

Eliminating Plastics and Microplastics from our Oceans

Trial Version



How can we, in school communities, take action against the global crisis of plastic pollution?

Title

Eliminating Plastics and Microplastics from our Oceans

Unit Description

The course is designed to help students raise public awareness and take action against the global crisis of plastic pollution. Based on specific examples of mymizu's efforts to reduce plastic bottles globally, students will examine plastic pollution problems in our oceans and propose solutions to help minimize the problem while valuing leadership and team diversity.

Driving Question

How can we, in school communities, take action against the global crisis of plastic pollution?

Learning Outcome

Understand the environmental impact of plastic pollution in our oceans and create a campaign to raise public awareness of plastic pollution issues.



TRIAL UNIT OVERVIEW

LESSON 1: ENGAGE WITH GLOBAL SOCIAL ISSUES

	Lesson	Description	Objectives	Standards	Student Work/Product
	<p>Lesson 1: How can tragedy inspire us to make a change?</p> <p>Time: 1 Class Period / 50 Minutes</p>	<p>This lesson is meant to introduce students to Robin Takashi Lewis, and the company he co-founded, mymizu. His story will help students see opportunities in times of great difficulty and tragedy.</p> <p>Students will engage in this lesson by:</p> <ul style="list-style-type: none"> analyzing Robin’s photo of a polluted beach. sharing reflective ideas about the photo with a peer. researching questions about plastic pollution. engaging in a gallery walk to discuss and gather new ideas. connecting personal experiences that inspired action. 	<p>Students will be able to:</p> <ol style="list-style-type: none"> appreciate the motivation behind the launch of mymizu to inspire innovation to help solve the global issue of plastic pollution. 	<p>SL 2: Integrate and evaluate information</p> <p>MS-ESS3-2: Analyze and interpret data</p> <p>MS-ESS3-4: Construct an argument supported by evidence</p>	

LESSON 2: EXPLAIN THE PROBLEM AND INNOVATIVE IDEAS

	<p>Lesson 2: How does plastic waste impact our environment?</p> <p>Time: 1 Class Period / 50 Minutes</p>	<p>In this lesson, students will investigate the attributes of plastic, research microplastics, identify how plastics impact the food web, and determine if plastic is sustainable.</p> <p>Students will engage in this lesson by:</p> <ul style="list-style-type: none"> collaboratively researching and discussing the attributes of plastic and microplastics. explaining how plastics enter the food web. explaining the other impacts of plastics and microplastics on our environment. 	<p>Students will be able to:</p> <ol style="list-style-type: none"> understand different attributes of plastics. explain how microplastics are generated and enter the environment. explain what happens to microplastics once they enter the environment. 	<p>SL 4: Present information and findings</p> <p>MS-ESS3-3: Apply scientific principles</p> <p>MS-ETS1-1: Design the criteria</p>	
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L3: ELABORATE ON YOUR SOLUTION TO THE PROBLEM

	<p>Lesson 3: How can you campaign for social change around plastic consumption and waste?</p> <p>Time: 1 Class Period 50 Minutes</p>	<p>Students will apply their research and understanding of the impacts of plastic pollution to take action.</p> <p>Students will engage in Lesson 3 by:</p> <ul style="list-style-type: none"> working collaboratively to identify a plastic-based problem in their school. generating ideas about social change and solutions to the problem. reflecting on their learning experiences throughout the mymizu unit. 	<p>Students will be able to:</p> <ol style="list-style-type: none"> identify plastic-based problems in their school. create a plan to initiate social change in their school. reflect on their learning experiences. 	<p>SL 5: Make strategic use of digital media and visual displays</p> <p>GC-TA-3: Act creatively and responsibly</p>	
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Technology Innovators Talk Series
Global Stage Inc. (GC_EN_S1-2)

6 CLEAN WATER AND SANITATION



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



14 LIFE BELOW WATER



Lesson Plan : Eliminating Plastics and Microplastics from our Oceans



with Robin Lewis

Co-Founder, mymizu

Director, Social Innovation Japan

 1 Class Period 50 Minutes	Description This lesson introduces students to Robin Takashi Lewis and the company he co-founded, mymizu. His story will help students to see there are often opportunities in times of great difficulty and tragedy. Students will engage in this lesson by: <ul style="list-style-type: none"> ● analyzing Robin’s photo of a polluted beach. ● reflecting upon and sharing ideas about the photo with a peer. ● researching questions concerning plastic pollution. ● engaging in a gallery walk to discuss and gather new ideas. ● connecting personal experiences that inspired action.
	Objectives Students will be able to: <ol style="list-style-type: none"> 1. appreciate the motivation behind the launch of mymizu to inspire innovation to help solve the global issue of plastic pollution.
	Materials Materials Needed for Lesson - white board, dry erase marker, chart paper, sticky notes, paper, markers, tape, video links (IP) - virtual white board, shareable document/presentation, video links (V)

Learning Experience	Teacher and Student Procedures
Whole Group: Image Analysis through Think-Pair-Share 15 Minutes	In this section, students will engage in a brief image analysis activity to activate prior knowledge while discussing the feelings invoked, based on their own backgrounds and perspectives. The photo serves as an introduction of the story that will unfold throughout this unit. Before beginning the Image Analysis activity, display the photo for your students to view. Think: 2 Minutes <ol style="list-style-type: none"> 1. Share with students that you have displayed a photo for the students to analyze. 2. The students should remain quiet and analyze details of the photo. 3. Using a sheet of paper, students will write down as many things they notice about the photo as they can, including any questions or ideas they may have, or any feelings that the photo may bring out.



Picture of Miyako Island

Pair: 3 Minutes

1. **In Person Classes:** Next, have your students find a partner to share their thoughts and ideas.
 - a. **Virtual Classes:** Pair students up and place them into breakout rooms to discuss.

Share: 3 Minutes

1. Have students return to a whole class setting, then have students share any questions, things they noticed, or ideas they may have about the photo.
 - a. **Virtual Classes:** Capture student thoughts on a digital document and share with students for a visual representation.
2. **In Person Classes:** As students share, capture their thoughts on the board for a visual representation.
 - a. **Virtual Classes:** Capture student thoughts on a digital document and share with students for a visual representation.

Note: It is likely that students will see a troubling photo with a problem stemming from plastic pollution. Students may discuss the quantities of plastics in the water, types of bottles, wonder where they originated, and share emotions they feel when looking at the photo. The key is to capture all the students' thoughts regardless whether you agree with them, (as long as they are school appropriate). This practice is intended to encourage fearless collaboration and contributions from students in the future.

Recap and Introduce: 7 Minutes

1. Next, recap the trends the students shared and affirm the students' ideas.
2. Share with students that the course they will begin is about a regular person like them who noticed a problem much the same way they did in this photo.
3. Introduce the founder of mymizu, Robin Lewis, and his innovative ideas about reducing plastic waste. [Video Link](#)
4. Next, introduce students to a more personal video of Robin describing his company, mymizu. [Video Link](#)

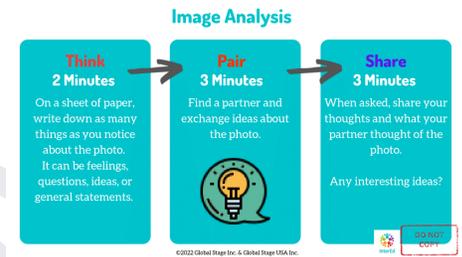


Image Analysis: Think-Pair-Share

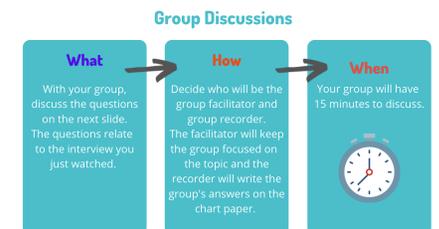
Small Group: Discussions and Personal Connections

15 Minutes

Next, students will work in small groups to discuss the key points that Robin shared in the video interview. The focus of this activity is for students to engage in discussions to formulate their own ideas about the phenomenon of global plastic pollution issues and how it relates to human rights issues. It's perfectly acceptable to ponder 'why' with the class and encourage further exploration and research to find possible answers to these questions. Teaching through inquiry means that we will not always have the answer, but we can ponder and research to find them – just like in real life.

Getting Ready

1. Share with students that they will be working in small groups to connect with the ideas that Robin shared in his interview.



2. Then, break students into small groups of 3 - 4 students.
3. Provide each group with a large sheet of chart paper and markers.
4. Then, have students in each group assume roles: (1) Group Facilitator and (2) Group Recorder.
 - a. The Group Facilitator will serve as the leader by keeping their peers on task with time and to complete the objective.
 - b. The Group Recorder will record the group's main ideas on the chart paper provided.

Group Discussion Chart Example

A) Our group believes that Asia produces 80% of the world's waste because...

B) We think _____ make up the other 20% of plastic bottle waste because...

C) We think this issue is...

D) When Robin shared that plastic pollution is a human rights issue, he means that...



The Discussion

5. Next, share the four discussion questions for the students to engage in with their groups. You can find the questions under 'Group Discussion Questions' below.
6. **In Person Classes:** Students will discuss each question together and record the key points that they have identified as important and would like to share with other classmates through a Gallery Walk.
 - a. **Virtual Classes:** Students will discuss each question together and type any key points into the shareable document provided for a 'Gallery Tour'. Please review the [Virtual Group Discussion Set up Example](#).

Group Discussion Questions: 15 Minutes

1. In the video, we learned that Asia produces 80% of the world's plastic bottle waste. What could be causing this?
2. What part(s) of the world do you think make up the other 20% of plastic bottle waste? Explain your thinking.
3. Do you think this issue is isolated to the above countries? Explain your thinking.
4. Robin Lewis, the founder of mymizu, shared that many of the issues involving plastic pollution are human rights issues, too. What does he mean by this? How are these two issues connected?

Small Group: Gallery Walk

10 Minutes

Now that students have completed their group discussions, the Gallery Walk activity will provide students with an opportunity to analyze multiple perspectives and gather additional thoughts and insights from other peer groups.

Gallery Walk: 10 Minutes (In Person)

1. Each group will tape their poster to the wall and stand in front of their poster. Students will now engage in a Gallery Walk by rotating clockwise to the next group's chart paper to review and discuss their ideas, as well as collect and analyze ideas from other groups.
2. Continue the process until all groups have had the opportunity to review and discuss each group's ideas.
3. Once completed, have all students return to their seats.

Gallery Walk

Next, let's find out what other groups discussed by doing a gallery walk.

In a gallery walk, each group hangs their information poster on a wall and other groups go from one poster to the next, reading, understanding, analyzing, and discussing each group's thoughts as they go.

It is much like going to an art gallery and discussing the paintings.



Gallery Tour: 10 Minutes (Virtual)

1. Student groups will continue to remain in their breakout room.
2. Each group should have already contributed their ideas to the shareable document provided by the teacher.
3. Next, each group is to start at the beginning of the document and review each group's ideas they contributed.
4. Students will review and discuss the ideas, as well as collect and analyze ideas from other groups.
5. Students will continue this process until all groups have had the opportunity to review and discuss each group's ideas.
6. Once completed, have all students return to a whole group setting.

**Whole Group:
Connections
and Reflections**

10 Minutes

In the final section of the lesson, students will discuss their findings from the gallery walk and learn more about what inspired Robin's desire to help solve the plastic pollution problem. Students will reflect and share how their personal experiences inspired them to take action.

Connections and Reflections

1. Next, have students share what ideas they gained from the gallery walk or what they found interesting about other groups' perspectives.
2. Then, ask students what they think inspired Robin Lewis to take action and create his company, mymizu.
3. After students have shared their ideas, introduce the [interview video](#) below to the students.
4. Have students share what they thought about Robin Lewis's experience and what prompted his call to action.
5. Then, ask students to think about an event that happened to them that inspired action. What were they able to do with their individual skills or backgrounds?
6. Provide students a sticky note to briefly share an action they took, based on a prior experience in two sentences. This will serve as an exit ticket at the end of the class period.
 - a. Sentence one: What happened?
 - b. Sentence two: Their action
 - c. Example: "A tornado hit my house and we were not prepared. I researched and taught my family about tornado preparedness and made a family guide for weather emergencies and shared it with people I know."
7. At the end of the class period, have students place their sticky notes on the board, classroom door, or any designated place as they exit the classroom. Review student responses at an appropriate time.

Connections and Reflections

A graphic with a light blue background. On the left, there is a lightbulb icon. Below it, the text reads: "What were some of your key takeaways from the gallery walk today?" and "What do you think inspired Robin to take action and create mymizu?". On the right, there is a photograph of a plastic bottle and other debris on a beach.

Exit Ticket Reflection

A graphic with a teal background. On the left, there is a lightbulb icon. The text reads: "Think about something you experienced that inspired you to take action. What were you able to do with your skills? Using a sticky note, write down two sentences that describe what happened and what your action was." Below this, there is a yellow sticky note with the example text: "A tornado hit my house and we were not prepared. I did some research and taught my family about tornado preparedness and made a guide for weather emergencies and shared it with people I know." To the right of the sticky note, there are two bullet points: "Sentence one: What happened" and "Sentence two: Your action". At the bottom right, there is a small logo and a "DO NOT COPY" stamp.

 1 Class Period 50 Minutes	Description In this lesson, students will investigate the attributes of plastic, research microplastics, identify how plastics impact the food web, and determine if plastic is sustainable. Students will engage in this lesson by: <ul style="list-style-type: none"> • collaboratively researching and discussing the attributes of plastic and microplastics. • explaining how plastics enter the food web. • explaining the other impacts of plastics and microplastics on the environment and people. 	
	Objectives Students will be able to: <ol style="list-style-type: none"> 1. understand different attributes of plastics. 2. explain how microplastics are generated and enter the environment. 3. explain what happens to microplastics once they enter the environment. 4. justify whether plastic is a sustainable material. 	
	<table border="1"> <tr> <td> Materials Materials Needed for Lesson - white board, dry erase marker, chart paper, sticky notes, markers, tape, video links (IP) - virtual white board, shareable document/presentation, video links (V) </td> <td> Materials to Prepare in Advance - </td> </tr> </table>	Materials Materials Needed for Lesson - white board, dry erase marker, chart paper, sticky notes, markers, tape, video links (IP) - virtual white board, shareable document/presentation, video links (V)
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Teacher and Student Procedures	
Introduction 2 Minutes	Review the following information with students: 2 Minutes 1.) In the previous lesson, students learned about innovator, Robin Lewis, and how his personal experiences inspired him to take action to help eliminate plastic pollution in our oceans and environment. 2.) In this lesson, students will explore the attributes of plastics and microplastics and how they impact our environment, oceans, and ultimately, us. Students will use this information to begin generating ideas to create social awareness and change.
Whole Group: Reflect 10 Minutes	<ol style="list-style-type: none"> 1. As you begin the class period, take a few minutes to discuss the trends from the student responses on the exit tickets from Lesson 1. <ol style="list-style-type: none"> a. Then, share examples of students who took action based on an event they experienced. Discuss what attributes someone might have to be able to take such action. b. Example: <i>One student's response recounted a story about a tornado that came through her town, but her family was not prepared. She decided to research tornado safety and created a family guide for weather emergencies and shared it with people she knows. What a great idea! This student took action after the scary event by using her research and design skills along with her concern for people's safety and created the emergency guide. It could save countless lives during another weather emergency. Amazing!</i> <div data-bbox="1596 1169 2026 1404" data-label="Image"> </div>

2. Then, remind students that innovator, Robin Lewis, took actions just like they did. It started with a small idea and then continued to grow with the collaboration and ideas from other people.
3. Share that in today's lesson, students will understand why plastic pollution has such a negative impact on our environment, our oceans, and us by examining the properties of plastics and microplastics.
4. Finally, ask students to share what questions they may have about plastics and microplastics and record their questions on the whiteboard. Accept and affirm all student inquiries. Example questions that students might ask are included below.
 - a. *How does plastic really hurt us?*
 - b. *It seems like small bits of plastic would just go into the ground. Why is it a problem?*
 - c. *How long does it take plastic to decompose?*
 - d. *Is it possible to eliminate plastics altogether?*
5. *Share that, as students research plastics in the next activity, they should review the students' inquiries on the board and seek to understand the answers to these questions if they are relevant to their assigned topic.*

Reflections



Robin took action just like you!
He started with a small idea and with collaboration and ideas from other people, he grew it into an amazing tool.

Questions



What questions do you have about plastics and microplastics?

Small Group: Examining Plastics

20 Minutes

In this section, students will work in small groups to identify and understand the attributes of plastic and how it impacts our world. Each group will create a visual presentation of their learning and present it to their peers.

Getting Ready

1. Break students into small groups of 3 - 4 students.
2. Have students in each group assign who will serve as the Group Facilitator.
 - a. The Group Facilitator will serve as the leader by keeping their peers on task with time to complete the objective.

Examining Plastics

1. Next, share that students will be using their devices to create 1 - 2 digital slides or use large chart paper to create a brief presentation to share their learning with their peers.
2. Then, assign each group one of the question sets below to research. You may have multiple groups researching the same topic. This is great for further comparison of ideas between the groups.

Plastic Attributes	Microplastics	The Food Web	Sustainability
What is plastic?	What are microplastics?	How do plastics enter the food web?	What does it mean if plastic is considered degradable or non-degradable? How does disposing of it impact the environment?
What is it composed of?	How are microplastics different from large debris waste?	How could microplastics from a plastic item end up being ingested by a human?	
What are common types of plastic we use daily?			

Examining Plastics

Students will work in small groups to identify and understand the attributes of plastic and how they impact our world.

Each group will create a visual presentation and present it to their peers.

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Examining Plastics: Group Roles

Group Facilitator

Serves as the leader by keeping their peers on task with time to complete the objective.



Examining Plastics: The Task

Create a brief presentation to share your learning with your peers.

You may create 1-2 digital slides, or use chart paper to create a poster of information.



	How do microplastics move through the environment?	What else is impacted once plastic enters the food web?	What are examples of degradable and non-degradable plastics that we use globally? In general, is using plastic sustainable?
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- Once each group has completed their research and presentation, students will decide who will present the different aspects of the presentation. All students are expected to present information during the two minute presentations.

Examining Plastics: The Topics

Plastic Attributes	Microplastics	The Food Web	Sustainability
What is plastic? What is it composed of? What are common types of plastic we use daily?	What are microplastics? How are microplastics different from large debris waste? How do microplastics move through the environment?	How do plastics enter the food web? How could microplastics from a plastic item end up being ingested by a human? What else is impacted once plastic enters the food web?	What does it mean if plastic is considered degradable or non-degradable? How does disposing of it impact the environment? What are examples of degradable and non-degradable plastics that we use globally? In general, is using plastic sustainable?

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**Whole Group:
Two Minute
Presentations**

10 Minutes

After each group conducts its research, students will share and demonstrate their learning through two minute presentations.

- Each group will have two minutes to share what they learned in relation to their topic.
 - Incorporating a two minute time limit to share information helps students stay relevant and concise while also keeping the audience engaged.
- Students can project their slides or hold up their chart paper during their presentation.

Two Minute Presentations

With your group, you will have two minutes to share what you learned about your topic.

Connections and Reflections

Making Connections: 5 Minutes

- Now that students have learned about the impacts of plastics in our environment, share that their research makes it clear that plastics in our oceans and environment are a growing problem globally. But, how can we increase awareness of such an issue?
- Share that students will revisit Robin of mymizu to learn how he brings awareness to people about plastic pollution.
- Show the video using the following link: [Video link](#)

In Person Classes: Reflection Exit Ticket: 2 Minutes

Connections and Reflections

- Place your name on the back of a sticky note.
- Reflect and write a brief response to the questions below.

➔ What did you think about Robin's methods of bringing social awareness about his mission?

➔ What surprised you the most?

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1. After watching the video, ask students to reflect on how Robin increases awareness about his mission.
2. Pass out one sticky note to each student and have them put their name on the back.
3. Students will reflect and write a brief response to the following on their sticky note:
 - a. What did you think about Robin's methods of bringing social awareness about his mission?
 - b. What surprised you the most?
4. At the end of the class period, students will place their sticky note on the board as they leave the classroom.
5. Collect the sticky notes and review student responses to ensure understanding.

Virtual Classes: Reflection Exit Ticket: 2 Minutes

1. After watching the video, ask students to reflect on how Robin brings awareness to others about his mission.
2. Share an [online survey link](#) with students to complete.
Note: This survey link is intended as an example for your reference. Please use the questions in this link to create your own online survey for use in your classrooms.
3. Students will reflect and write a brief response to the following on the survey:
 - a. What did you think about Robin's methods of bringing social awareness about his mission?
 - b. What surprised you the most?
4. At the end of the class period, students will submit their responses before dismissing.
5. Review the student responses to ensure understanding.

 1 Class Period 50 Minutes	Description In this lesson, students will apply their research and understanding of the impacts of plastic pollution to take action. Students will create a campaign to initiate social change in their school. Students will engage in Lesson 3 by: <ul style="list-style-type: none"> • working collaboratively to identify a plastic-based problem in their school. • create a campaign to initiate social change.
	Objectives Students will be able to: <ol style="list-style-type: none"> 1. identify plastic-based problems in their school. 2. create a plan to initiate social change in their school. 3. reflect on their learning experiences.
	Materials Materials Needed for Lesson - chart paper, markers, student group assignments (IP) - student group assignments (V)

Teacher and Student Procedures

Introduction 2 Minutes	<ol style="list-style-type: none"> 1. In the previous lesson, students learned about the composition of plastics and microplastics, how they can enter the food web and ultimately end up on our dinner plates! Students also learned about additional problems with plastic use and sustainability. 2. In this lesson, students will apply what they have learned through Robin’s innovative experiences to create a campaign to initiate social change within their school.
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Small Group: Reflecting and Generating Ideas 15 Minutes	<p>In this section, students will reflect on the inspiration they gained from Robin’s experiences and advice and apply it to the knowledge they have gained about the impact of plastic pollution. Students will work in groups to identify a plastics-based problem in their school and work to develop their campaign plan.</p> <p>Reflect: 5 Minutes</p> <ol style="list-style-type: none"> 1. Ask students to share what they noticed about Robin’s success as an innovator and as an agent of social change. 2. What key ideas could they apply to create social change in their school? <p>In Person Classes: Generating Ideas: 10 Minutes</p> <ol style="list-style-type: none"> 1. Divide the students into 4 - 5 groups, or more depending on the size of your class. 2. Give students a sheet of chart paper and markers.
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Let's Reflect



What have you noticed about Robin's success as an innovator and as an agent of social change?

What key ideas could you apply to create social change in our school?

3. Share that students will be working in groups to brainstorm what type of plastic issues are present in their very own school. Students will use the large chart paper to record their ideas about plastic problems in their school and select one issue they are choosing to address.
4. Have students select a Group Facilitator and Group Recorder for the group.
 - a. The Group Facilitator will serve as the leader by keeping their peers on task with time to complete the objective.
 - b. The Group Recorder will quickly record all the group's main ideas on the chart paper provided.
5. As students are collaborating and discussing, be sure to rotate to each of the groups to listen to their dialogue and offer constructive feedback.
6. As soon as a group has confirmed their idea, have a student volunteer record their group members' names and the issue they are choosing on the board. This will signal to other students that a group has already chosen that issue. Although students may choose the same issue, they should attempt to raise awareness about it in different ways.

Generating Ideas

Work with your group to generate ideas about plastic problems within your school.



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Examining Plastics: Group Roles


Group Facilitator

Serves as the leader by keeping their peers on task with time to complete the objective.


Group Recorder

Quickly records all the group's main ideas on the chart paper provided.

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Virtual Classes: Generating Ideas: 10 Minutes

1. Divide the students into 4 - 5 groups, or more depending on the size of your class.
2. Ask students to create their own presentation slides/document to brainstorm ideas and share them with their teacher to review their progress and thinking
3. Explain to students they will be working in groups to brainstorm what type of plastic issues are present in their very own school. Students will use the presentation slides/document to record their ideas about plastic problems in their school and select one issue they are choosing to address.
4. Have students select a Group Facilitator and Group Recorder for the group.
 - a. The Group Facilitator will serve as the leader by keeping their peers on task with time to complete the objective.
 - b. The Group Recorder will quickly record all group's main ideas on the presentation slides or document.
5. As students are collaborating and discussing, be sure to rotate to each of the groups to listen to their dialogue and offer constructive feedback.
6. Virtual students will inform their teacher what issue they are choosing to address.

**Small Group:
Creating a Plan
for Change**

25 Minutes

Next, students will begin formulating their plan to initiate change.

1. Provide each group with a new sheet of chart paper that students will use to create their plan.
2. Using the questions below, students will create a plan to initiate change within their school and guide their discussions.
 - a. What problem involving plastic use have you observed here at school?

- b. What happens to the item once it is used?
 - c. What is the potential impact on our oceans and environment from using plastics?
 - d. What is an alternative to the use of plastic products in your school?
 - e. What are the benefits of the alternative?
 - f. How much plastic waste do you estimate would be removed from the environment by using your alternative? (Students will make general calculations and justify their reasoning.)
3. Once they have completed a basic plan or outline, the students can use the remaining time to actually create their social awareness campaign. Using the choice board, each group can choose 1-2 elements of their campaign that they would like to create. The number of activities chosen by each team to complete during this time may depend on the size of your groups and the complexity of their choices.
 4. Share the rubric and your expectations with the students so that they can plan their campaign according to these criteria.
 5. As students are working together to develop their plan, circulate around the classroom to listen to their discussions and ask guiding questions to groups who may need additional help.
 6. When they have finished creating their campaign, you can use the rubric for teacher, peer, and/or self-evaluation.

Creating a Plan for Change

Using chart paper and markers, your group is to create a plan to initiate change within your school.

Use the questions to the right to guide you and then record your ideas.

- What problem involving plastic use have you observed here at school?
- What happens to the item once it is used?
- What is the potential impact on our oceans and environment from using plastics?
- What is an alternative to the use of plastic products in your school?
- What are the benefits of the alternative?
- How much plastic waste do you estimate would be removed from the environment by using your alternative?

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Creating a Plan for Change



Creating a Plan for Change

After your group has outlined a plan, use the rest of your available time to create your social awareness campaign for the change you want to see. Choose several ideas from the choice board to create for your campaign.

Create a digital presentation for your plan.	Make a poster to promote your plan.	Create a mime to promote your plan.	Create a social media post promoting your plan.	Record a short song or jingle to promote change.
Make a short, creative video to promote your plan.	Create an art piece that will raise awareness.	Make an infographic to support your plan.	Create a short, safe activity or game people can do to promote the plan.	Share your own creative idea with your teachers to get approval!

Creating a Plan for Change

Try to make sure:

- Your plan has all the needed parts and makes sense.
- You identify the problem.
- You identify an alternative.
- You identify the impacts (problem and solution).
- You estimate how much waste will be removed.
- You have 1-2 good visual or digital elements for your social change campaign.

Criteria	Excellent	Good	Needs Improvement	Not Met
Problem Identification	Clearly identifies the problem and its impact on the environment.	Identifies the problem and its impact.	Identifies the problem but lacks detail on impact.	Does not identify the problem.
Alternative Solution	Proposes a creative and feasible alternative solution.	Proposes a reasonable alternative solution.	Proposes a simple alternative solution.	Does not propose an alternative.
Impact Estimation	Provides a clear estimate of plastic waste to be removed.	Provides an estimate of plastic waste to be removed.	Provides a rough estimate of plastic waste to be removed.	Does not estimate waste removal.
Campaign Elements	Includes 1-2 high-quality visual or digital elements.	Includes 1-2 visual or digital elements.	Includes 1-2 simple visual or digital elements.	Does not include visual or digital elements.

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Optional Activities (Time Permitting)

This trial unit is an abbreviated version of our Silver Unit. In the actual Silver Unit, the following options are built into the learning progression. However, as time permits, we encourage you to continue the learning experiences with your students by incorporating the following elements into your lessons once students have created their plans for social change.

1. **Presenting Ideas:** Have each group present their plan to the class for encouragement and feedback.
2. **Launch:** Allow students to launch and advocate for their social change plan within the school. Students might hang posters around the building or host an information session to share awareness with their peers.
3. **Advocate:** Consider having students create an email to ask for a meeting with school administration to pitch their change ideas about plastic waste in their school.
4. **Host:** Have students host a booth at your school's Science Night to create awareness around the issues of plastic pollution in schools and their local communities. Students can share how they have advocated for change within their school and share ways families can make small changes at home.

Additional Activities: Launch Your Campaign

If you have the time and opportunity, you could also:

Actually launch and carry out your plan for social change within your school or your community.

You created a plan to make a change around plastics. Will your plan work? Find out by doing it!

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Reflections

5 Minutes

Now that students have experienced initiating social change, congratulate students on deepening their understanding of plastic pollution issues and how it impacts our environment, our oceans, and us. Using what they learned from Robin, along with their own innovative ideas, they created a plan to initiate change. This is what innovators do! They find ways to make things happen. Innovators also reflect on their experiences so they can learn more about themselves and identify plans for the future.

1. Using the reflection questions below, have students choose two to three questions they would like to respond to:
 - a. What was something you learned about plastics that you did not know previously?
 - b. What was the most surprising aspect about Robin's journey with mymizu?
 - c. How has this course changed the way you think about plastic waste or the food you eat?
 - d. Do you have an idea that you want to pursue to bring awareness to a different problem in our world? Explain.
2. Each student is to write a response on a sheet of paper and submit it at the end of the class period.
3. If time permits, have students share their response to one of the questions with the rest of the class.





Unit Title	Length	Topic & Driving Question	Assessment/Learning Outcome(s)	STEAM Connections	Standards	Instructional Strategies
Eliminating Plastics and Microplastics from our Oceans (GC_EN_S1-2) Robin Lewis  mymizu	350 Minutes (7) 50 Minute Lessons	Topic: Plastic Ocean Pollution Level: 1 DQ: How can we, in school communities, take action against the global crisis of plastic pollution?	Students will understand the environmental impact of plastic pollution and create a campaign to raise public awareness of plastic pollution issues in their school and community.	Science: Understanding plastic composition, degradation, and effects of oceanic pollution Arts: Designing a visual campaign Mathematics: Data analysis and creating graphic representations	CCSS & NGSS: SL2,3,4,5 MS-ESS3-2,3,4 MS-ETS1-1 GC: TA-3 SDGs: 6, 11, 12, 14	<ol style="list-style-type: none"> 1. Gallery walk 2. Chalk talk 3. Jigsaw activity 4. Think-Pair-Share 5. Whole group and small group discussions 6. Campaign presentation 7. Reflection
Green Energy: Providing Alternative Solutions to Power the Future (GC_EN_S1-10) Rachael Terada  CRS	400 Minutes (8) 50 Minute Lessons	Topic: Renewable Energy Level: 2 DQ: How can we harness green energy technology to provide sustainable, renewable energy for communities and industries in the future?	Students will create a plan to convince their peers to invest in their proposed renewable energy utilization plan. Students present their plans to their peers.	Science: Understanding renewable energy sources Mathematics: Data analysis and graphic representations	CCSS & NGSS: SL1,2,3,4,5 RST.6-8.6 MS-ESS3-1 MS-ETS1-1,2 GC: IW-1 RP-2 CI-2 TA-2-4 SDGs: 7, 9, 11, 17	<ol style="list-style-type: none"> 1. Whole group and small group discussions 2. Barometer activity 3. Jigsaw activity 4. Chalk talk 5. Creation of energy proposal 6. Presentations of proposals 7. Reflection
Education, Innovation, and Technology: Advocating Equity for All Students (GC_EN_S1-6) David Delmar Senties  	350 Minutes (7) 50 Minute Lessons	Topic: Educational Inequities Level: 3 DQ: How can we use education and innovation to reduce the global inequities of students around the world?	Students will create an innovative technology solution to reduce disparities in education. Students present their research and designs digitally to a live audience of educational stakeholders.	Technology: Implementation of tinkercad (optional) Arts: Creation of a digital prototype Mathematics: Data/statistics research and analysis	CCSS: SL1,2,4 GC: IW-1,4 RP-3,4 CI-1,3,4 TA-1,3,4 SDGs: 1, 4, 8, 10	<ol style="list-style-type: none"> 1. Whole group and small group discussions 2. Turn and talk 3. Group work 4. Hybrid Hackathon 5. Presentation 6. Exhibition 7. Reflection
Using Artificial Intelligence to Improve Sustainability in Fashion (GC_EN_S8-1) Salvador Nissi Vilcovsky  memomi	500 Minutes (10) 50 Minute Lessons	Topic: AI Technology Level: 2 DQ: How can we use Artificial Intelligence (AI) to improve sustainability in the fashion industry?	Students will evaluate a global sustainability problem in the fashion industry and develop an artificial intelligence based solution using the engineering design process.	Science: Understanding the impacts of the fashion industry on people and our world Technology: learning how artificial intelligence works Engineering: Using the engineering design process to solve a sustainability problem Arts: Designing an AI interface Mathematics: Analyzing clothing data trends, creating graphs	CCSS & NGSS: SL.5 RST.6-8.1,8.9 IMS-PS4-3 MS-ESS3-4 MS-ETS1-1,1-2,1-3,1-4 W.6.8 GC: IW-1 RP-2,4 CI-1 TA-1,2,4 SDGs: 8,12,13,15	<ol style="list-style-type: none"> 1. Think-Pair-Share 2. Group research 3. Group discussions 4. Carousel activity 5. Graphing activity 6. Engineering design process 8. Gallery walk 9. Class presentations 10. Chalk Talk: final reflections

<p>Delivering Help in Times of Crisis with Drone Technology (GC_EN_S1-9)</p> <p>Jessie Mooberry</p> 	<p>400 Minutes (8) 50 Minute Lessons</p>	<p>Topic: Drone Technology</p> <p>Level: 2</p> <p>DQ: How can we use the technology of drones and social entrepreneurship to impact a global humanitarian issue?</p>	<p>Students will understand the impacts of humanitarian crises and design an innovative drone prototype that can deliver humanitarian relief or help people in crisis.</p>	<p>Science: Understanding aviation concepts</p> <p>Technology: Learning about drones, using optional digital programs to create prototype</p> <p>Engineering: Experimenting with design modifications and testing</p> <p>Arts: Creating a drone prototype</p> <p>Mathematics: Data analysis, ratios and proportions</p>	<p>CCSS & NGSS: SL6 RST.6-8.3,4 MS-ETS1-3,4</p> <p>GC: IW-1 RP-2,4 CI-2,3 TA-1,2,3</p> <p>SDGs: 1, 11, 16, 17</p>	<ol style="list-style-type: none"> 1. Whole group and small group discussions 2. Humanitarian Drone Mission Project 3. Creation of video exhibition 4. Engaging in video exhibition 5. Reflection
<p>Providing a Path to Smarter Agriculture (GC_EN_S1-15)</p> <p>Lalit Gautam</p>  	<p>400 Minutes (8) 50 Minute Lessons</p>	<p>Topic: Agricultural Technology</p> <p>Level: 3</p> <p>DQ: How can we utilize entrepreneurship and technology to develop more sustainable agricultural practices to meet food demands of the future?</p>	<p>Students will understand the connection between soil health and food insecurity, and present a proposal for farmers to adopt more sustainable farming practices.</p>	<p>Science: Understanding agricultural practices, impacts of chemical fertilizers, soil health, and food security</p> <p>Technology: Development of agricultural techniques or innovations</p> <p>Mathematics: Data/statistics research, analysis, and graphic representations</p>	<p>CCSS & NGSS: SL1, 2,3, 4, 5 RST.6-8.6 MS-ESS3-3,4 MS-ETS1-2</p> <p>GC: IW-2 RP-2 CI-1 TA-4</p> <p>SDGs: 2, 6, 12</p>	<ol style="list-style-type: none"> 1. Think-Pair-Share 2. Group discussions 3. Group research 4. Designing a proposal 5. Pitching proposals 6. Evaluating proposals 7. Reflection
<p>Sustainable Foods: Creating Alternative Plant Based Products (GC_EN_S1-1)</p> <p>Christie Lagally</p>  	<p>500 Minutes (10) 50 Minute Lessons</p>	<p>Topic: Food Technology</p> <p>Level: 1</p> <p>DQ: How can we create a plant-based food alternative product that is sustainable, environmentally friendly, and healthy?</p>	<p>Students will become entrepreneurs and simulate a hypothetical company to produce a plant-based product. Students will design a plant-based meat alternative, a company logo and tagline to present to food industry clients in order to promote a more sustainable food industry.</p>	<p>Science: Understanding causes of global climate change and environmental impacts of livestock</p> <p>Technology: Learning about food manufacturing</p> <p>Engineering: Evaluating design solutions</p> <p>Arts: Food Market Expo artifacts</p> <p>Mathematics: Calculation and comparison of nutritional information and meat compositions</p>	<p>CCSS & NGSS: SL1, 2, 6 RST.6-8.1, 8.6 MS-ESS3-5 MS-ETS1-2 W.6.3,4 NS.B3</p> <p>GC: IW-1,3,4 RP- 1,2,4 CI-2,3 TA-1,2,3,4</p> <p>SDGs: 3,9,12,13</p>	<ol style="list-style-type: none"> 1. Whole and small group discussions 2. Group research 3. Gallery walk 4. Company profile research and development 5. Food Market Expo presentations 6. Reflection

Level 1 units are designed for students who have background knowledge of the topic, but limited to no experience engaging in project-based learning. The content in the unit is suitable for a wide-range of ages and academic abilities as the content is easily relatable. Students are able to research topics and apply their current understanding of core content skills with support or independently.

Level 2 units are designed for students who have little to no background knowledge of the topic, but experience engaging in project-based learning. Students will need to demonstrate an ability to work independently and also collaborate effectively with other students. In these units, students will apply their current understanding of core content skills as well as acquire new content skills through interdisciplinary practices.

Level 3 units are designed for students with little to no background knowledge of the topic, but have demonstrated strong academic backgrounds with a particular emphasis on literacy and reasoning skills. Content in these units will require students to reason deeply with multiple and complex perspectives through transdisciplinary practices.



Thank you for taking the time to experience a shortened version of our original Silver Unit. We hope that you and your students enjoyed this three day lesson on plastic pollution!

Did you know that we also have a FREE 30 day online access trial that provides digital access to three of our outstanding units, lesson plans, resources, and more? Be on the lookout for an email from our team to start your free online trial soon!

Have questions? Contact Saori Osu, Founder and CEO of InterEd, at saori.osu@gl-stage.com.

Thanks again from all of us at Team InterEd!

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