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SCIENCE

for Global Goals

OCEAN!

Part 7: Taking Action



SUSTAINABLE DEVELOPMENT GOALS

developed by



Smithsonian
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iap **SCIENCE
HEALTH
POLICY**
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PART 7: TAKING ACTION

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Find out More!

For additional resources and activities, please visit the *Ocean!* StoryMap at bit.ly/OCEAN2030.



Planner

Activity	Description	Materials and Technology	Additional Materials	Approximate Timing	Page Number
Task 1: How are different ocean systems interconnected?					
Discover	Use systems diagrams from previous parts to draw connections.	<ul style="list-style-type: none"> • Tape • String or yarn • Pens or markers • Sticky notes or a class board 	<u>System Diagrams</u> (from Parts 2, 3, 4, 5, 6—whichever ones you created)	25 minutes	228
Understand	Analyze the complex ocean system to identify problems you could help to solve.	<ul style="list-style-type: none"> • Sticky notes • Pens or markers 	<u>Complex Ocean System Diagram</u>	20 minutes	230
Act	With your team, come to consensus on the problem you will work to help solve.		<u>Ocean Identity Map</u> <u>Complex Ocean System Diagram</u>	20 minutes	230
Task 2: How will I contribute to a healthy ocean?					
Discover	Identify different action possibilities to address the problem you identified.	<ul style="list-style-type: none"> • Paper • Pens or pencils 	<u>Complex Ocean System Diagram</u>	20 minutes	232
Understand	Pick and plan your action.	<ul style="list-style-type: none"> • Paper • Pens or pencils 	<u>Personal Identity Map</u>	30 minutes	233
Act	Implement your action plan and reflect on your action.		<u>Action Plan</u> <u>Ocean Identity Map</u>	15 minutes + action time	236



Task 1: How are different ocean systems interconnected?

You have learned about different ocean systems. But of course, these systems do not exist separately; they exist together. In this task you will **discover** the connections between the systems you have diagrammed. Then you will analyze these systems to **understand** which problems are most important to your **community**. Finally, you will **act** to decide the problem you want to take action on.



Discover: *How do ocean systems connect?*

Complex systems can be hard to understand. In this guide, you have examined different ocean systems individually to help build your understanding. Now it is time to examine those systems together.

1. Think about the museum exhibit you designed in Part 1. One at a time, have each team member share how they would change that exhibit if they designed it now.
2. Take out all your system diagrams from any parts you completed, from Part 2 to Part 6.
3. Read *Connecting the Complex Ocean System* and do the activity.

Connecting the Complex Ocean System

Gather your materials. You will need:

- Your system diagrams from any previous parts
- Tape
- String, yarn, or a marker to mark the connections
- A marker or pen to write down details of the connections
- Sticky notes or a class board

Set Up Your System Diagrams

Place your system diagrams in a circle on a wall or table. Tape them in place.



Give one member of your team a piece of string or yarn and have them tape that string on one element in a system diagram. If you do not have string or yarn, you could use a marker.

Show the Relationships

Have one team member share a relationship between the element that has the string taped to it and another element in a system diagram. It can either be the same element in both diagrams or it can be an element that is connected. Tape the string or yarn to the new element. If you are not using string, just draw a line between the two with a marker.

Next to the string, on the board or on a sticky note, write down how the two elements relate. For example, maybe you are relating the *air temperature* element from your *Ocean and Temperature System Diagram* with the *atmosphere* element from your *Ocean and Air System Diagram*. You might write on the note “changes to the atmosphere are causing an increase in air temperature.”

Continue with the next team member. Have them connect the element where the string is now with another element in a different system diagram. Continue to write down how the two elements connect.

Have team members continue to connect elements until you run out of ideas. Can you connect all the elements into the larger system?

Sometimes one element might connect with many other elements. That is okay. Add as many connections as you want.

You have now created a *Complex Ocean System Diagram*.

4. With your team, examine the large system you have just created. Discuss:
 - a. Are there connections that surprise you?
 - b. When people think about systems and problems, what are some of the things you think they need to remember?
5. Keep the *Complex Ocean System Diagram* you just created. You will need it in the next activity.





Understand: *How can we analyze the whole ocean system to find places where we could make a difference?*

You have created a diagram of the complex system of the ocean. Now you need to analyze this system to identify the problems you would like to solve.

1. Give each team member a marker or a pile of sticky notes.
2. Individually, examine your Complex Ocean System Diagram for problems. When you notice a place where there is a potential problem, make a check mark on the sticky note or the board to show the problem. Add more information to explain the problem, if you need to.
 - a. Start identifying problems by examining the complex relationships between your original system diagrams that you found in the Discover activity. For example, if you wrote “changes to the atmosphere are causing an increase in air temperature” (like the example in the Discover activity), you might put a check mark next to this problem.
 - b. If you notice any additional problems, you can mark those as well.
3. When everyone has finished, silently examine all the problems you have identified. If you think a problem is something that affects your community or is something your community can help with, make a plus (+) sign next to that problem.
4. Examine all the marks and discuss with your team:
 - a. Which problems seem to be most important to your team?
 - b. Which problems do you think you could take action on right now?
5. Save this Complex Ocean System Diagram and the problems for the next activity.



Act: *Which part of the system will we act to help?*

At any time, there are many problems any of us could work to solve. But trying to solve everything at once often means you are not able to make much progress on anything. In this activity you will work with your team to identify which problem might be the best one for you and your team to work on first.



1. Take out your *Ocean Identity Map* from Part 1 and remind yourself about your team's *Hopes, Concerns, and Ocean Goals*. Pick one hope or concern that feels very important to you personally.
2. By yourself, examine your *Complex Ocean System Diagram*. Find one of the problems that seemed important to your community and is also related to the hope, concern, or goal you picked. Pick a problem that you think would be good to work on first.
3. Share your ideas with your team.
4. As a team, come to **consensus** on the problem you want to act on. A consensus is a balanced decision that works for everyone in the group. There are many ways to come to a consensus. Here are some ideas. You can choose whatever works best for your team.
 - a. List the good things and bad things about picking each problem. Discuss as a team.
 - b. Try to find the same values. Are there other people who picked similar hopes or concerns as you? Use that to help you try to pick a problem that would need to be solved to achieve that hope or avoid that concern.
 - c. Build a sense of the group opinion. Are there some problems that many people would be interested in working on?
 - d. Find a slow consensus. Find a partner and as a pair find consensus on which problem is most important to work on first. Then in a group of two pairs (four team members) you can build consensus among the four of you. Then in a group of four pairs (eight team members) you can discuss further to build consensus. Keep adding groups together until you have found a team consensus.
 - e. Consider your **impact**. Think about who would benefit from your team working on a specific problem. Which group are you most interested in helping?
5. Write down the problem you decide on as a team.



Task 2: How will we contribute to a healthy ocean?

As **action researchers** you now have a lot of information. You discovered what is important to you and your team. You understand more about the ocean. You understand the values of people in your community. Now you will put those ideas together. In this part you will decide how your team will act to solve the problem you identified. Then you will put that plan into action.

In this task you will **discover** more about the possibilities for action. Then you will **understand** more about your role in working toward the goal you identified. Finally, you will **act** on your ideas and work toward a **sustainable** and positive future.



Discover: *How can we help solve our ocean problem?*

There are many ways to act to solve a problem. You and your team need to decide what action might work best for you in your community.

1. Consider the problem you want to help solve. What are the actions that might help make the problem better?
2. Individually, get out a piece of paper and write or draw any actions you can think of. If you are having trouble thinking of actions you can take, here are some ideas you may want to consider.
 - a. Personal: Could you make changes to your behavior that might help the ocean? For example, could you produce less air or water pollution.
 - b. Educate others: Other people you know may not know much about the system of the ocean. Could you choose a group to educate to help them learn more? Could you redesign your ocean museum exhibit and share it with others?
 - c. Communicate with your community: You could help your community understand your ocean problem and how they could take action by designing posters, composing songs, recording podcasts, making public service announcements, setting up a social media campaign, or using other ways to communicate.



- d. Government change: Are there rules you think need to be changed about the ocean and our relationship with it? You could try to encourage a local or national government to change those rules. For example, you could write letters to officials or speak at local government meetings to share the actions you think are necessary to help solve the ocean problem you identified.
- e. Global change: You could **collaborate** with others around the world who are worried about the same problem. For example, join a group that is working toward a sustainable ocean.
- f. Come up with your own ideas!

2. Share your ideas with your teammates.

3. Examine the problem you selected on your *Complex Ocean System Diagram*. Notice any elements or relationships that relate to this problem. Discuss with your team how those elements or relationships might affect the actions your team shared with one another.



Understand: *What will my role be?*

Now it is time to plan your action. As you have learned, variations among people's perspectives and abilities can make the whole team stronger. Think about what role you will take to help with the team action.

1. Take out your *Personal Identity Map* from Part 1 and examine it closely. Make a note of things about your identity that might help you decide how you would like to act. For example:
 - a. What brings you joy or happiness?
 - b. Do you have any special talents, such as art or music, that might be useful to capture people's attention?
 - c. Are you part of any groups that you could communicate with?
 - d. Are you interested in science and engineering or other ways to try to find innovative solutions?
 - e. Do you have good planning or organizational skills?
 - f. Are there other things about your identity that might help you work toward the future you want?



2. Gather with your team. Write “Team Strengths” on a sheet of paper or on the board.
3. Under *Team Strengths*, write down all the ideas each person had about things from their identity that might help you all act.

 **Emotional Safety Tip**

Everyone has strengths and weaknesses. As a team member, sharing your unique strengths is important, even if it feels uncomfortable. It is important to respect your own strengths and to respect what others identify as their strengths.

4. As a team, discuss the actions you thought of in the Discover activity. Remove any actions that would not be helpful or that you cannot do.
5. Share your ideas and listen to others. Come to a consensus about which action you will take, using your *Team Strengths* list to help you decide the best action for your team. You can use some of the consensus-building ideas from the Task 1, Act activity, if you want.
6. With your team, take out a piece of paper and title it “Action Plan.”
7. Write “Goal” near the top of your *Action Plan*.
8. Discuss with your team what you want the final outcome of your action to be. When you have decided on your goal, write it next to *Goal* on your *Action Plan*.
9. Next write “Concerns” on your *Action Plan*.
10. Discuss with your team, are there things you are uncertain about or that you worry might not help people the way you want? If so, write those things down next to *Concerns*.
11. Think quietly to yourself about the steps that could be part of planning the action your team picked. Keep in mind your concerns and try to find a way to make sure they are not a problem.
12. Individually write, draw, or use another way to record your ideas on small pieces of paper. Each piece of paper should have one step of your action plan.



13. Have each team member share their steps by placing their pieces of paper on a table or by using a digital tool for collaboration.
14. Read through the steps from your teammates.
 - a. Did you notice any steps that were similar to yours?
 - b. Do you think your team is missing any steps?
15. Start to organize your team's steps. You can move the pieces of paper around as you do this. Thinking about your team's steps will help you decide how you will take action.
 - a. Group any similar steps together.
 - b. Remove any steps you don't think are needed to help your team take action.
 - c. Think about how each team member will help. Put their names on the steps they would like to help with.
 - d. Think about what steps might be missing. Add those steps.
16. Put the steps in order. For example, what do you think the team needs to do first? Place that piece of paper before all the others.
17. Record the following on your *Action Plan*:
 - a. The steps your team would like to take
 - b. The order of those steps
 - c. Who will help with each step (it might be more than one person)
 - d. When and where you will take these steps
 - e. How long will your action continue
 - f. Partners or other people you will involve
 - g. How you will communicate your action plan to the community
18. Think about what you will do if your plan doesn't work or you run into another problem. For example, what will you do if an adult in your community says you need permission to do something in your plan? Record these ideas as part of your action plan.
19. Remember to create an **inclusive** action plan. Being inclusive means everyone on your team can participate in some way. You may need to make changes to the plan so that everyone feels safe, comfortable, and able to help. Those changes are okay! They are part of being a good teammate.





Act: *How will we put our ideas into action?*

The time has come to act! You can use everything you have learned to take action to help create the future you want.

1. With your teammates, implement your Action Plan. This may take some time. There is no need to worry; take the time you need. When you are finished, come back and complete this activity.
2. Think quietly about the action you took. Consider:
 - a. What went well?
 - b. What do you think could have gone better?
 - c. How would you change your action if you had to do it again?
3. Discuss with your team:
 - a. What makes you proud of yourselves as a team?
 - b. What do you think you have learned for next time?
4. Examine your Ocean Identity Map from Part 1. How are you feeling about your connection to the ocean and the ocean's future now?
5. Think quietly to yourself about what you plan to do to create the changes you want to see in the future.

Congratulations!

You finished the *Ocean!* Community Research Guide!

All of us should be trying to do what we can to change ourselves and our world for the better. Maybe you took a big action. Maybe you took a small action. Maybe it had a big impact. Maybe it had a small impact. The most important thing is that you did something. When you take action to make your community better, you create the world you want to live in. You and your team are changing the world, one step at a time!



Glossary

This glossary can help you understand words you may not know. You can add drawings, your own definitions, or anything else that will help. Add other words to the glossary if you would like.

Action researchers: People who work with their community to discover, understand, and act on local and global problems they learn about

Collaborate: Work together for a common goal

Community: A group of people who share something in common, such as a space or an identity

Consensus: A balanced decision that works for everyone in the group

Impact: The effect one thing has on another

Inclusive: Making sure no one is left out

Sustainable: An approach that balances different perspectives and can keep working for a long time



Meet Heidi Gibson, Your Ocean Guide Developer

Meet Heidi Gibson. Heidi (*HI-dee*) was the main person writing this guide. She talked with lots of researchers to get information. However, like anyone, she has her own perspective. You have learned it is important to consider the perspectives of your teammates and research mentors. Perspectives affect what we think and how we think. It is also important to think about the perspective of the writer. This can help you understand why the guide was written the way it was. Considering the source of information is always a good idea. To help you, Heidi filled out an identity map, just like you did in Part 1.

Heidi's Identity Map



Before you finish the guide, think quietly to yourself about Heidi's identity map.

- What questions do you have about the way the guide was written?
- What perspectives does Heidi have that might have made her write the guide the way it is?
- Are there things you would include that were not included?

Do you want to tell Heidi what you would change about the guide? Email her at scienceeducation@si.edu. She'd love to hear from you!





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Smithsonian Science for Global Goals (SSfGG) is a freely available curriculum developed by the Smithsonian Science Education Center in collaboration with the InterAcademy Partnership. It uses the United Nations Sustainable Development Goals (SDGs) as a framework to focus on sustainable actions that are student-defined and implemented.

Attempting to empower the next generation of decision-makers capable of making the right choices about the complex socio-scientific issues facing human society, SSfGG blends together previous practices in Inquiry-Based Science Education, Social Studies Education, Global Citizenship Education, Social Emotional Learning, and Education for Sustainable Development.

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