

CLEAN UP OUR OCEANS

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10:00AM - 18:00PM



Your Goal

Trash weighing over two hundred thousand tons currently floats near the surface of the world's oceans, composed of trillions of pieces of oceanic trash. **Your goal is to invent a way to clean up the world's oceans.**

Step 1: Think about the different ways to clean up our oceans, and specialize in one of the listed ways.

Step 2: Explore the constraints of your specialization, to consider when designing your invention, using the template on Page 4.

Step 3: Create your invention! Draw a diagram of how your concept works on Pages 5 & 6.

Step 4: Create your Speech!

Let's get started!



Vocabulary

Specialization: How focused an invention is on solving a narrower set of problems, compared to solving a wider range of problems less effectively.

Design Thinking: A creative process used to address challenges. When solving problems with design thinking, it is important to be kind to others, and to offer and accept feedback.

Buoyancy: The ability or tendency to float in water or air or some other fluid. Buoyancy is caused by differences in pressure acting on opposite sides of an object immersed in a fluid.

Critique: A detailed form of giving feedback that analyzes how well a design achieved its objectives given the current constraints.



Designing an invention

Remember that it's always okay to change details or aspects of your invention design! Inventions are never perfect on the first try.



What is specialization, and why is it important?

Specialization allows inventions to better solve specific problems, instead of solving a wide range of problems less efficiently. Screwdrivers are specialized to be used with screws, not nails, for example.



Floating ocean trash

Some oceanic trash floats far away from the coastlines, polluting the waters that marine life calls home. Consider how you'd clean up trash so far away from land.



Shoreline trash

Over time, floating ocean trash can wash up on beaches and shores. This can be dangerous for people and animals, in addition to polluting the coastlines. Consider how you'd remove trash from a beach popular with tourists compared to a rocky, remote island.



Oil spills

Unique from trash found floating in open waters or washed up on beaches, oil spills are when toxic oil, such as petroleum, leaks from a commercial ship or structure. They can stretch miles in size and can simultaneously contaminate open water and beaches with sticky, toxic sludge.

Before moving forward, choose one of the specialization _____



Research

Do a research, on the internet, about the ocean pollution. With this research you will be conducted to exploratory studies to explore a group of questions about the ocean pollution. The answers and analytics may not offer a conclusion to the perceived problem.

Research is a process of systematic inquiry that entails collection of data; documentation of critical information; and analysis and interpretation of that data/information, in accordance with suitable methodologies set by specific professional fields and academic subjects.



Constraints

A constraint is a limitation or restriction to something. When designing something to be built, things like limited building materials, physics, and environmental factors are constraints to keep in mind. Your invention, for example, will be operating in or near water, which can affect electronics and motors.

Step 1: If you haven't decided yet on one of the specializations to focus on.

Step 2: Think about how your invention will work. Write one or two sentences, in the first box below, describing the specifics of how it will operate.

Step 3: Think about the constraints that will impact on your invention. Write 3 constraints in the next 3 boxes that will be important to consider when designing your invention.

How my invention will work?
Constraint 1
Constraint 2
Constraint 3



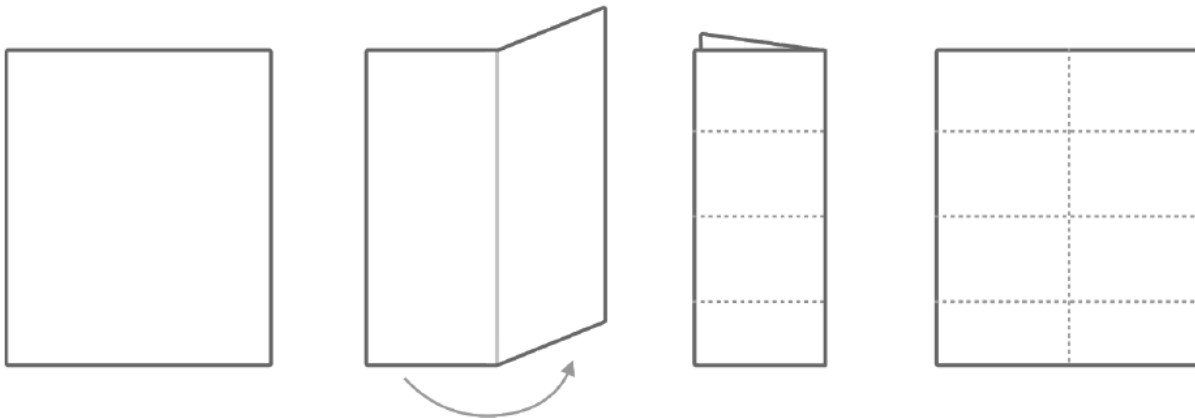
Generate ideas fast

Every finished invention in the world started out as a rough idea. To start designing your invention, it can be helpful to do a rapid ideation exercise. "Rapid ideation" just means creating ideas quickly, without worrying about the ideas being perfect yet.

At the end of this exercise, you will have made 6-8 simple drawings, representing early versions of your invention.

First, think about how your invention will work, and what building materials will be needed.

Second, fold a blank piece of paper like this, to create 8 sections.



Third, set a 5-minute timer.

Fourth, draw early versions of your invention! Try to draw your invention in different contexts, such as how it cleans up trash, or how it is transported. It's okay to change details or modify things in this early exploration phase!

On the next page, you'll refine your invention based on these explorations. Think about what you like about it, and what you'd want to change.



Rules of Brainstroming

Generate as many ideas as possible during the session.

Criticizing ideas is not allowed.

Wild and ambitious ideas are welcome.

Be brave not fearful and develop other ideas.



Take your design to the next level

In the space below, take 10 or 15 minutes to explore a more detailed version of your invention.

- Draw 1 diagram showing how your invention works.
- Also draw 1 diagram showing how it is transported to the site of ocean trash.

Diagram of how my invention works?

How my invention will be transported?



Self-critique

Complete the question prompts below to self-critique your invention.

How well would your invention handle environmental challenges, such as a powerful storm?

How well does your invention handle trash of different sizes or types?

How well would your invention handle environmental challenges, such as a powerful storm?

Can your invention work in any other situations, other than the specialization you chose?

What would you change about your invention to improve it?



Speech | Presentation

In order to present your idea, prepare a presentation. You can create a PowerPoint, a video, a poster or other things that you want.

Steps to Prepare a Presentation:

Step 1: Define the objective of the presentation; Preparing the Content of Your Presentation;

Step 2: Create the body of the presentation;

Step 3: Prepare the introduction and conclusion;

Step 4: Define if it is only one person to present or all the members of the group;

Step 5: Practicing.

Don't forget to use the Hackathon logo.