once students have had time to create a project proposal, ask them to write a letter. The students will write a letter to the company that they have chosen for their project proposals. Using the information they have gathered from their Project Proposal worksheet, students will outline what the circular economy is, how the company can implement it in their manufacturing process, and explain why it is beneficial for the environment.

## Connection to the Canadian Geography Framework

### Concepts of Geographic Thinking

- ▷ Patterns and trends
- ▷ Interrelationships
- ▷ Geographic perspective

### Inquiry Process

- ▷ Ask geographic questions
- ▷ Communicate
- ▷ Reflect and respond

### Geospatial Skills

- ▷ Foundational elements
- ▷ Spatial representations

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## Conclusion and Consolidation

Once students have written their project proposals and letters to the company, each group will share their ideas with the class. As a class, students will decide which group's project proposal they would like to focus on. Once a proposal is chosen, as a class, or in small groups, students will create a public service announcement video that explains their ideas on how the company can change to adopt a circular economy.

To conclude the lesson, ask the students to discuss the following:

- Was it easy to come up with ideas to support a circular economy?
- Why is it important for companies to work towards a circular economy?
- Do you think more companies will start adopting a circular economy?
- What are some of the difficulties faced by companies when adopting a circular economy?

This could be presented to the students as an exit slip.

Encourage students to head to [10000changes.ca/](https://10000changes.ca/) and make a pledge about what they can do to decrease their use of plastics. Encourage students to make pledges with their friends and families as well.

## Extend Your Geographical Thinking

- Have students explore the website of the company they have chosen to research to learn about what kind of environmentally friendly projects they have.
- If the company your students have selected provides contact information, consider encouraging your students to send the project proposal or letter to the company.
- Consider posting the public service announcements to a blog or to your school's social media accounts to extend the reach of students' work.

## Modifications

- Students who use devices can use a digital copy of the proposal worksheet and can write their letter on the device.
- Devices such as tablets, phones, or computers can be used throughout the activity to assist students in researching companies and different ways to create a circular economy.
- Modify the Project Proposal worksheet as required to meet student needs. E.g., remove questions for younger students.
- Create a project proposal as a class.
- Challenge older students to extend their understanding of a circular economy by comparing different companies' production regulations.

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- Have students share their project proposals, letters or videos with the school community.
- Students can work in groups or individually to complete this activity.
- In the “Minds On” section, the Nature and Man-made cards activity can be done as a large class activity, with students playing the roles on the cards, and having a class discussion about the order.
- For the public service announcement, students can create a public service announcement for their groups’ project proposal.

## Assessment Opportunities

- Anecdotal notes can be taken while the students are discussing the Nature and Machine-made cards, during the time they are working on their project proposals, and during the consolidation discussion time.
- Students can submit their project proposals, letters or videos for formative assessment.
- When presenting, students may be assessed on their oral communication and presentation skills.
- Learning skills such as responsibility, organization, collaboration, and initiative can be assessed.
- Students can self- and peer-assess while writing letters and creating the video.

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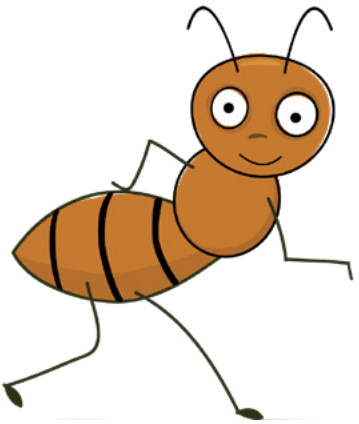
## Nature cards



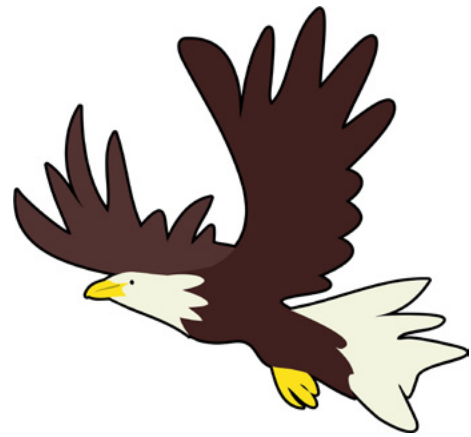
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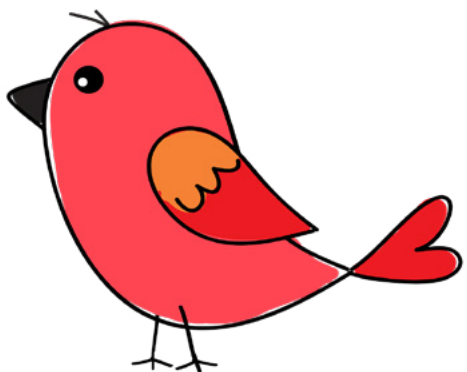
SNAKE



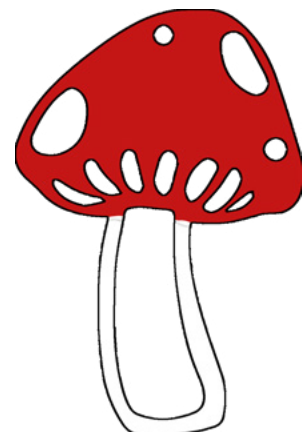
ANT



EAGLE



BIRD



MUSHROOM

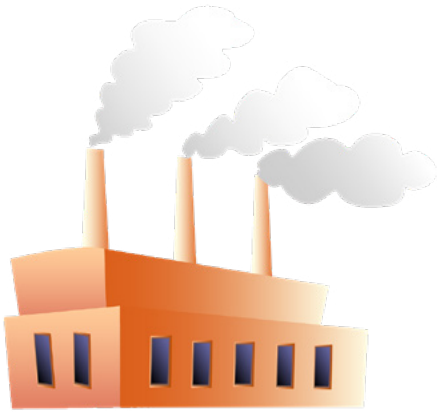
## Machine-made cards



NATURAL RESOURCE EXTRACTION  
(i.e., crude oil)



STORE



FACTORY



USAGE



TRANSPORTATION TRUCK



DISPOSAL

# CIRCULAR ECONOMY



## Project Proposal worksheet

**Company's name:** \_\_\_\_\_

**Company's location:** \_\_\_\_\_

**Main product:** \_\_\_\_\_

What is a circular economy?

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What product are you going to focus on?

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What steps can you propose that would help this company adopt a circular economy?

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How will this help the company reduce their waste and help the environment?

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How will this change benefit the company?

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