

BIOCOLLECTION TECHNOLOGY FOR RECYCLING PLASTIC

10000
CHANGES™

Time

60 minutes

Grade level

3-8 (can be modified for older and younger grades)

Learning Objectives

- Students will learn about and understand the new 3Rs that are at the core of the 10,000 Changes program.
- Students will learn about BioCellection's innovative technology that aims to reduce plastic waste.
- Students will apply their understanding of BioCellection to find new ways to reuse old objects.

Materials

- *BioCellection Technology for Recycling Plastic* infographic and video (accessible at 10000changes.ca)
- 10,000 Changes "The New 3Rs" (10000changes.ca/en/rethinking-plastics/the-new-3-rs/)
- Reimagine Your Plastic worksheet and pencil
- Supplies to create a new object (optional)

Focus Questions

Is recycling the only solution to the global plastic problem? How much of the plastic that is produced gets recycled or reused? How can we help reduce the amount of plastic we use in our daily lives? Are there other ways to recycle plastic than the current approach?

Lesson Description

Minds on

Students will be introduced to "The New 3Rs" of the 10,000 Changes program. Students will think about ways to refuse, replace and reimagine plastic use in their lives. The class will discuss the benefits of the new 3Rs.

Action

Students will watch the [10,000 Changes](#) video and examine the accompanying infographic focusing on BioCellection to learn more about the company's alternative solution to recycling plastic. Students will expand their learning of the new 3Rs, focusing on "Reimagine." They will find an object in the recycling bin to use as inspiration to reimagine the object in a new and different way. Students will answer questions, reflecting on the connection between the activity and the work that BioCellection does.

Conclusion

Students will share their reimaged object with the class and discuss how it could be useful. The class will discuss how the activity connects to the work that BioCellection does.

Lesson Implementation

Minds on

Start the lesson by asking your students about the original 3Rs: reduce, reuse and recycle. Discuss what these terms mean to them and what experience they have had with them. Next, explain that 10,000 Changes has a new set of 3Rs to help solve the issues around recycling plastic. The new 3Rs are: refuse, replace, and reimagine.

Ask students to come up with ways they can refuse, replace and reimagine their day-to-day plastic use to help reduce waste. Ask students what they are already doing where they either refuse, replace, or reimagine.

Sample answers:

- Refuse: Refusing plastic straws, plastic cutlery, and plastic bags.
- Replace: Replacing single-use plastic items with reusable items, such as metal straws, portable utensils, or reusable lunch containers.
- Reimagine: Finding new ways to use old items, transforming an item that might end up in the garbage or recycling it into something new, and finding new ways to recycle.

*Created in partnership by Canadian Geographic and the Recycling Council of Ontario,
with funding provided by Environment and Climate Change Canada*



BIOCOLLECTION TECHNOLOGY FOR RECYCLING PLASTIC

10000
CHANGES™

You can use this to prompt a discussion around the 3Rs and have students voice their thoughts and feelings towards both the original 3Rs and the new ones that 10,000 Changes suggests. Record answers and display them to prompt discussion.

Action

Ask students if they can think of any better ways to recycle plastic. Play the 10,000 Changes video *BioCollection Technology for Recycling Plastic* and the accompanying infographic. After watching the video, have a discussion with students to ensure their understanding of BioCollection.

In this activity, students will be focusing on the “Reimagine” of the 3Rs to design a new use for a recycled object. This object will be a plastic object that they could find either in the classroom, the school, or bring from home that would otherwise end up in the recycling bin (e.g., plastic water bottles, milk containers, shampoo bottles, plastic bags). Instruct students to imagine they are deconstructing it to create something new. They will be using BioCollection’s concept on a larger scale by imagining that they are taking their object apart, similar to BioCollection’s technology of chemically breaking down polymer chains and rebuilding them into something new. Encourage students to come up with as many different new objects and uses as time allows.

Provide students with the Reimagine Your Plastic worksheet to help them organize their thoughts.

Conclusion and Consolidation

Once students have completed the chart and come up with their ideas, ask each of them to share their ideas with a peer, a group, or the whole class. The students should use this time to help inspire each other with different uses of many objects. If time permits, to further this lesson, students can create the new object that they have imagined if they have the necessary materials and tools available (e.g., cutting water bottles to make pencil holders, creating shovels out of shampoo bottles, making a tablecloth out of old plastic bags). Have a gallery walk to show off the final products. If students have created something that you can use in the class, use this as an opportunity to use the object for its reimagined purpose in real life.

After students have shared what their objects are, have a class discussion about the follow-up questions they answered on the worksheet.

Encourage students to head to 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 create posters and local initiatives to help promote the new 3Rs. Display the reimagined objects, along with a description of why the students have completed this activity. Consider posting pictures or a blog about this activity to your school’s social media accounts to expand the reach of students’ work.

Have students come up with a plan to make your class zero waste.

Have students create a daily journal entry regarding single-use plastic they use every day to make them aware of the amount of plastic they are using.

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

*Created in partnership by Canadian Geographic and the Recycling Council of Ontario,
with funding provided by Environment and Climate Change Canada*



Modifications

- Students who use devices can use a digital copy of the worksheet.
- Devices such as tablets, phones, or computers can be used throughout the activity to assist the students when they are brainstorming new ways to use their objects.
- When introducing the new 3Rs, set it up as a Predict, Observe and Explain exercise. Have the students predict the new 3Rs, ask the students what the new 3Rs would look like in the real world, and then explain by showing them the *BioCollection Technology for Recycling Plastic* video.
- Modify questions as required to meet student needs.
 - ▷ Remove questions for younger students.
 - ▷ Have a class discussion rather than having students write out answers.
 - ▷ Challenge older students to come up with their own discussion questions.
 - ▷ Have students create a school-wide survey on the new 3Rs.
- Students can work in groups or individually to complete this activity.

Assessment Opportunities

- Anecdotal notes can be taken while the students are discussing the 3Rs, during the time they are working with their plastic objects, and during the consolidation discussion time.
- Students can submit their worksheets for formative assessment.
- If students present their ideas or objects, students could be assessed on their oral communication and presentation skills.
- Learning skills such as responsibility, organization, collaboration, and initiative can be assessed.

*Created in partnership by Canadian Geographic and the Recycling Council of Ontario,
with funding provided by Environment and Climate Change Canada*

BIOCOLLECTION TECHNOLOGY FOR RECYCLING PLASTIC



Reimagine Your Plastic worksheet

Original object	Reimagined object description	Reimagined object drawing

QUESTIONS TO EXTEND YOUR THINKING:

1. How does this activity relate to the work BioCollection is doing?

a. What are the similarities? _____

b. What are the differences? _____

2. What are the potential outcomes of the new 3Rs that 10,000 Changes is suggesting?

a. What positive impacts could it have on society and the environment? _____

b. What negative impacts could it have on society and the environment? _____

3. How can reimagining objects help reduce plastic waste?
