

MISD Mission Blue: Oceans!

Resource Guide



The aim of Little Inventors workshops is to allow students to express the far reaches of their imagination. We want to inspire students to think up and draw original, ingenious, funny, fantastical or perfectly practical invention ideas. There are no limits!

MISD Mission Blue: Oceans! offers a creative approach to learning using invention. It is a pilot program designed for Macomb County Intermediate Schools District in partnership with Little Inventors. Hearing about your experience using these resources in your school is really important to us so we ask that you complete an evaluation at the end of the project.

Students will be able to draw and submit their own inventions to appear on misd.littleinventors.org, where they will be reviewed by the Little Inventors team and MISD. Their idea might be chosen as a Little Inventors Team Favorite, turned into an animation or even made into a real object by one of our Magnificent Makers.

The winners will be revealed at a special event live from the Detroit Zoological Society.

MISD Mission Blue: Oceans! is comprised of:

Pack 1 Get Inventing: Introduction to invention, getting students to think about how invention is part of everyday life and all around us. The presentation includes an open invention challenge using creative starter activities.

Pack 2 Oceans Challenge: Using a pack that was 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 learn about the oceans and issues that affect us all: the environment, the impacts of climate change, and our future. The presentation offers a fresh way to learn about why the oceans matter, about sea life and habitats and the threats and challenges to ocean health.

Pack 3 Prototyping Activity: The resources have been designed to support scaffolded learning for students aged 5 to 15 years old to stretch their imagination and creativity. Each resource includes a PowerPoint presentation, activity sheets and a resource guide.

Use the notes in the presentation to deliver your workshop. You can choose the slides and activity sheets 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.

Familiarize yourself with the resources available before the workshop

Little Inventors challenge video

Make sure you can access the video online at <https://www.littleinventors.org/resources/> or <https://www.youtube.com/watch?v=ERFgorcRCJY> and play it either on a whiteboard, individual computers or tablets (if you don't have internet access during the session, you can download the video from our Run a workshop! page).

For further invention inspiration watch Dominic here <https://vimeo.com/122959827>

MISD Mission Blue: Oceans! Get inventing Presentation 1 (optional)

Use this presentation on a whiteboard or computer to help you deliver the workshop.

Printing materials per student

1 x Little Inventors drawing sheets (have some spare ones too)

1 x Character profiler

1 x Mind Mapping

Per whole group: 1 x set of ready-made challenge cards

1 x set of character cards

Tools or materials needed during the workshop

Make sure you have plenty of printed copies of the invention drawing sheets, black pens and coloring pens available during the workshop

Running the workshop

The following activities are offered with indicative timings on how you could run a workshop. You could decide to run only some of the activities depending on time and abilities.

Get started! 5-10 mins

Explain that in this workshop, children will be given a chance to come up and draw their own invention ideas.

Refer to the Little Inventors presentation to help you create an inspiring atmosphere.

Watch the Little Inventors challenge video by our Chief Inventor Dominic Wilcox.

Have a class discussion on inventions, for example:

- What is an invention?
- Can you name some well-known inventions?
- What about ordinary objects? Why were they invented?
- Inventions are used to solve problems – can you think about problems or things that could be made more interesting or fun?
- Can you think of someone who has a problem or finds things difficult? How can you help them?

Note some children may draw robots to tidy their bedroom or do their homework for example. While robots are fun, try to encourage the creation of unique and original invention ideas.

Follow up: Depending on the time available and abilities, children can either move on to do the Character profiler, the Mind Mapping or go straight to drawing with What's Your Invention?.

Character profiler 10-20 mins

Inventions happen when someone needs help with something! Tell children that this Character profiler will help them form a picture in their mind of a character and what that character might find challenging.

- Give children a Character profiler worksheet.
- Ask them to choose one character card and put it on the worksheet.
- Ask them to write down information about this character, by thinking about who they are, where they live, what they like or dislike.
- Ask them to come up with an invention idea that their character would need or like.

Differentiation: Instead of writing their description, children could draw their character and add keywords to explain who they are, where they live, their likes and dislikes.

Extension activity: You could ask children to write a story, or draw a comic strip about this character, their life and how the invention could change their life.

Follow up: Depending on time available and abilities, children can either move on to do Mind Mapping or go straight to drawing with What's Your Invention?

Mind Mapping 10-20 mins

This Mind Mapping exercise aims to encourage children to think about challenges in a bit more depth in order to develop a better idea for an invention.

- Give children a Little Inventors Mind Mapping worksheet.

- Get them to choose one ready-made challenge card and put it on the sheet.
- Ask them to write down words that come to their minds when reading their challenge.
- You might want to get children to work in pairs or small groups to share their ideas.
- You can help them by asking them to think about different questions: what it is, where does it take place, when, who is involved, what happens? etc.
- Ask children to repeat the process with the words they have written down to create another layer of words.
- Ask them to explore words they have written down – what idea does it give them for an invention?

Differentiation: Choose one ready-made challenge and discuss it with the class and choose 4-5 keywords or themes for children to work from.

Extension activity: Give children both a ready-made challenge card and their completed Character profiler and ask them to think about how they could link the two together.

Follow up: Depending on time available and abilities, children can either explore the Character profiler if they haven't already completed it or start drawing with What's Your Invention?.

What's Your Invention? 20-40 mins

Once children have had a chance to develop their ideas a little through discussion in Get Started!, the Character profiler and/or the Mind Mapping, give them a Little Inventors drawing sheet to draw and explain their invention.

- Make sure that children put their name and age on the worksheet.
 - First, ask them to draw using a black pen as an outline, and add colors to their invention to bring it to life. Tell them to fill as much of the drawing sheet as possible. Ask them to label parts on their drawing to explain how it works.
 - Secondly, ask children to name and explain their invention - what does it do? who is it for? what is it made of? how big is it?
 - Tell them they are briefing someone to make their invention (which could happen!).
- Students can draw more than one invention if they want.

Differentiation: Children make a video or audio recording to explain how they got their idea in their own words.

Extension activities: Children come up with their own invention ideas, draw them and explain how they think it can work and how it can be made. Children can also create adverts for their invention by designing leaflets or making a video.

Follow up: Use Round-up to finish the session and upload the invention ideas to littleinventors.org.

Round-up! 5-15 mins

Gather all the children's invention drawings in a gallery around the classroom/ workspace.

Get children to discuss their favorite ideas – what do they like and why? Encourage positive feedback throughout.

- What do they think of their invention?
- What are its strengths and weaknesses?
- What would they do differently?
- Can they imagine other people using their inventions? 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?

Follow up: Make sure you upload the children's invention ideas on misd.littleinventors.org for a chance to get picked as team favorites, turned into animations or even get made into real objects!

This pack will get you prepared for creating marvelous inventions for the ocean using the next resource pack **MISD Mission Blue: Oceans! Challenge presentation**