

Mission: Protect our oceans

The plastic problem guide



Mission: Protect our oceans offers a creative approach to learning about the oceans and issues that affect us all: the environment, the impacts of climate change, and our future. Developed with the Natural Sciences and Engineering Research Council of Canada (NSERC) in partnership with the Canadian Commission for the United Nations Educational, Scientific and Cultural Organization (CCUNESCO).

Students will be able to draw and submit their own inventions to appear on nserc.littleinventors.org, where they will be reviewed by the Little Inventors team, NSERC and CCUNESCO! Their idea might even be chosen as team favourite, turned into an animation or even made into a real object by one of our Magnificent Makers. The winners will be invited to take part in a special exhibition in 2021 to celebrate the launch of the **United Nations Decade of Ocean Science for Sustainable Development**.

The Plastic Problem is the second of a set of three extensions packs on pollution designed to complement our core challenge resource pack - **Mission: Protect our oceans**, which offers a fresh way to learn about why the oceans matter, about sea life and habitats, and the threats and challenges to ocean health.

A second extension pack, **Climate Power** (the water cycle, the role of oceans in the weather, climate change issues) will be available by June 8, 2020 for World Oceans Day.

You can download the resources from nserc.littleinventors.org.

The resources have been designed to support scaffolded learning for students age 5 to 15 years old to stretch their imagination and creativity.

Use the notes in the presentation to deliver your workshop. You can choose the slides that you think are most appropriate to support your lesson, whether for elementary or secondary students. The notes are coded in regular font for content that is more accessible and **in bold for content that is more advanced**.



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Familiarize yourself with the resources available before the workshop

Plastic everywhere presentation

- Presentation
- 1x Your day in plastic activity sheet per student

And of course don't forget to give your students invention sheets to capture their ingenious ideas!

Tools or materials needed during the workshop

Make sure you have plenty of black pens and colouring pens available for the workshop!

The plastic problem presentation

This presentation looks at plastic in our daily lives and the problem that it causes in our oceans. is accessible to elementary students and secondary students. Go through the slides with your class:

- Slide 2 '**Plastic everywhere**' explores the advantages and disadvantages of plastic in our daily lives and its impact on the oceans.
- Slide 3 '**But what is plastic exactly**' looks at plastic as a man-made material, and the main two types of plastic, thermoplastics and thermosets.
- Slide 4 '**What about recycling**' tackles the concept of recycling and how it is not a suitable answer to the plastic problem.
- Slide 5 '**Why plastic ends up in the ocean**' explains how so much plastic ends up in the ocean, as garbage or as microplastics.
- Slide 6 '**Plastic's not my bag**' shows the recent history of the plastic bag as an example of single use plastic.
- Slide 7 '**Inventing to the rescue**' introduces some of the innovations currently happening to tackle the plastic problem.
- Slide 8 '**Your day in plastic**' supports the activity sheet of the same name, and challenges students to think about their own use of plastic over the course of a day and how they could change to non plastic options.
- Slide 9 '**Coming up with ideas**' offers tips to get ideas flowing!
- Slide 10 offers useful links to continue their ocean invention journey...

You can make this PowerPoint as interactive as you wish by asking your students questions throughout, such as:

- What pollution do they think ends up in the ocean?
- Why does land pollution matter to the health of the oceans?
- Why do we need plastic?
- Can we do away with plastic altogether?
- What are the effects of plastic pollution in the ocean?
- What are alternative materials to plastic? What are their advantages and disadvantages?
- What could we do as individuals to reduce the amount of pollution on land and in the oceans?



Then use the 'Your day in plastic' activity sheet to get your students thinking about how they use plastic in their everyday lives and how they could change to more environmentally friendly options or habits.

Finish by getting them to think up and draw an invention that tackles the plastic problem and submit it to the **Mission: Protect our oceans** challenge on nserc.littleinventors.org for a chance to see their invention being made real!

Customization: You could ask students to do an inventory of their desk/what they are wearing – list everything they find that has plastic parts.

Extended activity: You could ask students to create an action plan poster for their home or school on how to ban single use plastic and encourage new habits. Or you could organise a hands on activity such as an outdoor clean-up day near a stream or body of water.

Round-up!

After running the activity, gather all the student invention drawings in a gallery around the classroom/ workspace.

Get students to discuss their favourite ideas — what do they like and why? Encourage positive feedback throughout.

- What do they think of their invention?
- What are its strengths and weaknesses?
- How do they think their invention would work in real life?
- Can they imagine their invention being used by other people? What would they say?
- What other ideas or challenges can they think of?
- Why are inventions useful?
- How will they approach problems in the future?

Give students extra invention sheets to come up with more invention ideas at home. They can also download more invention sheets for free on nserc.littleinventors.org.

After the workshop: Make sure you collect all invention sheets during the workshop. Invention drawings should be scanned (rather than photographed) to be uploaded on nserc.littleinventors.org for a chance to get picked as Little Inventors team favourites, turned into animations or even get made into real objects!

With thanks to Let's Talk Science for contributing their expertise in bringing these resources together.

You can find useful learning strategies and further ocean related resources - <https://letstalkscience.ca/educational-resources/learning-strategies>.

<https://letstalkscience.ca/resources/search> (type "ocean" in the search box)

