Biinaagami Giant Floor Map
Teacher's Guide



Biinaagami

OUR SHARED RESPONSIBILITY TO THE GREAT LAKES

ROYAL CANADIAN GEOGRAPHICAL SOCIETY

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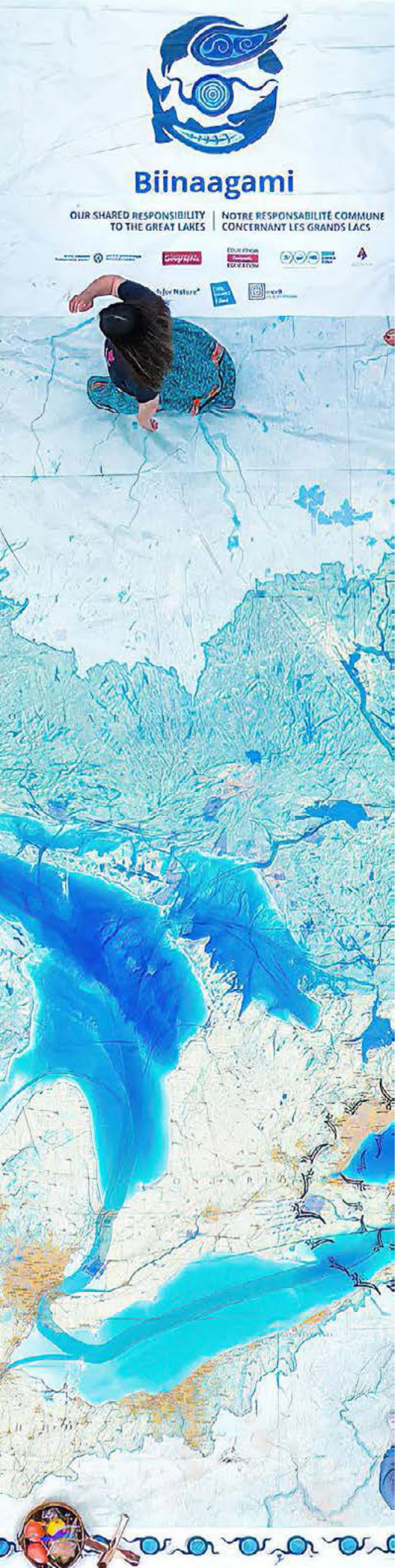


Biinaagami Giant Floor Map

Our shared responsibility to the Great Lakes

Welcome to Biinaagami

Biinaagami (Bih-nah-ga-meh) means "pure, clean water" in Anishinaabemowin. It is an Indigenous-guided initiative of Canadian Geographic and Swim, Drink, Fish. This multimedia, change-driven program is rooted in Indigenous knowledge. Through ceremony, mapping, inclusive storytelling, augmented reality, experiential learning, community water hubs and ecosystem restoration, Biinaagami aims to rebuild just and healthy relationships between wildlife, people and place in the Great Lakes-St. Lawrence Watershed.

Biinaagami is a call to action. It affirms our shared responsibility to this tapestry of land and water that many call home. We hope you and your students are inspired to connect with and protect your local waters.

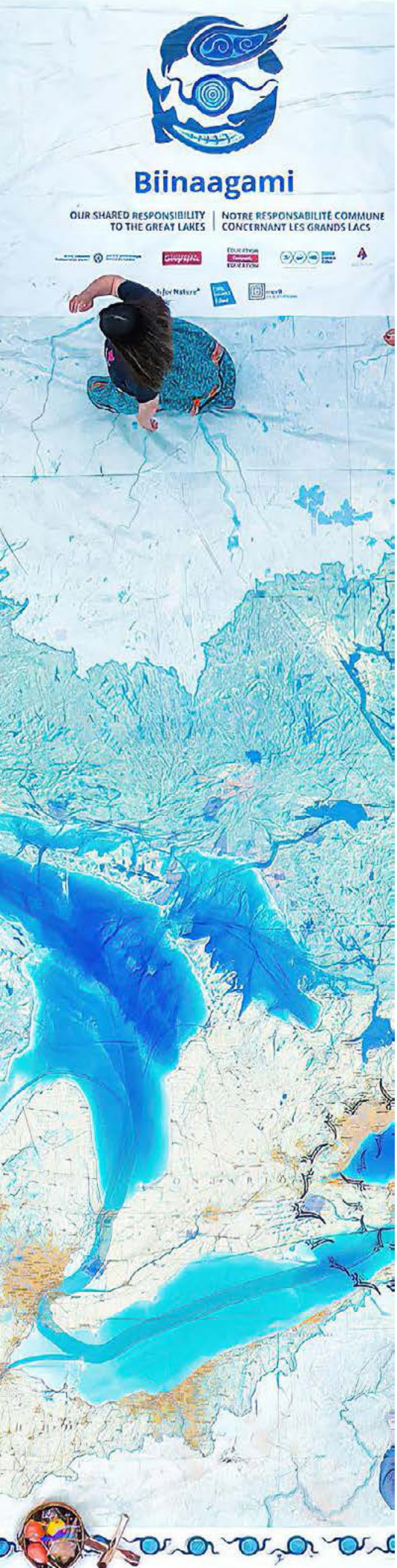
Many of the stories and teachings shared throughout this project come from conversations with Indigenous Elders and Knowledge Keepers who have graciously shared their wisdom with the Biinaagami team. These relationships have guided the creation of the Biinaagami Education Program and have made Traditional Indigenous Knowledge more accessible to the public. However, the best way to learn the stories from these lands and waters is always to sit with local Knowledge Keepers and listen with an open mind. We recommend building those connections and inviting such individuals onto the map with your class. Use the virtual map on our website to locate the First Nation nearest you. Keep in mind that it is good practice to offer an honorarium (payment) to those who share their experience and knowledge.

Our teacher resources include videos of some of our Biinaagami Shared Circle advisors speaking from the Giant Floor Map about the Haudenosaunee and Anishinaabe Peoples and the importance of working together to protect water.

The Biinaagami Giant Floor Map comes with this step-by-step teacher's guide written by a team of Indigenous and non-Indigenous authors from a Two-Eyed Seeing perspective. In alignment with Indigenous values, the Biinaagami Education Program takes a holistic approach, ensuring the representation of diverse Indigenous core values.

The educational framework draws inspiration from the Medicine Wheel, a symbol widely used across First Nations in the watershed and beyond. The themes relate to the four capacities of self— intellectual, spiritual, emotional and physical—to promote a holistic way of connecting with water.

- **Emotional Self:** Exploring emotional connections to water, climate change, stories of hope, activism and ecofeminism.



Welcome to Biinaagami

- **Physical Self:** Examining human interactions with the environment, resource management, water safety and Indigenous place names.
- **Spiritual Self:** Understanding responsibilities toward more-than-human relations, developing an appreciation of creation and teachings from nature.
- **Intellectual Self:** Comparing Indigenous and Western sciences, recognizing the personhood of water, Oral Tradition and TwoEyed Seeing.

The Biinaagami Education Program is an innovative initiative that transcends conventional education paradigms. By seamlessly weaving together cultural richness, environmental stewardship and advanced technology, this program empowers Indigenous learners and helps non-Indigenous learners understand and appreciate the profound interconnectedness of Indigenous knowledge with the world around us.

The education kit includes student activity cards, legends and a companion digital and interactive map (found at www.biinaagami. org/map), offering unique ways for students to explore and experience the Great Lakes-St. Lawrence Watershed.

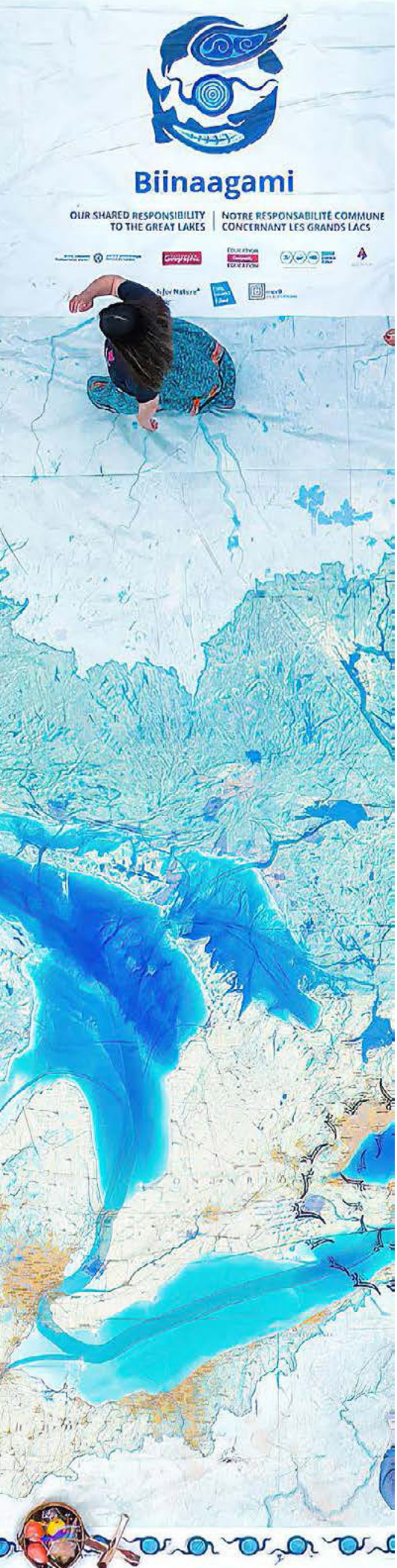
Use the map to:

- Discover the Watershed's geography, ecosystems and diverse cultures.
- Learn about Indigenous perspectives and our collective responsibility to water.
- Engage with augmented reality and interactive learning activities.
- Join in storytelling, mapping and water stewardship challenges.

The Biinaagami Education Program is part of a broader initiative that incorporates storytelling, mapping, community-based monitoring, documentary filmmaking and exhibitions into a rich program designed to help everyone connect with the waters of the Great Lakes and St. Lawrence River.

For more learning opportunities and ideas on how to protect water, explore our website at www.biinaagami.org. Navigate to the "Learn" tab to read more stories from the watershed. Follow us on social media @Biinaagami to stay engaged and connect with others working to protect water.

We hope you enjoy the Biinaagami map with augmented reality stories and lesson plans. We sincerely want to hear from you. Thanks to our generous supporters, we offer these resources to schools at no charge. In return, we must report on how many individuals and schools we reach. Please help us continue this program by completing the survey you receive via email (after receiving the map) and providing feedback on the materials—tell us what you loved, and feel free to share ideas for new content you would like to see.

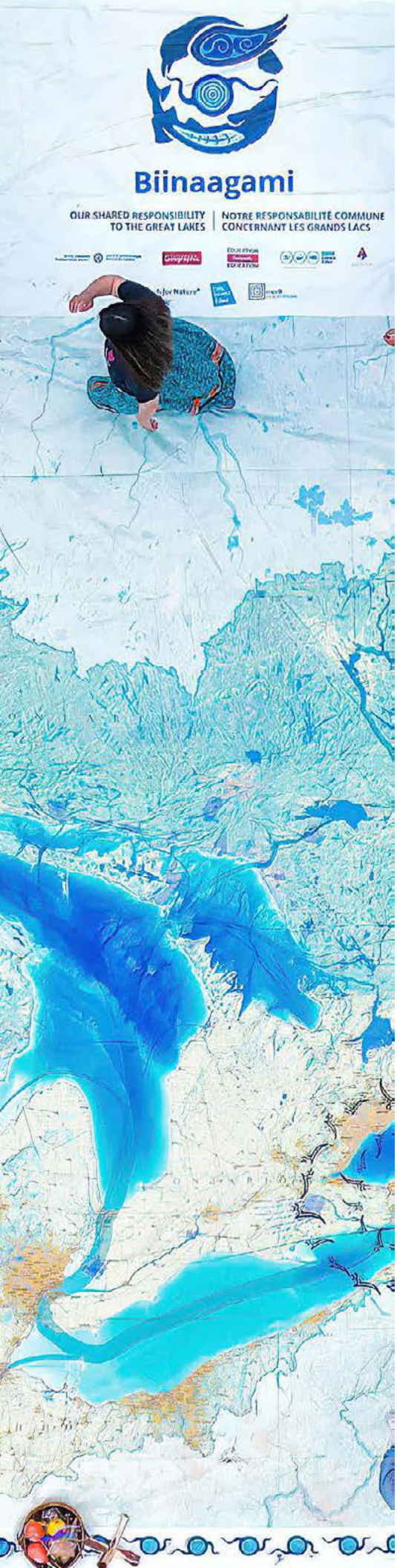


Welcome to Biinaagami

If you share photos on social media while using the map or referring to the Biinaagami initiative, please tag us in your posts: @Biinaagami @CanGeoEdu @CanGeo @SwimDrinkFish. Help us spread the word about our shared responsibility to the Great Lakes.

Niá:wen, Miigwetch, Merci, Thank You

Meredith Brown, Biinaagami Director
Katie Doreen, Biinaagami Education and Editorial Coordinator
Patrick Madahbee, Biinaagami Shared Circle Lead



Biinaagami Giant Floor Map

Our shared responsibility to the Great Lakes

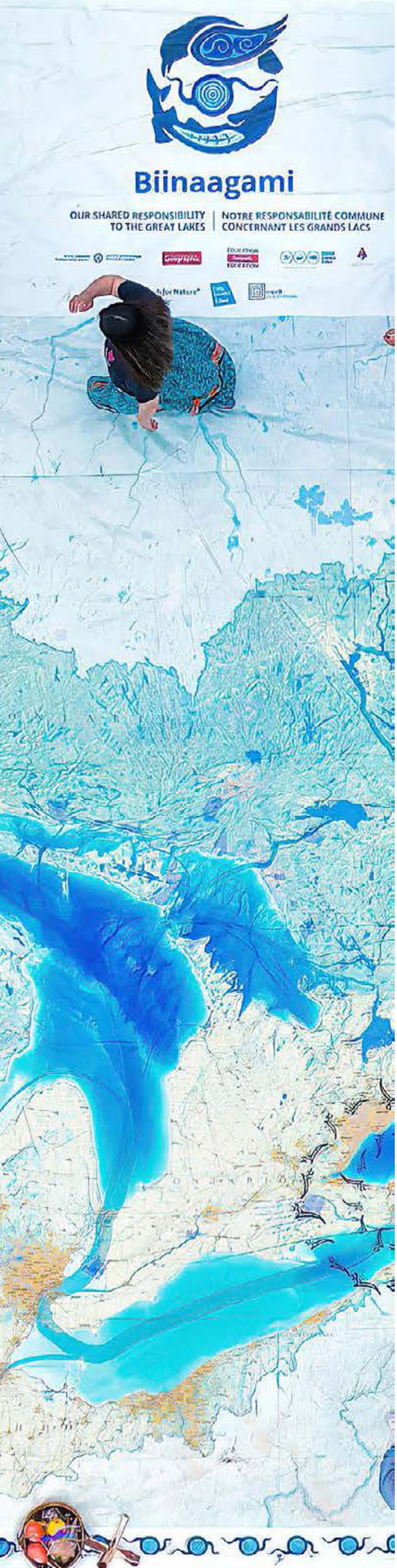
Cartographer's message

My goal with any Giant Floor Map is to communicate the intended message(s) both immediately (at a glance) and slowly over time (by taking a deep dive). I hope that when you see the prominent blues (of all things water) and purples (of all things First Nations) overlaid on a classic land-cover based map, that you intuitively and immediately understand that this map seeks to tell stories about water from both Indigenous and non-Indigenous perspectives. And I hope as you dig deeper into the details of this map, that you begin to understand how complementary our two understandings can be.

The Biinaagami Giant Floor Map is my first attempt to collaboratively create a map that is genuinely guided by the principle of Etuaptmumk, a Mi'kmaq word meaning "two-eyed seeing". Etuaptmumk is described by Mi'kmaq Elder Albert D. Marshall (who coined the term with fellow Eskasoni First Nation member Murdena Marshall) as a way of seeing something "from one eye with the strengths of Indigenous ways of knowing, and to see from the other eye with the strengths of Western ways of knowing, and to use both of these eyes together." Etuaptmumk is evidenced in all aspects of this map, from the cast of characters who guided its creation, to the selection of information contained on the map, to the cartographic design of the many elements included in its final design.

As you step onto the map, you step over a prominent border of wampum belts. These wampum belts are representations of agreements between distinct First Nations, and between First Nations, Europeans and Canadians. They are a starkly different means of communicating the specifics of agreements than proclamation and treaty texts drafted by colonial and national governments. But they both were created to answer the same central question: how do we share these lands and waters? And so, these Wampum Belts, mirrored by the treaty and land cessation boundaries on the map (and their associated treaty agreement texts) represent a First Nations and a colonial understanding of our mutual agreements (two-eyed seeing). It should be noted that the wampums depicted predate all of the treaties and land cessations in the Great Lakes – St. Lawrence Watershed, and should be considered foundational for these later agreements. As Justice Murray Sinclair said of the Treaty of Niagara and the 1764 Covenant Chain | Treaty of Niagara Wampum, if we are going to have reconciliation it must be based on the "mutual respect that was originally promised" in these agreements.

Another example of Etuaptmumk on this map is the relatively equal representation of the many nations who call these lands and waters home. In the past, non-Indigenous Canadians have viewed the Great Lakes – St. Lawrence Watershed through a bi-national lens, considering it to be Canadian/American territory. But it is clearly a multi-national region, with well over 100 First Nations calling it home



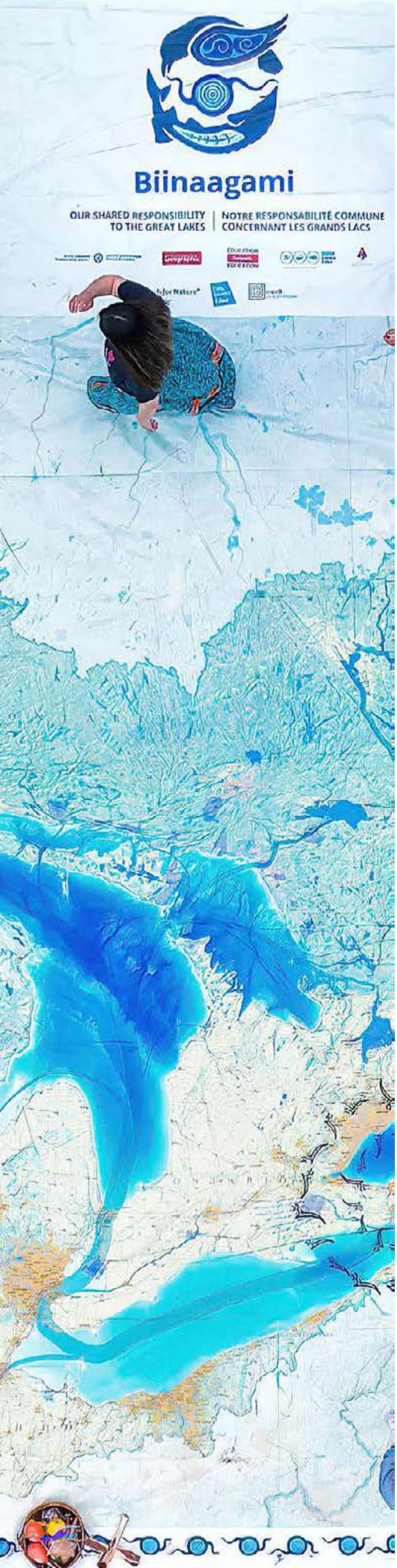
Cartographer's message

alongside the two countries. Cartographically, this multinational nature is reflected in prominent representation of First Nations both within and nearby the Great Lakes – St. Lawrence Watershed, where First Nation communities are represented with large bold fonts, and First Nations Reserves are shown in a rich purple colour that stands out from the background. Further, languages spoken by Original Peoples are draped over the entirety of the landscape to represent their national ties to the lands and waters, in balance with the names of the provinces and states that also claim jurisdiction over the territory. Tying all of these nations together are the treaties and land cessations, which, as mentioned above, are living agreements and should be seen as guiding documents as to how to share the land today.

The final example of two-eyed seeing on this Biinaagami map is in the way water is represented. In a slightly different version of Etuaptmumk, a fairly classic western way of representing water systems, through the delineation of watersheds and the graphic augmentation of water flow through "flowlines", simultaneously represents aspects of First Nations' understanding of water. Watersheds and flow volumes are measured and mapped using classically western ways of observation and data gathering. But watersheds are well known and meaningful to First Nations. Indeed watersheds often form the boundaries between one First Nations' territory and the next. And as the primary mode of travelling distances in the Great Lakes – St. Lawrence watershed was historically by canoe, an understanding of how water flows and connects across the landscape has always been part of Indigenous ways of knowing. This knowledge is even baked into the name for the St. Lawrence River in Mohawk (Kaniatarowanénhne), which describes practical qualities of the river including flow volume. First Nations members of the Biinaagami team felt that watersheds and flowlines represented aspects of Indigenous knowledge, and while it remains beyond my abilities to graphically represent a fundamental First Nations understanding that water has spirit and sovereignty, it has been eyeopening to learn that watersheds and water flow are more a universal language than strictly a Western one.

As a final thought on Biinaagami, I look to Josephine Mandamin from Wiikwemikoong Unceded Territory, Manitoulin Island. Also known as "Grandmother Water Walker", she walked around the Great Lakes from 2003 to 2017 to bring awareness to water-related issues in the Great Lakes region. She said "We've known for a long time that water is alive. Water can hear you. Water can sense what you are saying and what you are feeling.… Give it respect and it can come alive. Like anything. Like a person who is sick…if you give them love, take care of them, they'll come alive." She asks us to see beyond scientific and economic rationales to care for water, and asks us to connect to it, to feel its spirit. If Biinaagami helps us to understand the value of water not only for its utility, but also for its "livingness" it will have truly succeeded in Etuaptmumk.

- Chris Brackley, Cartographer



List of Contributors

This teacher's guide has been developed by the following members of the Royal Canadian Geographical Society, Canadian Geographic and Canadian Geographic Education:

Charlene Bearhead: Vice President of Learning and Reconciliation
Charlene is a mother, grandmother, educator, Indigenous education advocate and author with over 30 years of regional, national and international experience. She is the co-author of the children's book series Siha Tooskin Knows, and contributor to multiple anthologies and reconciliation-focused resources.

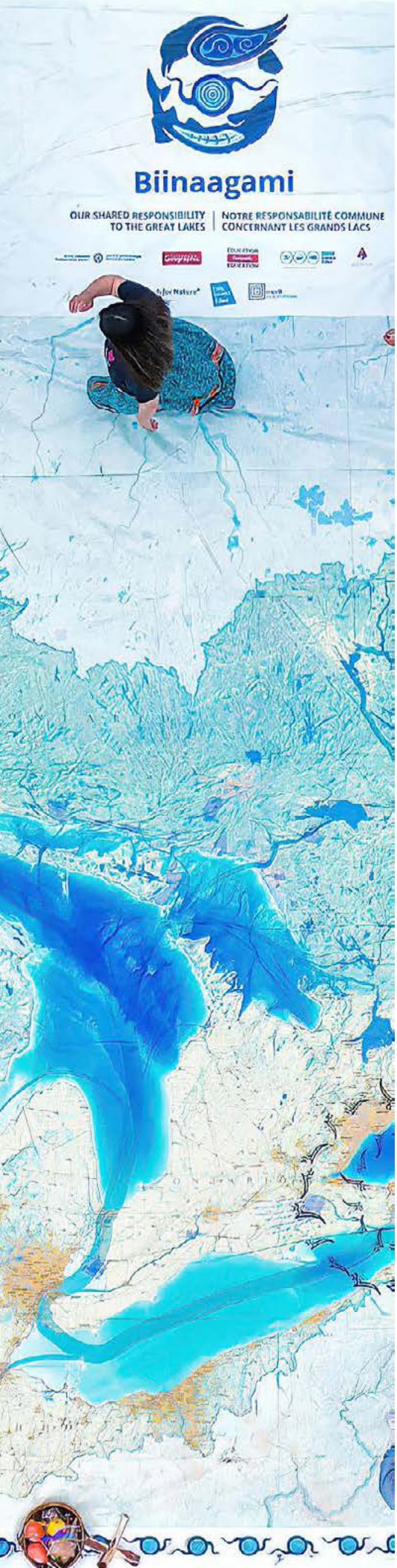
Meredith Brown: Director of Water and Land Relations
Meredith is the Director of Water and Land Relations for Canadian Geographic and has devoted her career to freshwater protection. Meredith has worked collaboratively across Canada on issues related to water pollution, instream flow, river restoration, watershed governance, watershed health, community-based monitoring, nuclear waste and the rights of nature.

Michelle Chaput: Director of Research and Education
Michelle holds a Ph.D. in Geography, is an adjunct professor in the Department of Geography, Environment and Geomatics at the University of Ottawa, and is the Director of Canadian Geographic Education. She and her team are currently working on enhancing the geography curriculum in primary and secondary schools across Canada through the development of free, bilingual, inquiry-based tools and resources for teachers and students.

Katie Doreen: Biinaagami Editorial and Education Coordinator
Katie is a former teacher from Kenhtè:ke (Tyendinaga Mohawk Territory). She draws from the Kanyen'kehà:ka ways of knowing about place and the traditional responsibilities humans have to the Earth according to the Haudenosaunee worldview. Katie blends academic training with Indigenous land-based knowledge to advocate for water stewardship, language preservation, and Indigenous ways of connecting with nature.

Bluebird Mustooch: Indigenous Education Fellow
Bluebird Mustooch is from the Alexis Nakoda Sioux Nation of central Alberta, and is a graduate of the Emily Carr University of Art and Design. She is a seamstress, beadworker, illustrator, painter, and sculptor, and is the inaugural Fellow of the Royal Canadian Geographical Society's Indigenous Fellowship Program.

Eric Nadeau: Education Program Coordinator
Eric designs and leads educational programs for K-12 classrooms across Canada, featuring interactive resources that support geoliteracy and inspire curiosity and deeper learning. Before joining Canadian Geographic Education, Eric gained experience in engineering, teaching, and community development roles, fuelling his love of creative thinking and cross-cultural connection, and shaping his approach to education.



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Biinaagami's Shared Circle is made up of respected Indigenous people from throughout the Great Lakes-St. Lawrence watershed who continue to guide this project in a good way:

Simon Brascoupé: Shared Circle Member
Simon Brascoupé, Anishinabeg/Haudenosaunee – Bear Clan, is a member of Kitigan Zibi Anishinabeg First Nation. He is an Adjunct Research Professor at Carleton University and Trent University, with research interest in land based healing, traditional medicine and traditional knowledge. Simon is also an artist who aims to connect the viewer to the sacredness of the land through his works.

Grand Council Chief Linda Debassige: Shared Circle Co-Chair
Born and raised in M'Chigeeng First Nation, Linda Debassige currently serves as the Grand Council Chief of the Anishinaabek Nation. Linda is often called upon to provide advice and advocacy for Indigenous communities, organizations and leadership and is known for her strong leadership style, knowledge, dedication and passion for all First Nations People.

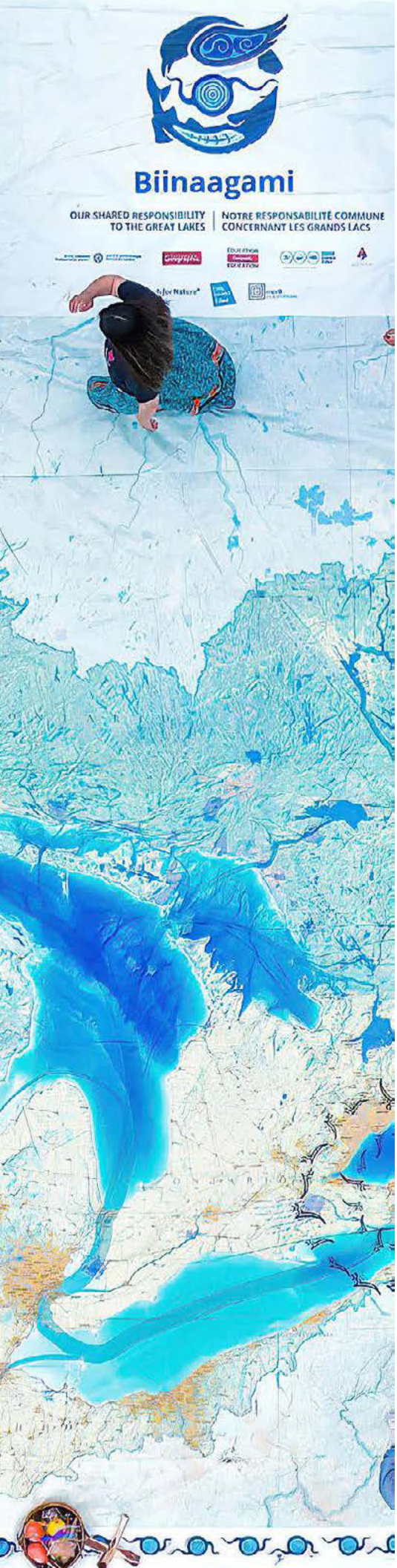
Chief Duncan Michano: Shared Circle Member
Duncan Michano is the Chief of Biigtigong Nishnaabeg. Duncan is an experienced canoe tripper and guide and has led many wilderness trips over the years with a focus on getting youth out and connected with the land and waters.

Kahontakwas Diane Longboat: Shared Circle Member
Kahontakwas Diane Longboat is a member of the Turtle Clan and Mohawk Nation at Six Nations of the Grand River. She is a ceremonial leader, traditional teacher, and knowledge keeper. Diane is an educator, passionate about Diane is a passionate Indigenous knowledge systems, peace making and care of Mother Earth.

Chief Ghislain Picard: Shared Circle Member
Ghislain Picard is an Innu from the community of Pessamit. Since 1992 he has been the Chief of the Assembly of First Nations QuebecLabrador (AFNQL). He sits on the Assembly of First Nations' Executive Committee and Management Committee and he is the spokesperson for the Comprehensive claims, Urban population and International Issues portfolios.

Patrick Madhabee: Shared Circle Co-Chair
Patrick Madahbee is a widely respected leader who has dedicated over 50 years serving his First Nation and many others. He was the chief of Aundeck Omni Kaning (Mnidoo Mnising | Manitoulin Island) for 17 years and previously worked as a councilor for his Nation.

Kahsennenhawe Sky-Deer: Shared Circle Member
Kahsennenhawe Sky-Deer (Wolf Clan) is the former Grand Chief of the Mohawk Council of Kahnawà:ke. She was elected as the first ever female Grand Chief in 2021. Kahsennenhawe is passionate about issues pertaining to the protection of inherent rights, the revitalization of the Mohawk Language and the survival of the cultural identity of her people.



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Iza Valle - Graphic Designer
Keegan Hoban - Project Coordinator

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Biinaagami
ROYAL CANADIAN GEOGRAPHICAL SOCIETY
SOCIÉTÉ GÉOGRAPHIQUE ROYALE DU CANADA
ÉDUCATION Géographic EDUCATION
SWIM DRINK FISH
Connecting people with water
RBC Foundation
AVARA

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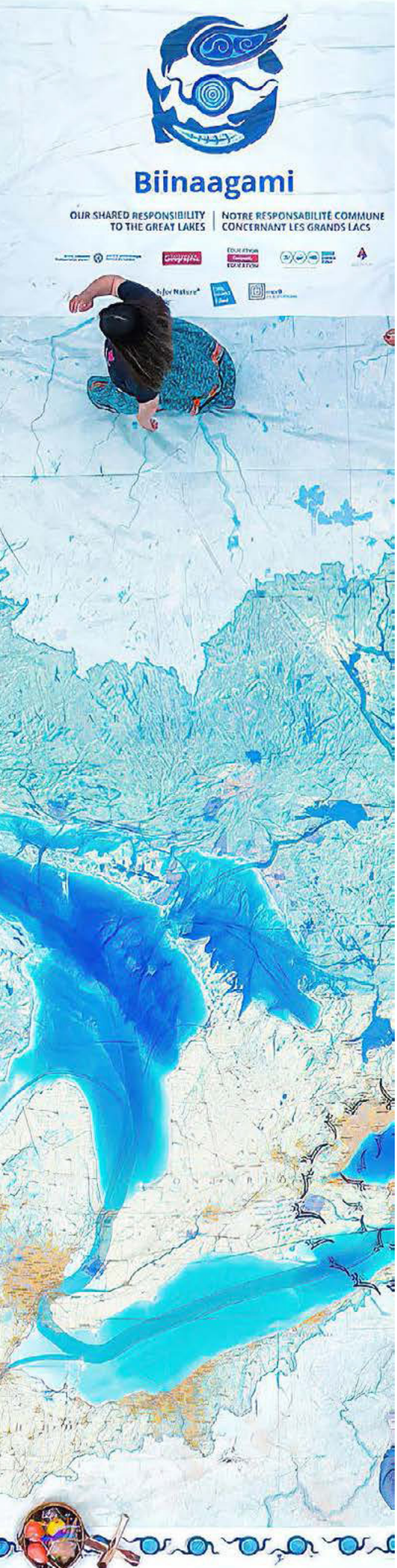

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Activity 8 - Maritime Traffic and Marine Life 42
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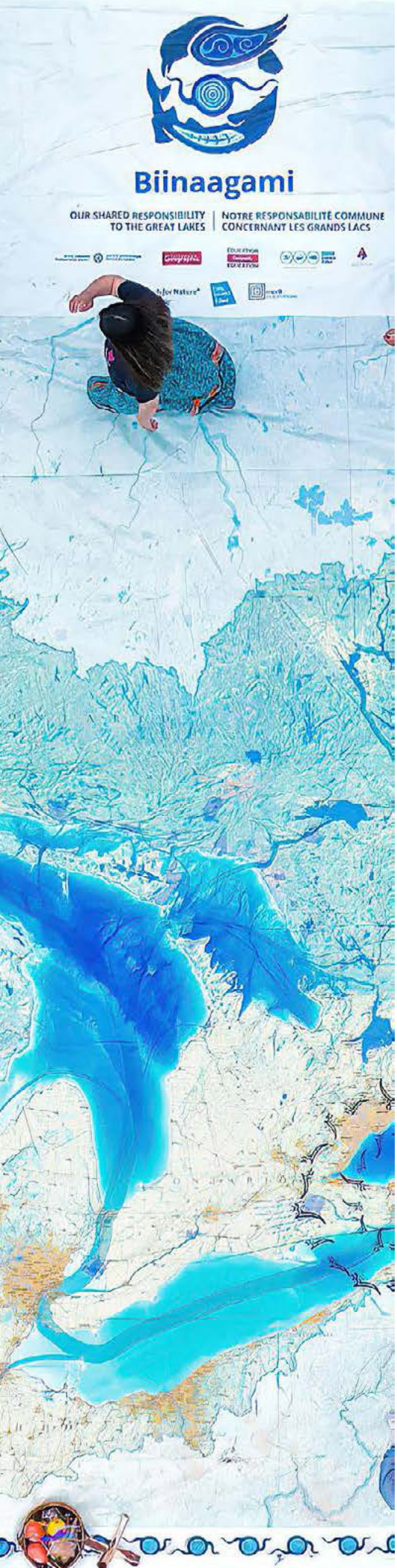

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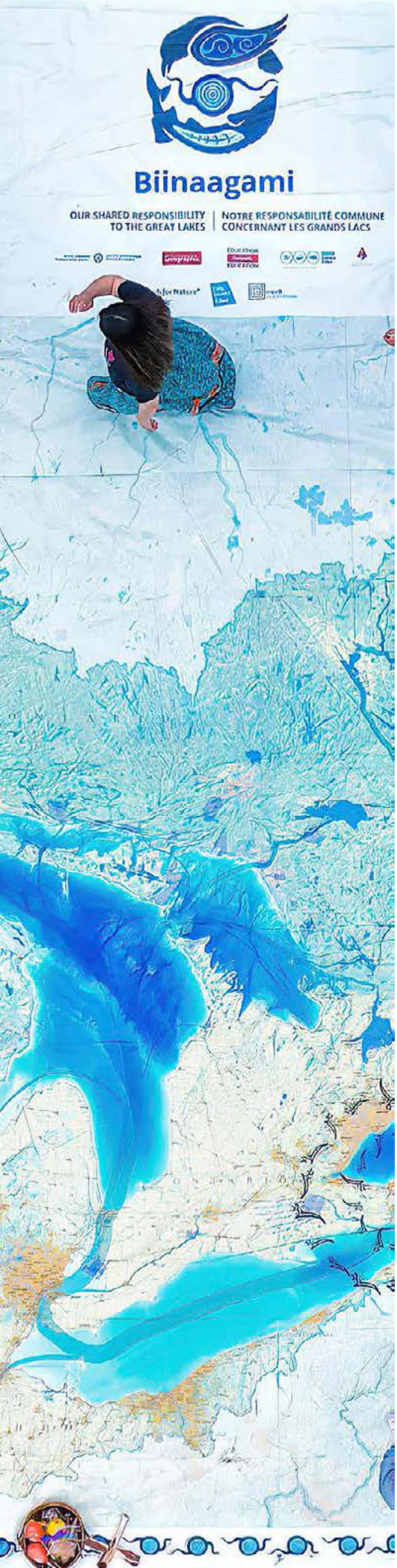
In this activity, students will explore various careers related to water protection and conservation.

Activity 10 - Glaciation 47
In this activity, students will learn about the role of glaciation in the formation of the Great Lakes.

Activity 11 - Water Pollution 50
In this activity, students will explore the sources and impacts of water pollution, using the Giant Floor Map to visualize and under stand the flow and effects of contaminants through the Great Lakes St. Lawrence Watershed.



Augmented Reality

The Biinaagami Giant Floor Map is embedded with augmented reality (AR) experiences designed to bring the map to life through 3D visual storytelling. These experiences allow students to deepen their understanding of the wildlife, people and places within the Great Lakes St.Lawrence Watershed, and incorporate stories gifted to Biinaagami from a few of the many First Nations who have been in relationship with, and the guardians of, the lands and waters of the Watershed since time immemorial.

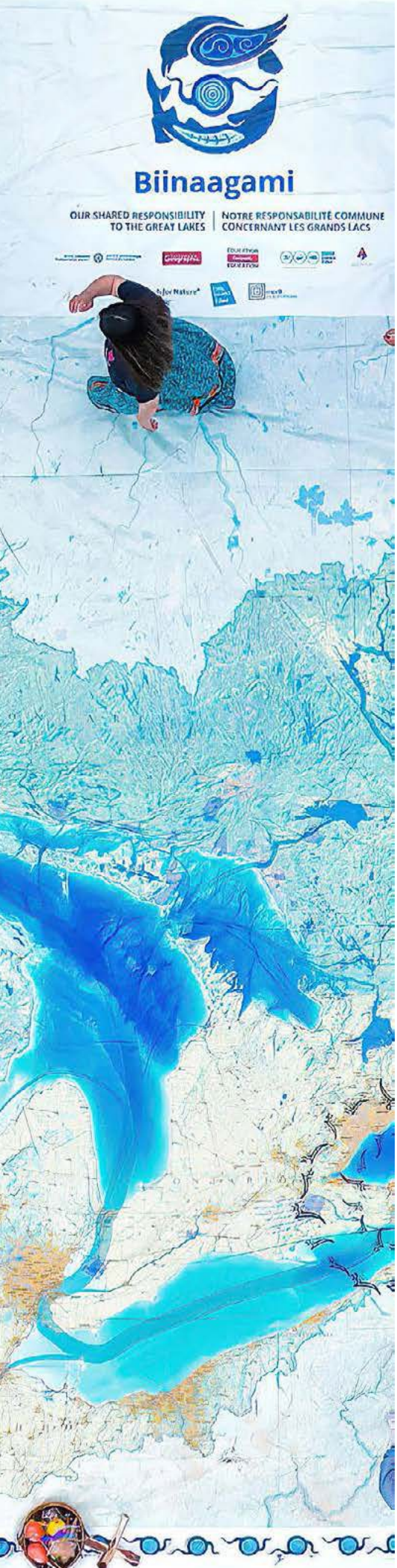
The experiences are meant to be viewed using a handheld device, such as a tablet or smartphone with sound. The AVARA Discover app (Android, iOS) must be downloaded and the devices connected to Wi-Fi.

Best practices for using augmented reality with students:

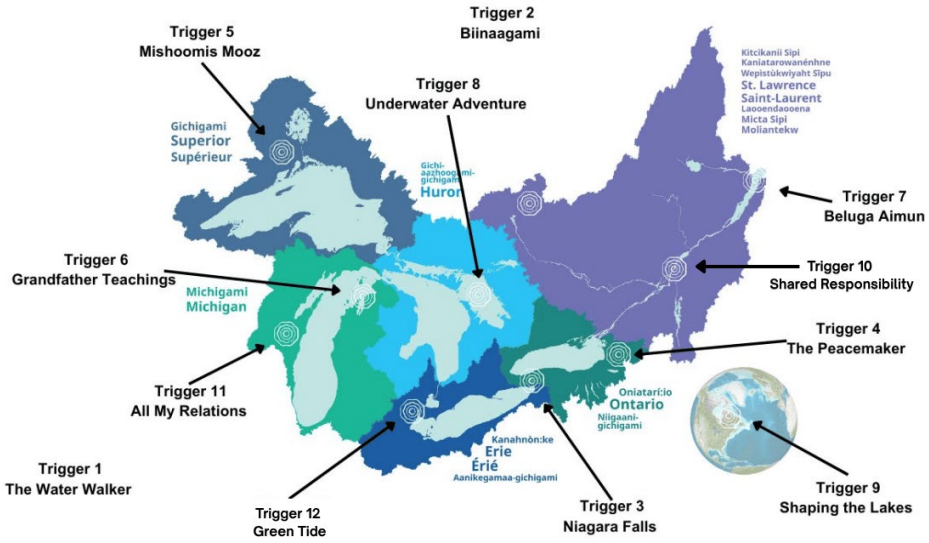
- Download the latest version of the AVARA Discover app (Android, iOS).
- It is recommended that students wear headphones when viewing the experiences.
- Try to have one device per student. If this is not possible, allow students to take turns, or break students into the smallest groups possible.
- Explain that the experiences are similar to the popular game application "Pokemon Go." Students will look at the real world through their device, and will tap the screen to interact with virtual people, places, wildlife and objects.
- Encourage students to explore through three dimensional movement. Have them move the device around while standing in place, and move their bodies around to explore the entirety of each experience. Students should place their device at different heights and different angles to fully experience the stories.
- Being too close to the augmented reality triggers can leave important elements out of frame. In some cases, certain elements need to be in frame in order for the augmented reality experience to progress ahead. Ideally you want a full 1 m^3 space in front of your device to view the experience. For example, they can enter the longhouses in the *Peacemaker* experience.
- Some experiences have interactive elements such as floating orbs, games or videos. Students should tap the screen to engage with these elements.
- The technology relies on a device's camera "seeing" the triggers with full clarity throughout the whole experience. If there are folds in the map where a trigger is located, the experience may not be detected. Similarly, if someone is standing partially on a trigger, then detection will be inhibited. Please ensure the map is stretched out and as wrinkle-free as possible. Instruct students to be mindful of where they're walking.
- Instruct students that their device will automatically download the experience before it starts. Sometimes this takes a while, especially when Wi-Fi is poor.

The triggers for the experiences are located on the Giant Floor Map as seen on the next page.

Please note: as updates are made to the experiences, some may be labelled as "coming soon" until they are live.



Augmented Reality



Descriptions of Augmented Reality Experiences

The Water Walker

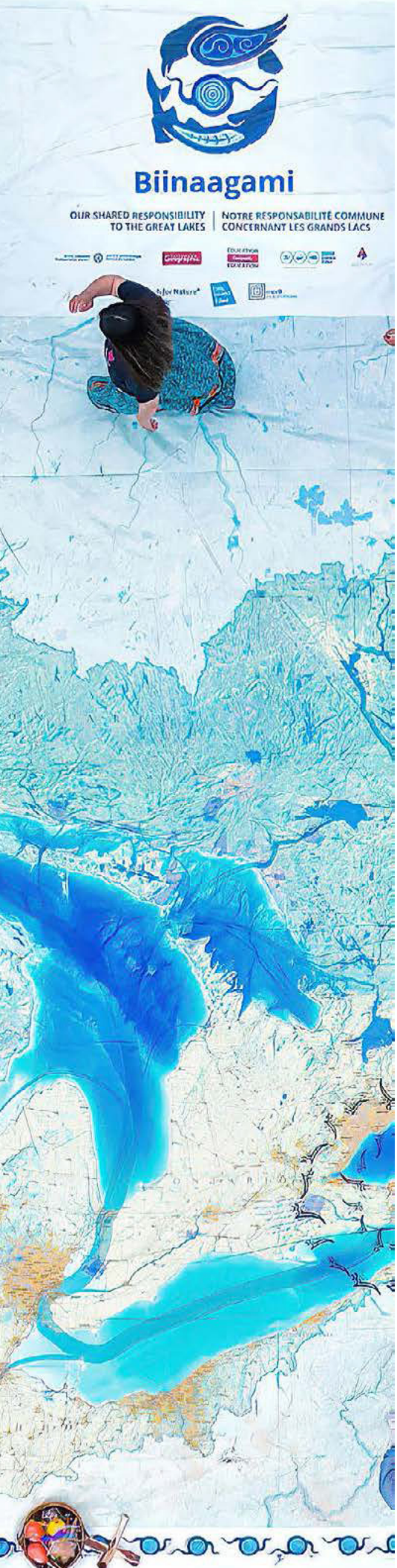
Follow a Water Walker as she shares the story of Josephine Mandamin, the original Water Walker, and explains our shared responsibility to Biinaagami—the good, clean waters. This experience frames water, in line with Anishinaabe values, as a relative that needs our help to stay clean and healthy. It pairs well with the book The Water Walker by Joanne Robertson, which is part of the education kit. Joanne helped write and narrate this experience.

Credits:
Joanne Robertson: writing and narration
Sabrina Sawyer: story development and production
Abi Hayward: script editing

Biinaagami

Watch the Biinaagami logo swirl to life, introducing the Biinaagami project in four languages: Anishinaabemowin, English, French and Kanien'kéha. The logo experience will take you to our website, introducing more amazing learning resources.

Credits:
Katie Doreen (Mohawks of the Bay of Quinte): English and Kanien'kéha narration
Chastity Jenner-Keeshig (Chippewas of Nawash First Nation): Anishinaabemowin narration
Tatiana Jasinsky-Parent: French narration
Karonhiio Delaronde (Ganienkeh): Kanien'kéha translation
Ron Root (Saugeen Ojibway Nation): Anishinaabemowin translation
Abi Hayward: script development



Augmented Reality

Niagara Falls

Travel back in time as the Thunder Spirits and giant serpents collide in the Haudenosaunee story of how Niagara Falls came to be. Did you know that the Haudenosaunee have ancient stories about evil monsters trapped in the caves beneath Niagara Falls? This story shows how one rogue serpent created the Niagara gorge and whirlpool, mimicking the process of hydraulic erosion.

Credits:
Jock Hill (Six Nations of the Grand River): storytelling and narration Biinaagami storytelling team: story development and production

The Peacemaker

Paddle with Aiionwahta and the Peacemaker in their stone canoe as they traverse the waters, uniting the Six Nations of the Haudenosaunee Confederacy in everlasting peace. The Haudenosaunee Confederacy is one of the largest groups of Indigenous Peoples in the Great Lakes-St. Lawrence Watershed and consists of the Mohawk, Oneida, Onondaga, Cayuga, Seneca and Tuscarora. This story illustrates how this longstanding democracy, which eventually inspired the U.S. Constitution, came to be.

Jock Hill (Six Nations of the Grand River): storytelling and narration Dawn Martin Hill and Ohneganos (Six Nations of the Grand River): community engagement Biinaagami storytelling team: story development and production

Mishoomis Mooz

Chat with a life-sized moose at the water's edge. This grandfather moose has wisdom to share about how humans and non-humans can coexist in a good way, stemming from an ancient agreement between the moose and the Anishinaabe. When the hungry moose emerges from the forest, he has four teachings to offer—each corresponding to one of the directions of the Medicine Wheel. Students must give him offerings if they want to hear his stories.

Patrick Madahbee (Aundeck Omni Kaning): narration Biinaagami storytelling team: story development and production

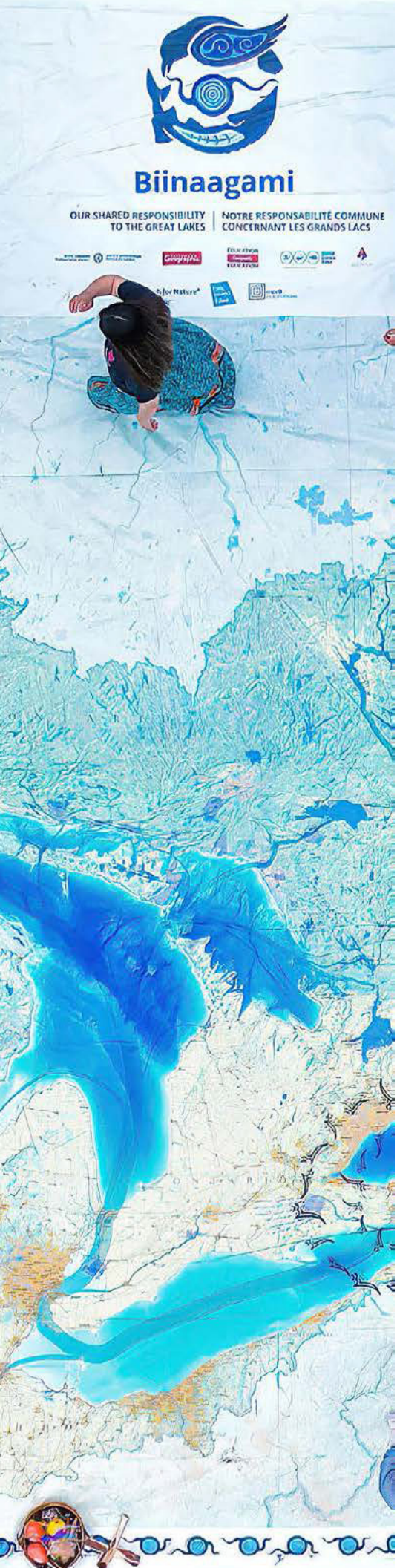
Seven Grandfather Teachings

The Seven Grandfather Teachings are shared through generations, encapsulating the core morals, values and spiritual beliefs of the Anishinaabek. The user will meet seven animals, each of whom has wisdom to share, based on their ecological roles. This experience also incorporates woodland style art by Ansihinaabe artist, Cody Houle.

Cody Houle (Anishinaabe): illustration, woodland animals Biinaagami storytelling team: story development and production

Green Tide

In an underwater experience, learn how harmful algae blooms occur, their impact, and how they can be prevented. Use levers to make small and large decisions about what we do on the land to see how it will affect the water quality.



Augmented Reality

Beluga-Aimun

Swim the St. Lawrence Seaway with a pod of belugas as they struggle to navigate a world inundated with disruptive shipping traffic and underwater noise pollution. Thousands of commercial ships pass through the St. Lawrence every year, delivering goods from oceans away. But this human necessity is catastrophic for beluga whales, which rely on sound to navigate and communicate. This experience draws parallels between shipping noise disrupting whale communication and settler colonialism disrupting the original languages of the watershed. Find hope from an Innu youth who speaks her language amid the cacophony.

Uapukun Mestokosho (Innus of Ekuanitshit): Innu-Aimun narration (adult) Zélya-Destiny McKenzie (Innus of Ekuanitshit): Innu-Aimun narration (child) Tim Asta: French narration
Biinaagami storytelling team: story development and production

Underwater Adventure

Walk along the lakebeds of the Great Lakes to investigate sunken mysteries in their depths. First, witness the prophesized black snakes, hissing and slithering—a metaphor for oil pipelines. Next, observe an ancient hunting area where caribou roamed before the land bridge sank, along with the old-growth forests harvested in Canada's infancy. Finally, explore a sunken ship covered in invasive quagga mussels and watch a clip from the documentary All Too Clear.

Inspired Planet Productions: underwater/ROV footage
Biinaagami storytelling team: story development and production

Shaping the Lakes

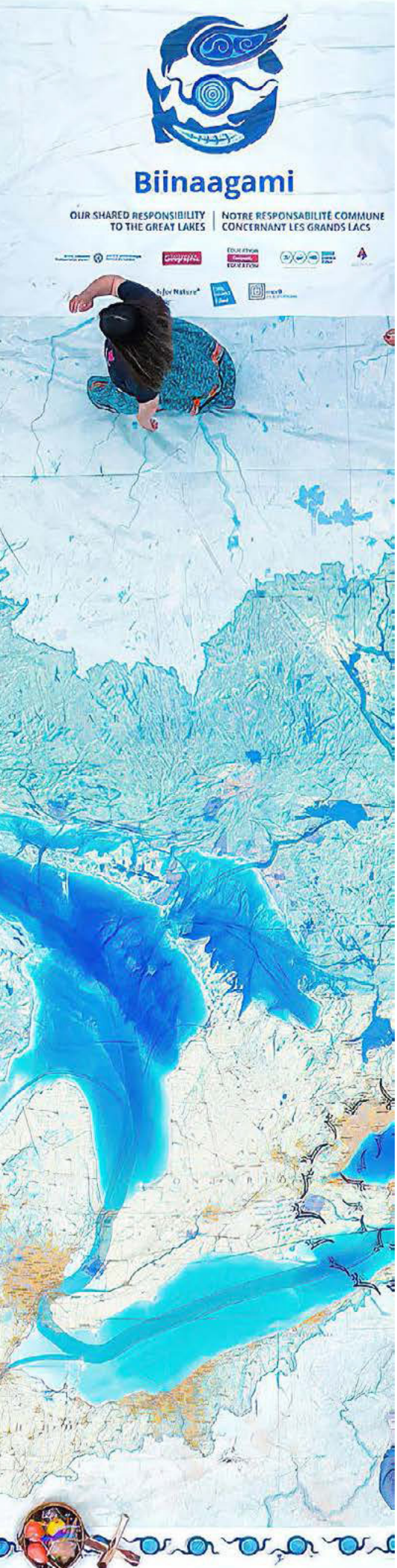
Locate the Great Lakes on the world map and watch glaciers retreat to the north, carving the lakes as they move. This experience demonstrates how prehistoric ice continues to alter the landscape. Students will also see the movement of Indigenous settlements in the Great Lakes region throughout the Ice Age.

Shared Responsibility

With over 40 million people living within the Great Lakes-St Lawrence Watershed, we all have a shared responsibility to protect the waters and all our relations from harmful pollutants. Students will learn about the pathways of pollutants from home to water to aquatic life and how we can make changes that make a difference.

All My Relations

Follow a monarch butterfly from a home garden to the school's pollinator garden to the local stream where she meets thousands of other monarchs. Cheer on the monarchs as they travel down the urban stream to begin their amazing migration across the Great Lakes to overwinter in Mexico.

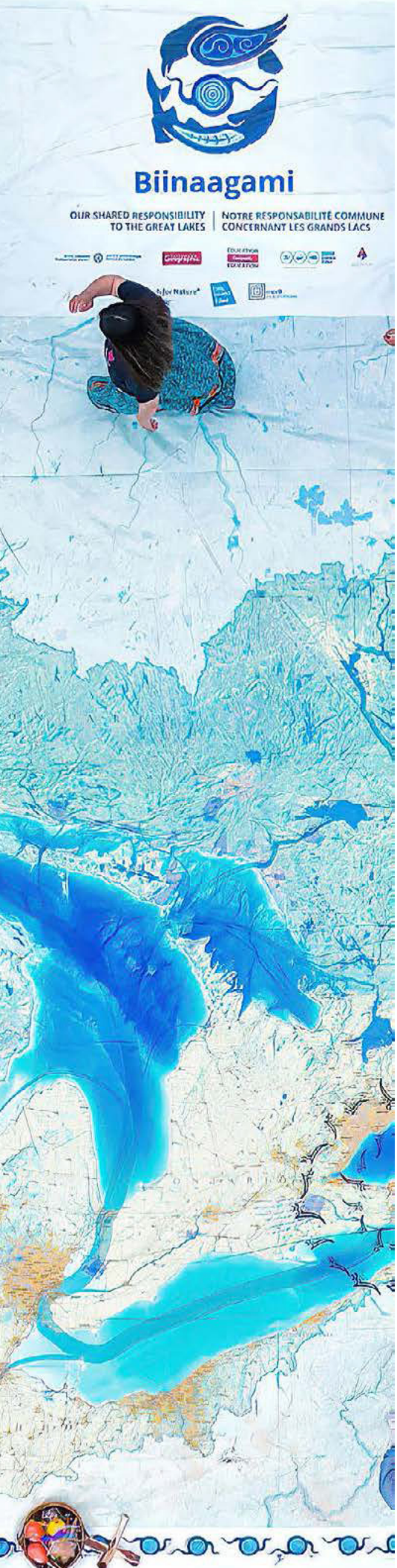


First Nations of the Great Lakes-St. Lawrence Watershed

There are over 140 sovereign First Nations within the boundaries of the Great Lakes-St. Lawrence Watershed. We recommend you get to know the Nations near your school.

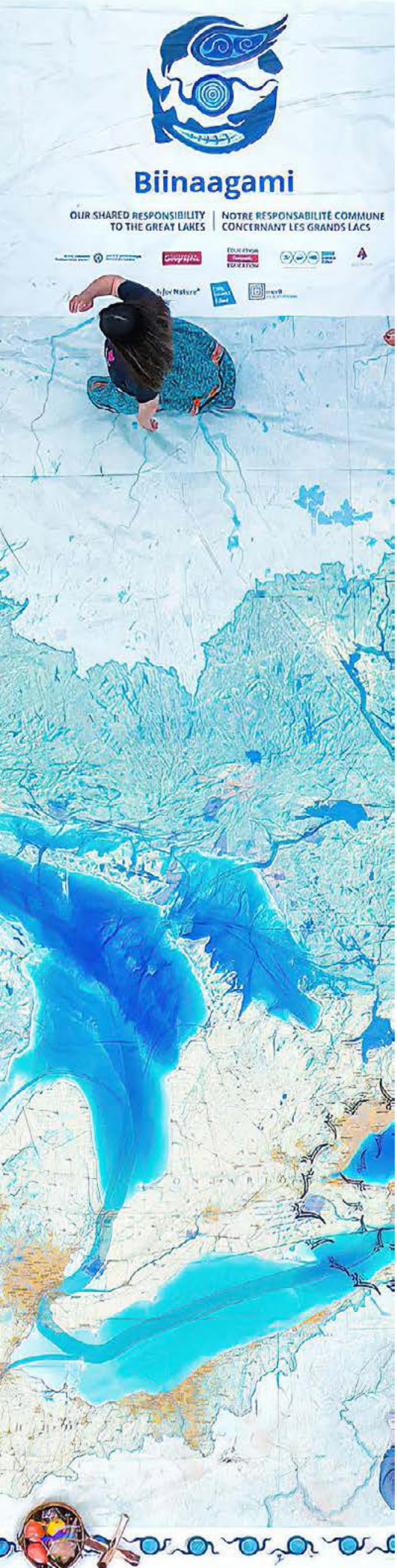
Please note: When a vertical line (|) is used, the Nation's self name is on the left and their common English name is on the right.

Kenhtè:ke | Tyendinaga Mohawk Territory
Wiikwemkoong
Aazhoodena | Kettle and Stony Point
Matachewan
Ketegaunseebee | Garden River
Atikamekw de Wemotaci
M'Chigeeng
Zaaga'iganiniwag | Caldwell
Alderville
Opwaaganisiniing | Red Rock
Aamjiwnaang
Chippewas of Georgina Island
Atikamekw d'Opitciwan
Deshkaan Ziibing | Chippewas of the Thames
Magntaawan | Magnetawan
Kiashke Zaaging Anishinaabek | Gull Bay
Shawanaga
Moose Deer Point
Whitesand
Animbiigoo Zaagi'igan Anishinaabek | Lake Nipigon Ojibway
Nbisiing | Nipissing
Omàmiwinini | Pikwàkanagàn
Okikendawt | Dokis
Sagamok Anishnawbek
Whitefish River
Saugeen Anishnabeg | Timiskaming
Kebaowek | Eagle Village
Chi-Genebek Ziibing | Serpent River
Sheguiandah
Mazina'iga-ziibing Misi-zaagiwininiwag | Mississaugas of the Credit
Wolastoqiyik Wahsipekuk
Akwesásne
Oshkiigmong | Curve Lake
Bkejwanong | Walpole Island
Nalahii Lunaapewaak | Munsee-Delaware
Henvey Inlet
Teme-Augama Anishnabai | Temagami
Atikamekw de Manawan



First Nations of the Great Lakes-St. Lawrence Watershed

Animkii Wajiw | Fort William
Mishibikwadinaang | Michipicoten
Zaagiing | Saugeen
Miississaugiig | Hiawatha
Abénakis de Wôlinak
Atikameksheng Anishnawbek
Wahnapitae
Miississaugiig | Scugog Island
Sheshegwaning
Missanabie Cree
Winneway | Long Point
Aundeck Omni Kaning
Pekuakamiulnuatsh Takuhikan
Michikanibikok Inik | Barrière Lake
Bingwi Neyaashi Anishinaabek | Sand Point
Neyashewun | Thessalon
Kahnawà:ke
Mnjikaning | Rama
Biinjitiwaabik Zaaging Anishinaabek | Rocky Bay
Pawgwasheeng | Pays Plat
Kitigan Zibi Anishinabeg
Wolf Lake
Wasauksing | Parry Island
Zhiibaahaasing
Neyaashiinigmiing | Chippewas of Nawash
G'Chimnissing | Beausoleil
Obaajiwan | Batchewana
Kanehsatà:ke
Abénakis d'Odanak
Misswezahging | Mississagi
Netmizaaggamig Nishnaabeg | Pic Mobert
Biigtigong Nishnaabeg | Pic River
Wendake | Nation Huronne-Wendat
Six Nations of the Grand River
Oneida Nation of the Thames
Eelünaapéewi Lahkéewiit | Delaware Nation
Kitcisakik | Grand Lac
Wahta Mohawk Territory
Cattaraugus
Oneida Nation
Onondaga Nation
Gakiiwe'onaning | Keweenaw Bay
Miskwaabiikaang | Red Cliff Band of Lake Superior Chippewa
Tonawanda



First Nations of the Great Lakes-St. Lawrence Watershed

Tuscarora Nation
Mashkiiziibii | Bad River Chippewa Band
Gnoozhekaaning | Bay Mills Indian Community
Wejkisenyanik | Forest County Pottawatomi Community
Gichi-wiikwedong | Grand Traverse Band of Ottawa and Chippewa Indians
Nottawaseppi Huron Band of the Potawatomi
Gakiiwe-wenaning | Keweenaw Bay
Gaaching Ziibi Daawaa | Little River Band of Ottawa Indians
Waganakising Odawak | Little Traverse Bay Band of Odawa Indians
Match-E-Be-Nash-She-Wish | Gun Lake Tribe
Pokégnek Bodéwadmik | Pokagon Band of Potawatomi
Baawiting | Sault Ste. Marie Tribe of Chippewa
Nagaajiwanaang | Fond du Lac Band
Waganakising Odawak | Little Traverse Bay Band of Odawa Indians
Gichi-wiikwedong | Grand Traverse Band of Ottawa and Chippewa Indians
Ho-Chunk Nation | Wisconsin Winnebago Tribe
Wejkisenyanik | Forest County Pottawatomi Community
Zaka'aaganing | Sokaogon Chippewa Community
Omāēqnomenēw-Otāēskonenan | Menominee Tribe of Wisconsin
Stockbridge-Munsee Band of Mohican Indians
Gaaching Ziibi Daawaa | Little River Band of Ottawa Indians
Anishinaabe Ziibiwing | Saginaw Chippewa Isabella
Cayuga Nation
Akwesásne | Saint Regis Mohawk Tribe
Gichi Onigaming | Grand Portage Chippewa
Wigwas Zibiniwek | Hannahville Potawatomi
Pokégnek Bodéwadmik | Pokagon Band of Potawatomi
Gnoozhekaaning | Bay Mills Indian Community
Baawiting | Sault Ste. Marie Tribe of Chippewa

1 Meeting the Watershed
Exploring our connection

Overview

In this activity, students will reflect on the Great Lakes-St. Lawrence Watershed as a living entity, and will review the importance of respectfully acknowledging the Original Peoples of northern Turtle Island (now known as Canada), who have been in relationship with the Watershed since time immemorial.

Time required

1 hour (can be divided)

Grades

Best suited for Grades 5-8 (modifications provided for younger and older students).

Learning objectives

By completing this activity, students will:

- Develop an understanding of the Great Lakes-St. Lawrence Watershed as a living entity, and the relationship between the water and the Original Peoples of the watershed.
- Explore the specific roles and functions of watersheds, and develop their geographical knowledge of the Great Lakes-St. Lawrence region using a Two-Eyed Seeing approach.
- Learn about land acknowledgements and create their own for the community where they live, fostering a sense of respect and connection with the land and the Original Peoples that live there.

Lesson implementation

Minds on

Begin the lesson by having students stand around the Giant Floor Map. Engage in a discussion about water and its importance in their lives:

- Why is water essential for all living things?
- How does water connect us to the environment and each other?
- Where does the water you use come from?

Explain to students that they are looking at a map of the Great Lakes-St. Lawrence Watershed.

Elicit existing knowledge of watersheds using the following prompts:

- What is a watershed?

Imagine a bathtub in your house. When you take a bath, the water fills up the tub. The sides of the tub are like the edges of a watershed, which are defined by the highest elevations surrounding a lake or river segment. Water from the tap or from the shower head represents rain or snowmelt in a watershed. Just as the edges of the bathtub collect and direct the water into the drain, a watershed collects and directs all the water that falls within its boundaries into a larger body of water, such as a river, lake, or ocean. It is a water collection basin for a specific region.

- Why are watersheds important?

Watersheds are important because they play a crucial role in supplying clean drinking water for humans and all our relations, and in supporting diverse ecosystems by sustaining plants, animals, and human communities. Watersheds also help regulate the water cycle by collecting, storing, and filtering precipitation, contributing to groundwater recharge, and maintaining water quality.

Action

Activity 1 - Acknowledging the Watershed persona

Introduce the concepts underlying the deep connection that the Original Peoples of Turtle Island (North America) have to the lands and waters, emphasizing the interconnection between humans and the environment:

Many people see the natural world as something separate from themselves, as just a provider of resources or economic worth. But Indigenous traditions and belief systems are based on a different view. Indigenous Peoples recognize nature as a living part of their lives, just like family or friends. They acknowledge that everything in nature is connected, including us. They understand that water, plants, animals, and the land all play important roles in our lives. So, by caring for nature and being stewards of the land, we are also taking care of ourselves and our communities. According to this perspective, we, as humans, should strive to form a deeper relationship with nature, based on respect and mutual giving (reciprocity). Rather than taking from nature or treating it as property, we exchange with it and care for it, just like we would our family or friends.

1 Meeting the Watershed
Exploring our connection

Materials

- Activity Card: Great Lakes-St. Lawrence Watershed Introduction (1)
- Activity Card: Great Lakes-St.Lawrence Watershed Fact Sheet (1)
- Paper and pencils
- Chart paper and markers
- Additional art supplies for creating visual representations (optional)

Connections to the Canadian Geography Learning Framework

Concepts of geographic thinking

- Spatial significance
- Interrelationships
- Geographic perspectives

Inquire process

- Ask geographic questions
- Interpret and analyze
- Evaluate and draw conclusions
- Communicate
- Reflect and respond

Geospacial skills

- Foundational elements

Share with students that, today, they will be "meeting" the Great Lakes-St. Lawrence Watershed. Read to the class, or have students read, the Great Lakes-St. Lawrence Watershed Introduction Card. Next, divide the class into small groups or pairs. Instruct students to take a few minutes to explore the Giant Floor Map and discuss with their group the characteristics, features, connections, and significance of the Watershed as a living being. To guide them to consider how the following aspects represent this perspective you may want to:

- Encourage students to think about the physical attributes of the Watershed, such as its size, shape, and diverse landscapes.
- Discuss how the Watershed changes throughout the seasons and its dynamic nature.
- Explore key features like rivers, lakes, and tributaries as the veins and organs of the living Watershed.
- Consider human-made features like cities, industries, and agricultural areas as components that interact with the natural living ecosystem.
- Consider how much of the Watershed is forested and where the largest tracts of forests remain.
- Examine the interconnectedness of different elements within the Watershed, emphasizing how changes in one area can affect the entire system.
- Discuss the relationships between living organisms within the Watershed, including plants, animals, and humans.
- Discuss the Watershed's role in giving and supporting life.

Next, prompt students with questions to stimulate ideas for the next activity:

- What do you think the Watershed might look like if it were a living being?
- What might its personality traits or characteristics be?
- How might it make introductions to and connections with between different communities and species?

Provide each group with a Great Lakes-St-Lawrence Watershed Fact Sheet, along with a large sheet of paper and markers.

Instruct students to create a visual representation of the Watershed as a living being (person, animal, etc.), incorporating their ideas about its characteristics and connections, while using the fact sheet for further inspiration.

Encourage them to include elements such as colours, physical features, clothing, and symbols that represent different aspects of the Watershed's personality.

Allow time for each group to present their creations and explain their choices to the class.

Activity 2 - Land acknowledgements

Ask students to consider how perceiving the Watershed as a living entity, just like a friend or family member who takes care of us and provides for us, might change someone's relationship with nature. How would it influence the way we use and interact with the land and water around us?

Emphasize that, by embracing such a perspective, we can better understand the important connection we have with the natural world and our shared responsibility to care for it. This can also give us a better understanding of Indigenous Peoples' connections to the land and how they have lived in harmony with one another since time immemorial.

Next, introduce the concept of land acknowledgements and their role in recognizing and respecting Indigenous Peoples and their connections to the land, discussing the concept of traditional territories and how they are tied to Indigenous identity.

Ask students to identify which Original Peoples have traditionally lived in the area where they are currently located. Additionally, draw students' attention to the current federally recognized First Nations lands outlined on the Giant Floor Map (i.e., reserves). Note: a hint is to use the language group identifiers and the information related to the First Nations reserves within the territory.

Explain that these territories represent fractions of the ancestral lands of the Original Peoples, and acknowledging Original Peoples is a way to honour and respect their history, culture, and ongoing relationship with the land.

Prompt students with questions to stimulate discussion:

- Why is it important to acknowledge the land's history and the Original Peoples who care for it?

By acknowledging the traditional territories of Indigenous Peoples, we demonstrate our awareness of the land's history and the importance of Indigenous stewardship. It is a way to recognize that the land we live on today has been, and continues to be, home to Indigenous communities since time immemorial. Their connection to the land remains strong to this day.

- What do you think it means to respect the land and Indigenous Peoples?

Respecting the land and Indigenous Peoples means recognizing the relationship and deep connection between the two. It involves understanding and appreciating the wisdom, traditions, and knowledge passed down through generations about living in balance and harmony with nature. Respecting the land and Indigenous peoples also means treating the land with care and not taking more than what is needed, as well as listening to and learning from the perspectives and experiences of Indigenous communities.

- How can land acknowledgements foster a sense of connectedness and honour the people who lived in harmony with the land before European colonization?

When we recognize the traditional territories of Indigenous Nations, it reminds us that the land we stand on has been cared for and occupied by Original Peoples for thousands of years. This acknowledgment honours the resilience, cultures, and contributions of the Peoples who lived on the land before European contact and colonization, strengthening the connection between Indigenous and non-Indigenous Peoples. By embracing land acknowledgements, we recognize the importance of reconciliation, understanding, and building meaningful relationships with Indigenous Peoples, fostering a sense of unity and shared responsibility for the land we now all call home.

Next, instruct each student to write their own land acknowledgement on a piece of paper.

Encourage them to consider their personal connection to the land where they live and the Indigenous traditional territory within which their home currently sits.

Provide examples of land acknowledgements as models, such as:

"I acknowledge that I am on the traditional territories of [Indigenous Nation(s)]. I am grateful for their stewardship of this land, which provides me with [personal uses of land and water]."

"I recognize that this land has been home to the [Indigenous Nation(s)] for thousands of years, and I honour their ongoing relationship with this place. I am grateful for the knowledge and wisdom they have shared, helping me to be mindful of my actions when [personal interactions with the land and water]."

Conclusion and consolidation

Have a brief class discussion to reflect on the activities and their significance.

Ask students to share their thoughts on what they have learned about the Great Lakes-St. Lawrence Watershed and how their thinking has changed as a result.

Encourage students to consider how they can take action to honour and respect the land and Indigenous Peoples in their everyday lives.

Modifications

For younger students:

- Students can also express their land acknowledgements creatively through artwork, poetry, or other forms of expression.
- The activities can be completed together as a class instead of in groups or individually. Activity 1 can also be simplified by having students come up with a list of adjectives that describe the Watershed.

For older students:

- Students can conduct independent research on a specific Indigenous Nation within the Watershed and create a comprehensive land acknowledgement incorporating historical, cultural, and environmental aspects.

Taking Action

- Have the class submit a Watermark about their connection to the Great Lakes.
- To ensure land acknowledgements are meaningful, have students create an intentional and local acknowledgement that also clearly identifies their own personal commitment to reconciliation and the actions they plan to take going forward. Resources are available to help with this undertaking.
- Encourage students to become stewards of the Watershed by initiating a longterm project focused on environmental conservation and community engagement. Working individually or in small groups, students can identify a specific environmental issue within the Watershed, such as pollution, habitat degradation, or invasive species. Guide students to create action plans that involve collaborating with local Indigenous communities and other organizations, raising awareness, organizing community cleanups, or proposing sustainable solutions to address the identified issue.
- Invite guest speakers from local First Nations to share their connection, perspectives and knowledge related to the Great Lakes-St. Lawrence Watershed. Prior to the visit, have students prepare questions about the invited guest's specific expertise, knowledge, culture, traditional practices, and their relationship with the land and water. During the session, encourage an open and respectful dialogue between the students and guest speakers. Emphasize the importance of active listening and learning from diverse perspectives.
- Engage students' creativity and imagination by assigning a creative communication task related to the Great Lakes-St. Lawrence Watershed. Ask students to write a short story, poem, or journal entry from the perspective of an animal, plant, or person living within the Watershed. They may also wish to create a modern dance piece, song, sculpture or painting. Encourage them to explore themes of connection, environmental challenges, and the importance of caring for nature.

Additional Resources

- I am Mutehekau Shipu: A river's journey to personhood in eastern Quebec



2 Protecting the Water
Who are the Water Walkers?

Overview

In this activity, students will get to know the important role of Water Walkers in the protection and conservation of the Great Lakes-St.Lawrence Watershed.

Time required

1 hour (can be divided)

Grades

Best suited for Grades 5-8 (modifications provided for younger and older students).

Learning objectives

By completing this activity, students will:

- Learn about Water Walkers and their mission to bring awareness to endangered bodies of water.
- Understand the importance of protecting the Earth's water resources.
- Be able to orient themselves on the Giant Floor Map.
- Have a better understanding of how spatial data is used to convey information.

Materials

- Giant Floor Map legends (5)
- Coloured pylons (40)
- Activity card: Biinaagami (1)
- Activity card: Anticipation Worksheet (1)
- Activity card: Giant Floor Map Information (1)
- Activity card: The Great Lakes (1)
- *The Water Walker* by Joanne Robertson (1)
- Electronic devices with internet access
- AVARA Discover App (iOS, Android)
- Paper, sticky notes and writing utensils (optional)

Lesson implementation

Minds on

Begin the lesson by having students stand or sit around the Giant Floor Map. Read the Biinaagami activity card to the class. Note: an option is to play this video for the class before getting on the Giant Floor Map. The video describes the origin of the name Biinaagami.

Now tell students they are going to participate in a series of small activities designed to help them develop their connection, or reconnection, with water. The activities are inspired by Water Walker Josephine-ba Mandamin and the story of The Water Walker written by Anishinaabe author Joanne Roberston.

As an entry point into a reflection on the importance of freshwater, begin by having students complete the Anticipation Worksheet.

Lead a discussion based on everyone's answers.

Action

Activity 1 - The story of the first Water Walker

Invite students to walk around the Giant Floor Map, giving them time to explore the map in whatever way they wish. As students are walking around the map, ask them to pay close attention to the theme and geographic extent of the map, and how water is displayed. Inform students that they are going to use the map to learn more about the first Water Walker, Josephine-ba Mandamin, and the Great Lakes of Turtle Island (North America). Ask students to take a seat on the map in a circle around the Great Lakes.

Explain to students that their introduction to the map begins with learning the story of *The Water Walker* written and illustrated by Anishinaabe author Joanne Roberston. The story tells of Josephine-ba Mandamin's love for water and her great desire to protect it. She completes a long and difficult walk around the Great Lakes to raise awareness of the clean water crisis and the importance of clean water for all forms of life on the planet. Her story is an invitation to us all to take up our responsibility to protect our freshwater and ocean resources in the name of all future

Read the story of *The Water Walker* as a class. Pause at regular intervals throughout the story to allow students time to identify key locations and bodies of water mentioned in the story on the map. If desired, have students write the names of these locations on sticky notes and place them on the map. After the story is over, have students share their thoughts on Josephine's journey and goals. Examine the connections between living things based on water. Joanne Robertson refers to everything in nature being relatives connected by water. Ask students what this statement means to them.

Inform students that Joanne Robertson, the author and illustrator of The Water Walker, has narrated an augmented reality experience as a special welcome to the Giant Floor Map.



2 Protecting the Water
Who are the Water Walkers?

Connections to the Canadian Geography Learning Framework

Concepts of geographic thinking

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

Inquire process

- Ask geographic questions
- Interpret and analyze
- Evaluate and draw conclusions
- Communicate
- Reflect and respond

Geospatial skills

- Foundational elements

With their electronic devices, ask students to download and open the AVARA Discover augmented reality app (iOS, Android) and begin the experience entitled "Welcome to the Great Lakes". The trigger for this experience is located at marker number X on the Giant Floor Map. Note: students may want to wear headphones to minimize external noise while watching the augmented reality story.

Ask students to set aside their devices and share their impressions of what they experienced. Can they accurately describe the goals of Water Walkers and the importance of their mission?

Activity 2 - The Geography of the Great Lakes

Next, have students explore the map in greater detail. Divide the class into five groups and give each group member one pylon. Ask the groups to work together to place one pylon in each of the following locations:

- A place a group member has previously visited or wants to visit
- A place they are interested in learning more about
- A body of water they have heard of before
- An example of a border (e.g., land/water, country, provincial)
- A word that they think belongs to an Indigenous language

Take a few minutes to step back and assess the locations of everyone's pylons. Do the students observe any patterns and trends? What attracted students to these locations? Do a poll and see if students have similar responses. Ensure that students understand that this map reflects a smaller area within Turtle Island (North America) and not the whole world.

Next, inform students that they are going to examine the legend to learn more about the different data layers on the map. Give each group a copy of the map legend and challenge them to decode what they see on the map, paying special attention to colours, textures, gradients, shading, symbols, text and directional arrows. Encourage them to walk on the map, and even to get down on their hands and knees while exploring.

Conclusion and consolidation

Bring students back together, have them sit down on the map, and as a class, go through the different data layers. Use the Giant Floor Map Information card to go through each layer, inviting students to share what they learned about it while they were exploring the map, adding any missing pieces to their understanding using the information provided on the card. Ensure that your class understands where the datasets come from and that the symbols and place names represent real people, real places and languages used by different groups that live in and around the Great Lakes region.

Conclude the activity by inviting the students to sit on the map while you read the Great Lakes card out loud. Invite students to ask you three questions about the map before ending the activity.



2 Protecting the Water
Who are the Water Walkers?

Modifications

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 fish to various locations that are labeled differently, have them pretend to paddle a canoe in the direction of the water flow, or have them "dip their toe" in a deep body of water, and then a shallow one.

For older students:

- Have students determine the original names of places and water bodies in and around the Great Lakes-St.Lawrence Watershed. To which Indigenous languages do they belong? How do these names connect to and describe the area?

Taking action

- Consider joining the Junior Water Walkers initiative, and allow students to plan a water walk in your community.
- Learn the Nibi ("water" in Anishinaabemowin) song and encourage students to teach it to their peers and family members.
- Learn about the Conservation Kid and follow him along for inspiration as he travels the world educating others on water protection and conservation.
- Meet the Guardians at the Indigenous Leadership Initiative and stay connected by attending events organized in your community.
- Ask students to research water advisories and communities without clean drinking water, and identify impacts on communities and people due to a lack of access to clean water. Consider writing a letter to a government representative to advocate for equitable access to clean water for all Canadians (see this example from World-Changing Kids).
- Pose the question: What is a watershed? Ask students to design a child-friendly way to communicate this information, through a podcast, poster, infographic, digital presentation, etc.

Additional resources

- Aki Kikinomakaywin: "learning on the land"



3 Reciprocity
The Great Moose (Mooz) story

Overview

In this activity, students will explore the concept of reciprocity in the context of the Great Lakes-St. Lawrence Watershed.

Time required

1 hour (can be divided)

Grades

Best suited for Grades 5-8 (modifications provided for younger and older students).

Learning objectives

By completing this activity, students will:

- Learn about the concept of reciprocity in Indigenous cultures and its significance in the context of the Great Lakes-St. Lawrence Watershed.
- Understand the impact of human activities on species decline in the Watershed and explore positive actions to address the issue.

Materials

- Activity Card: Human Activities Contributing to Species Decline (1)
- Activity Card: Select Species Found in the Great Lakes-St. Lawrence Watershed (1)
- Electronic devices with internet access
- AVARA Discover App (iOS, Android)
- Headphones (optional)

Lesson implementation

Minds on

Begin the lesson by having students stand around the Giant Floor Map. Have students point out key features on the map they are familiar with, such as local rivers, lakes, and communities.

If this is their first time on the map, ask students if they have heard of the term "watershed" before and invite them to share their understanding of it.

Explain that a watershed is an area of land that collects all the rain and snowmelt in that area and channels it into rivers and lakes. These rivers and lakes provide water for drinking, agriculture, and other activities.

Briefly discuss the importance of watersheds for both humans and wildlife:

- Writing/drawing materials
- *What might happen if we didn't have clean water from watersheds for drinking and other needs?*

Introduce the concept of reciprocity as a practice of giving back what you receive, not just in terms of physical things but also in actions and care for something or someone.

Ask students to consider the idea that, just like we receive benefits from nature and watersheds, we have a responsibility to give back or take care of them.

Have students think about their own lives and daily interactions:

- *Can you think of an example from your life when you gave back to someone or something in a way that made you feel good?*
- *How do you think reciprocity relates to our relationship with the environment and the Great Lakes-St. Lawrence Watershed?*
- *In what ways can we practice reciprocity with nature and the environment?*

Open the floor to students to share their thoughts and examples. Encourage them to consider how small actions, like picking up litter or conserving water, can be acts of reciprocity towards the environment. You can also discuss the idea that by taking care of the watershed and the natural world, we are ensuring that future generations can also benefit from it.

Action

Activity 1 - The Great Moose (Mooz) story

Explain to students that they are about to experience an Indigenous story related to reciprocity in the Watershed. Preface the story by sharing that Indigenous Peoples have been living in relationship with the land in a sustainable way since the beginning of time, utilizing every part of the animals they hunt, for food, shelter, utensils, tools, toys, ornaments, and more. Highlight that this particular story involves a moose, which is not just a source of meat but holds significant cultural and practical importance for many Indigenous communities. Emphasize that the



3 Reciprocity
The Great Moose (Mooz) story

Connections to the Canadian Geography Learning Framework

Concepts of geographic thinking

- Spatial significance
- Interrelationships
- Geographic perspectives

Inquire process

- Ask geographic questions
- Interpret and analyze
- Evaluate and draw conclusions
- Communicate
- Reflect and respond

Geospatial skills

- Foundational elements

moose, other animals, is respected and valued for all it provides, reflecting a deep connection and reciprocity with the natural world.

With their electronic devices, ask students to download and open the AVARA Discover augmented reality app (iOS, Android) and begin the experience entitled "The Great Moose (Mooz)". The trigger for this experience is located at marker number X on the Giant Floor Map. Note: students may want to wear headphones to minimize external noise while watching the augmented reality story.

Allow students to immerse themselves in the story, which narrates the relationship between Indigenous Peoples and moose, emphasizing the importance of reciprocity for mutual well-being and survival.

Once students have had a chance to go through the story, facilitate a brief discussion:

- *What did you learn from this story about reciprocity?*
- *Why is it important to maintain a balanced relationship with the environment?*

Next, introduce the concept of species decline in the Watershed due to human activities, eliciting examples of contributing factors, such as pollution and habitat destruction (see the activity card called Human Activities Contributing to Species for ideas). If possible, show visuals and statistics highlighting patterns in the decline of different species. Note: In the Great Lakes-St.Lawrence Watershed, most species are in decline, but mammals, like moose, have been particularly vulnerable.

Briefly discuss the importance of raising awareness about such issues and taking positive action to protect wildlife.

Activity 2 - Short stories about species in the Watershed

Divide the class into small groups and assign each group a species found in the Great Lakes-St.Lawrence watershed (see the activity card called Select Species Found in the Great Lakes-St. Lawrence Watershed for ideas).

Explain to students that they will be working with their group to create their own short stories featuring their assigned species, in which they will be exploring the concept of reciprocity with nature. Students should research and include in their story some references to:

- The species' role in their ecosystem;
- What students admire or appreciate about the species;
- Examples of human activities that impact the species, and how; and
- What humans should be doing to care for this species (i.e. reciprocity).

Optionally, they can also illustrate their stories with drawings or digital art.

If students are having trouble crafting their story, ask them to think about what it would be like to have a conversation with the animal they were assigned. What might you learn from each other? Would that animal have any grievances towards humans? How would you address their concerns and work to establish a mutually beneficial relationship?



3 Reciprocity
The Great Moose (Mooz) story

Conclusion and consolidation

Allow time for students to present their stories to the class or arrange a gallery walk. Wrap up the lesson by emphasizing the importance of reciprocity with the environment.

Ask students to reflect on what they have learned and how they can apply the concept of reciprocity in their daily lives.

Modifications

For younger students:
- The activities can be completed together as a class instead of groups or individually.

For older students:
- Dive deeper into the scientific aspects of species decline in the Watershed.
- Include case studies and real-world examples of successful conservation efforts.
- Encourage students to research and present on specific environmental issues in the Watershed as a follow-up project.

Taking action

- Watch the Great Lakes Untamed series to better understand the natural history of the Watershed. Allow students to film their own video reflections, or write a journal entry about how their understanding of our relationship with water has changed.
- Work with students to submit a VAST Survey to track changes to a waterbody or shoreline over time.
- Organize a school-wide or community awareness campaign about environmental issues in the Watershed.
- Plan a field trip to a local conservation area or wildlife sanctuary to see positive action in practice.

Additional resources

- The International Union for Conservation of Nature (IUCN)
- World Wildlife Fund (WWF)
- Canadian Wildlife Federation (CWF)
- With each stroke, a breath

4 Laws Braided into Belts
Understanding wampum belts

Overview

In this activity, students will learn about three Haudenosaunee wampum belts that are significant to the Original Peoples of the Great Lakes-St.Lawrence Watershed.

Time required

1 hour (can be divided)

Grades

Best suited for Grades 7-10 (modifications provided for younger and older students).

Learning objectives

By completing this activity, students will:

- Understand the significance of three Haudenosaunee wampum belts and their relationship to the Great Lakes region.
- Develop an appreciation for Indigenous perspectives on geography and history.
- Enhance their collaboration, presentation, and critical thinking skills.

Materials

- Electronic devices with internet access
- Activity card: Wampum Belt Information (1)
- Activity card: The Hiawatha Belt (2)
- Activity card: The Dish with One Spoon (2)
- Activity card: The Two-Row Wampum (2)
- Activity card: Discussion Questions (6)
- Headphones (optional)
- Paper and pencils
- Chart paper and markers

Lesson implementation

Minds on

Begin the lesson by having students explore the Giant Floor Map independently. Have students point out key features on the map they are familiar with, such as local rivers, lakes, and communities.

Have students find Haudenosaunee (pronunciation: hoe-dee-no-SHOW-nee) territory by looking at the languages written on the map in purple (around Lake Ontario). Explain that the Haudenosaunee Confederacy, also known as the Iroquois Confederacy, is an Indigenous alliance that has inhabited the Great Lakes region for millennia. It consists of Six Nations: Mohawk, Oneida, Onondaga, Cayuga, Seneca and Tuscarora.

Next, direct their attention to the wampum belts that border the map, asking how many different belts they observe, and what prior knowledge they have of the history and purpose of wampum belts.

Read the activity card Wampum Belt Information out loud to students.

Briefly discuss with students what it would be like to only have oral histories, or devices such as wampum belts, to remember past events.

- How would storytelling be different?
- What would be special or beneficial about this method?
- How would it affect communication within and across communities and nations?

Open the floor to students to share their thoughts and examples.

Action

Activity 1 - The creation of the Hiawatha belt

Explain to students that they are about to experience an Indigenous story recounting the creation of the Hiawatha wampum belt.

With their electronic devices, ask students to download and open the AVARA Discover augmented reality app (iOS, Android) and begin the experience entitled "The creation of the Hiawatha Belt". The trigger for this experience is located at marker number X on the Giant Floor Map. Note: students may want to wear headphones to minimize external noise while watching the augmented reality story.

Allow students to immerse themselves in the story, which narrates the story of one wampum belt that has become the most ubiquitous symbol of the Haudenosaunee.

4 Laws Braided into Belts
Understanding wampum belts

Connections to the Canadian Geography Learning Framework

Concepts of geographic thinking

- Spatial significance
- Interrelationships
- Geographic perspectives

Inquire process

- Ask geographic questions
- Interpret and analyze
- Evaluate and draw conclusions
- Communicate
- Reflect and respond

Geospatial skills

- Foundational elements

Once students have had a chance to go through the story, facilitate a brief discussion:

- What did you learn from this story about wampum belts and the Haudenosaunee?
- Why is it important that the story of the Hiawatha belt remain well-known and well-understood?

Activity 2 - The three Haudenosaunee wampum belts

Divide the class into three groups and assign each group one of the three Haudenosaunee wampum belts.

Give each group one of the three activity cards detailing the history and importance of either the Hiawatha wampum, the Dish with One Spoon wampum or the TwoRow wampum.

Give each group a copy of the Discussion Questions activity card.

Have students sit in their groups on the Giant Floor Map. Allow time for students to read their stories and answer the provided questions. If they have questions, encourage additional research, using websites like Biinaagami or the Haudenosaunee Confederacy.

Encourage students to consider how their assigned wampum belt reflects the values, history, and relationship of the Haudenosaunee people with the land and waters of the Great Lakes-St.Lawrence Watershed.

Conclusion and consolidation

Allow time for students to present their stories and responses to the class, or arrange a gallery walk by allowing students time to make poster presentations recording their understanding of the history and importance of the wampum belts.

Ask students to reflect on what they have learned and how they will endeavor to remember the history of importance of the use of wampum belts in their daily lives.

- *What was the story behind the creation of your assigned wampum belt, and how does it reflect the values and traditions of the Haudenosaunee people?*
- *How does the design and symbolism of your assigned wampum belt represent the relationship between the Haudenosaunee and the land and waters of the Great Lakes-St.Lawrence Watershed?*
- *What historical events or cultural practices were depicted in the imagery of your assigned wampum belt, and how do they contribute to our understanding of Haudenosaunee history?*
- *What can we infer about the role of your assigned wampum belt in maintaining social order, resolving conflicts, or passing down oral traditions within the Haudenosaunee community?*
- *How might your assigned wampum belt inspire us to learn more about the cultural heritage and environmental stewardship of Indigenous Peoples in the Great LakesSt. Lawrence Watershed?*

4 Laws Braided into Belts
Understanding wampum belts

Modifications

For younger students, complete the activities as a large class.

- The activities can be completed together as a class instead of groups or individually.
- Students can draw or bead a piece of artwork representing a story or an important event in their lives.

For older students:

- Research additional wampum belts not included in this activity.

Taking action

- As a class, join Biinaagami and signal your desire to protect and care for the waters of the Great Lakes and St. Lawrence River by adding your class name to the Biinaagami Declaration.
- Organize a discussion with a representative of the Haudenosaunee Confederacy or a Nation in your community, or plan a visit to an Indigenous learning center.

Additional resources

- The Two-Row wampum infographic
- She who holds the canoe: A ceremonial pilgrimage along the Peacemaker's

5 The Seven Grandfather Teachings
Moral respect for all living things

Overview

In this activity, students will learn the story of the Seven Grandfather Teachers, the foundations of the Anishinaabe Peoples' guiding principles.

Time required

45 minutes (can be divided)

Grades

Best suited for Grades 5-8.

Learning objectives

By completing this activity, students will:

- Know the Seven Grandfather Teachings and their significance to the Anishinaabe.
- Be able to critically reflect on how these teachings can be applied in their own lives.

Materials

- *Mashkiki Road: The Seven Grandfather Teachings* by Elizabeth S. Barrett (1)
- Paper and pencils
- Art supplies (optional)

Lesson implementation

Minds on

Gather students on the Giant Floor Map, and begin the activity with a discussion on values and why they are important in our lives. Use the following prompts and questions to help keep the conversation flowing:

- *Values are the beliefs and principles that guide our actions and decisions, and how we treat others and the world around us.*
- *What are some values that come to mind when looking at the Giant Floor Map?*
- *What are some of our values in this classroom, and how do they influence the way we treat each other and our space?*
- *How do our values influence the way we treat the environment?*
- *Imagine if no one cared about values. How would they treat other people and the environment?*

Next, introduce the pan-Indigenous concept of "all my relations" by explaining the following:

- *Indigenous worldviews see all living beings as interconnected and as having responsibilities to one another. In this worldview, there is no hierarchy among species. All species have unique gifts that are used to fulfill their responsibilities. Within this worldview, it is important to recognize the efforts made by all different species and try to learn from them.*

Ask students if they can recall any Indigenous stories that have a plant or animal helper. Guide the conversation by working in the concept of the Seven Grandfather Teachings which are an Anishinaabe set of guiding principles. The Anishinaabe are a Great Lakes-based group of three First Nations, also referred to as the Council of Three Fires. The three Nations are the Ojibwe, the Odawa and the Potawatomi. Note: for a brief overview of the Seven Grandfather Teachers, see the Seven Generations Education Institute.

Open the floor to students to share their thoughts and examples of how they do (or could) employ one or more of these teachings in their daily lives. Have them make connections to the different data layers on the Giant Floor Map.

Action

Activity 1 - Mashkiki Road

Ask students to walk around the Giant Floor Map, and sit on a location that catches their eye.

Briefly introduce Mashkiki Road: The Seven Grandfather Teachings by Elizabeth S. Barrett. In the book, three small cousins walk through the woods looking for medicines that have the power to heal and purify. Along the way, they are gifted with advice from many wise creatures who hope to instill in the young cousins life lessons that have been passed on for countless generations.

Have them inspect that location as you read the book.

5 The Seven Grandfather Teachings
Moral respect for all living things

Connections to the Canadian Geography Learning Framework

Concepts of geographic thinking

- Interrelationships

Inquire Process

- Communicate
- Reflect and respond

Geospatial skills

- Foundational elements Pause

Pause as you read to discuss each teaching and its significance (or discuss the teachings at the end of the reading). Invite students to brainstorm how each animal embodies a particular value:

- Wisdom - beaver
- Love - eagle
- Respect - buffalo
- Bravery - bear
- Honesty – Bigfoot (also known as Saabe or sometimes raven)
- Humility - wolf
- Truth – turtle

Discuss with students why they think it is that the Seven Grandfather Teachings are the most commonly shared of all the North American Indigenous teachings, from coast to coast to coast.

Conclusion and consolidation

Ask students to create a piece of art, a poem, or a short story that represents one of the teachings and that incorporates something they saw on the Giant Floor Map (e.g., colours, symbols, words, data, etc.). Provide materials and allow students to work individually.

As students work, facilitate a discussion on how students can incorporate the teachings into their daily lives. Encourage students to think about ways they can embody these values in their interactions with others.

Sharing teachings while crafting or working on a project is a very common Indigenous pedagogical tool. People often share relevant teachings through storytelling or song while members of a group work with their hands. For example, they might share strawberry teachings while picking berries or baking, or the story of the Three Sisters (corn, beans and squash) while making corn husk dolls.

Display their artwork in the classroom as a reminder of those values and as a way of acknowledging local First Nations and the Original Peoples of the Great Lakes-St. Lawrence Watershed.



5 The Seven Grandfather Teachings
Moral respect for all living things

Taking action

- Instead of reading the book, invite an Elder or Knowledge Keeper to the classroom to discuss these teachings. In the Anishinaabe culture, teachings are passed down through generations orally. While books are fantastic supplementary materials, in-person teachers can provide an enriched learning experience.
- Organize a community/school service project that embodies one or more of the teachings.
- Create a classroom mural that represents all seven teachings.
- Have students maintain a reflective journal over several weeks, documenting how they observe and practice the Seven Grandfather Teachings in their daily lives. Encourage them to share their reflections periodically in class discussions.
- Organize a storytelling circle where students can share personal stories that reflect one or more of the Seven Grandfather Teachings.

Additional resources

- Ontario Native Womens Association - Seven Sacred Teachings

6 Historical Treaties
Towards mutual respect and cooperation

Overview

In this activity, students will learn about the historical treaties made between Indigenous Nations and colonial powers between 1701 to 1923 within the Great Lakes-St.Lawrence Watershed.

Time required

1 hour (can be divided)

Grades

Best suited for Grades 8-12.

Learning objectives

By completing this activity, students will:

- Understand the historical treaties made between colonial powers and Indigenous Peoples in the Great Lakes-St.Lawrence Watershed.
- Be able to differentiate between reserve lands and broader First Nations territories.
- Know about the historical treaties that impacted Indigenous lands and how these treaties led to the dispossession of land and current land claims.

Materials

- Activity card: Treaty Information (1)
- Activity cards: Historical Treaties (6)
- Activity card: Treaties and the Indian Act (1)
- Coloured ropes (30)

Lesson implementation

Minds on

Invite students onto the Giant Floor Map and allow some time for independent exploration of the treaty boundaries visible on the map. Ask students to sit on the Giant Floor Map next to a treaty boundary. Begin the activity by welcoming thoughts on and explanations of treaties based on the students' prior knowledge.

Read the Treaty Information activity card out loud to the class, pausing to explain any concepts or terminology students find challenging or confusing. Optional: Read the Treaties and the Indian Act activity card out loud as well.

Walk around the map and point out areas labeled in Indigenous languages. Discuss the importance of including these place names on the map. For example:

- *Including original place names in Indigenous languages is a sign of respect and a form of reconciliation. These languages are central to the identity of Indigenous Peoples, the preservation of their cultures, worldviews and visions, and an expression of self-determination.*
- *Including original place names in Indigenous languages gives everyone the opportunity to learn and engage in language revitalization and preservation.*
- *Indigenous place names are usually uniquely tied to a specific location—describing the landscape, or a species that proliferates in that area, or a cultural event that occurred at that location.*

Students may notice some of the Indigenous place names on the map are similar to common English names. For example, Ontario comes from the Mohawk word "oniatarí:io" meaning "beautiful lake."

Locate the wampum belts around the border of the map and read about them on the legend (see Activity 4 for additional information about wampum belts). These are another form of treaty made by Indigenous Nations and provide some context as to what Indigenous Peoples knew to be a treaty. Note: they primarily relate to First Nations responsibilities towards each other and towards the land.

Action

Have students identify reserves on the map (areas shaded in purple) and the Nations they belong to. Compare the extent of the reserves to non-reserve land, and explain that they are a minuscule fraction of First Nations' traditional territories. Precolonization, all of Turtle Island was stewarded by the Original Peoples — many First Nations claim that large areas of Canada remain unceded (were never legally given up to the Crown, through a treaty or other agreement), or were illegally sold.

Discuss the concept of traditional territories versus reserves. Explain that traditional territories cover a broader area in which Indigenous Peoples historically lived, while reserves (Canada) and reservations (United States) are much smaller areas of land set aside by the government that many Indigenous Peoples were forcibly moved to after being removed from their larger, ancestral territories.

Explain that strictly defined territorial boundaries, land ownership, and reserves are colonial concepts and impositions. Western mapmaking has produced maps that

6 Historical Treaties
Towards mutual respect and cooperation

Connections to the Canadian Geography Learning Framework

Concepts of geographic thinking

- Spatial significance
- Interrelationships
- Geographic perspectives

Inquire process

- Ask geographic questions
- Interpret and analyze
  - Evaluate and draw conclusions
- Communicate
- Reflect and respond

Geospatial skills

- Foundational elements

created land boundaries and territories on Indigenous lands that did not align with how the people native to the land viewed it. And colonialism imposed restrictions on land and water that Indigenous Peoples have inherent rights to.

Divide students into six groups, and give each group a set of ropes and one of the six Historical Treaties activity cards. Instruct students to locate their assigned treaty on the Giant Floor Map. Ask the groups to map the border of their assigned treaty on the Giant Floor Map using the ropes before sitting within (or next to) the treaty to read the information on their activity card.

Once all groups have completed this task, discuss how the bodies of water within the treaty boundaries were, and still are, vital to Indigenous cultures for transportation, hunting, gathering and spiritual practices.

Read the following excerpt:

"Prior to the arrival of Europeans in North America, Aboriginal peoples were organized as sovereign nations. They had their own cultures, economies, governments, and laws. They were generally in exclusive occupation of defined territories, over which they exercised governmental authority (jurisdiction). They also owned the lands and resources within their territories, and so had property rights, subject to responsibilities placed on them by the Creator to care for the land and share it with the plants and animals who also lived there.

The inherent right of self-government that Aboriginal peoples have today in Canadian law comes from the sovereignty they exercised prior to contact with Europeans. It is inherent because it existed before European colonization and the imposition of Euro-Canadian law. Aboriginal rights to lands and natural resources are also inherent because they pre-date European colonization. They are communal rights that come from occupation and use of the land by Aboriginal peoples as sovereign nations."

Kent McNeil, 2011, A Brief History of Our Right to Self-Governance: Pre-Contact to Present

Allow students a moment to reflect individually or in pairs on this excerpt. Encourage them to share their reflections with the class.

Conclusion and consolidation

Wrap up the activity by asking students:

- What kind of access to water did First Nations have before signing treaties versus after?
- How did these treaties lead to the loss of land for Indigenous Peoples and why did this happen?
- What can be done to ensure the decolonization of water access? For example:
  - » Including a Two-Eyed Seeing approach in decision-making around water governance.
  - » Creating safe opportunities in water, sanitation and hygiene policy-making that uplifts Indigenous voices.

Encourage students to think about ways they can continue to learn about and support Indigenous communities facing problems related to land and as a result of colonization.

6 Historical Treaties
Towards mutual respect and cooperation

Taking Action

- Divide students into small groups and assign each group a specific treaty to research in greater detail. Each group will present their findings on how their assigned treaty impacted Indigenous land and lives and which specific First Nations were involved in the treaty process. Have students look for instances of land claims within the treaty region.
- Develop a visual or multimedia project about the cultural significance of waterways to Indigenous Peoples in the Great Lakes region.
- Invite a facilitator of the KAIROS Blanket Exercise to come to your school to provide an interactive educational experience.

Additional resources

- Treaties (from the Indigenous Peoples Atlas of Canada)
- I am Mutehekau Shipu: A river's journey to personhood in eastern Que-bec
- GeoMinute: The Williams Treaties
- GeoMinute: Treaty #3 and the Dawson Road



7 Language Learning
Plant names and the language of place

Overview
In this activity, students will learn words from the Mohawk language Kanien'kéha by studying plants within the Great Lakes-St.Lawrence Watershed.

Time required
45 minutes (can be divided)

Grades
Best suited for Grades 5-8 (modifications provided for younger students)

Learning objectives
By completing this activity, students will:
- Be able to list and describe native plants growing within the Watershed.
- Find and identify these plants in the schoolyard (where possible).
- Learn the names of these plants in Mohawk (Kanien'kéha (Mohawk) name).
- Be able to reflect on the ecological needs of these plants.

Materials
- Activity cards: Plant Species Information Cards (16)
- Sticky notes, pens and/or pencils
- Journals for reflection
- Electronic devices with internet access

Lesson implementation
Minds on

Invite students onto the Giant Floor Map and ask them to walk around independently, keeping an approximate count of the number of different languages they come across (English, French and 70+ Indigenous languages).

Walk to the legend and contrast the number of languages that are currently spoken with the number of languages that are extinct (no longer spoken).

Ask students to brainstorm reasons why a language might go extinct (e.g., oppression, conflict, geographic isolation, mortality). Contrast this with a list of ways to revitalize a language (e.g., government initiatives, revitalization projects, family teachings, mandatory courses, YouTube videos and social media campaigns).

Explain to students that one of the first acts of European colonization and settlement was to name newly "discovered" land in the language of the colonizers or the "discoverers."This was done despite the fact that there were already names for these places that were used by the Original Peoples. The names of places given by the Original Peoples of Turtle Island were more significant than their European counterparts because they had a strong connection to the People. This connection may have had spiritual, cultural or historical significance as different First Nations often call these places by the same names.

This is the case for plants as well, as plants were often named according to their spiritual and medicinal gifts.

Explain to students that they will be taking part in an activity designed to teach them a variety of plant names in a commonly-spoken language within the Watershed: Mohawk.

Action

Divide the class into groups of 2-3 students and distribute one Plant Species Information Card to each group. Each card has the plant's name, image, description, use and habitat.

Instruct each group to carefully read the information on their card, and discuss it in the context of the Giant Floor Map (e.g., geographic extent, climate, landscape and landforms, water availability, human activity, etc.) What is it about the Great LakesSt. Lawrence Watershed that allows this plant to thrive?

Hand out sticky notes and pens/pencils to each group, telling them to write the name of their assigned plant on five sticky notes. Ask them to place their sticky notes on the Giant Floor Map where they think a suitable habitat for their plant can be found. The following prompts may help them in their search:

- *Which areas have the temperature range that your plant prefers?*
- *Could your plant survive in an urban area?*
- *Do human activities have a big impact on your plant?*
- *Where do you think your plant could find the type of soil it needs?*
- *Does your plant need to be in or near water, or can it survive in drier areas?*
- *Where could your plant outcompete other species?*



7 Language Learning
Plant names and the language of place

Connections to the Canadian Geography Learning Framework

Concepts of geographic thinking

- Spatial significance
- Interrelationships
- Geographic perspectives

Inquire process

- Ask geographic questions
- Interpret and analyze
- Evaluate and draw conclusions
- Communicate
- Reflect and respond

Geospatial skills

- Foundational elements

- *Does your plant like lots of sunlight (like it would get in a field) or shade (like on the forest floor)?*

Discuss as a class why they placed their sticky notes in the locations they did. Talk about how the geography of the Great Lakes-St.Lawrence Watershed influences plant distribution (e.g., soil types and quality, temperature variation, climate and weather patterns, human activity). Note: Consider having an electronic device on hand to verify the geographic extent of the plants against student responses.

Explain to students that one act of respectful and meaningful reconciliation can be to learn the original names and proper pronunciation of different elements of First Nations cultures in their original language.

Allow students time to practise the pronunciation of the names of their assigned plants by scanning the QR codes on the Plant Species Information activity cards with their electronic devices.

Conclusion and consolidation

Review the fact that different First Nations name and describe plants (and animals, places, etc) with great purpose and intentionality. In Anishinaabemowin, for example, plants and animals are animate beings, and are spoken about in the same way that Anglophones or Francophones would talk about a friend or family member.

Kanien'kéha (Mohawk) specifically refers to nature as kin, stemming from their Creation Story. For example: Grandmother Moon, Mother Earth and Brother Sun.

These loving and familial ways of talking to and about the natural world often dictate how First Nations treat the natural world and all living creatures.

Have students write a short reflection in their journals about what they learned regarding the distribution of plants across the Watershed, and First Nations' language conventions. They can also reflect on the significance of knowing plant names in Kanien'kéha (Mohawk).

Modifications

For younger students:

- The activities can be completed together as a class instead of in groups or individually. The Action section can also be simplified by having students come up with a list of adjectives that describe the plants or the geography of the Watershed.



7 Language Learning
Plant names and the language of place

Taking action

- Help your students organize a BioBlitz using tools such as ArcGIS Survey123 or iNaturalist (iOS, Android) with other students from the school community. Complete a survey of the school environs and graph the data afterwards to spark discussions about native and invasive species. Learn the names of the species you find in one or more Indigenous languages.
- Take students outside to look for the plants that were discussed. Encourage them to note where the plants are found and any important environmental conditions.
- Have students research other plants in their area and find out their names and pronunciations in an Indigenous language.
- Invite an Elder or Knowledge Keeper to the school to guide a medicine walk instead of having students look for plants independently. A medicine walk is a walk guided by an Indigenous educator wherein they introduce participants to different plants as they walk. Often, they will share knowledge about each plant, such as its medicinal uses.

Additional resources

- The First Nations, Métis and Inuit volumes of the Indigenous Peoples Atlas of Canada have additional information on Indigenous languages and plants of significance.



8 Maritime Traffic and Marine Life
Safe navigation in busy waters

Overview

In this activity, students will explore the impact of maritime traffic on marine life in the St.Lawrence River.

Time required

1 hour (can be divided)

Grades

Best suited for Grades 5-8 (modifications provided for younger and older students).

Learning objectives

By completing this activity, students will:

- Come to understand some of the challenges of balancing economic activities and environmental protection.
- Learn about current initiatives to mitigate the negative effects of shipping on marine ecosystems.

Materials

- Activity cards: Maritime Traffic and Marine Life Activity Cards (6)
- Coloured ropes (30)
- Coloured pylons (40)
- Electronic devices with internet access for research (optional)

Lesson implementation

Minds on

Have students gather around the Giant Floor Map and initiate a discussion about the role of the St.Lawrence river in shipping and trade:

- *What might be the benefits and drawbacks of having ships travel through the river?*
- *Why is shipping important for Canada?*
- *How might ships affect the animals living in the river?*

Explain that maritime traffic can have both positive and negative impacts. On one hand, it supports the economy by facilitating trade, transportation, and providing jobs for many people. On the other hand, it can disrupt marine habitats, increase pollution, and pose threats to marine animals through collisions and noise pollution.

Students are encouraged to explore the Beluga Aimun augmented reality experience

Action

Activity 1 - Understanding the issue

Divide students into six groups and distribute the Maritime Traffic and Marine Life Activity Cards. Each card includes information on different aspects of the issue, such as noise pollution, ship strikes, and water pollution, as well as the benefits of maritime shipping.

Ask each group to use the Giant Floor Map to identify key areas related to their specific card (e.g., shipping routes, areas of marine life concentration, research stations, etc.). Instruct them to discuss how these areas overlap and what potential conflicts might arise due to maritime traffic.

Have groups share their findings with the class, focusing on identified conflicts between maritime traffic and marine life. Encourage each group to use the map to illustrate their points clearly, making sure they connect their card's information to specific locations on the map.

Activity 2: Problem-solving

Each group should now brainstorm solutions to mitigate the negative impacts of shipping on marine life, considering the specific aspect of maritime traffic or marine life highlighted on their card.

Students can also research current initiatives, like regulations on ship speeds, rerouting, and technological innovations, and think creatively about additional solutions.

Conclusion and consolidation

Have each group present their solutions to the class, explaining how their ideas could help balance the need of shipping with the protection of marine life.



8 Maritime Traffic and Marine Life
Safe navigation in busy waters

Connections to the Canadian Geography Learning Framework

Concepts of geographic thinking

- Spatial significance
- Interrelationships
- Geographic perspectives

Inquire process

- Ask geographic questions
- Interpret and analyze
- Evaluate and draw conclusions
- Communicate
- Reflect and respond

Geospatial skills

- Foundational elements

Students should reference their card information and use the map to show where and how their proposed solutions could be applied.

Consider highlighting real-world examples and efforts currently being implemented (see resources below) to provide context and show the feasibility of their solutions.

Conclude the lesson by asking students to reflect on the complexities of balancing economic and environmental needs. Highlight the importance of finding sustainable solutions, as well as the role each individual can play in this effort.

Modifications

For younger students:

- Simplify the information on the activity cards and provide more guided questions during the map exploration.

For older students:

- Include more complex data and ask students to develop detailed action plans for reducing the impact of shipping on marine ecosystems.

Taking action

- Read the story by Canadian Geographic on an 1895 steamship wreck in Lake Huron, and explore a collection of documentaries about the human-water connection.
- Organise local beach cleanup events to remove trash that could harm marine life. Students can collect data on the types of debris found and discuss how they might be related to maritime activities.
- Plan field trips to nearby conservation areas or marine research centres. Students can observe ongoing conservation efforts and speak with experts about their work.
- Conduct simple experiments to understand the impact of noise pollution on aquatic environments. Use underwater microphones to record sound levels in local water bodies and discuss how these noises might affect marine life.



8 Maritime Traffic and Marine Life
Safe navigation in busy waters

Additional resources

- Global Ship Tracking
- Saguenay-St.Lawrence Marine Park
- 5 Facts About How Belugas Use Sound
- Whale Observation Map
- Managing Ballast Water
- Great Lakes Aquatic Invasive Species Management
- Maritime Traffic Regulations and Laws
- Protecting Marine Mammals Through New Technology
- Ontario Marine Transportation Strategy

9 Working with Water
Exploring careers in conservation

Overview

In this activity, students will explore various careers related to water protection and conservation.

Time required

1 hour (can be divided)

Grades

Best suited for Grades 5-8 (modifications provided for younger and older students).

Learning objectives

By completing this activity, students will:

- Understand the importance of protecting water resources and the roles different professions play in this effort.
- Develop an appreciation for the diversity of skills and knowledge needed to protect water resources.

Materials

- Activity cards: Careers in Water Protection Activity Cards (11)

Lesson implementation

Minds on

Start by having students gather around the Giant Floor Map and discuss the importance of water in their daily life. Ask students to think about who is responsible for keeping water safe and clean:

- *What kind of jobs do you think exist to protect water resources?*
- *Why is it important to protect our water resources?*

Responses may include scientists, engineers, technicians, policymakers, environmental lawyers, and community advocates. These roles are needed to monitor water quality, enforce regulations, develop new technologies, and educate the public. Emphasize that many different careers contribute to water protection and that it takes a diverse group of professionals working together to ensure water is safe and clean.

Action

Divide the class into small groups and distribute the Careers in Water Protection Activity Cards. Explain that each card describes a profession related to water conservation.

Instruct each group to explore the map and identify areas where their assigned profession might work. For example, a water quality technician might be needed near major cities or industrial areas, while a marine biologist might focus on coastal regions.

Once students have identified their working location, ask each group to roleplay as their assigned professional. They should discuss their daily tasks, tools they might use, and challenges they may face.

Encourage students to use the map to identify specific problems or areas of interest related to their profession.

Students should also discuss the questions listed at the bottom of their activity card.

Conclusion and consolidation

Have each group present their findings to the class. They should explain the role of their assigned career in protecting water and show areas on the map where their professional would be most active.

Encourage students to ask questions and discuss how these different careers might work together to protect water resources.

Highlight how each career contributes uniquely to the overall effort of conserving and protecting the Great Lakes-St.Lawrence Watershed and consider the things we could do as citizens to make their jobs easier.

9 Working with Water
Exploring careers in conservation

Connections to the Canadian Geography Learning Framework

Concepts of geographic thinking

- Spatial significance
- Interrelationships
- Geographic perspectives

Inquire process

- Ask geographic questions
- Interpret and analyze
    - Evaluate and draw conclusions
- Communicate
- Reflect and respond

Geospatial skills

- Foundational elements

Modifications

For younger students:

- Simplify the career descriptions and provide more guided questions during the map exploration

For older students:

- Ask students to research current water protection issues and how these careers specifically address them.

Taking action

- Work as a class to gather water quality data and submit a pollution report using the Swim Guide.
- Invite professionals from various water protection careers to speak to the class and engage in discussions.
- Organize a clean-up day focused on a local waterway to collect trash and recyclables, partnering with local environmental organizations.
- Conduct a water quality testing project where students collect and analyze water samples from different local sources and report their findings.
- Develop and share educational materials or presentations about water protection with younger students or community members.
- Visit a local water treatment or wastewater treatment facility to learn firsthand how water is treated.

10 Glacial History of the Watershed
The power of ice

Overview
In this activity, students will learn about the role of glaciation in the formation of the Great Lakes.

Time required
45 minutes (can be divided)

Grades
Best suited for Grades 5-8 (modifications provided for younger and older students).

Learning objectives
By completing this activity, students will:
- Understand the role of glaciation in the formation of the Great Lakes.
- Learn about the continuous changes in the landscape due to glacial retreat and isostatic rebound.
- Gain an appreciation for the long-standing presence of Indigenous Peoples in the Great Lakes region and the ways in which they are adapting in the face of climate change.

Materials
- Activity cards: Glaciation and the Great Lakes Information Cards (5)
- Coloured pylons (40)

Lesson implementation
Minds on

Have students gather around the Giant Floor Map and initiate a discussion on the formation of the Great Lakes:

- What do you know about the Great Lakes?
- How do you think they were formed?

Briefly introduce the concept of glaciers and glaciation:

- *The Great Lakes were formed by glaciers during the last Ice Age. A glacier is a huge, slow-moving mass of ice. It forms in places where snow doesn't melt completely, so over many years, the snow piles up, gets packed down, and turns into ice. Glaciers can be found in very cold areas, like high mountains and the polar regions. As they move, they can shape the land by carving out valleys and moving rocks. Glaciers are important because they store a lot of the Earth's fresh water and can affect the environment in many ways. Glaciation is the process by which glaciers form and shape the land.*

Students are encouraged to explore the Shaping the Lake's augmented reality experience.

Action

Activity 1 - Glaciation and the Formation of the Great Lakes

Explain that thousands of years ago, glaciers covered much of North America, including the Great Lakes region. These glaciers carved out the basins that would become the Great Lakes and shaped the landscape.

Emphasize that Indigenous peoples have lived in the Great Lakes region for thousands of years, including during the last Ice Age. Indigenous knowledge and oral histories have provided valuable insights into the region's history and the adaptation of people to changing environments.

Next, provide students with the Glaciation and the Great Lakes Information Cards. Have students take turns reading information out loud about different glacial features while displaying the images to the class.

Next, invite students to simulate the movement of a glacier while observing its impact on the landscape:
- Select a group of students to be the glacier and another group to be debris (rocks, sand, and clay).
- The glacier group stands at the "origin" point on the map (the northern part of the watershed), while the debris group scatters around the map.
- Have the glacier group slowly move southward across the map.
- As the glacier group moves, the debris group joins them, representing debris picked up by the glacier.
- At various points, stop and discuss what happens when the glacier encounters obstacles (e.g., mountains or valleys) and how it shapes the landscape. Have the glacier group act out how they move around or over these obstacles, shaping the landscape.

10 Glacial History of the Watershed
The power of ice

Connections to the Canadian Geography Learning Framework

Concepts of geographic thinking

- Spatial significance
- Interrelationships
- Geographic perspectives

Inquire process

- Ask geographic questions
- Interpret and analyze
- Evaluate and draw conclusions
- Communicate
- Reflect and respond

Geospatial skills

- Foundational elements the

- When the glacier group reaches the southern part of the map, they "melt" (and recede northwards).
- The debris group then spreads out to simulate the formation of moraines and outwash plains.

Next, explain that students will become "Glacial Detectives" and search for the location of glacial features on the map that show how and where glaciers shaped the Great Lakes region.

Provide each student or group with a set of pylons, along with their Glaciation and the Great Lakes Information Card.

Have students find and identify at least one example of their assigned glacial feature on the map using the information provided on their card. Instruct students to work with their group to also answer the discussion questions listed on their card. Note: if this proves to be too challenging, consider completing the activity with Google Earth instead of using the Giant Floor Map.

Conclusion and consolidation

Gather students together and discuss how the glacier simulation and subsequent activity helps us understand the real processes that shaped the Great Lakes region and how the movement of glaciers has affected the landscape.

Modifications

For younger students:

- The activities can be completed together as a class with more guided discussion.

For older students:

- Students can conduct independent research on specific glacial features and create presentations or reports.

Taking action

- Organize a field trip to a local park or natural area known for its glacial features. Have students identify and document features such as moraines, kettle lakes, or glacial valleys.
- Assign a creative writing task where students imagine living in the Great Lakes region during the last Ice Age, incorporating elements of glaciation and Indigenous life.
- Have students research the effects of climate change on modern glaciers around the world. They can create presentations, posters, or digital media projects to share their findings.
- The region is also known for glacial valleys (e.g., Letchworth State Park, New York), outwash plains (e.g., Saginaw Lowlands, Michigan) and eskers (e.g., Muskoka region, Ontario). See if your glacial detectives can locate these formations on the Giant Floor Map!

10 Glacial History of the Watershed
The power of ice

Additional resources

- Ottawa's Pinhey sand dunes
- The Shape of Ice - Mapping North America's Glaciers
- Glacial Lakes History
- Glacier Basics For Kids
- The Great Lakes in Ancient Times
- Great Lakes Glacial Features Storymap



11 Water Pollution
Contaminants in the Watershed

Overview

In this activity, students will explore the sources and impacts of water pollution, using the Giant Floor Map to visualize and understand the flow and effects of contaminants through the Great Lakes St. Lawrence Watershed.

Time required 50 minutes

Grades

Best suited for Grades 5-8 (modifications provided for younger and older students)

Learning objectives

By completing this activity, students will:

- Understand how household products, industrial processes, and agriculture contribute to water pollution
- Understand the movement of water throughout the watershed and how pollutants travel
- Reflect on their own consumer choices and their impact on the watershed

Materials

- Water pollution information cards (9)
- Ropes (optional)
- Pylons (optional)

Lesson implementation

Minds on

Begin the lesson by inviting students onto the Giant Floor Map and asking them to locate their community on the map, as well as the body of water nearest to their community. Ask the students: If we were to put a plastic bottle in the water here, where will it go?

Using the water flow lines on the map to guide them, have a student volunteer trace this bottle's potential path through the watershed.

Explain that it can take around 200 years for water to get from the headwaters of Lake Superior, through the Great Lakes, and out to the Atlantic Ocean. Which means that substances not natural to the environment, like plastics and harmful pollutants, can remain in the watershed for several generations.

Continue exploring the map while providing additional guiding questions to prompt discussion:

- What do you notice about the areas surrounding the Great Lakes?
- Which Great Lake do you think is the most polluted and why?
- What might be some sources of water pollution in your community?
- Have you ever seen or experienced water pollution firsthand?

Explain that pollutants can come from various sources, including industrial activities, agricultural practices, and household products. Water pollution can occur directly, when waste is discharged straight into a body of water. Alternatively, it can happen indirectly, when pollutants are not intentionally dumped into waterways but still reach them. This often occurs when contaminants seep into the ground, enter groundwater supplies, and eventually flow into rivers or streams.

Encourage students to explore the Shared Responsibility augmented reality experience.

Illustrate the connection between students' homes, local sewer systems, and the Great Lakes, highlighting how pollutants from household drains and stormwater runoff contribute to the larger watershed. Explain how these pollutants can have far-reaching impacts through processes of bioaccumulation and biomagnification:

Bioaccumulation *refers to the ways pollutants, like heavy metals or chemicals, build up in the tissues of organisms over time. For example, fish may absorb mercury from contaminated water or food, leading to higher levels of mercury in their bodies as they grow.*

Biomagnification *describes how these pollutants become more concentrated as they move up the food chain. Smaller organisms with accumulated pollutants are eaten by larger predators, like fish, which are then consumed by birds or humans. As a result, the concentration of harmful substances, like mercury, increases in top predators, posing significant health risks.*



11 Water Pollution
Contaminants in the Watershed

Connections to the Canadian Geography Learning Framework

Concepts of geographic thinking

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

Inquire process

- Ask geographic questions
- Acquire geographic resources
- Interpret and analyze
- Evaluate and draw conclusions
- Communicate
- Reflect and respond

Geospatial skills

- Foundational elements
- Spatial representations

Action

Divide the class into three expert groups, each focusing on one category of pollution sources: household products, industrial processes, or agriculture. Provide each group with an information card detailing how their assigned category contributes to water pollution in the Great Lakes. The cards include key pollutants, their sources, and examples of how they impact water quality and ecosystems. Instruct each group to read through their information card carefully and discuss the main sources of pollution related to their category. Encourage them to identify specific pollutants, how they enter the watershed, and the choices individuals or organisations could make to help reduce these pollutants. Give the groups time to prepare a brief presentation summarizing their findings. Each group should identify key locations on the Giant Floor Map where pollution from their category might enter the watershed. They should also describe potential impacts on the region's ecosystems and communities downstream. You can choose to conduct these presentations using the Jigsaw method, where groups share their expertise with new groups, or have each group present to the whole class in turn. After all groups have presented, facilitate a class discussion to compare the different types of pollution and their effects.

Conclusion and consolidation

Invite students to reflect on what they discovered during the main activity. Discuss how these pollutants, whether directly discharged or indirectly carried by groundwater and runoff, can affect water quality and the health of ecosystems throughout the watershed. Encourage students to think about how their everyday consumer choices contribute to these pollution sources. For example, the group that studied household products might reflect on how choosing eco-friendly cleaning supplies or properly disposing of medications could reduce harmful contaminants entering the waterways. Similarly, the group focused on agriculture could discuss how supporting local farms that use sustainable practices might help limit runoff that contains fertilizer, pesticides and herbicides. Reinforce the idea that each of them can make a difference through mindful decisions that positively affect the environment. Share a hopeful example by telling the story of how banning DDT, a harmful pesticide once widely used in agriculture, led to the remarkable recovery of the bald eagle population in North America. DDT runoff entered waterways and accumulated in fish, the eagles' primary food source, causing their eggshells to thin and their populations to plummet. In response to these harmful effects, DDT was banned in 1972, and over the following decades, the bald eagle population rebounded significantly, eventually leading to its removal from the endangered species list in 2007. This example shows how changes in policies and behaviours can positively impact the environment. For more information, see additional resources below. Ask students to think about their own households and daily routines in light of the pollution sources discussed. Challenge them to identify one habit or behaviour they could change that would help reduce their impact on local waterbodies. Discuss how these small changes, when adopted collectively by many people, can lead to significant improvements in water quality. Encourage them to think creatively about other ways to protect the watershed, whether by reducing plastic use, conserving water, or participating in local clean-up efforts.



11 Water Pollution
Contaminants in the Watershed

Modifications

For younger students:

- Instead of using the detailed information cards, focus solely on one or two key pollutants from household products (like herbicides or cleaning supplies) and their impacts, making it easier for them to grasp the concepts.
- To further illustrate the concept of biomagnification, play a game where students act as different animals in a food chain, each "eating" pylons representing various amounts of pollutants. As they move up the food chain, they accumulate more pollutants, visually demonstrating how substances build up and magnify in higher trophic levels.

For older students:

- Students can research a specific pollutant (see additional resources provided below). These 8 chemicals found in the Great Lakes are of particular concern and known to be harmful to human health and the environment:
  - hexabromocyclododecane (HBCD)
  - polybrominated diphenyl ethers (PBDEs)
  - perfluorooctanoic acid (PFOA)
  - perfluorooctane sulfonate (PFOS)
  - long-chain perfluorinated carboxylic acids (LC-PFCAs)
  - mercury
  - polychlorinated biphenyls (PCBs)
  - short-chain chlorinated paraffins (SCCPs)

Taking action

- Challenge students to make an eco-friendly swap at home for one week. For example, they could switch to biodegradable cleaning and personal care products, or avoid using single-use plastics. Have them document their experience and reflect on how these changes could positively impact local water quality.
- Have the class submit a Watermark about their connection to the Great Lakes. Students can also turn their watermark into a video and submit them to the Watermark project website.
- Visit a local waterbody and report any cases of pollution you find to your local Waterkeeper.



11 Water Pollution
Contaminants in the Watershed

Additional resources

- Health Canada - Environmental Contaminants
- Swim Drink Fish - Understanding Combined Sewer Overflows
- Canadian Geographic - Mapping the Human Impact on the Great Lakes
- Environment Canada - Bald Eagle Populations in the Great Lakes Region
- The Narwhal - What can we learn from the bald eagle's return to the southern Great Lakes?
- International Joint Commission - The Great Lakes
- The Binational Commissions of the Great Lakes Region - Library
- The United States Environmental Protection Agency - The Great Lakes