



EXPLORE



INDIVIDUAL

Welcome to your STEM Notebook. This is where you'll be able to brainstorm, research, and create new ideas for changing the world.



Read page 2

OCEAN TRASH





INDIVIDUAL



THE BIG QUESTION

Where do you think your trash  
goes after it is discarded?



Page 3

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## THE BIG QUESTION

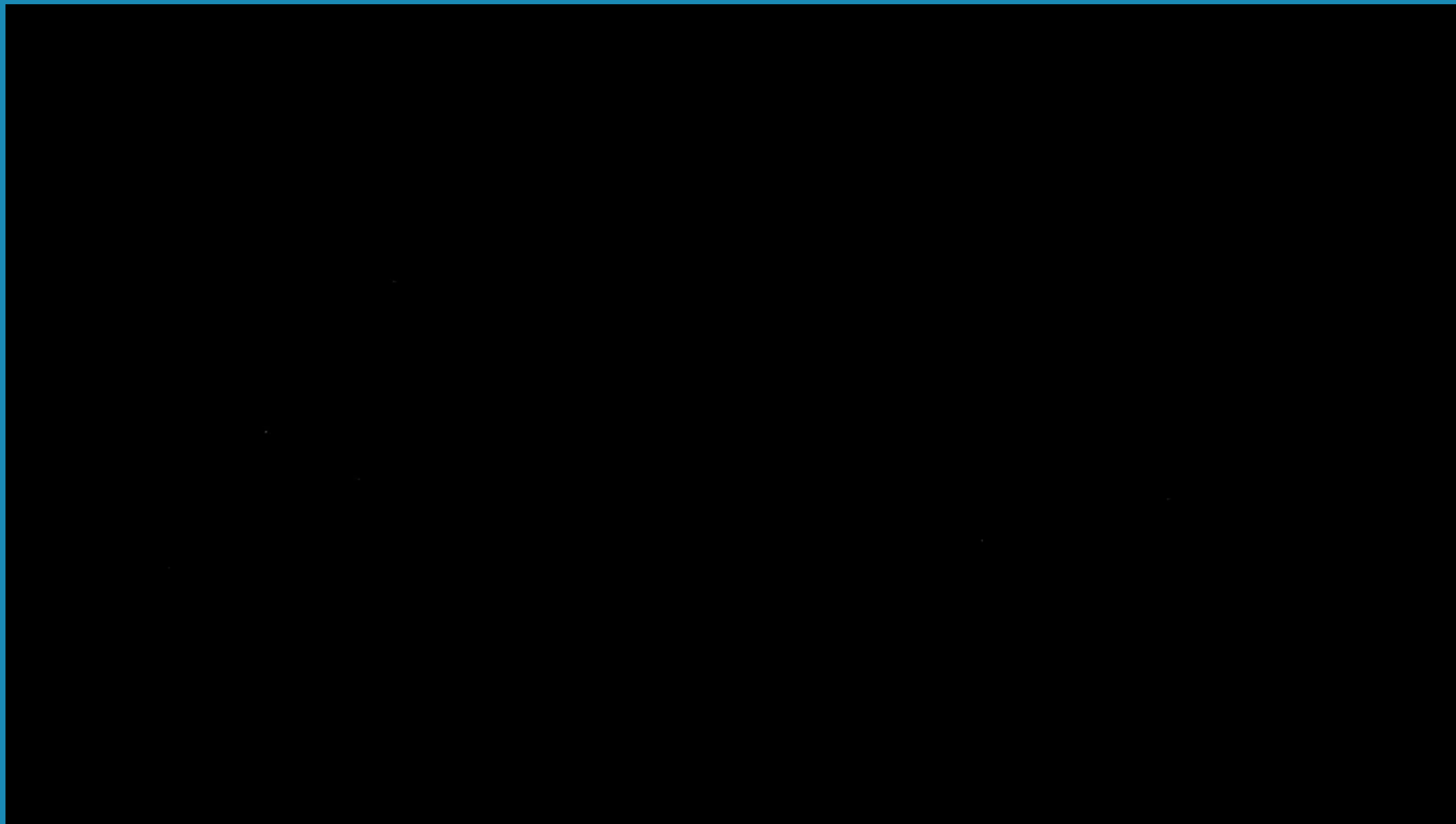
What different ideas did your partner have about where trash ultimately ends up?

Why does this matter?





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FILL OUT THE CHART

On page 5 of your STEM Notebook, complete the table of facts and questions after watching the video. Use page 4 as a reference.



Pages 4 and top of 5

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PAIR-SHARE

What is the responsibility of humans with regards to trash and the Earth's oceans?

How does this connect to your challenge?

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SMALL GROUP



INQUIRY

Create a list of questions  
connected to ocean trash.



Bottom of page 5

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MATERIALS

Meet with your launch teams and begin to explore the materials list.



page 6

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SMALL GROUP



BRAINSTORM

Brainstorm in STEM Notebook:  
Come up with 5 ideas for how you  
would fix the problem of ocean trash.



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TEAM SHARE

Share your 5 ideas with another team. Jot down any new ideas you discover and record them in your notebook.



page 8

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RESEARCH

Research with graphic organizer:

1. What role do humans play on the Earth's oceans?
2. What is the impact of trash?
3. What inventions already exist to fix this problem?



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BRAINSTORM

After doing research, add any new ideas to the team-sharing page.  
Combine ideas.



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SMALL GROUP



## COLLABORATIVE BRAINSTORM

1. Review your group's brainstorm and add any new ideas.
2. Discuss the sustainability and scalability of your solution.
3. Combine any similar ideas.
4. Get rid of any unacceptable ideas.
5. Narrow your ideas down into one concept.

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PARTNERS



PAIR-SHARE

Pair-Share: Pair up with a member of another group and share what your idea is and why you are doing it. Then switch roles.

Partner A: Share the idea

Partner B: Give one strength, one potential weakness, and one question

Partner B: Share the idea

Partner A: Give one strength, one potential weakness, and one question

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ANNOTATED SKETCH

In your STEM Notebook, sketch  
out your concept.



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COLLABORATIVE BRAINSTORM

Share your concept with your small group. Don't make a decision yet. You'll have time later to finalize the design.

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Use a strengths-weaknesses chart in your  
STEM Notebook on page 11.

Additionally, answer questions 1 and 2.



Page 11

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TEAM SHARE

Share your best idea with another group.  
Focus your discussions on the  
questions in your STEM Notebook.



Page 11

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BUILD



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BUILD A MODEL

Start building the model showing how it would work. Write notes and observations as you build.



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TEST IT

Complete the table in your STEM Notebook to show how it's working and what needs improvement.



Page 13

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LAUNCH



WHOLE GROUP



SHARE IT!

Have your group share or  
demonstrate your prototype with  
the class.

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LAUNCH IT!

Choose from one of the menu options and share your final work with a larger audience.



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SELF-REFLECTION

Complete the self-reflection  
questions in the STEM  
Notebook.



Page 15 and 16

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# WARM-UPS



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WARM-UP

Why is ocean trash a big deal?  
How does it impact the marine  
ecosystem? How might it impact  
humanity?



Warm Up #1 – page 17

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WARM-UP

Why would your invention work?  
What drawbacks do you see in  
it?

What problems are you still  
unable to solve?



Warm Up #2 – page 17

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# EXIT SLIPS



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EXIT SLIP

Why is it important to brainstorm  
ideas with others?



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EXIT SLIP

What is your group's solution?  
What are you planning to do next  
class period in order to build it?

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