OCEAN, FRESHWATER, AND US GIANT FLOOR MAP

This Giant Floor Map highlights the foundational connections between ourselves and the water that surrounds and sustains us. The massive freshwater flow arrows highlight the reality that while few Canadians live close to the ocean, we are all connected to it by local and ever-flowing lakes, rivers, and wetlands. And this connection is more than conceptual. What we put into local freshwater systems invariably flows to the ocean, affecting delicate marine ecosystems sometimes thousands of kilometres from our homes.

Of course, human impact on the ocean is often more direct and this map also highlights our efforts to protect the ocean through a growing network of protected areas. There are no "one-size-fits-all" solutions to protecting ocean environments, and the different protected areas on this map reflect that reality; some removing certain fishing pressures, some limiting ship traffic and anchoring, some limiting or eliminating resource development, and some doing all of the above. The human impact on water is, of course, determined by us. And the "us" shown on this map is perhaps the most fulsome ever shown on a Giant Floor Map. Not only does it include all villages, towns, and cities (heavily weighted towards the southern parts of the country), but it also shows the ubiquitous presence of Indigenous Peoples throughout the entirety of what we now call Canada.

Hopefully, looking at this rich resource will meaningfully inform and inspire Indigenous and non-Indigenous people as we work together to better protect the water around us.

- Chris Brackley
Cartographer, *Canadian Geographic*

CENTRE for OCEAN LITERACY COLLABORATION

Ocean Week Canada

ROYAL CANADIAN GEOGRAPHICAL SOCIETY

Canadian Geographic EDUCATION

Ocean School

With collaborative support from:

Canada

IMPAC 5

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

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INTRODUCING THE MAP TO STUDENTS

Everyone has a different and personal connection to water. That is why there is no one way to use this resource with students. This Giant Floor Map and facilitator's guide has been designed to provide you with a plethora of information to use as you see fit. A set of five learning activities have been created, along with accompanying student cards, coloured ropes, and pylons to help you bring this map to life in your own way. At the end of each learning activity there is also a list of additional resources you can use to continue your ocean, freshwater, and climate education journey.

Each of the learning activities have been designed around five key messages and are meant to act as a pathway for further learning on these topics. It is recommended that you use the learning activities in the order they appear, but they can also be used interchangeably. Modification and extension ideas have also been shared with you in each activity. Additional learning activities can be found in the Ocean, Freshwater, and Us Facilitation Guide. We encourage you to review these resources prior to inviting students onto the map.

In addition to these learning activities, this Giant Floor Map offers a unique and exciting opportunity to engage with this map using augmented reality. This type of technology will transform students' learning and virtually transport them to specific Marine Protected Areas in Canada for some deep underwater exploration. Curated community and 360-degree videos are also embedded in the **Ocean Canada Map augmented reality (AR) app** that was co-developed by Ocean School and the Centre for Ocean Literacy Collaboration (formerly Canadian Ocean Literacy Coalition).. We encourage you to follow the instuctions provided in this facilitator's package and download the **Ocean Canada Map AR app** today.

We wish you success as you explore this unique and one-of-a-kind resource!

Sincerely,

CENTRE for OCEAN LITERACY COLLABORATION

Ocean Week Canada

Ocean School

Canadian Geographic EDUCATION

AUGMENTED REALITY

About the app

The **Ocean Canada Map AR app** lets you experience the ocean waters and freshwater resources of Canada in a brand new way. Through augmented reality, discover the various ways Canada is working to protect ocean and freshwater areas.

As part of the augmented reality experience, you can also enjoy two Ocean Week Canada video collections, including Coastal Stories curated by the SOI Foundation, and Indigenous Water Guardians created by the Indigenous Leadership Initiative and partnering communities. You can also enjoy immersive 360-degree videos produced by Ocean School.

App instructions

1. Install the **Ocean Canada Map AR app** on your handheld device by scanning one of the QR codes below:

Android

SCAN ME

iOS

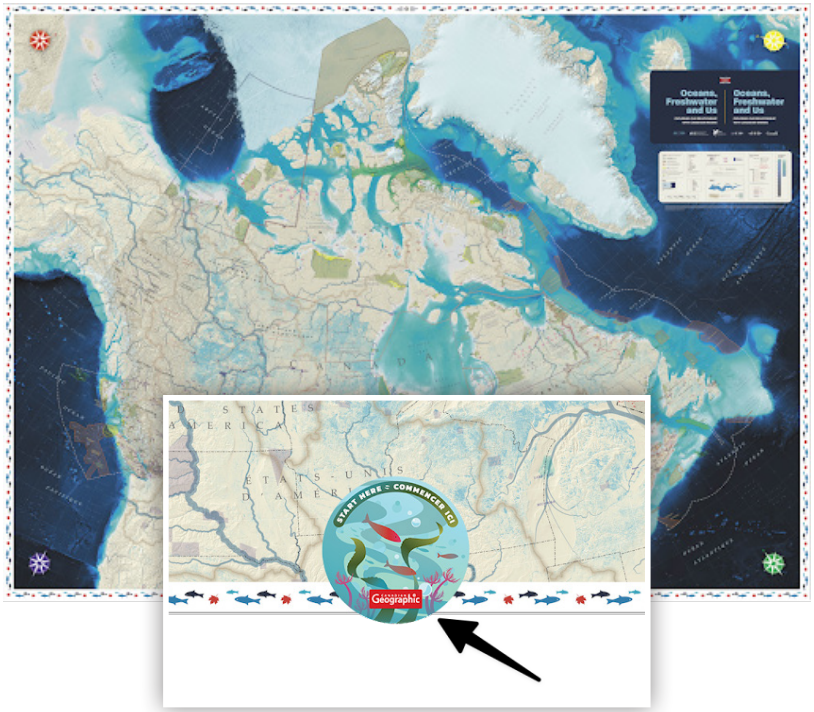
SCAN ME

2. Launch the app on your device. *Note: The app will mimic the language settings of your device. Alternate languages are accessible in the upper lefthand corner of the screen.*

3. To begin the experience, click on the START button that is displayed on your device. *Note: We recommend using headphones when possible as the audio is an important part of the experience. If you do not have headphones available, set the volume on your device so you can hear the audio.*

4. Stand on the Giant Floor Map and place the provided circular marker at the bottom center of the Giant Floor Map so that the Canadian Geographic logo is visible through the cutout in the marker.

AUGMENTED REALITY



5. On your device, select USE WITH AN OCEAN CANADA MAP.

6. Scan the circular marker with your device; this will trigger the augmented reality experience. Follow the visual and audio prompts and click on the glowing orbs in the app to discover the various ways Canada is working to protect the ocean and watersheds.

Important notes

- **Using the Ocean Canada app without a Giant Floor Map:**
  You can use the Ocean Canada Map app without the Giant Floor Map by clicking the USE WITHOUT A MAP option. You will be prompted to scan a flat surface and the map will appear in augmented reality without physically having the Giant Floor Map.

- **What to do if the circular marker is missing:**
  If the circular marker is missing from the Giant Floor Map kit, download, print, and cut out the marker along the indicated lines.

1 WATER SHAPES US

Overview

In this learning activity, students will be introduced to the *Ocean, Freshwater, and Us* Giant Floor Map, as well as the various data layers presented on the map. They will discuss the impact water has on our everyday lives.

Time

Approximately 60 minutes

Grade

3-12 (can be adapted for all grade levels)

Materials

- Giant Floor Map Shape Survey card (5)
- Marine Protected Areas Survey card (5)
- Giant Floor Map and your Community Survey card (5)
- Legends (4)
- Survey Answer Key (1)

Learning objectives

In this activity, students will:

- Identify the different layers presented on the Giant Floor Map.
- Discuss the important role the ocean and freshwater play in our everyday lives.
- Connect their community and other Canadian communities to the ocean.

Introduction

Allow time for students to independently explore the Giant Floor Map. As students are walking around the map, ask them to pay close attention to the theme of the map and how water is displayed. Next, inform students that they are going to use the map to learn more about their classmates. Ask students to stand on a location where they:

- have previously visited
- want to visit
- are interested in learning more about

As students move to different locations, ask them to look for patterns and trends in where their fellow classmates are standing. How many are standing near coastal areas or large bodies of water? What attracted students to these places? Do a poll and see if students have similar responses.

Next, inform students that they are going to examine the legend together as a class to learn more about the different types of layers on the map. Using the provided legends, or referring to the legend displayed on the map, discuss the various layers students see. Challenge students by dividing them into teams and turning this into a game. Ask students to locate:

- Their community
- One Marine and Freshwater Protected Area in each colour
- One First Nation treaty area
- One Indigenous language that is spoken near their community
- Five Canadian cities, each in a different province/territory
- One wetland
- Three different forms of transportation

Modification suggestions for younger students: Decode the legend together as a class and simplify it by using colours and actions. For example, have students pretend to swim like a whale in the ocean, canoe or act like a sailboat in a river, or dip their toe in a lake.

Development

Explain to students that they will be surveying the Giant Floor Map to better understand the different layers. Divide students into five groups and distribute a Giant Floor Map Shape Survey card to each group. Allow time for students to work together to review the questions on their card and locate the shapes on the Giant Floor Map. Afterwards, take up the answers as a class.

Next, draw attention to how water is displayed on this map. Ask students how freshwater is shown on this map versus the ocean. Ask students to stand anywhere in Canada. Ask all students standing on or near water to sit down. (Note: all students should sit down). Explain that no matter where you live in Canada there is water nearby. As a class, locate and name the three interconnected ocean waters that surround Canada, as well as the five Great Lakes, the Saint Lawrence River, the Mackenzie River, and any other large body of water students can locate. Using the same groups as before, distribute a different Marine Protected Area Survey card to each group and allow time for students to review the questions on their card and locate the answers on the Giant Floor Map. Afterwards, take up the answers as a class.

1 WATER SHAPES US

Connection to the Canadian Geography Framework

Concepts of Geographical Thinking

- Patterns and trends
- Geographic perspective
- Spatial significance
- Interrelationships

Inquiry Process

- Formulate questions
- Interpret and analyze

Geospatial Skills

- Foundational elements

Finally, bring attention to how Canada's population is displayed on the map. Explain that this map displays urban areas, cities of different sizes, as well as the locations of Indigenous Peoples in Canada. Place a coloured pylon on your community and share the local land acknowledgement. Next, highlight the various Indigenous data layers that this map displays, including communities with First Nation, Inuit, and Métis populations, as well as their languages and treaty boundaries. Have students spend some time exploring these layers on the map. Distribute the Giant Floor Map and your Community Survey card to each group and allow time for students to review the questions on their card and locate their answers on the Giant Floor Map.

Modification suggestions for younger students: Do this activity together as a class. Focus on the Shape Survey card and the Community Survey card and adjust questions accordingly.

Conclusion

Now that students are more comfortable with the information displayed on the map and have had an opportunity to connect with the various layers in greater detail, conclude the activity with a class discussion about the role freshwater and the global ocean play in our everyday lives. Explain that water shapes us and has an impact on all aspects of our lives. Use the following questions to generate discussion:

- How does water shape your everyday life?
- How are we connected to the ocean?
- What measures can we take to protect the ocean and freshwater at the local, regional, national, and global level?

Modification suggestions for younger students: Conclude by discussing with students how they use water. This can be turned into a game of charades.

Diving deeper

Coastal Stories Video Series: Ocean Week Canada has a suite of educational videos that further explores the regional, cultural, and biological diversity various communities have in relation to the ocean in their *Coastal Stories* video series. After students are finished exploring the Giant Floor Map, allow time to watch these videos and discuss how different communities are connected to the ocean and freshwater.

Indigenous Water Guardians: Indigenous Peoples have been taking care of water for thousands of years. Today, Indigenous Guardians continue to honour this responsibility on behalf of Indigenous Nations. This work is rooted in Indigenous laws, knowledge, science, and culture, and it helps to conserve vibrant freshwaters and the ocean for all people. Listen to Guardians' stories and learn about ways to support their important work.

Our Water Connection StoryMap: Can Geo Education has created a StoryMap focusing on Indigenous teachings on how water shapes our lives, sustains us, and why we need to protect it. Use this interactive tool to further explore our connection to water.

2 WATER CONNECTS US

Overview

This learning activity will highlight to students how we are dependent on the ocean and how the ocean is affected by our actions. Students will learn about Canada's watersheds and investigate a variety of ways that humans interact and connect with the ocean.

Time

Approximately 60 minutes

Grade

3-12 (can be adapted for all grade levels)

Materials

- Watershed Information card (5)
- Icon cards (36)
- Spinner card (1)
- Colored ropes (20)

Learning objectives

In this activity, students will:

- Map and explore Canada's main watersheds.
- Explore how humans and the ocean are interconnected using specific categories.
- Discuss how technology plays a role in helping humans monitor and protect the ocean.
- Discuss types of careers in ocean exploration and protection.

Introduction

Once students have had an opportunity to explore the Giant Floor Map independently, gather them around the border of Canada. Explain that all the water that makes up Canada's lakes, rivers, bays, streams, and coastal areas is connected. In fact, no matter where you are standing, you are standing in a watershed. When it rains or when snow melts, water is incorporated into a watershed. The physical landscape can affect a watershed and the direction of the flow of water. *Note: A watershed can be defined as an area that drains all the water in that environment into a particular stream, river, or lake.*

Divide students into five groups and give each group a different Watershed Information card and some coloured ropes. Inform groups that there are two parts to this activity:

1. They must use the coloured ropes to map out their watershed.
   Tip: Watersheds share a border with other watersheds. Have students work with connecting groups to save on rope space.

2. They have to complete the activity outlined to them on their card.
   Note: Some activities may be more challenging than others or have more tasks.

When groups have finished, ask each group to select a spokesperson to present to the class information about their watershed.

Development

Now that students have learned how water connects us, inform them that they are going to look further into the relationship between humans and the ocean. Conduct a Think-Pair-Share activity by having students pair up and brainstorm all the different ways humans are connected to the ocean. Afterwards, allow time for each group to share with the class.

Next, randomly distribute an Icon card to each pair of students. Ask students to identify the icon on their card and to work together to brainstorm where on the map they think their card fits best. When students have made their decisions, allow time for them to share their thoughts with the class. Next, ask each group to rotate to another icon and repeat the same activity, selecting a different place to put their new icon.

Note on using the spinner: A spinner has been provided in the kit for educators to use to select who can present first. Alternatively, facilitators can have all students do the same icon (the one that the spinner point lands on) at the same time. This will allow for students to look for and discuss patterns and trends in locations for the same icon.

Modification suggestions for older students: Have students use a handheld device to go beyond simply placing the icon on the map. Have students research a fact, statistic, or story related to why they selected this particular location to place their Icon card to highlight the connection between their icon and our connection to the ocean.

Conclusion

Now that students have a better understanding of all the ways humans and the ocean are connected, wrap up this activity with a discussion focusing on technology and the types of jobs that exist to help address, monitor, and protect ocean and freshwater resources. Discuss the challenges related to protecting the ocean that have arisen

2 WATER CONNECTS US

Connection to the Canadian Geography Framework

Concepts of Geographical Thinking

- Geographic perspective
- Spatial significance

Inquiry Process

- Interpret and analyze
- Evaluate and draw conclusions
- Communicate

Geospatial Skills

- Foundational elements
- Spatial representations

due to climate change. For older students, introduce the concept of Geographic Information Systems (GIS) as a bridge into a deeper discussion of how geospatial technology is used throughout the world to record data, as well as monitor and protect the environment, giving us a greater understanding of the planet.

First, use the spinner provided to jump into a discussion about jobs. Spin the wheel and, whichever icon it lands on, have students consider the types of careers that may exist in this field and how it is connected to ocean research, exploration, and/or protection. Alternatively, students can use their handheld devices to research careers in this field. Once all icons have been touched upon, ask students if there are any other fields that are missing.

Lastly, use the following questions to dive into a discussion about technology and ocean-themed jobs to wrap up the activity.

- How can technology help us monitor and protect the ocean?
- How does the technology required to study the ocean differ from the technology used to study lakes and rivers?
- What types of jobs do you think exist connected to ocean or freshwater research? Which job would you like to have in this field?

Modification suggestions for older students: Use this as a starting point to conduct a research project on how technology (and/or GIS) plays a role in ocean research and exploration. Have students investigate either a type of job/career or a piece of technology and present their findings to the class, using the Giant Floor Map to highlight locations on where this person may work or where this piece of technology may be used.

Optional activity extension for students: Have students select one icon and career and create a career profile card.

Diving deeper

Ocean Week Canada Schools Toolkit #1: Ocean Week Canada has a school toolkit composed of a suite of resources available to classrooms of all grade levels. The third theme explored in this toolkit is technology. Using this resource, students can explore an infographic about ocean sampling technology, ocean data in the classroom, and much more!

Ocean Week Canada Early Career Toolkit: Ocean Week Canada also offers a toolkit connected to postsecondary and early careers information. Check it out to learn more.

Discover Canada's Watersheds map: Check out this map of Canada's watersheds and print it out for your classroom!

Women in Ocean Science: Dive into this engaging collection of resources featuring women in ocean science, as part of Ingenium's broader Women in STEM initiative. In particular, check out the #OceanDecade video series, the shareable posters series, and the Canadian-authored report, Gender Equity in Ocean Science.

Watershed CPR Education Program: The Watershed CPR Education Program is a virtual experience where users are guided through engaging activities about the Fraser Watershed to become a Watershed Defender.

3 WATER IS LIFE

Overview

This learning activity will explore how life on land and life below water depend on a healthy ocean. Students will examine specific species living in Canadian water bodies, as well as discuss how humans are dependent on not just the ocean but these organisms as well.

Time

Approximately 60-90 minutes

Grade

3-12 (can be adapted for all grade levels)

Materials

- Biodiversity cards (12)
- Ocean Habitat cards (5)
- Coloured pylons (20)
- Coloured ropes (20)

Learning objectives

In this activity, students will:

- Relate ocean habitats to various marine bioregions surrounding Canada.
- Examine specific examples of marine life using the biodiversity cards.
- Discuss how humans depend on a healthy ocean.

Introduction

Once students have had an opportunity to explore the map independently, gather students around the border of Canada and ask them to sit down on the map. Explain to students that water is a globally shared resource and affects all of our lives. But what about the habitats, animals, and plants? How does life on land and life below water depend on a healthy ocean? Ask students to stand back up and walk around the map thinking about this question and to share their thoughts with the class or a partner.

Next, divide students into five groups and distribute a different Ocean Habitat card to each group. Explain to students that on one side of the card is a map of Canada highlighting the various marine bioregions and on the other side is an infographic providing more information about Canada's diverse ocean habitats and the challenges they face with ongoing climate change. Allow time for students to review the information on the map and to walk around the Giant Floor Map, connecting the information displayed on the map with the information displayed on their card. When students are ready, gather everyone in a circle and use the following questions to spark a discussion about ocean habitats around Canada.

- Why do you think Canada has so many marine bioregions?
- Which bioregion do you think is under the most threat due to climate change?
- Using the information on the infographic, what kind of challenges are threatening Canada's marine habitats?
- How do these challenges differ in each of the three interconnected ocean waters that surround Canada? What is similar? How are they all connected?

Development

Now that students have a greater understanding of the variety of marine habitats across Canada, explain to them that they will be looking further into specific examples of species living within these habitats. Distribute a different Biodiversity card to pairs or small groups of students and allow time for students to examine the images and information on the card. Inform students that they will locate where the animal depicted on the card can be found and use the coloured pylons and ropes to map out their distribution range. *Note: If there isn't enough rope for all groups, facilitators can choose to bring in their own coloured string or yarn or students can use coloured paper to place on the map to identify their area.*

Once students have completed their task, allow time for them to share information about their animal with the rest of the class. Alternatively, students can place their Biodiversity card on the map and walk around the map's border to examine the different types of animals independently.

Finally, connect what students have learned about ocean health. Ask students to consider what makes an ocean or a habitat clean and healthy versus polluted and unhealthy. Have students brainstorm or research different types of marine pollution (including plastics and microplastics) in Canada and how aquatic pollutants enter the ocean. Have students also think back to their earlier discussion about marine habitats and the threat climate change presents for various habitats. Ask students to consider how the animal they chose is affected by climate change and how the marine pollution stressors they learned about are connected.

3 WATER IS LIFE

Connection to the Canadian Geography Framework

Concepts of Geographical Thinking

- Patterns and trends
- Geographic perspective
- Spatial significance
- Interrelationships

Inquiry Process

- Gather and organize
- Interpret and analyze
- Evaluate and draw conclusions
- Communicate

Geospatial Skills

- Foundational elements
- Spatial representations

Modification suggestions for younger students: Do this activity together as a class or select a small handful of animals to discuss during this class period. This can also be turned into a game of charades and students can guess the animal they learned about or a game of Simon Says where students act out the animal they just learned about.

Optional activity extension for older students: Expand on the discussion about ocean health and ocean pollutants and have students complete a research project investigating various types of marine pollutants and how and where they enter the ocean. Have students create an information card that they can use on the Giant Floor Map and share what they have learned with others.

Conclusion

Wrap up this activity with a discussion connecting students back to the question asked at the beginning of the lesson: How does life on land and life in the water depend on a healthy ocean? Allow time for students to reflect on this question and share their answers with the class. Conclude with the following questions to expand on discussion. For older students, encourage them to select one of these questions to research and answer.

- How do human actions (i.e., plastic pollution, overfishing, and tourism) affect the health of the ocean?
- How does the health of the ocean affect humans?
- How do humans use and depend on marine life? Consider both Indigenous and settler ways of life.
- What can we do at the local, regional, national, and global level to ensure the health of the global ocean and all life within it?

Diving deeper

Canada's Oceans Now infographic series: Explore this series of 12 infographics showing key messages about Canada's marine ecosystems.

Canadian Arctic and Atlantic Ocean infographic series: Continue to learn more about ocean life in an illustrative way through the Canadian Arctic infographic series and the Atlantic Ecosystems infographic series.

Diversity of Canada's Marine Coastal Habitats: Learn about Canada's marine coastal habitats and ways to protect them through Let's Talk Science's Diversity of Canada's Marine Coastal Habitats resource.

Ocean School Toolkit: Use this toolkit to explore the relationship between the land and the sea with virtual reality!

4 OCEAN, CLIMATE, AND US

Overview

This learning activity will examine the impact climate change has on the ocean and explore the theme of ocean health as it connects to our health and the health of future generations.

Time

Approximately 60-90 minutes

Grade

Recommended for grades 5-12

Materials

- Climate Change cards (4)
- Coloured ropes (20)
- Coloured pylons (20)
- Handheld or portable device for research (not included)
- Scrap paper or Post-it notes (not included)

Learning objectives

In this activity, students will:

- Explore the Arctic region of the Giant Floor Map and the communities that are found there.
- Discuss and research how climate change is affecting the ocean and Arctic communities.
- Use the Giant Floor Map to visually summarize findings of climate change research.

Introduction

Once students have had an opportunity to explore the Giant Floor Map, gather them around the Arctic region of the map. Bring attention to the sea ice labelled on the map. Using coloured ropes, map out the sea ice extent on the Giant Floor Map. Explain to students that this data reflects the smallest recorded ice extent, measured on September 14, 2012. Ask students why having this data is important and what you can learn from it.

Note: To observe more recent ice extent data visit NASA's websites for Sea Ice Minimum Extent or the Current State of Sea Ice Cover.

Next, bring attention to ice on land. Have students place the coloured pylons on the Arctic areas where they think glaciers are located. *Hint: The solid white areas represent the larger glaciers.*

Finally, have students stand on an Arctic community labelled on the map. Ask students what patterns and trends they notice about the location of these communities. How do they think ice plays a role in the culture, lifestyles, and livelihoods of people living in these communities? Explain that many people living in the Arctic region rely on traditional knowledge of the land to understand their environment. Knowledge of ice covering the sea and land is very important to the people living in Inuit Nunangat — it can be a matter of life or death while hunting and travelling. *Note: Inuit Nunangat refers to the homeland of Inuit in Canada and comprises four Inuit settlement regions: Inuvialuit Settlement Region in the Western Arctic, Nunavut, Nunavik in northern Québec, and Nunatsiavut in Labrador.*

Extension activity option for older students: Using portable or handheld devices, have students learn more about the Arctic communities located across Inuit Nunangat. Have each student stand on a different community and create their own community card outlining the population, climate, meaning of the place name, etc. Use these community cards to look further into Inuit culture in the North.

Development

Explain to students that no other place on this planet is changing more rapidly due to climate change than the Arctic. Sea ice extent is declining year after year, permafrost on land is melting, and glaciers are receding at an exponential rate. Inuit, and the communities located in Inuit Nunangat, are on the frontlines of climate change and being forced to adapt. It is now more important than ever to combine Inuit Qaujimajatuqangit (an Inuktitut phrase meaning Inuit traditional knowledge) and Western science to co-produce data and ensure that people's livelihoods and the biodiversity in this fragile environment are protected.

4 OCEAN, CLIMATE, AND US

Connection to the Canadian Geography Framework

Concepts of Geographical Thinking

- Patterns and trends
- Geographic perspective
- Spatial significance
- Interrelationships

Inquiry Process

- Interpret and analyze
- Communicate

Geospatial Skills

- Foundational elements

Ask students to consider how climate change is affecting the ocean. Allow time for students to share with a partner or with the class. Explain that the ocean covers approximately 71 per cent of the Earth's surface and is responsible for providing us with oxygen that we need to survive. The ocean also absorbs a large amount of carbon dioxide, which in turn helps us to regulate our climate. The ocean is the determining life system for all human and non-human species on Earth. It is important to remember that changes to the global climate not only affect the state of the ocean (e.g, acidity, temperature) but also the health of terrestrial and marine life, as well as our ability as humans to access food, oxygen, and drinking water.

Inform students that they will be learning about the direct and indirect impacts that climate change has on the ocean. Divide students into four groups and distribute a different Climate Change card to each group as well as a portable electronic device. *Note: Students can use their own handheld devices for research as well. Explain to students that they will be using the instructions and questions on their card to guide research on their topic. They are encouraged to use their notebooks or a shared online document to record their answers. As students are researching, ask them to also use the Giant Floor Map and the available coloured pylons and chains to highlight geographical areas in their research. Remind students to record their sources for future reference.*

Conclusion

When all students are ready, allow time for each group to share their topic and their research with the rest of the class. Once each group has presented, ask students to share their thoughts and concerns about what they have learned. Next, distribute a scrap paper or Post-it note to each student, asking them to share a thought or concern on their paper using one word. Ask students to place their word on the Giant Floor Map in an area that best connects to that word. Afterwards, have students stand around the map and explore the visual they created as a class. What words stand out to them? Use the words displayed on the map to dive into a discussion about how students feel about climate change and where they see it having the most serious effects.

Conclude the activity by focusing on the positive side of things. Explain that climate change is challenging the ocean and terrestrial environments around the globe; however, actions can and are being taken at the local, national, and international level to affect positive change. It is important for everyone to take action, and no action is too big or too small. Have students begin by reflecting back on what their group learned with their Climate Change cards and, using the following questions, initiate discussion:

- Which of the impacts shared on the Climate Change cards concerns you the most?
- How does taking action for climate provide co-benefits for the global ocean system? (Co-benefits are beneficial outcomes from action that are not directly related to climate change mitigation. Some co-benefits for the ocean include cleaner water, blue job creation, marine habitat health, and less pollution.)
- What actions can you take (today, near term, longer term) to create a future scenario that ensures a healthy global ocean?

Brainstorm as a class what actions students can take or ways they can get involved in protecting local waterways and the ocean.

4 OCEAN, CLIMATE, AND US

Diving deeper

Climate Atlas of Canada: Use this resource to learn more about how Indigenous ways of knowing are an integral part of ocean education and research.

Empowering Learners in a Warming World: This collection of Climate Change Inquiry Guides (K- Grade 2; Grades 3-6; Grades 7-12) presents opportunities to evolve students' understanding of the climate and climate change.

Ocean: Life, Flow, and Change: This education resource places the focus on the life, flow, and change found within the ocean. Going beyond just bathymetry (i.e., the underwater depth of the ocean), the Ocean Tiled Map combines different elements to capture ocean patterns and present a meaningful and cohesive view of the global ocean.

5 ONE GLOBAL OCEAN

Overview

This learning activity will explore the notion that there is one interconnected global ocean and that we all have a responsibility to care for it. Students will do this by diving deeper into the purpose and locations of Marine Protection Areas.

Time

Approximately 60 minutes

Grade

3-12 (can be adapted for all grade levels)

Materials

- Marine and Freshwater Protected Areas information card (2)
- Marine Protected Areas card (14)
- Coloured pylons (20)

Learning objectives

In this activity, students will:

- Locate Canada's 14 Marine Protected Areas on the Giant Floor Map.
- Discuss the purpose and importance of Marine Protected Areas.
- Collaborate in small groups to propose a new Marine Protected Area.

Introduction

Once students have had an opportunity to independently explore the Giant Floor Map, gather students around the map's border and review what they have already learned. Inform students that one of the goals of this map is to highlight that there is one big global ocean and that everyone has a responsibility to care for it. Ask students to brainstorm with a partner how someone can care for the ocean and how our actions in one area can affect the ocean as a whole.

Next, bring attention to the Marine and Freshwater Protected Areas displayed on the map. Inform students that one of the ways in which the Government of Canada, Indigenous communities, and ocean conservation groups are helping to protect the global ocean is by protecting select coastal areas surrounding Canada.

Explain that there are five types of protected areas labelled on this map:

- Marine Protected Areas
- National Marine Conservation Areas
- Other effective area-based conservation measures
- Marine National Wildlife Areas
- Other marine or freshwater protected areas

Using the Marine and Freshwater Protected Areas information card, go over the definition of each type of protected area. (*Note: Facilitators of younger grades may need to elaborate on the definition and adjust the wording for their grade level.)*

After explaining each type, allow time for students to locate an example of each type of protected area on the Giant Floor Map and stand on its location. Use the following questions to start a discussion:

- Which type of protected area is the most common?
- Which coastline has the most variety of protected areas? Which coastline has the largest number of protected areas? Why do you think this is?
- Why do you think there are five types of protected areas located on this map? Why is this important?
- How do you think these areas affect the global ocean as a whole?

Development

Now that students have a better understanding of the variety of protected areas labelled on the map, explain to students that they will be looking further into the 14 Marine Protected Areas (MPAs). Share some facts with students about Marine Protected Areas across Canada using the statistics below.

- There are 14 Marine Protected Areas in Canada.
- These areas make up more than 350,000 square kilometres.
- MPAs contribute to a healthy marine environment and offer a nature-based solution to address the effects of climate change by protecting ecosystems, their habitats, and species.
- Canada has committed to protecting 25 per cent of its ocean waters by 2025, working towards 30 per cent by 2030.

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Connection to the Canadian Geography Framework

Concepts of Geographical Thinking

- Patterns and trends
- Spatial significance

Inquiry Process

- Formulate questions
- Gather and organize
- Interpret and analyze
- Evaluate and draw conclusions
- Communicate

Geospatial Skills

- Foundational elements

Divide students into pairs or small groups (14 groups total) and distribute a different Marine Protected Area card to each group. Allow time for students to locate their MPA on the Giant Floor Map and read the information provided on their card. Have students pay special attention to the conservation objectives on that card. When all groups have finished, have each group rotate to the next card to the left of them and review the new information, comparing this card with their previous one. Repeat this several times or until students observe differences and similarities between several MPAs. Allow time for students to share their thoughts with the rest of the class on what they learned about how Marine Protected Areas are similar and different throughout Canada's three coastal regions (Pacific, Arctic, Atlantic).

Modification suggestions for younger grades: Locate and review the MPAs together as a class. Read the name of the MPA and then allow time for students to find it. Then read through the information on the card. Facilitators can decide which MPAs to read with their students or do all 14.

Note: The conservation objectives stated on the Marine Protected Area cards are provided from the Department of Fisheries and Oceans Canada website. If students require additional information, please visit dfo-mpo.gc.ca.

Conclusion

Instruct students to leave the Marine Protected Areas cards on the Giant Floor Map and line up around the map's border. Examine the locations of these protected areas and identify any patterns or trends. Ask students how they think one goes about creating a new Marine Protected Area. Brainstorm as a class or in small groups.

Once students have shared their thoughts, explain that, according to the Department of Fisheries and Oceans Canada, there are five steps:
Note: Visit dfo-mpo.gc.ca for a complete overview of each step.

- **Step 1:** Selection of an area of interest.
- **Step 2:** Assessment of the ecological, biophysical, social, cultural, and economic characteristics of the area of interest that make it a good candidate for a possible MPA.
- **Step 3:** Consultation with and assessment of communities that could be affected by the design of the MPA.
- **Step 4:** Legal rules and regulations are drafted, and if approved by government, are used to officially designate the MPA as a conservation location.
- **Step 5:** MPA management begins to ensure the MPA goals and objectives are continuously met.

Inform students that they will be participating in Step 1: Selection of an Area of Interest. Using the same groups as before, have each group explore the Giant Floor Map and determine a location that they think would be a good location for a new MPA based on what they learned from the existing MPAs. Students can use the coloured pylons provided to identify their location or stand on that location. Have students share their locations with the class, explaining why they think it would be important to protect their chosen area.

Modification suggestions for younger grades: The review of the process outlined above may be too advanced for younger grades. Instead, ask students to look at the location of the

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current MPAs and select an area they would like to propose for a new one. Once students have selected an area, explain that there is a process put in place to create a new MPA and ask students what they think this process involves or why this process is important.

Activity extension for older grades: Have students conduct a research project of their proposed area by creating a draft proposal. Encourage students to complete Step 2 (refer to the Department of Fisheries and Oceans Canada for more information).

Conclude this activity by highlighting the MPA Tallurutiup Imanga. Explain that for thousands of years, this area has been used by Inuit. Inuit Qauijimajatuqangit (traditional knowledge) is being incorporated in the management of this area and other MPAs. Through collaboration and co-management, we can meet Canada's 30 by 30 target of protecting at least 30 per cent of the ocean by 2030.

Activity extension for older grades: Have students select two websites to read under the Indigenous-led conservation websites listed in the Diving deeper section or find resources of their own. Have students learn more about current Indigenous-led conservation efforts and the work of Indigenous Guardians.

Diving deeper

Ocean School's Marine Protection in Canada collection: Learn Ocean School's Marine Protection in Canada collection: Students learn about Canada's goal to protect 30% of the ocean by 2030, and find out how these underwater parks safeguard marine life.

What is an MPA: Use this infographic to help students better grasp what an MPA entails.

Indigenous-led conservation efforts: Explore the following sites to learn about the important role Indigenous knowledge plays in the protection of the ocean and ocean resources.

- Indigenous Leadership Initiative
- Government of Canada
- The PEW Charitable Trusts
- World Wildlife Federation
- Parks Canada
- Coastal Stories – Tallurutiup Imanga (video)

Canadian Parks and Wilderness Society (CPAWS): Explore CPAWs connection to ocean protection and explore their informative map and interactive MPA dashboard to expand on your MPA knowledge.

Taking Action: Ocean Week Canada has an entire section highlighting national and global initiatives on how to take action. Check it out!

OCEAN EDUCATION KEY MESSAGES

Ocean Week Canada

Key Messages

- Water shapes us.
- We are connected to the ocean, and the ocean connects us.
- Life on land and life below water depend on a healthy ocean.
- Our actions impact ocean health, our health, and the health of future generations.
- There is only one big global ocean, and we have a responsibility to care for it.

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Water shapes us

- We have the longest coastline of any country, 50% of which is in the Arctic
- We have a bounty of freshwater, including over 2 million lakes and 8500 named rivers
- Languages, cultures, and identities, across generations, are influenced by our connections to the ocean and local waterways

We are connected to the ocean, and the ocean connects us

- Our community waterways are part of watersheds that flow to the ocean
- Water flows across boundaries, linking us and our communities to each other
- All drains lead to the ocean

Life on land and life below water depend on a healthy ocean

- The ocean creates and supports life on the planet
- A healthy ocean contributes to biodiversity and community well-being
- The ocean regulates climate, and provides clean air, food, jobs, medicines, recreation, transportation, and more

Our actions impact ocean health, our health, and the health of future generations

- Changes in the ocean and global climate are a result of human activities
- Ocean health and biodiversity are threatened as a result of human (in)actions
- These changes are already impacting life in and out of the water and require action

There is only one big global ocean, and we have a responsibility to care for it

- We have an urgent and shared responsibility to protect and restore the ocean and all waters that flow to it
- We, as a country, are working together to protect 30% of land and marine waters by 2030
- We all have a role to play in achieving this goal

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ABOUT OCEAN WEEK CANADA

Ocean Week Canada is an annual national celebration of the ocean held during the week of World Ocean Day (June 8). Through events and learning activities, we recognize the important role the ocean plays in our everyday lives and how local waterways connect us all with the ocean.

Ocean Week Canada is nationally coordinated by the Centre for Ocean Literacy Collaboration (COLC, formerly the Canadian Ocean Literacy Coalition). COLC is a living lab for high-impact public ocean engagement. They work with partners and communities to mobilize ocean research and knowledge into collaborative action. Ocean Week Canada helps to raise public awareness and celebrate our diverse connections to coastal areas, the ocean, and watersheds in Canada. Together, we can inspire action to ensure a healthy ocean for future generations.

The *Ocean, Freshwater, and Us* Giant Floor Map was developed as a learning and engagement tool for schools, libraries, museums and aquariums, conferences, and other public spaces and events to use during the Ocean Week Canada celebrations and throughout the United Nations Ocean Decade (2021-2030).

Learn more at www.oceanweekcan.ca

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