

**Wild Rice-Manoomin - a cultural symbol and essential staple in a sacred way of life. Sustainability is an indigenous practice of not taking more than you need and giving back.**

## Science and Technology

### Grade 1 - Life Systems: Needs and Characteristics of Living Things

Resources: Leading Children in hands on Explorations, <http://resourcesforearlylearning.org/educators/module/20/15/74/> See videos.

Stem exploration: <https://growing-minds.org/documents/stem-exploration-lesson-plan.pdf>

Pondering Plants <http://www.lifelab.org/wp-content/uploads/2010/02/1stPonderingPlants2012.pdf>

Look at Those Seeds Grow <http://sciencenetlinks.com/lessons/look-at-those-seeds-grow/>

Crops 2: What Plants Need to Grow <http://sciencenetlinks.com/lessons/crops-2-what-plants-need-to-grow/>

Cycle of Life Food Chains <http://sciencenetlinks.com/lessons/cycle-of-life-1-food-chain/>

Overall Expectations	Expectations #	Content: Big Ideas	<p><b>Wild Rice Facts/Lesson Plan Ideas:</b></p> <p><b>What? Why ? How?</b></p> <p><b>Open ended questions</b>  <b>Think Predict Describe Explain</b></p> <ul style="list-style-type: none"> <li>explore, investigate, predict, notice, observe, sort, categorize, measure, compare, represent, discover, communicate, <i>and</i> explain.</li> </ul> <p><b>Review</b>  <b>How can you help children make connections to the science concepts and ideas that are central to their explorations?</b></p> <p>Invite them to observe science phenomena on a topic in different settings, contexts, or venues (e.g., indoors, outdoors, in videos, at home) and across different domains (e.g., science, language, art).</p> <p>Help children make connections between their own hands-on science explorations and books about the topic. Choose quality fiction and nonfiction books that address the</p>	<p><b><u>Indigenous Knowledge: First Nation Métis and Inuit Connections - Scope and Sequence of Expectations 2015</u></b></p>
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			<p>science concepts you are investigating, and read them before and/or after children's science explorations.</p> <p>Make videos or take photographs of children's explorations and invite children to view them to support their learning.</p> <p>Incorporate science talk into children's routines. If children are learning about seeds, invite them to notice any foods that contain seeds during snack time or lunchtime.</p> <p>Invite them to share their thinking and new learning.</p> <p>Invite children to record their observations by drawing and/or writing them on classroom charts <i>during</i> and/or <i>after</i> science explorations.</p> <p>Invite children to create drawings, labels, or diagrams to show others what they have observed or learned.</p> <p>Ask questions and provide opportunities for children to talk about what they observed and what they are wondering.</p>	
1. assess the role of humans in maintaining a healthy environment;	2 and 3	Living things grow, take in food to create energy, make waste, and reproduce.	<p><b>See Creative Activity Lesson Plan: Dramatization of Wild Rice Life Cycle</b></p> <p><b>See Plant Detective Primary Unit Plan</b></p> <p><b>What do humans do to help plants grow?</b></p> <p><b>Activity:</b> collect seeds and compare, observe - colour, size - measure and weigh, feel - texture, covering, look up close with magnifying glass or microscope, draw and record results</p> <p><b>Activity:</b> observe, taste, eat</p>	

			<p>a) seeds in fresh fruits and vegetables - watermelon, kiwi, cucumber, bananas, apples - eat some seeds , compost some seeds</p> <p>b) seeds in vegetables to cook, squash, peas in the pod, wild rice</p> <p>Make a chart : I like    Yes /no</p> <p>Draw item they sampled then record mark under yes or no column</p> <p><b>Activity:</b> plant grass seeds in a peat container with dirt, decorate container with markers, initials on bottom, face or drawing on side, water and monitor, record observations and growth of plants</p> <p>Complete chart :first, then</p> <p>Sow (soil, site selection), protect (location), monitor (weather, temp., rain, water quality, water height, growth, needs) thin, weed (invasive plants), fertilize(feed), irrigate(water) trim, monitor/discourage insects, pests, animals, support, reproduce, harvest, recycle waste (compost), process, package, research, study, record, share, sell, communicate, store, transport</p> <p>Indigenous people plant/seed water bodies with wild rice in the late fall. The wild rice is harvested, processed by parching, dancing, winnowing, storing and then cooking. Humans eat wild rice to get energy. Humans make waste. Humans, insects, birds and animals eat wild rice stalks or seeds for food energy.</p> <p><b>Activity:</b> Using seeds, create a collage. Observe, drawing and writing about their observations and ideas, or creating a collage.</p>	
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2. investigate needs and characteristics of plants and animals, including humans;	2 and 3	Plants and animals, including people, are living things.	<p><b>What do wild rice/ manoomin plants need to grow or survive?</b>  Activity: Observe- seed growth. Sprout seeds in water-  Predict - <b>How many days until the seeds sprout?</b></p> <p><b>What do you notice about these seeds? How do they look, feel, and smell? How are they the same or different from other seeds? how, what, what if, and why do you think... What did you notice about...? Why do you think that happened? What do you think will happen if we...? How did you figure that out?</b></p> <ul style="list-style-type: none"> <li>- location protected from wind and severe weather events</li> <li>- clean water</li> <li>- fresh moving water (oxygen, CO2)</li> <li>- unchanging depth of water</li> <li>- sunlight</li> <li>- mucky rich soil in water body for roots to anchor in and get nutrients</li> <li>- air</li> <li>- no predators-bugs, animals, birds,</li> <li>- no competition from other aquatic or invasive species</li> </ul> <p><b>What are the characteristics of wild rice plants?</b></p> <ul style="list-style-type: none"> <li>- plants are producers</li> <li>- they take in nutrients, air, water, sunlight chemicals</li> <li>- they do not consume food but produce their own food through photosynthesis</li> <li>- they grow</li> <li>- they produce flowers, fruits, and seeds (reproduce)</li> <li>- the plant dies and decays or rots becoming nutrient in the soil for other plants to grow (produce waste, nutrients)</li> </ul>	2.2 investigate and compare the basic needs of humans and other living things, including the need for air, water, food, warmth, and space, using a variety of methods and resources (e.g., prior knowledge, personal experience, discussion, books, videos/DVDs, CD-ROMs) Sample guiding questions: ... <b>Why do some Aboriginal people consider rocks to be living things?</b>
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3. demonstrate an understanding of the basic needs and characteristics of plants and animals, including humans.	1, 2, and 3	Living things have basic needs (air, water, food, and shelter) that are met from the environment.	<b>Activity:</b> What do seeds need to grow?	
	2 and 3	Different kinds of living things behave in different ways.	<b>Activity:</b> Water table - investigate Predict what will float and what will sink Observe what floats and what sinks to the bottom. Collect items from outside e.g. seeds, pine cones, leaves, rocks Include green wild rice seeds	
	1, 2, and 3	All living things are important and should be treated with care and respect.		

## Grade 1 Matter and Energy: Energy in Our Lives

Resource: Plants in Motion <https://www.pbslearningmedia.org/resource/lsp07.sci.life.reg.plantmovies/plants-in-motion/?#.W1Aa8tlzq1s>

Overall Expectations	Expectations #	Content: Big Ideas	Wild Rice Facts/ Lesson Plan Ideas	Indigenous Knowledge
1. assess uses of energy at home, at school, and in the community, and suggest ways to use less energy;	1, 2 and 3	Everything that happens is a result of using some form of energy.		
2. investigate how different types of energy are used in daily life;	3	The sun is the principal source of energy for the earth.	<p><b>*** See Creative Activity Lesson Plan: Dramatization of Wild Rice Life Cycle</b></p> <p>Inquiry: Do plants need light and heat?            Experiment: Impact of light/no light and heat/no heat comparison            Use 4 of the same potted plants.            1) Provide light to one and no light to the other (in a bag, under a box or cupboard with no light            2) provide one with room temperature and provide one in the refrigerator.            Observe, discuss, draw, photograph results over time e.g. check at specific time period.</p>	
3. demonstrate an understanding that energy is something that is needed to make things happen, and that the sun is the principal source of energy for the earth.	1 and 2	Humans need to be responsible for the way in which we use energy.	<p>The energy produced by the Sun provides light and heat to the Earth and its air, water and plants.            Wild rice requires light to grow. Wild rice and many other plants will not grow in the dark. The tilt of earth in relation to the sun heats and cools the air and water. Wild rice seeds are protected by the cold soil in the bottom of the water body and in the cold water during the winter. In the spring when the sun causes the air and water temperatures to rise, the seed can germinate and grow into a plant.            The light and warm temperatures in water and air allow the plant to grow through the summer, ready for harvest in late summer and early fall.</p>	

Indigenous Knowledge and Science

Wild Rice Integration - Primary

## Grade 1 Earth and Space Systems: Daily and Seasonal Changes

The Four Seasons <http://sciencenetlinks.com/lessons/the-four-seasons/>

Overall Expectations	Expectations #	Content: Big Ideas	Wild Rice Facts/Lesson Plan Ideas	Indigenous Knowledge
1. assess the impact of daily and seasonal changes on living things, including humans;	1, 2 and 3	Changes occur in daily and seasonal cycles.	<p><b>*** See Creative Activity Lesson Plan: Dramatization of Wild Rice Life Cycle</b></p> <p>Life Cycle of wild rice through seasons.            Winter - seed is dormant in soil of water body, harvested seeds are processed by humans and wither stored or cooked for food            Spring - as water and air temperatures rise, seed germinates, sprouts and grows roots and leaves            Summer - the wild rice plant grows leaves to the surface of the water, sheds leaves, grows leaves and stalk that grow into the air, the plant flowers, fertilizes itself and produces seeds            Autumn - seeds mature and are either harvested by humans, eaten by insects, birds or knocked off by animals, fall into the water body and dive to the soil of the water body where they implant and remain dormant until spring.</p>	1.2 assess ways in which daily and seasonal changes have an impact on society and the environment (e.g., ... <b>The Anishinaabe people tell their stories only in the winter when there is snow on the ground.)</b>
2. investigate daily and seasonal changes;	1 and 3	Changes in daily and seasonal cycles affect living things.	Monitor water levels in local water bodies. Depth of water determines whether wild rice will grow successfully.	
3. demonstrate an understanding of what daily and seasonal changes are and of how these changes affect living things.			<b>*** See Creative Activity Lesson Plan: Dramatization of Life Cycle</b>	

				<p><b>Social Studies:</b>  People and Environments: The Local Community  B2. Inquiry: Interrelationships and Their Impact B2.2 gather and organize information on the interrelationship between people and the natural and built features of their community, and on the effects of this interrelationship, using sources that they have located themselves or that have been provided to them (e.g., use a tally sheet to monitor the use of garbage cans and recycling containers around the school; use a digital camera to record the amount of garbage on the ground in the park; organize satellite images that show changes in natural or built features in their community; interview a person who works in the park) Sample questions: ...  <b>“How can we use satellite images of the First Nation reserve to help us create maps and locate familiar features that we use?” ...</b></p>
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## Grade 2 Life Systems: Growth and Changes in Animals

Overall Expectations	Expectations #	Content: Big Ideas	Wild Rice Facts	Indigenous Knowledge
1. assess ways in which animals have an impact on society and the environment, and ways in which humans have an impact upon animals and the places where they live;	2 and 3	Animals have distinct characteristics.	<b>Animals that feed on wild rice green seeds include:</b> <b>Mammals:</b> white-tailed deer, muskrat, beaver and other wetland animals <b>Birds:</b> Song-birds: red-winged blackbird, northern bobwhite and bobolink <b>Waterfowl:</b> Mallards, wood duck, Canada Geese feed swim, and live in wild rice fields <b>Fish:</b> Carp	
2. investigate similarities and differences in the characteristics of various animals;	1, 2, and 3	Humans are animals.	Humans plant, harvest and process wild rice for survival.	2.5 investigate the ways in which a variety of animals adapt to their environment and/or to changes in their environment, using various methods (e.g., <b>read simple non-fiction texts and Aboriginal stories; ...</b> )
3. demonstrate an understanding that animals grow and change and have distinct characteristics.	2	There are similarities and differences among different kinds of animals.		3.3 identify ways in which animals are helpful to, and ways in which they meet the needs of, living things, including humans, to explain why humans should protect animals and the places where they live (e.g., ... <b>the buffalo provided some Aboriginal people with everything they needed to survive: food, shelter, clothing, tools, ornamentation, and weapons; ...</b> )

	<b>1</b>	Humans need to protect animals and the places where they live.	Humans plant and harvest wild rice sharing the plants and its seeds with wetland animals and birds	
				<p><b>C. Healthy Living</b></p> <p>C1. Understanding Health Concepts Substance Abuse, Addictions, and Related Behaviours</p> <p>C1.3 describe the difference between prescription medicines and non-prescription medicines, giving examples of each, and identify rules for the proper use of all medicines Teacher: “How are commonly used non-prescription medicines and health care supplements – for example, ... herbal, homeopathic, and naturopathic remedies; <b>and First Nation, Métis, and Inuit traditional medicines</b> – different from prescription medicines?”</p> <p>Student: “... <b>Traditional First Nation, Métis, and Inuit medicines are usually made from things like plants that grow in the forest.</b>”</p>

## Grade 2 Earth and Space Systems: Air and Water in the Environment

Overall Expectations	Expectations #	Content: Big Ideas	Wild Rice Facts	Indigenous Knowledge
1. assess ways in which the actions of humans have an impact on the quality of air and water, and ways in which the quality of air and water has an impact on living things;	1,2 and 3	Air and water are a major part of the environment.	<p><b>*** See Creative Activity Lesson Plan: Dramatization of Wild Rice Life Cycle</b></p> <p>Negative Human Impact: Add the impact of pollution from mines, pulp and paper plants, oil and gas plants, pipelines, hydro developments, sewage , garbage and road salt. Pollution, Dams, Locks and Canal Systems, Genetic modifications from cultivated rice or paddy grown rice, Overharvesting, Cottagers removing rice with machines, Intensified harvesting with air boats, Wars between indigenous people, Settlers, colonization, treaties, racism and genocide resulting in forced relocations to reserves, Government rules /laws against harvesting, Invasive species.</p> <p>Positive Human Impact: Indigenous people are protectors and guardians of the environment, land, water and air. Assertion of aboriginal rights, land claims, harvesting rights. Reseeding and reintroduction of traditional harvesting activities. Education of the indigenous and settler communities to protect the environment for selves and future generations.</p>	
2. investigate the characteristics of air and water and the visible/invisible effects of and changes to air and/or water in the environment;	1 and 3	Living things need air and water to survive.	<p>Wild rice is an aquatic grass plant. It grows in both clean water and the air. Changes in water levels - too shallow or too deep and the wild rice plant will not survive.</p>	

3. demonstrate an understanding of the ways in which air and water are used by living things to help them meet their basic needs.	1 and 3	Changes to air and water affect living things and the environment.		
	1,2 and 3	Our actions affect the quality of air and water, and its ability to sustain life.	Dams made by animals and humans or lock and canal systems cause destruction of the wild rice. See negative and positive human impact above.	
				<b>Social Studies</b> B. People and Environments; Global Communities B1. Application: Variations in Global Communities B1.2 describe some of the ways in which two or more distinct communities have adapted to their location, climate, and physical features (e.g., in Arctic Canada, where it is cold, people wear warm clothes made with fur and hide or insulated with down or fleece; ...) Student talk: “It’s too cold to farm in the Arctic. Inuit people hunt seals and whales from the ice. They sometimes travel by dog sled or snowmobile because you can’t drive a car on the ice.”

### Grade 3: Life Systems: Growth and Changes in Plants

Overall Expectations	Expectations #	Content: Big Ideas	Wild Rice Facts	Indigenous Knowledge
1. assess ways in which plants have an impact on society and the environment, and ways in which human activity has an impact on plants and plant habitats;	2 and 3	Plants have distinct characteristics.	*** See Creative Activity Lesson Plan: Dramatization of Wild Rice Life Cycle ***See Unit Plan: Plant Detectives/Scouts	1.1 assess ways in which plants are important to humans and other living things, taking different points of view into consideration ... and suggest ways in which humans can protect plants Sample prompts: ... <b>Aboriginal people use plants for many medicines.</b>
2. investigate similarities and differences in the characteristics of various plants, and ways in which the characteristics of plants relate to the environment in which they grow;	2	There are similarities and differences among various types of plants.		
3. demonstrate an understanding that plants grow and change and have distinct characteristics.	1	Plants are the primary source of food for humans.	Wild rice is a source of food for humans.	3.5 describe ways in which humans from various cultures, including <b>Aboriginal people, use plants for food, shelter, medicine, and clothing (e.g., food – from rice plants; houses for shelter – from the wood of trees; medicines – from herbs; clothing – from cotton plants)</b>

	1	Humans need to protect plants and their habitats.	Wild rice will only grow in clean flowing water at a specific depth. Indigenous people have been on the forefront of efforts to protect waterways from the effects of logging, pulp and paper companies, mining, hydroelectric projects which can pollute or change water quality or change the water levels and flow patterns.	
	1	Plants are important to the planet.	Wild rice provides food for human and other animals.	
				<p><b>C. Healthy Living</b></p> <p>C3. Making Connections for Healthy Living Healthy Eating</p> <p>C3.1 explain how local fresh foods and foods from different cultures (e.g., berries, curries, chapattis, lychees, kale, lentils, corn, nan, wild game, fish, tourtière) can be used to expand their range of healthy eating choices [CT] Teacher prompt: <b>“Look at these different versions of Canada’s Food Guide.</b> This one is in English, these have been translated into different languages, and another is <b>for First Nation, Métis, and Inuit users.</b> What is the same about these guides? What is different about the food choices they recommend, and why are they still healthy choices?” Student: “All of the guides show four food groups, but the foods in the groups are different. ... The translated versions of the guides all show the same pictures, but</p>

				<p>the 23 languages are different. All of the guides provide information about healthy choices for different cultures. <b>The First Nation, Métis, and Inuit guide has some different information. The picture on the front shows the food groups as a part of a circle instead of a rainbow. It also shows some pictures of some First Nation, Métis, and Inuit foods, like berries, wild plants, bannock, and wild game, and includes healthy living tips that fit with the lives of First Nation, Métis, and Inuit people.”</b></p>
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**Grade 3: Earth and Space Systems: Soils in the Environment**

<b>Overall Expectations</b>	<b>Expectations #</b>	<b>Content: Big Ideas</b>	Wild Rice Facts	Indigenous Knowledge
1. assess the impact of soils on society and the environment, and of society and the environment on soils;	1, 2 and 3	Soil is made up of living and non-living things.	<b>*** See Creative Activity Lesson Plan: Dramatization of Wild Rice Life Cycle</b>	
2. investigate the composition and characteristics of different soils;	1, 2 and 3	The composition, characteristics, and condition of soil determine its capacity to sustain life	Wild Rice Grows best in :  <b>Soil type:</b> Soft soil layer with peat, loam or clay. <b>Soil pH</b> 6.5-8.5	
3. demonstrate an understanding of the composition of soils, the types of soils, and the relationship between soils and other living things.	3	Soil is an essential source of life and nutrients for many living things.	Wild rice grows in soil and provides food for humans and other animals.	
	1	Living things, including humans, interact with soils and can cause positive or negative changes.		
				<b>Social Studies</b> B. People and Environments: Living and Working in Ontario B1. Application: Land Use and the Environment



				<p>B1.3 identify and describe some of the main patterns in population distribution and land use in two or more municipal regions in Ontario, using mapping and globe skills (e.g., read city maps to extract information on how much land is used for residential and transportation purposes; read digital provincial land use and/or agricultural maps to identify population patterns in agricultural areas; create a thematic map to show how land used for commercial purposes often exists in specific pockets within areas with large populations) Sample questions: ...  <b>“Where are the reserve communities located? What do you notice about the location of reserve communities?” ...</b></p> <p>B2. Inquiry: The Impact of Land and Resource Use</p> <p>B2.1 formulate questions to guide investigations into some of the short- and/or long-term effects on the environment of different types of land and/or resource use in two or more municipal regions of Ontario (e.g., the impact of mining, forestry, agriculture, suburban land development) and measures taken to reduce the negative impact of that use</p>
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				<p>Sample questions: ... <b>“What natural resources are available in the local First Nation community? How have they affected that community?”</b> ...</p> <p>B2.2 gather and organize a variety of data and information on the environmental effects of different land and/or resource use and measures taken to reduce the negative impact of that use (e.g., ... <b>an interview with an Elder on traditional ecological knowledge about a region and his or her observations on changes in that region)</b></p> <p>B2.6 communicate the results of their inquiries, using appropriate vocabulary (e.g., ... reserve, ...) and format (<b>e.g., a plan of action to address a local land-use issue; a cooperatively produced book of photos showing the environmental impact of a mine; a report on the benefits of forestry in provincial parks; song lyrics, a rap, or a poem about the effects of industrial pollution on a local waterway; an informational poster on what individuals can do to reduce their ecological footprint)</b>)</p>
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