



EDUCATION FOR SUSTAINABLE
DEVELOPMENT: KINDERGARTEN
TO GRADE 4 POSTER ACTIVITIES

Grade 4

GRADE 4 LEARNING EXPERIENCES

The lessons and activities presented in this website, and related links are to supplement existing curriculum guidelines.

Sustainable Development Themes Related to the K-4 ESD Poster Learning Experiences

Learning Experience	Subject	Cluster Section	SLO	Page
1. Take a Stand	Social Studies	2. Canadian Citizenship (4.2.5: Government)	4-KE-048: Identify various ways in which governments help people meet their needs. <i>Examples: education, health care, sanitation . . .</i>	4-7
2. Windmills and More	Social Studies	3. Living In Manitoba (4.3.2: Environmental Stewardship and Sustainability)	4-KL-023: Identify issues related to environmental stewardship and sustainability in Manitoba.	4-9
3. Open Your Own Tour Company	Social Studies	3. Living In Manitoba (4.3.5: Artistic and Cultural Achievements)	4-KL-025: Describe places of historic, cultural, or environmental significance in Manitoba. <i>Examples: Lower Fort Garry, the Forks, musée de Saint-Boniface, Thunderbird House, provincial/national parks . . .</i>	4-11
4. What a Landscape!	Social Studies	4. History of Manitoba (4.4.1: Early Life and Settlement)	KL-026: Describe the influence of the natural environment on settlement in Manitoba.	4-15
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Learning Experience	Subject	Cluster Section	SLO	Page
6. Invertebrate Critter Survey	Science	1. Habitats and Communities	4-1-07: Investigate and describe a variety of local and regional habitats and their associated populations of plants and animals.	4-21
7. What's for Dinner?	Science	1. Habitats and Communities	4-1-09: Recognize that plant and animal populations interact within a community. 4-1-10: Recognize that the food chain is a system in which some of the energy from the sun is transferred eventually to animals. 4-1-11: Construct food chains and food webs, and classify organisms according to their roles. Include: producer, consumer, herbivore, omnivore, carnivore, predator, prey, scavenger.	4-25
8. Predator-Prey Games	Science	1. Habitats and Communities	4-1-13: Predict, based on their investigations, how the removal of a plant or animal population may affect the rest of the community. <i>Examples: if the wolves were removed from a community, the deer population may increase rapidly . . .</i>	4-31
9. Cleaning Up Without Voom	Science	1. Habitats and Communities	4-1-14: Investigate natural and human-caused changes to habitats, and identify resulting effects on plant and animal populations. Include: endangerment, extinction. 4-1-15: Describe how their actions can help conserve plant and animal populations and their habitats. <i>Examples: clean up a local stream to improve fish and bird habitat . . .</i>	4-35

continued

Learning Experience	Subject	Cluster Section	SLO	Page
10. What's That Noise?	Science	3. Sound	4-3-12: Describe harmful effects of high or sustained sound levels and identify potential sound hazards at home or in the community. <i>Examples: leaf-blowing machines, snowblower, stereo, drone of machinery . . .</i>	4-39
11. Investigate	Science	4. Rocks, Minerals, and Erosion	4-4-12: Investigate and describe ways in which soil erosion is controlled or minimized in their community and in communities around the world. <i>Examples: windbreaks, retaining walls, terracing, cover crops, reforestation . . .</i>	4-43
12. The Great Sand Blowing Contest, and Other Investigations	Science	4. Rocks, Minerals, and Erosion	4-4-13: Use the design process to determine an appropriate system for controlling soil erosion in a given situation.	4-45
13. Look Out Landscape!	Science	4. Rocks, Minerals, and Erosion	4-4-15: Identify natural phenomena and human activities that cause significant changes in the landscape. <i>Examples: floods, avalanches, mud slides, hydroelectric dams, clearing land for agriculture, clear-cut forestry, forest fires . . .</i>	4-49
14. Inuit Games: Design-a-Game	Physical Education/ Health Education	4. Personal and Social Management	K.4.4.B.1b: Discuss connections or representations of cultures in different physical and recreational activities <i>(e.g., lacrosse from Aboriginal culture, tinikling from Philippines, voyageur games from French-Canadian culture . . .).</i>	4-51
15. Healthy Body Snack Survey	Physical Education/ Health Education	5. Healthy Lifestyle Practices	S.5.4.A.3b: Use problem-solving strategies to reduce barriers to healthy eating and to improve food choices, if appropriate.	4-57

Notes

Targeted Outcome/Intended Learning:

Social Studies: Cluster 2: Canadian Citizenship
(4.2.5: Government)

4-KE-048: Identify various ways in which governments help people meet their needs.

Examples: education, health care, sanitation . . .



Background:

This learning experience will assist students in identifying the various levels of governments in Canada.

Note: Activity Centre #3 will need to be done before this learning experience.

Materials:

- reports from Activity Centre #3
- old phone books
- computers
- writing materials
- Suggested K-4 ESD Poster picture card: 2. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.
- Suggested K-4 ESD Poster word cards: protect, safety, teach, defend, access, conserve, ideas, needs, recycle, culture, celebrate, care, citizen, organize, understand, connect, communicate, listen, grow, help. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Activity Directions:

Activity 1:

For “Take a Stand,” have students share their Activity #3 news articles with the class. Discuss each article and decide if there is one that the class can act on. Decide what that action could be (e.g., letter to the editor, letters to a government official, newsletter to parents to bring student’s concerns to their attention, etc.)

Or

Activity 2:

For “Serving the Public,” use old phone books, divide the government section of the book into sections (either city, province, federal, or alphabetically). In pairs, have students select three government departments from the section of the phone book they were given and encourage them to find out more about these departments. What do their chosen government departments do to help people? What portion of the population do they serve? What would happen if these departments did not exist? Students may use computers, publications, or telephone their chosen departments in order to complete their research. Encourage students to use the SD cards for vocabulary in their writing.

For Blackline Masters activities related to this outcome, go to www.edu.gov.mb.ca/k12/cur/socstud/foundation_gr4/blms/index.html.

Targeted Outcome/Intended Learning:

Social Studies: Cluster 3: Living In Manitoba (4.3.2: Environmental Stewardship and Sustainability)

4-KL-023: Identify issues related to environmental stewardship and sustainability in Manitoba.

Background:

This learning experience first looks at windmills and wind farms as environmental stewardship and sustainability issues. It then suggests other environmental stewardship and sustainability issues students could investigate.

Materials:

- telephone directory, business directories
- Suggested K-4 ESD Poster picture cards: 1, 22. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.
- Suggested K-4 ESD Poster word cards: reduce, sustainable, think, protect, learn, relate, etc. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Websites:

Wind Power with Miller is an excellent site where students can play an interactive game and navigate on their own. Available online at www.windpower.org/en/knowledge/wind_with_miller.html.

Activity Directions:

Activity 1:

Define the terms *environmental stewardship* and *sustainability*. Invite students to write about or discuss examples of each in Manitoba.

Activity 2:

To find out more about wind farms, invite students to use the website *Wind Power with Miller* at <www.windpower.org/en/knowledge/wind_with_miller.html>. Check the Manitoba Yellow Pages to find locations of wind farms in Manitoba.

Activity 3:

This is a series of scenarios/issues for students to investigate. Working in small groups, students can choose one scenario or issue, research it, and present the findings to the class, discussing how the issue is related to environmental stewardship/sustainability, and identifying the negative or positive consequences of the topic. Where applicable, they could also propose an appropriate resolution to the issue. Some topics could include cutting down trees along riverbanks, clear-cutting of trees, initiating a user-pay waste disposal system, creating a “protected land area,” creating laws to regulate disposal of toxic chemicals and the use of pesticides and herbicides, and banning cleaning products that contain phosphates. What are the facts about going “power smart”? What are the pros and cons of natural gas heat? Encourage students to use the word cards for vocabulary words in their writing.

Social Studies Blackline Master 4.3.2: Environmental Stewardship and Sustainability: This BLM may be helpful for Activity 3. Find it at <www.edu.gov.mb.ca/k12/cur/socstud/foundation_gr4/blms/index.html>.

Targeted Outcome/Intended Learning:

Social Studies: Cluster 3: Living In Manitoba (4.3.5: Artistic and Cultural Achievements)

4-KL-025: Describe places of historic, cultural, or environmental significance in Manitoba.

Examples: Lower Fort Garry, the Forks, musée de Saint-Boniface, Thunderbird House, provincial/national parks . . .



connect

Background:

Students explore their places that are of historic, cultural, or environmental significance in Manitoba.

Materials:

- Brochures from various historic and natural sites in Manitoba
- Suggested K–4 ESD Poster picture card: 2. Available online at <www.edu.gov.mb.ca/k12/esd/poster.html>.
- Suggested K–4 ESD Poster word card: connect. Available online at <www.edu.gov.mb.ca/k12/esd/poster.html>.

Websites:

Manitoba Hydro: Go to <http://en.wikipedia.org/wiki/Manitoba_Hydro> for important Hydro sites.

Manitoba Conservation Provincial Parks: Go to <www.gov.mb.ca/conservation/parks/popular_parks/index.html>, and then click on *alphabetical parks listing* to link to the desired park, or go to the *regions* link to find the parks and map in that area.

Lower Fort Garry: Go to <www.pc.gc.ca/lhn-nhs/mb/fortgarry/index_e.asp>.

Riding Mountain National Park: Go to <www.pc.gc.ca/pn-np/mb/riding/index_E.asp>.

Travel Manitoba: Go to <www.travelmanitoba.com> and click on *family fun* or *leisure activities*.

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Grade 4 Learning Experience #3: Open Your Own Tour Company

Tourism Winnipeg: Go to <www.tourismwinnipeg.com>.

Discover Winnipeg: Go to <www.discoverwinnipeg.ca>.

Activity Directions:

Choose one of . . .

Activity 1:

Open Your Own Manitoba Tour Company! Have the class create a name for the company. Divide students into groups of three or four. Assign each group a specific area of Manitoba (Shield Country, south-eastern Manitoba, south-central Manitoba, the Winnipeg Region, Portage Region, South Interlake, North Interlake, Brandon, Westman Region, south-western Manitoba, the Manitoba Escarpment, Northern Manitoba, Manitoba's far north). Inform the groups that their job is to create a guided tour of their assigned region. Each tour must include information about two people who contributed historically or artistically to their region, two sites of environmental significance, and two sites of historical and/or cultural significance in the assigned area. Students can use brochures, websites, regional tourist centres, or government agencies to complete their presentation. The assignment can be submitted as

- a poster with maps or pictures that highlight each significant point
Or
- a bus tour where “the audience” sits in a row as if on a bus while each presenting student takes a turn at being the tour guide
Or
- a presentation, where presenting students point out each site on a map and describe its historical, cultural, or environmental significance

Activity 2:

For “Where in Manitoba is . . .,” have students working in groups or on their own. Students choose one or more of the following sites (feel free to add to the list). Ask them to find out where in Manitoba the site is located, what the significance of the site is, and why it is special to Manitobans. **Where, oh where is:** Pisew Falls; The birthplace of Nellie McClung (and who she was); South Indian Lake; The site of the Seven Oaks Massacre; Lower Fort Garry; Oak Hammock Marsh; Captain Kennedy House; The Spirit Sands; The Golden Boy; Limestone Generating Station; Prince of Wales Fort; Molson Lake Rock Paintings; (Norway House); King Miner (Thompson); International Peace

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Grade 4 Learning Experience #3: Open Your Own Tour Company

Gardens; York Factory; Baldy Mountain (Duck Mountain Prov. Park); The City Built on Rock (Flin Flon); Thunderbird Nest—The Narrows; St. Andrew's Lock (Lockport); AECL Pinawa/Pinawa Dam; Bannock Point Petroforms (Whiteshell Prov. Park); West Hawk Lake; Garson Quarry; The home of Dr. Charlotte Ross (Whitemouth); La Verendrye Trail; Atikaki Park; Tiger Hills; Riel House; Stott Site (Grand Valley Prov. Park); Virden (oil wells); Royal Canadian Mint; The home of Margaret Lawrence (Neepawa); Delta Marsh; Fort la Reine (Portage la Prairie); Fort Gibraltar; Chief Peguis; Red River Floodway; Precambrian Shield; Turtle Mountains; The Winnipeg Floodway

Social Studies Blackline Master 4.3.5: Artistic and Cultural Achievements Significant Places (at <www.edu.gov.mb.ca/k12/cur/socstud/foundation_gr4/blms/index.html>) may be useful.

Targeted Outcome/Intended Learning:

Social Studies: Cluster 4: History of Manitoba (4.4.1: Early Life and Settlement)
KL-026: Describe the influence of the natural environment on settlement in Manitoba.

Background:

This learning experience assists students in looking at examining the natural environment and its influence on Manitoba's settlement.

Materials:

- 30–60 cm square blocks, heavy cardboard, or heavy drywall with portions of the paper removed from one side
- fabric scraps, branches, stones, old silk flowers/pine cones, dried grasses, etc., to create landscape features
- Manitoba relief maps or atlases showing natural land formations and watersheds of Manitoba, and settlement patterns.
- plaster of Paris, modelling clay, or other material for creating relief
- paints, brushes, scissors, glue
- Suggested K–4 ESD Poster picture card: 2. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Activity Directions:

Activity 1:

In small groups, have students study maps showing geological formations, rivers, and other elements of the natural environment of Manitoba. Invite them to create a model of Manitoba (or a region of Manitoba), including land formations, forests, grasslands, riverbeds, lakes, and marshes. Once the models are complete, have students look at maps of settlement patterns of early settlers. Add these settlements to their model. Discuss why the settlers might have chosen the places they first settled in. Add information about Aboriginal populations during that period. Is there any correlation between European settlement and the Aboriginal encampment areas?

Activity 2:

Invite students to pretend that they are settlers wandering through their miniature Manitoba landscapes. Have them discuss, write about, or describe what route they would use to move about the province. What areas might have looked the best to settle in and why? Ask them to consider natural environment factors, such as flood zones, soil conditions, proximity to water, etc.

Note: Many wonderful materials for classroom use are available free of charge through ArtsJunktion. To become a member (that's free too) or for more information, go to <www.ArtsJunktion.mb.ca>.

For more background and activities for Cluster 4, go to <www.edu.gov.mb.ca/k12/cur/socstud/foundation_gr4/cluster4.pdf>.

Targeted Outcome/Intended Learning:

Science: Cluster 1: Habitats and Communities

4-1-04: Identify physical and behavioural adaptations of animals and plants, and infer how these adaptations help them to survive in a specific habitat.

Examples: ducks' webbed feet and waterproof feathers help them dive for food in the marsh . . .



Background:

In this activity, students can apply what they have learned about plant and animal adaptations by creating an animal or plant that has adaptations to help it survive in a specific habitat (real or imagined) of the student's choice. Encourage creativity and attention to detail.

For an interesting online lesson from Manitoba Fisheries, go to www.gov.mb.ca/conservation/sustain/educate.html and click on *Grade 4*.

Materials:

- pieces of fabric, twigs, wool, corks, bottle caps, sandpaper, and anything else natural or recycled that can spark the imagination
- trays to display materials in an appealing, orderly way
- white glue
- large squares of cardboard (one per student) as a base for their creature collage
- scissors
- Suggested K-4 ESD Poster picture card: 21. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.
- Suggested K-4 ESD Poster word card: evaluate. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Activity Directions:

“Create a Creature”

Have materials on display and organized neatly in an appealing way. Draw students’ attention to the condition of the display and remind them that you expect the area to look similar to this when they complete the activity.

Explain to students that today they will be creating a plant or animal that has adaptations to help it survive in a specific habitat. Students can choose any habitat they like. It can be a make-believe habitat or a real one. Ask students to think about what their creature would look like. What would its hands/paws/claws and feet/flippers/claspers look like? What about its head, eyes, legs (if it has any), body, teeth, etc.? Remind them to include all parts of the body. Ask them to think about the habitat they have chosen for their plant or animal. Is it hot or cold, and does it have extremes in temperature? What is the ground like? Is it rocky, wet, hilly, or flat? Is there lots of shelter around? What kinds of plants live in this habitat? What animals live there? What characteristics would the creature/plants need to cope with these factors?

Suggest they draw out their design on paper first. Tell them that once their rough design is completed, then they can choose materials to create their “creature collage.” Model the activity for them (without influencing their own personal choices). Talk about the materials available and what you might be considering (e.g., “I will need something to create the head/stem of my creature/plant. I’ll also have to think about its legs/branches. Does it have a protective covering/thorns? What materials could I use to make the covering?, etc.). Encourage them to do a walk around the materials table to get some ideas (before they choose anything).

Once they are set on a design and have drawn it for themselves, hand out the squares of cardboard and allow the students (a few at a time) to choose materials for their project.

When the activity is complete, invite each student to present her or his creature/plant to the class and describe its habitat and the adaptations it has in order to live in that habitat. Ask students if their animal/plant has a special name. “Where does it live?” “What does it eat?” “Where would it sleep?” “What does it do during winter?” etc.

As a follow-up activity, encourage students to write a story about their animal/plant. The stories could be displayed alongside the completed artwork.

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Grade 4 Learning Experience #5: Create a Creature

For more information about this theme, please visit the Grade 4 Science Cluster 1 at <www.edu.gov.mb.ca/k12/cur/science/found/kto4/4c1.pdf>.

Note: Many wonderful materials for classroom use are available free of charge through Arts Junktion. To become a member (that's free too) or for more information, go to <www.ArtsJunktion.mb.ca>

Targeted Outcome/Intended Learning:

Science: Cluster 1: Habitats and Communities

4-1-07: Investigate and describe a variety of local and regional habitats and their associated populations of plants and animals.

Background:

This activity can be linked to 4-1-08 for measuring a plant population in a given habitat (in this activity, students will measure the invertebrate populations). It can also be linked to 4-1-13 and 4-1-14, as invertebrates are excellent monitors of water quality in natural systems. The better the water quality, the greater the species diversity of invertebrates.

The books listed have stories, illustrations, and technical information about various aquatic invertebrate species.

Materials:

- two samples of water: one from a pond, river, or marsh, and one from a temporary water source (e.g., ditch, puddle, etc.)—a polluted source would also be good to study
- magnifying glasses
- spoons
- small plastic containers
- four clear plastic storage bins (30 cm. x 50 cm. and 14 cm. high)
- white paper to place under the bins for easy viewing
- microscopes and microscope slides
- grid paper and small clear square containers to place over the paper
- pencils and paper for recording observations
- an illustrated picture of aquatic invertebrates (one per student)
- Suggested K-4 ESD Poster picture card: 21. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Books:

Canadian Album Series – Insects by Barbara Batulla (1985). Manitoba Education Library Call #595.70971 B38.

Wilderness Album Series – Invertebrates by Barbara Batulla (1990).

Activity Directions:

For the Diversity of Living Things—Invertebrate Critter Survey: Prior to class, collect samples of water from two natural water bodies. Store the samples in large pails in a cool, dark location.

Clear the tables and chairs from the centre of the classroom and place white paper or sheeting on the floor on four separate areas. Place four clear plastic storage bins on the paper. Allow enough space between each bin so that students can move comfortably, sit around the bins, and take notes.

When students arrive, explain to them that they will be comparing two water samples for diversity of aquatic invertebrates/aquatic habitats. Show them the illustrated picture and tell them that they are to look at the creatures in the water, draw them, and try to identify them using the picture. Remind them to handle the animals with care as they are delicate living things. Tell them not to leave them under the microscope, to take turns, to share, etc.

1. Pour contents of the pails into the four bins. Assign half of the students to one water sample and half to the other. Have students use the spoons and small containers to scoop samples of water up for individual study and record what they see.
2. After 20 minutes, the two groups can switch bins and repeat the activity.
3. Compare their findings for the two water samples. Was there a difference in species diversity between the samples? Was there more of one species than others? Some species are more tolerant of pollutants than others. When one species dominates, this may be an indicator that the water is polluted. Scientists often use the presence or absence of certain invertebrate species as an indicator of water purity in a natural environment.
4. To measure population density, have students pour one cup of pond water into a square clear-bottomed container. Place grid paper underneath the container. Calculate the area of the container by counting the number of grid squares (length x width), and ask students to count the number of aquatic creatures in their sample. Calculate the number of creatures per square. Compare with the other water sample.

Oak Hammock Marsh and Ducks Unlimited offer several water kits that would complement this outcome. For more information, go to www.oakhammockmarsh.ca.

Common Freshwater Invertebrate Species in Manitoba

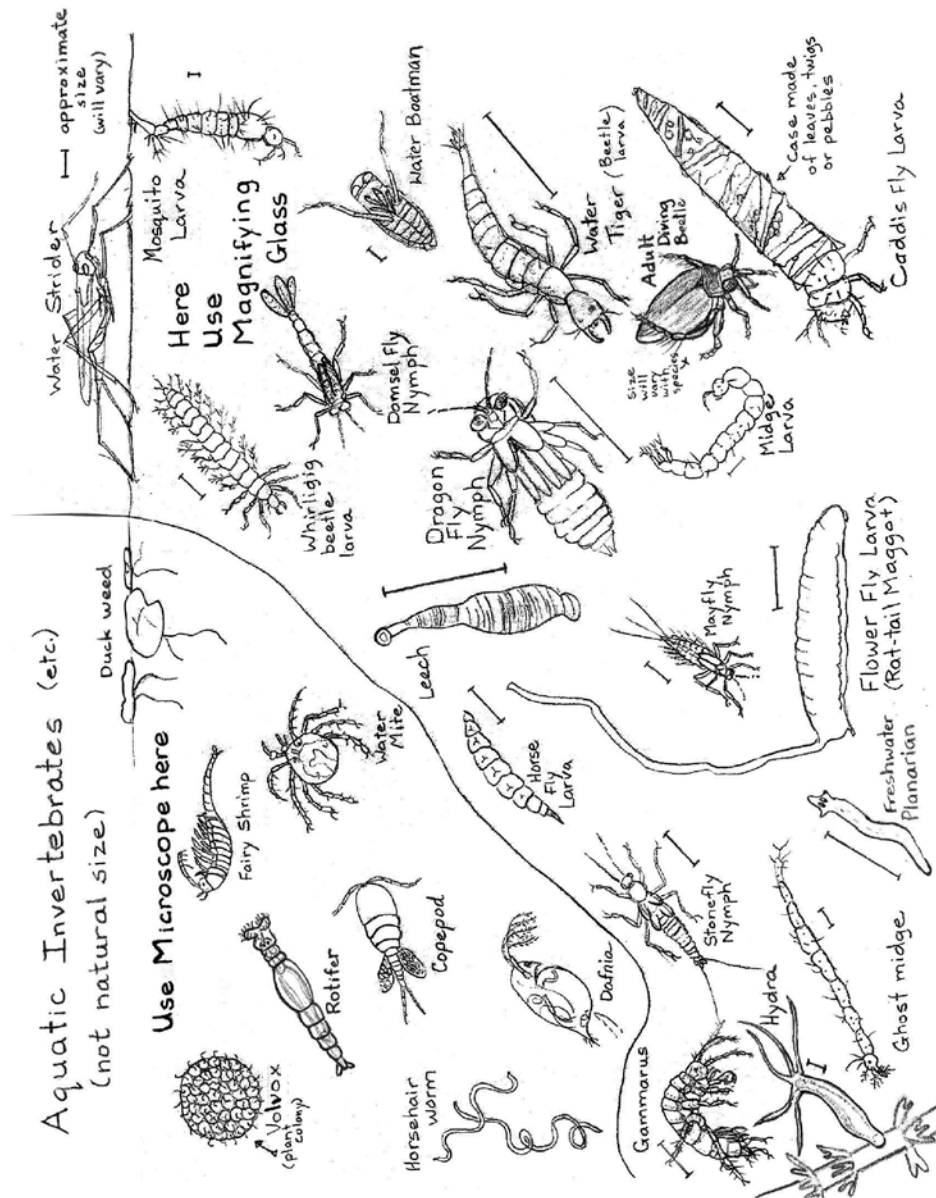


Illustration by Barbara Batulla.

Targeted Outcome/Intended Learning:

Science: Cluster 1: Habitats and Communities

4-1-09: Recognize that plant and animal populations interact within a community.

4-1-10: Recognize that the food chain is a system in which some of the energy from the sun is transferred eventually to animals.

4-1-11: Construct food chains and food webs, and classify organisms according to their roles. Include: producer, consumer, herbivore, omnivore, carnivore, predator, prey, scavenger.



understand

Background:

This activity was originally developed by Project Wild to assist students in making connections between what they eat and from where their food comes. For interesting online lessons from Manitoba Fisheries, go to <www.gov.mb.ca/conservation/sustain/educate.html> and click on *Grade 4*.

Note: The first activity can also be borrowed in kit form from Oak Hammock Marsh.

Materials:

- Students' lunch boxes or a list of what they had to eat the previous evening
- pencil, crayons
- 11 x 17 sheet of paper for each student
- Suggested K-4 ESD Poster picture card: 21. Available online at <www.edu.gov.mb.ca/k12/esd/poster.html>.
- Suggested K-4 ESD Poster word cards: learn, relate, distinguish, evaluate, environment, value, respect, needs, diversity, depend, identify understand, connect. Available online at <www.edu.gov.mb.ca/k12/esd/poster.html>.

Activity Directions:

Ask students if they ever wondered where their foods come from. Bring out a chicken sandwich. Say "Let's have a closer look at just what is in a sandwich." Draw a picture of a person at the top of the white board with a drawing of the sandwich below her or him. Ask students, "Where does the meat from this sandwich come from?" (*Answer: chickens*) (Draw a picture of a chicken on the board below the drawing of the sandwich.) "Is there anything else in the sandwich?" (*Answer: bread*) (Draw the bread next to the chicken.) "Where does bread come from?" (*Answer: wheat/grains or some might say flour*) (Draw grains of wheat or a wheat plant below the bread.) "What else is in the sandwich?" (*Answer: lettuce from lettuce plants*) (Draw a piece of lettuce next to the bread and a lettuce plant below the picture of the piece of lettuce.) Ask again, "What else is in this sandwich?" (*Answer: mayonnaise*) Tell them that mayonnaise is made from eggs and vegetable oil (Draw a blob of mayonnaise next to the bread, lettuce, and chicken, with a picture of an egg and a plant below the blob. Draw a chicken below the egg.) Draw all components of the sandwich on the board, drawing the component parts below the sandwich with the individual ingredients below this.

Tell students that they will each be able to map out the sources of their own dinner ingredients in the same way. Ask them to look carefully at each item (or the main item). Invite them to think about what individual ingredients each item is made of. Give each child a piece of 11x17-inch paper. Have students draw self-portraits at the top of the paper. Below this, have them draw (and label) pictures of each item in their meal. For items that include more than one ingredient (e.g., a sandwich), have them draw the ingredients below the picture of the item (just as you did for your sandwich).

Decide what other items in their dinners are made of. "What is cheese (milk product)?" "Where do frozen peas come from?" "What are noodles made of (eggs, flour/rice)?" Break down each component of the meal, drawing the source below the item (e.g., cheese = milk = cow; noodles = eggs = chicken plus flour/rice = grains).

For all items that end with an animal, ask students what that animal would eat. Ask the students to draw what the animal eats (usually grains/plants) below the picture of the animal. Point out that all of the ingredients from their lunch end up with plants at the bottom of the rows. Ask them what the plants need to live (i.e., water, air, sun, and soil). At the bottom of the page, have them draw the sun, air, soil, and water. Discuss how all of our needs come down to our dependence on the environment and energy from the sun.

Draw an energy pyramid and identify the components of the picture as parts of the pyramid. Label components as producers, consumers, herbivores, and omnivores. Compare the dinner pyramid with one from the natural environment. Discuss what would happen if one of the links were removed and how the transfer of energy would be affected. Post the drawings where children can compare their lunch components to those of their classmates.

As a journal activity, have students write about what they discovered. Their observations can assist teachers in assessing their understanding of the outcomes targeted. Encourage students to use the word cards for vocabulary.

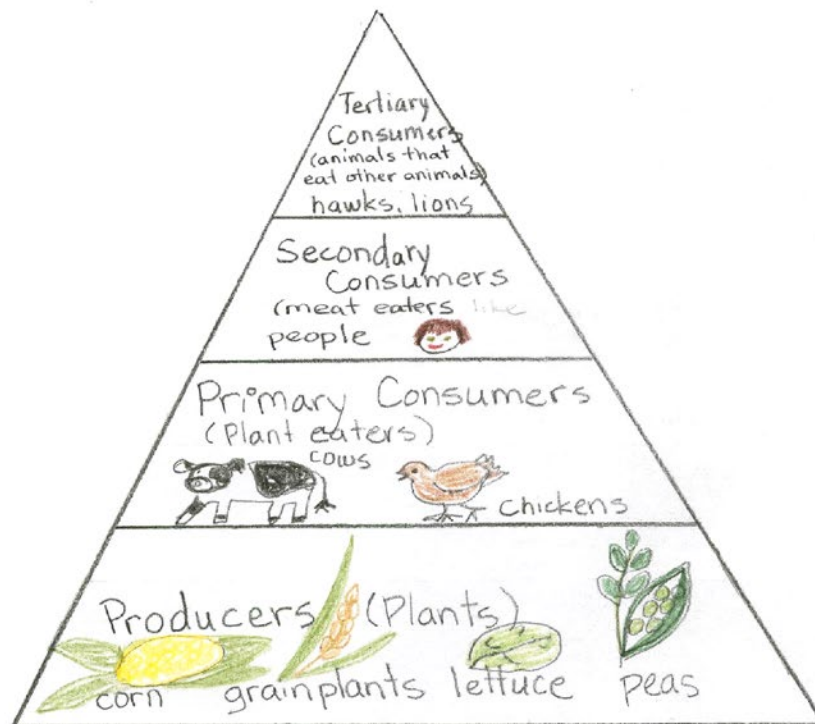
The science page on the Manitoba Education and Advanced Learning website also has many excellent ideas in Cluster 1. Find them at <www.edu.gov.mb.ca/k12/cur/science/found/kto4/4c1.pdf>.

7 Grade 4 Learning Experience #7: What's For Dinner?

"What's For Dinner" Child's Diagram of Dinner Components



"What's For Dinner" Child's Diagram of Energy Pyramid



Energy Pyramid

by Chris

Targeted Outcome/Intended Learning:

Science: Cluster 1: Habitats and Communities

4-1-13: Predict, based on their investigations, how the removal of a plant or animal population may affect the rest of the community.

Examples: if the wolves were removed from a community, the deer population may increase rapidly . . .

Background:

This learning experience helps students understand that the different parts of nature are interconnected. If we change one part of a community (even for “good” reasons), other parts may be affected.

Materials:

- poster and journal entries from Learning Experience #7
- an open area such as a field or gym space
- wrapped candy or another item that can be used to represent plant food (you will need three times half the number of students)
- Suggested K-4 ESD Poster picture card: 21. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.
- Suggested K-4 ESD Poster word cards: diversity, protect. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Activity Directions:

Activity 1:

For “What if . . .” use the drawings and energy pyramids created by the students during Learning Experience #6 to discuss what would happen if you removed a plant or animal from a population. Go back to the sandwich example. What would happen if there were no more wheat plants? (Expect

responses like “no more bread,” or “no more chickens.”) (Chickens eat the wheat, so take away the wheat and the chicken has nothing to eat. Therefore, no more sandwich.) Ask what would happen if you took away certain plants from a community. What would happen to the animals that eat those plants? What would happen to the predators that eat the plant eaters (herbivores)? Refer back to the energy pyramid to show the interdependency.

Activity 2:

For the “What is Overcrowding?” activity, have students sit in a semi-circle around you. Ask them if they know what *overcrowding* means. Explain that overcrowding happens when there are too many individuals trying to fit into a given space (when an area exceeds its maximum holding capacity, like on an elevator). Students could discover what physical overcrowding feels like by having them all try to fit into a small space. What might *overcrowding* mean when referring to an animal or plant population? Overcrowding in a natural community happens when there are too many of one species for the size of the community, and not all of the individuals can get enough food, nesting space, shelter, etc. A game of musical chairs (where the chair taken away represents nesting space, habitat, or food) could illustrate the effects of overcrowding.

To check for understanding, follow the game with a discussion of what happened during the game (with reference to removing nesting space/food).

Activity 3:

The object of the “Predator/Prey Game” is to demonstrate the importance of predators within an ecosystem. Ask students how they think predators could help with “overcrowding.” Inform the children that they are going to play a game that will help them understand how a predator population can help prevent an “overcrowding” problem from happening.

Playing the Game: Select a large open area for playing the game (about the size of a small gymnasium). Set distinct boundaries. Add an item to the area that can represent food plants. The number of food items used should be about three times half the number of prey in the game.

Divide the children into two groups in a two-thirds/one-third ratio (i.e., one group should be three times the size of the other). The smaller group will be the predators (wolves), the larger group the prey (deer). Tell the deer that their job is to pick up as many food items as possible (they must find at least three in order to survive). Tell them that they only have two minutes to do this before the predators (wolves) pick up their trail and give chase. If a wolf tags a deer,

the deer must give its food to the wolf and fall to the ground. The wolves must each have at least six food items in order to survive.

After the deer have had two minutes, let the wolves start hunting. The total length of the game is four minutes. After the game, have students regroup. Do a count: how many deer survived and how many wolves? Try the game again, this time with more wolves and fewer deer. Then with fewer wolves and more deer. What happens to the players in these situations? What happens to plant supplies in each situation?

Activity 4:

As a follow-up, have students investigate population dynamics of real plant and animal communities (e.g., lemmings and owl/fox populations; island populations where no predators are present; Easter Island: a human population study). Invite them to share their findings with the class.

See Science Cluster 1 at <www.edu.gov.mb.ca/k12/cur/science/found/kto4/4c1.pdf> for excellent suggestions for this theme.

Targeted Outcome/Intended Learning:

Science: Cluster 1: Habitats and Communities

4-1-14: Investigate natural and human-caused changes to habitats, and identify resulting effects on plant and animal populations.
Include: endangerment, extinction.

4-1-15: Describe how their actions can help conserve plant and animal populations and their habitats.

Examples: clean up a local stream to improve fish and bird habitat . . .

Activity Centre #5 has a related activity.

Background:

For interesting online lessons from Manitoba Fisheries, go to www.gov.mb.ca/conservation/sustain/educate.html and click on *Grade 4*.

See also World Wildlife Federation, *Schools for A Living Planet* at <http://schools.wwf.ca/Lessons>. Click on *Grade 4* and then click on *Exploring Habitats*. Note you must sign in to access the lesson plans.

Materials:

- poster paper
- computers for research
- Suggested K-4 ESD Poster picture card: 18. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.
- Suggested K-4 ESD Poster word cards: reduce, sustainable, think, protect, learn, relate, safety, restore, teach, consequences, contribute, evaluate, defend, environment, respect, predict, care, diversity, cooperate, communicate, listen, help. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Cleaning Up Without Voom: cooking oil, water, ice cream pails (one for every group of 3-4 students), various absorbent materials (paper towels, flour, sponges, sawdust, cotton batting, lengths of string, dishwashing detergent, etc.).

Books:

The Cat in the Hat Comes Back by Dr. Seuss (1958).

Environmental Education Activity Guide K-8 by Project Learning Tree (1993).

Activity Directions:**Activity 1:**

In its Environmental Education Activity Guide K-8, Project Learning Tree includes a useful “The Cat in the Hat Comes Back” activity. After students read the book by Dr. Seuss, ask them what represented pollution in the story. How did the cat get rid of the pink stuff? (*Answer: First he moved it from one place to another, and then he got help.*) Who did he get help from? What did the little cats do? Who finally got rid of the mess? (*Answer: little cat “Z”.*) Discuss how this way of dealing with a mess is a lot like how people deal with pollution. We move it from place to place, break it into smaller pieces (dump it in the ocean or into the air or a landfill site). But does it disappear? In real life, is there something like “voom” (i.e., the magical “voom” in the story)? Discuss some positive ways that companies are now dealing with pollutants (e.g., car oil can be recycled at special facilities, and old paint can be taken to collection sites; old plastics and glass are being used to make new building materials).

Activity 2:

For the “Cleaning Up Without Voom” activity, the objective is to engage students in creative problem solving while helping them realize just how hard pollution can be to clean up.

Explain to the students that they are now important scientists with a very serious problem to solve. A large boat carrying thousands of litres of oil has just smashed into the rocks on the river/lake near your community. The oil has spilled into the water and is causing a serious threat to the community’s drinking water supply, the animals and plants that live in the water, and all those who depend on the shoreline for food, shelter, and nesting space. The students’ job as scientists is to clean up the mess before any serious damage is done to the natural environment.

Place two cups of water in each ice cream pail. Add one tablespoon of cooking oil. Divide students into small groups, one group per pail. Have the various materials laid out on a table in small containers for the students to experiment with. Review the materials with the students. Show them what is in each container, and discuss how real scientists use various methods to clean up such spills. They may attempt to contain the floating oil with loops of rope on the water's surface. They sometimes use absorbent solids to soak up the spill, and they might also try chemicals that break down the oil into less harmful compounds. Invite students to discuss their options and choose which materials they feel would best clean up the pollutant.

Allow the groups a few minutes to try various solutions. Report their successes to the class along the way.

After they have finished, have the whole class examine each sample. Have each group give a written report of their findings. Were any groups successful in their clean-up attempts? What problems did they encounter? What would they do differently next time? Discuss how this is a very real problem in lakes and oceans where oil spills happen, where factories drain liquids into water, or even when motor boats spew fuel into lakes and rivers. Discuss what a challenge it is to clean our environment of such pollutants. Explain that laws are in place to prevent or control such pollution sources, but enforcement of the laws is sometimes difficult and accidents still do happen.

Activity 3:

For an extension activity, have students create a poster about their experiment. Students can work in groups. One group can write and illustrate the materials required; another can describe the procedure used for the experiment. A third group could compile the scientist group reports to be included on the poster. Another group can do research on the Internet to find out more about oil spills and water pollution. The class can come up with a plan to make people more aware of the harmful effect of water contaminants. During the writing process, encourage students to use the word cards for their vocabulary.

This activity is so hands-on that students can really feel connected to the issue. Use discussions students have during the experiment, project materials, and posters to assess students' understanding of the effects that changes in habitats can have on plant and animal populations.

Oak Hammock Marsh offers several kits suitable for this outcome, including kit #28, *Water Criminals, Guilty or Innocent* (a mock trial about water pollution), and *Enviroscape*, a large model of a watershed where students can participate and see how our actions affect a watershed and its associated habitats. For more information, go to <www.oakhammockmarsh.ca>.

The Safe Drinking Water Foundation offers online lesson plans and kits that can be ordered. These lessons help students understand the causes of water pollution, the effects on us and the natural environment, and things we can do to help. For more information, go to <www.safewater.org>.

Manitoba Education and Advanced Learning's science website also has excellent ideas for this theme in Cluster 1. Visit <www.edu.gov.mb.ca/k12/cur/science/found/kto4/4c1.pdf>.

Targeted Outcome/Intended Learning:

Science: Cluster 3: Sound

4-3-12: Describe harmful effects of high or sustained sound levels and identify potential sound hazards at home or in the community.

Examples: leaf-blowing machines, snowblower, stereo, drone of machinery . . .

Background:

This learning experience will assist students in recognizing and understanding some of the sound hazards they encounter.

Materials:

- 11 x 17" paper for "music experiment" drawing
- drawing materials
- music player
- poster paper, writing materials
- telephone directory for access to local radio stations
- Suggested K-4 ESD Poster picture card: 26. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.
- Suggested K-4 ESD Poster word cards: reduce, think, protect, learn, safety, consequences, contribute, environment, value, respect, recognize, contribute, care, citizen, cooperate, share, identify, appreciate, understand, enjoy, communicate, listen, grow, help. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Websites:

Lesson Planet: Put teachers in touch with several lesson plans on noise pollution. See www.lessonplanet.com/search?keywords=noise+pollution&rating=3.

10 Grade 4 Learning Experience #10: What's That Noise?

Activity Directions:

Activity 1:

For “What is Noise Pollution?”, discuss with students the meaning of the phrases *sound hazard* and *noise pollution*. Brainstorm with students to create a list of noises/sounds that make them uncomfortable at home, in the community, and in school. Have students record and share their ideas about how your body tells you that sounds are too loud (e.g., difficulty concentrating, a feeling of agitation or irritability, headache, can't hear others, buzzing in the ears, temporary hearing loss). Discuss how animals might feel or react to loud noises.

Activity 2:

For “A Music Experiment,” discuss what kinds of music the students enjoy listening to. Invite students to bring a recording of their favourite song or artist. Provide a wide variety of alternative forms of music (soft songs, slow songs, fast-paced songs, whale songs, children's music, dance music). Provide each student with an 11 x 17" piece of paper and colouring materials. Tell the students that they are going to hear a variety of music styles at various volumes, and invite them to draw or doodle a separate picture for each music selection they hear. The pictures can be of whatever they wish, or they can be lines of moving colour that reflect what they are hearing. Ask them to label each picture as to which music selection it corresponds to. Alternatively, divide the class into several groups. Have each group listen to a specific kind of music. While they are listening, ask them to draw a picture or create coloured lines that reflect how they feel about what they are hearing.

Once the pictures have been created, invite students to share their creations with the class. Discuss how the drawings have been influenced by the sound. Did the music tempo and sound level affect the appearance of their drawings? What does this tell us about how sounds can affect our feelings and moods? When can this be good? When can it be bad? Use student discussion and reactions to the activity to assess their understanding and the success of the activity with regard to heightening their understanding of the effects of noise on our minds.

Activity 3:

For “Sharing the Knowledge” in groups or on their own, have students investigate (in books or on websites) the problems associated with noise pollution in one of the following environments: a) in the classroom, b) in the community, c) in the natural environment, d) in the home. Investigate how long our hearing can be exposed to loud sounds before damage occurs. Invite each group to present their findings to the class, in a discussion, on a computer page, or as a presentation.

Activity 4:

For “Make a Pledge,” invite students to share what they have learned by creating a public service announcement or a poster to warn people about the negative effects of loud noise. Encourage students to use words from at least five of the word cards listed above. Posters and announcements can be general, outlining the effects of noise pollution in the school, community, and natural environment, or they can be geared towards a specific situation (e.g., in the classroom, in the workplace, in the natural environment, at social gatherings, in the home, etc.). The announcements can be read during school assembly and/or forwarded to a local radio station along with a letter asking announcers to share the students’ findings with their listeners. Posters can be placed in an area where other classes can see them or in the community.

Activity 5:

Have students agree on what sound levels are acceptable, and make a class pledge to monitor/control the amount of sound to which students expose themselves.

For more information on this outcome, please see science Cluster 3: Sound at www.edu.gov.mb.ca/k12/cur/science/found/kto4/4c3.pdf.

Targeted Outcome/Intended Learning:

Science: Cluster 4: Rocks, Minerals, and Erosion

4-4-12: Investigate and describe ways in which soil erosion is controlled or minimized in their community and in communities around the world.

Examples: windbreaks, retaining walls, terracing, cover crops, reforestation . . .



Background:

This learning experience is to help students find examples of soil erosion and how to alleviate soil erosion. Manitoba Education and Advanced Learning's science website has more information at <www.edu.gov.mb.ca/k12/cur/science/found/kto4/4c4.pdf>.

Materials:

- Suggested K-4 ESD Poster picture card: 11. Available online at <www.edu.gov.mb.ca/k12/esd/poster.html>.
- Suggested K-4 ESD Poster word cards: reduce, sustainable, protect, restore, consequences, contribute, compost, environment, value, replenish, conserve, care, diversity, appreciate, understand, grow, help. Available online at <www.edu.gov.mb.ca/k12/esd/poster.html>.

Activity Directions:

"Investigate": In groups of two or on their own, have students investigate one of the following terms or phrases: hedgerows, terracing, reforestation, harrowing, leaving stubble in the fields between plantings, wind breaks, rock walls, dikes, retaining walls, cover crops, zero tillage farming, companion crops.

Ask students to find pictures that illustrate the term, and invite them to report on the following:

- how the technique minimizes erosion
- under what circumstances the technique is used
- how effective this technique is for minimizing erosion
- what other benefits or what problems this technique has
- what can happen if the technique is not used

Encourage students to use at least five of the word card words listed above when writing about their term or phrase.

Information can be presented in poster form or as a written page that can then, once edited, be compiled into a class booklet on soil protection.

Assess students' level of understanding by their choice of vocabulary words used and the content of their reports. Individual understanding can be assessed by questioning/observing individual members of the group.

Targeted Outcome/Intended Learning:

Science; Cluster 4: Rocks, Minerals, and Erosion

4-4-13: Use the design process to determine an appropriate system for controlling soil erosion in a given situation.

Background:

Use the information students acquired during 4-4-12 (Learning Experience #11: Investigate) and the following scenarios to assist in the design of a system for controlling erosion.

Materials:

Sand blowing contest:

- one long table
- two ice cream pails of fine sand
- eight to 10 large straws
- sticks, small stones, miniature trees, small pieces of screening, clumps of grass

Water problems:

- One ice cream pail filled with sand, clay, loam, soil, stones, pebbles, twigs and water
- Freezer
- Materials to build a trough and basin (e.g., a two-metre by 50-centimetre piece of cardboard rounded to create a channel and lined with plastic, a large washtub or plastic bin as the basin for the “melt water materials” to flow into).

Enviroscape:

- Contact Oak Hammock Marsh for the loan of an “Enviroscape” at www.oakhammockmarsh.ca.

Alternatively, create your own watershed using a large block, small wooden blocks, or cardboard boxes for buildings, twigs or popsicle sticks to build bridges, sprinkles, cocoa mix, and food colouring for pollutants, soil, modelling clay, grasses, toy trees, etc. to create berms and natural barriers along riverbanks and water channels.

- Suggested K-4 ESD Poster picture card: 11. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.
- Suggested K-4 ESD Poster word cards: reduce, sustainable, think, protect, restore, consequences, contribute, evaluate, environment, value, conserve, recognize, predict, care contribute, repair, citizen, diversity, appreciate, understand, help. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Activity Directions:

Experiment with different conditions to discover appropriate methods of soil erosion control for each condition.

Activity 1:

The “Fine Particle Wind Erosion: Sand Blowing Contest” is a very messy activity! Objective: To simulate topsoil or sand erosion caused by wind, and to explore different methods of preventing the soil/sand from blowing away. Set up a long table (approximately 2 metres long by 1.5 metres wide). Pour one pail full of sand on either end of the table (approximately 30 centimetres from the end of the table). Inform students that the piles of sand represent soil in a field, and that they are now farmers or structural engineers who are faced with a serious soil erosion situation. Their job is to try to prevent the soil from blowing away by creating a barrier. Provide a variety of materials for students to experiment with, and explain to them that they must decide which materials would be best for preventing wind erosion. Divide the class into two groups (or four groups and have two runs of the simulation). Assign four students in each group to be “the wind.” These students will use the straws to blow the sand towards the centre of the table. Assign another four students to be the “engineers.” These students will experiment with various materials to try to halt the movement of sand. Remaining students can be the audience. Have students from opposing teams stand at each end of the table. On your mark, have the “wind” students begin to blow their sand pile towards the centre of the table (duration one minute). After one minute, stop the blowing and have the “engineers” erect “erosion barriers.” Once barriers are in place, have the “wind” students blow for another minute. Then have the engineers try other materials. Repeat this three times, and discuss which group was more effective in preventing the sand from moving and why.

Discuss how their findings could be used in a real-life situation. As a journal entry, ask students to describe the activity, give examples of where this problem might occur, and explain what they felt was the best solution to the problem. Encourage students to use at least five words from the word card list as vocabulary words in their journals.

As a follow-up activity, teachers could plan a trip to Spruce Woods Provincial Park or Grand Beach Provincial Park to study dune movement firsthand.

Activity 2:

For a “Water Problems” activity, create a mini-glacier to study how various-sized particles move through water, and infer how this information could be used to prevent soil erosion along riverbanks and other water bodies. Place stones, pebbles, sand, clay, loam, small twigs, and fine soil particles in an ice cream pail. Add approximately two cups of water and mix well. Let the mixture stand for a few hours, then add more water and place the pail in the freezer until frozen solid. Two hours prior to the experiment, remove the pail from the freezer and allow the concoction to defrost a bit. Have students create an inclining river bed (approx. 15–20 degree slope), using a long piece of cardboard that has been shaped to resemble a river bed, and lined with plastic. Students may wish to create some traction on the river bed by putting a few lines of hot glue onto the plastic liner to simulate the surface of a river bottom. Place a large flat bin at the base of the river bed, and arrange the plastic so that it fans into the bin (to resemble a river delta). Rest the top of the “river bed” on a stool or other elevated flat surface, and, when ready, pour the “glacier” onto the top of the river bed. Allow several hours for the glacier to totally melt; invite students to make periodic observations as to how the particles are settling out. When the glacier has melted, observe and discuss which particles settled out first, which settled next, and so on. Ask students how this information could help engineers to control the erosion of riverbanks. Students can record their ideas in a journal entry once again using the word cards for vocabulary (use the journal entries to assess students’ understanding and ability to apply what they have observed).

Activity 3:

For the “Environment” activity, arrange to borrow one of Oak Hammock Marsh’s Enviroscape kits. The kit comes with lessons, directions, and everything needed to create flooding conditions and soil erosion prevention in a watershed. This is an excellent resource. To book the kit, go to <www.oakhammockmarsh.ca>. If the kit is not available, students can create their own watershed. Students can carve out riverbeds, a lake, and valleys or hills

can be added using modelling clay, or other materials. Buildings can be added for factories, farms, and towns. Leave depressions by the farmland and factories so that runoff enters the waterways. Place the “watershed” in a plastic bin or sink to collect excess water. Sprinkle water onto the model (so that runoff enters the rivers and lakes). Food colouring sprinkles or hot chocolate mix can be sprinkled on the ground as pollution and loose soil. Students then can see how pollution and eroded topsoil can enter the watershed. Next, have students suggest and design dikes, treed areas, and other methods of preventing the runoff of materials into the water bodies.

For more lesson background, visit Cluster 4: Rocks, Minerals, and Erosion on the Manitoba Education and Advanced Learning science page at www.edu.gov.mb.ca/k12/cur/science/found/kto4/4c4.pdf.

Targeted Outcome/Intended Learning:

Science: Cluster 4: Rocks, Minerals, and Erosion

4-4-15: Identify natural phenomena and human activities that cause significant changes in the landscape.

Examples: floods, avalanches, mudslides, hydroelectric dams, clearing land for agriculture, clear-cut forestry, forest fires . . .



conserve

Background:

This activity helps students examine activities that have changed the landscape. This is an opportunity to examine a local change and/or a change that is in the news.

Materials:

- Suggested K-4 ESD Poster picture card: 1, 4, 11, 22, 24. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.
- Suggested K-4 ESD Poster word cards: reduce, sustainable, think, protect, learn, safety, restore, consequences, evaluate, defend, environment, value, replenish, respect, create, conserve, recognize, ideas, needs, predict, beauty, repair, contribute, care, diversity, depend, cooperate, appreciate, understand, help. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Activity Directions:

Activity 1:

For the “Look out Landscape!” activity, have students investigate one of the following situations: floods, avalanches, mudslides, clearing land for agriculture, clear-cut forestry, forest fires, clearing land for housing developments, tornadoes, drainage of wetlands for farming/housing, scenes from picture cards 1, 4, 11, 24, and 22. Invite them to answer the following questions: How often are these situations caused by humans? What positive and/or negative effects can these situations have on the landscape? What

steps can be taken to prevent or minimize the negative effects of these situations? Encourage students to use the word cards for vocabulary in these investigations.

Activity 2:

Oak Hammock Marsh offers a kit called “Water Soakers Find” (Water Resource Kit #29) that helps students understand how wetlands absorb water and help prevent floods. To borrow this kit or for more information, go to www.oakhammockmarsh.ca.

For more information about this outcome, see Cluster 4: Rocks, Minerals, and Erosion at www.edu.gov.mb.ca/k12/cur/science/found/kto4/4c4.pdf.

Targeted Outcome/Intended Learning:

Physical Education/Health Education: 4. Personal and Social Management

K.4.4.B.1b: Discuss connections or representations of cultures in different physical and recreational activities (e.g., lacrosse from Aboriginal culture, tinikling from Philippines, voyageur games from French-Canadian culture . . .).

Background:

Wikipedia has good background information concerning the Arctic Winter Games at <http://en.wikipedia.org/wiki/Arctic_Winter_Games>.

Materials:

- One dowel or piece of leather (for Ac Sa Raq Thong game)
- One 10-foot-long soft rope (Holman Island Dog Team Pull game)
- One large rock and several small stones (Nakartartuq game)
- One skipping rope and a cloth to tie in middle of the rope (Holman Island Skipping game)
- Materials for student-created games
- Suggested K-4 ESD Poster picture card: 4. Available online at <www.edu.gov.mb.ca/k12/esd/poster.html>.
- Suggested K-4 ESD Poster word cards: think, walking, defend, value, create, care, depend, activity cooperate, share, organize, enjoy, communicate, listen. Available online at <www.edu.gov.mb.ca/k12/esd/poster.html>.

Websites:

Wikipedia describes and shows photos of the northern whaling festivals and provides links to other interesting sites, including winter survival skills and descriptions of games. See <www.wikipedia.org/wiki/nalukataq>. Print out of pictures of the Inuit snow games from this website. (The pictures can be enlarged and laminated to create poster stations to be placed on the wall of the gym or classroom.)

14 Grade 4 Learning Experience #14: Inuit Games: Design-a-Game

Activity Directions:

Activity 1:

For the “Create a Game” activity, brainstorm games that students know from their own cultural background. Discuss how these games reflect physical features of the land, climate, practical skills for future occupations, etc. Invite students to create a “regional game” for their area of Manitoba based on demographics (i.e., physical features of their area, climate, and potential jobs they might have as adults, etc.). Have students create a written description of their game so that they can describe it to others. Encourage them to use the vocabulary word cards. Features of the games students create will help you to assess students’ understanding of the concept. Question students further to verify understanding and clarify misconceptions.

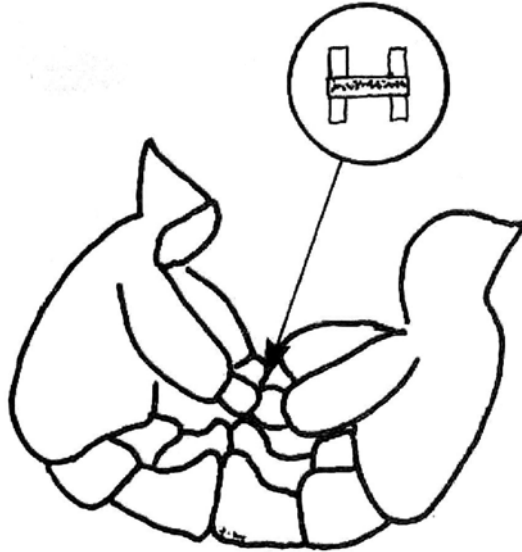
Activity 2:*

“The Inuit Snow Games” reflect many facets of the Inuit culture and lifestyle. The Inuit are a fun-loving people, but the Arctic environment is full of hardships. Most of the games help to develop skills for life in the Arctic. Skills include strength, endurance, throwing, aiming, stalking, etc. These games will give students meaningful insights into both the fun and hardships of a people who live intimately with winter and snow. These games would be great indoors or as an outdoor winter activity. Review each game prior to the activity, and discuss with students what skills the game might help the player develop for real-life situations.

* **Note:** This activity is reproduced from: “Snow Activity Program” by J. Pattimore, Manitoba Parks Branch, Department of Natural Resources, 1981.

Ac Sa Raq (Thong Game)

Sit facing each other on the floor (ground). Legs are kept straight while the pairs students place their feet together. Both opponents hold onto a dowel or piece of rawhide. The object is to pull your opponent up off the ground.



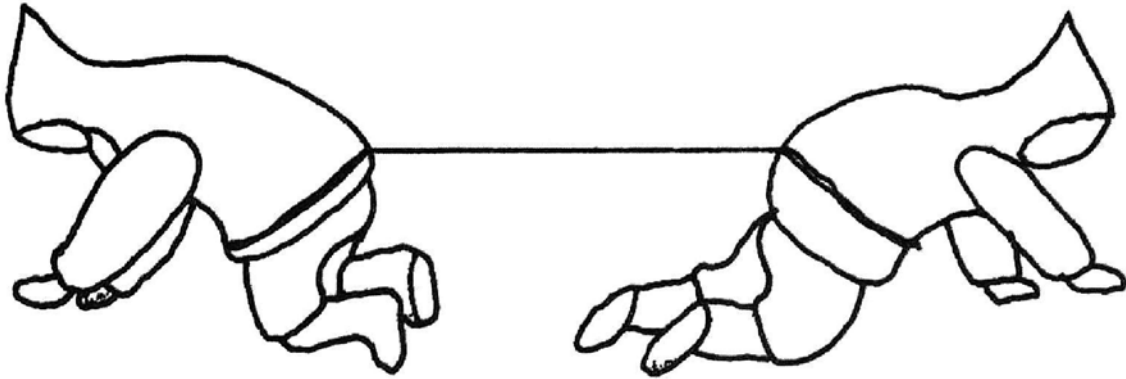
Tu Nu Miu (Back to Back)

Two children sit back-to-back with a mark on the ground beneath them (e.g., tape on the floor). The object of the game is to push your opponent over the line using only your hands and feet.



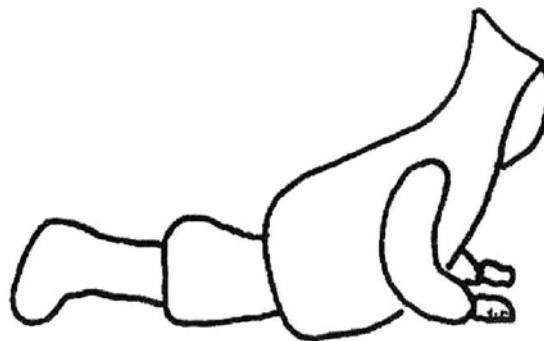
Holman Island Dog-Team Pull

A rope is used as a harness around each opponent's waist. On hands and knees, the contestants try to pull their opponent over a line drawn between them.



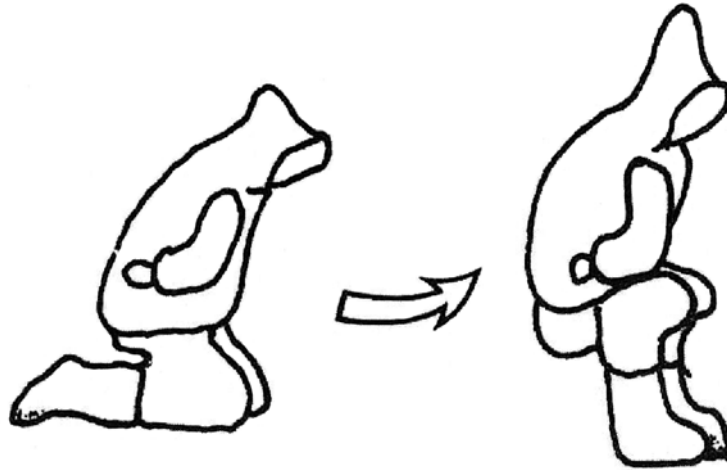
Seal Racing

Opponents lie on their stomachs on the floor. Using their hands for support, with legs limp and body trailing, students race for the finish line.



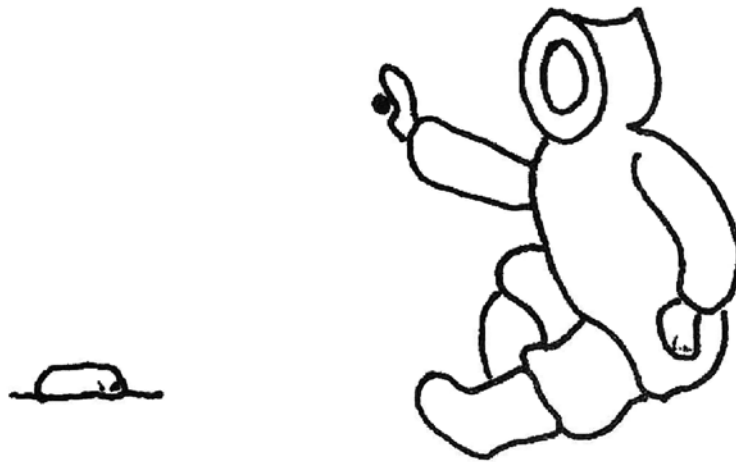
Peed Le Ta Tuq

Opponents move from a kneeling position to a squatting one with a quick jump and then back to kneeling again.



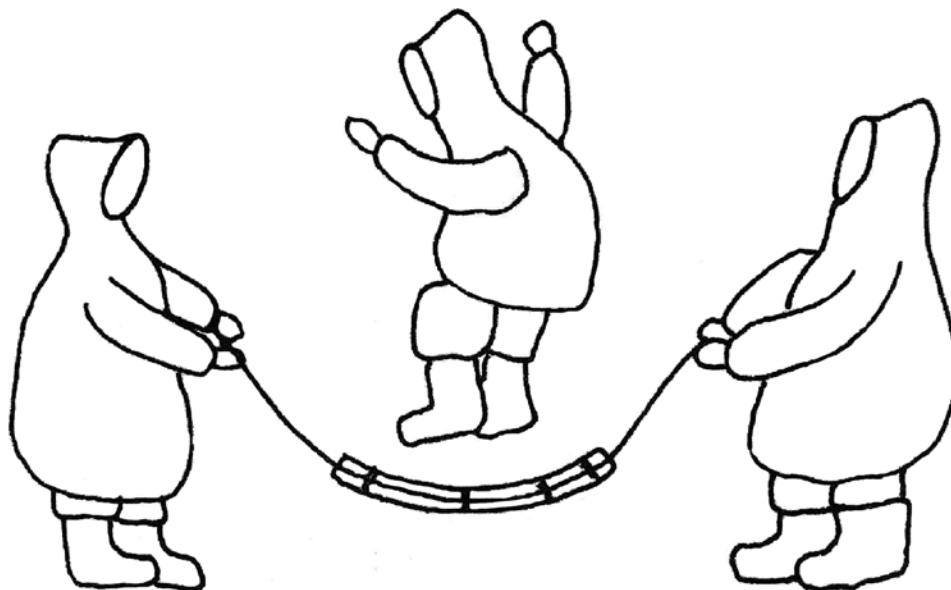
Nakartartuq

Using pebbles for tossing and a large stone as the target, children take turns trying to hit or land their pebbles as close to the stone as possible.



Holman Island Skipping

A rope with an animal hide rolled around its mid-portion is used as the “skipping rope.” The skin is swung rhythmically from side to side. The object is to make as many jumps as possible.



Targeted Outcome/Intended Learning:

Physical Education/Health Education: 5. Healthy Lifestyle Practices

S.5.4.A.3b: Use problem-solving strategies to reduce barriers to healthy eating and improve food choices, if appropriate.

Background:

To aid in a discussion of “everyday” and “sometimes” foods, it might help teachers to refer to this online article sponsored by the Heart and Stroke Foundation. See <www.heartandstroke.com/atf/cf/%7B99452D8B-E7F1-4BD6-A57D-B136CE6C95BF%7D/3971gra4.pdf>.

Materials:

- *Manitoba’s Food Guide to Healthy Eating*
- boxes from various cereal and snack brands
- paper
- pencil crayons
- Suggested K–4 ESD Poster picture cards: 12, 19, 24, 27. Available online at <www.edu.gov.mb.ca/k12/esd/poster.html>.

Activity Directions:

Activity 1:

For “Good Food,” discuss how we can gain enjoyment from food without giving up healthy eating. Brainstorm what we like about the foods we eat (e.g., crunchy texture, sweet taste, salty taste, juicy, smooth, etc.). Then discuss what foods we can choose that give the desired sensations without the negative qualities (e.g., crunchy foods that have not been fried in fat). Encourage ideas that provide “sometimes” foods in moderation. Invite students to create a sample menu for the week, create a class healthy meal, or an enjoyable but healthy cafeteria menu. Create a plan for a garden that contains the students’ favourite fruits and vegetables. Make plans for a home, community, or school garden.

Activity 2:

For a “Healthy Body Snack Survey” activity, discuss healthy limits of sugars, fats, salts, and other ingredients in our foods. Have students examine the nutrition facts on the side of the boxes. Discuss what these facts mean. Invite students to identify which products they feel are healthy and which ones contain insufficient nutrients (low in protein or vitamins), or too much sugar, sodium, trans fats, etc. Look at the design of various boxes. What attracts their attention? Does the advertising lead you to buy one brand over another? Have students choose a product that they feel is missing certain nutrients, or has too much of a certain ingredient. Explain that their job is to redesign the cover of the food product box to bring attention to that point in a catchy, appealing way (e.g., with only 120% of your daily fat requirements! . . .).

Post their artwork in an area where other classes can see it.

GRADE 4 ACTIVITY CENTRES

The lessons and activities presented and related links are to supplement existing curriculum guidelines. The activities centres presented here can be used on their own, in combination with other activity centres, or, in some cases, as a whole-group activity. References to related learning experiences are given where applicable.

Sustainable Development Themes Related to the K-4 ESD Poster Activity Centres

Activity Centre	Subject	Cluster Section	SLO	Page
5. Citizen Go Fish	Social Studies	2. Living in Canada (4.2.2: Canadian Citizenship)	4-KC-004: Explain from a personal perspective what it means to be a citizen of Canada.	4-61
6. What if . . .	Social Studies	2. Living in Canada (4.2.3: Public and Private Property)	4-KE-047: Use examples to distinguish between public and private property. 4-VE-012: Respect public and private property.	4-63
7. Make a Difference	Social Studies	2. Living in Canada (4.2.5: Government)	4-KC-002: Identify democratic ideals in Canadian society. <i>Examples: equality, freedom, citizen participation in government . . .</i>	4-65
8. Interview Who?	Social Studies	3. Living In Manitoba (4.3.2: Environmental Stewardship and Sustainability)	4-KL-023: Identify issues related to environmental stewardship and sustainability in Manitoba.	4-67

continued

Activity Centre	Subject	Cluster Section	SLO	Page
9. How Does This Help?	Science	1. Habitats and Communities	<p>4-1-14: Investigate natural and human-caused changes to habitats, and identify resulting effects on plant and animal populations. Include: endangerment, extinction.</p> <p>4-1-15: Describe how their actions can help conserve plant and animal populations and their habitats.</p> <p><i>Examples: clean up a local stream to improve fish and bird habitat . . .</i></p>	4-69
10. Employment Opportunity	Physical Education/ Health Education	3. Safety	<p>K.3.4.B.4: Recognize roles of individuals in school and community who provide safety services (e.g., school staff, crosswalk patrols, police officers, Block Parents, firefighters, doctors, nurses, elders, ski patrols, snowmobile patrols, forest rangers, coast guards . . .).</p>	4-71

Targeted Outcome/Intended Learning:

Social Studies: Cluster 2: Living in Canada (4.2.2: Canadian Citizenship)

4-KC-004: Explain from a personal perspective what it means to be a citizen of Canada.

Background:

This activity centre is intended to be an application activity. Discussions about Canadian citizenship and the qualities of a good citizen should be undertaken prior to using these activities. Students' writings, discussion during the card game, and the concepts explored through the acrostic poem will help you to assess students' understanding of the concept of citizenship.



Materials:

- writing paper and pen
- Suggested K-4 ESD Poster picture cards: 1, 2, 4, 5, 6, 7, 8, 11, 13, 14, 16, 18, 20, 22, 23, 24, 26, 27, 29, 30, 31, 32, 33, 34, 35, 36. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.
- Suggested K-4 ESD Poster word cards: protect, learn, relate, safety, teach, contribute, defend, compost, value, respect, conserve, care, contribute, celebrate, reuse, repair, culture, recycle, diversity, cooperate, share, appreciate, understand, connect, communicate, listen, grow, help. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Activity Directions:

Activity 1:

For "Being a Good Citizen," have students choose five cards and write about how the scenes in the cards reflect being a good citizen.

Alternatively, have students choose a card from those listed above, and write a story about what is happening in the picture. If there are people involved in the story, have students explain how the people are being good citizens (e.g., saving energy, recycling, cleaning up, reducing the amount of garbage they produce, stopping the spread of germs, etc.). Encourage students to use at least five of the word card words in their writing.

Activity 2:

For “Go Fish Citizen,” make copies of the cards and invite students to play a “go fish” game by asking questions such as “Do you have a card that shows someone saving energy?”

Activity 3:

Ask students to create an acrostic poem using the letters from the words *good citizen*, with each letter representing a different trait that makes one a good citizen.

The Manitoba social studies curriculum provides additional ideas for activity centres in Cluster 2. See it at <www.edu.gov.mb.ca/k12/cur/socstud/foundation_gr4/cluster2.pdf>.

As well, “Appendix G: Resources Organized by Learning Experience” provides connections to citizenship and heritage information. This can be found at <www.edu.gov.mb.ca/k12/cur/socstud/foundation_gr4/appendixg.pdf>.

Sites for Heritage Minutes and Citizenship can be found on the Manitoba Education and Advanced Learning web page at <www.edu.gov.mb.ca/k12/cur/socstud/supporting/4-2.html>.

Hands On Social Studies Grade 4 lists the *Canadian Charter of Rights and Freedoms* (page 97); the rights of children are also summarized (page 98). Manitoba Education Library Call #372.83044 L38.

Targeted Outcome/Intended Learning:

Social Studies: Cluster 2: Living in Canada (4.2.3: Public and Private Property)

4-KE-047: Use examples to distinguish between public and private property.

4-VE-012: Respect public and private property.

Background:

On a T-chart, have students categorize public and private property items in the school.

Materials:

- T-chart
- pencils, pens, paper
- Suggested K-4 ESD Poster picture cards: 2, 14, 18, 22, 26, 29. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.
- Suggested K-4 ESD Poster word cards: citizen, beauty, access, care, appreciate, culture, contribute, diversity, enjoy, protect, needs, recognize, learn, respect, value, share, walking. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Activity Directions:

Ask students to choose one of the picture cards 2, 14, 18, 22, 26, or 29, and have them write a story about what life would be like without public places such as the one featured on the card. Encourage students to use at least four of the word cards listed above in their story. Assess students' sensitivity and understanding of the topic by reading their stories and providing feedback where necessary.

Note: The Manitoba Education and Advanced Learning curriculum document *Grade 4 Social Studies: Manitoba, Canada, and the North: Places and Stories: A Foundation for Implementation* includes many interesting suggestions. It is available online at <www.edu.gov.mb.ca/k12/cur/socstud/foundation_gr4/cluster2.pdf>. The blackline master “BLM 4.2.3: Public and Private Property” is particularly useful for this topic.

Targeted Outcome/Intended Learning:

Social Studies: Cluster 2: Living in Canada: 4.2.5:
Government

4-KC-002: Identify democratic ideals in
Canadian society.

*Examples: equality, freedom, citizen participation
in government . . .*



Physical Education/Health Education: 4: Personal and Social Management

K.4.4.A.3: Identify the steps of the decision-making/problem-solving
process with an emphasis on the final steps (e.g., making the decision,
taking action, evaluating results . . .).

Background:

After discussing and defining democracy and the roles of local, federal, and provincial governments, identify the current ideals of Canadian society: equality, freedom, citizen participation in government. Model what these ideals mean to you, and encourage students to share their thoughts. For more background activities and suggestions, see the Grade 4 Social Studies *Foundation for Implementation* document at: <www.edu.gov.mb.ca/k12/cur/socstud/foundation_gr4/cluster2.pdf>.

Materials:

- news articles containing current issues related to Canadian democratic ideals of equality, freedom, and citizen participation in government
- paper
- writing materials
- computers for final draft
- Suggested K-4 ESD Poster picture card: 26. Available online at <www.edu.gov.mb.ca/k12/esd/poster.html>.
- Suggested K-4 ESD Poster word card: communicate. Available online at <www.edu.gov.mb.ca/k12/esd/poster.html>.

Activity Directions:

For “Make a Difference,” invite students to bring to school news articles containing current issues relating to democratic ideals in Canada. Review some of the articles and choose a simple example to model to the students. Tell students that you are very interested in the topic of the chosen article. Explain why (e.g., you don’t think people in the article were treated fairly). Ponder out loud: “I wonder what I could do to help. I could come up with a step-by-step plan to try to help. Here are some of the steps I could take: I could find out more about the issue. I could find out if there are any laws about what happened. I could find out who enforces these laws and write to them. Maybe they don’t know what happened”

Tell students that now it is their turn to try. Working in pairs or small groups, have students choose an article and propose an action or solution that could be taken to address the issue. As part of the process, remind students to use the following steps:

- Determine why this problem is important to them, their community, and/or the world
- Identify the problem
- Brainstorm for potential solutions
- Create a step-by-step action plan
- Divide up jobs
- Take action
- Describe how the results could be evaluated

Students could follow up on their action plan by writing a letter to local government expressing their concerns. Alternatively, they could create a poster to let other people know of the concern, or take another action that is appropriate to the situation.

Observe students’ discussions and provide suggestions where necessary.

Targeted Outcome/Intended Learning:

Social Studies: Cluster 3: Living In Manitoba (4.3.2: Environmental Stewardship and Sustainability)

4-KL-023: Identify issues related to environmental stewardship and sustainability in Manitoba.

Learning Experience #2: Windmills and More: This learning experience includes connections to this activity.

Background:

Use this activity centre as an application activity. As such, it can help teachers assess students' understanding through observation and discussion. The interview activity could also be assessed through student self-reflection. Ask students how they felt their interview went. Are there questions they should have asked? Did they find out everything they wanted to know?

For engaging and acquisition suggestions, see Cluster 3 and Learning Experience #2 in the Grade 4 Social Studies curriculum at www.edu.gov.mb.ca/k12/cur/socstud/foundation_gr4/cluster3.pdf.

Materials:

- local yellow pages/phone book/business directory
- Suggested K-4 ESD Poster picture cards: 1, 3, 7, 5, 6, 8, 11, 12, 19, 20, 23, 22, 24, 27, 29, 30, 33, 34, 35. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.
- Suggested K-4 ESD Poster word cards: compost, communicate, contribute, conserve, consequences, distinguish, protect, recycle, recognize, repair, reduce, refuse, resist, respect, understand, value, reuse, sustainable, share. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Activity Directions:

Activity 1:

For the “Sharing Circle/Learning Centre” activity, use the picture cards and word cards listed above. In a sharing circle, invite students to choose a card and describe how the scene or the word on the card relates to sustaining and/or protecting our environment for the future.

Activities 2:

For the “Interview Who?” activity, provide students with copies of the local yellow pages and business directories. Ask them to identify companies that are involved in different forms of stewardship and sustainability (e.g., recycling, auto-wreckers, landscapers, oil recycling companies, solar panel distributors, wind farms, etc.). Students can then choose one company that they would be interested in learning more about. Have them compose a list of questions to interview a representative of the company. The list could include the following questions: “How long has your company been in business? How is it involved in stewardship and sustainability? What are the goals and objectives of the business? Is it publicly owned, privately owned, or not for profit?” (Students could share their questions with the class and revise their questions to create a well-rounded interview.) If an interview is possible (either over the phone, in-person, or online), students can report their findings after the interview has been completed. Create a class “Who’s Who in Environmental Stewardship and Sustainability” list.

Targeted Outcome/Intended Learning:

Science: Cluster 1: Habitats and Communities

4-1-14: Investigate natural and human-caused changes to habitats, and identify resulting effects on plant and animal populations.

Include: endangerment, extinction.

4-1-15: Describe how their actions can help conserve plant and animal populations and their habitats.

Examples: clean up a local stream to improve fish and bird habitat . . .



Background:

This activity can be offered as an introduction to the topic, and to engage students in thoughts about how their actions could help conserve plant and animal populations/habitats. The activity could also be repeated in a sharing circle after the outcome has been explored in order to encourage students to engage in self-reflection and to discuss how their attitudes or ideas might have changed based on what they have learned about human-caused changes to habitats.

If students are not sure of the differences between human- and nature-caused habitat changes, you may want to look at science Cluster 1, SLO 4-4-14 at <www.edu.gov.mb.ca/k12/cur/science/found/kto4/4c1.pdf>. It provides a sorting activity where students create a chart changes to habitats before starting Activity Centre #5.

Materials:

- paper and writing materials
- Suggested K-4 ESD Poster picture cards: 1, 3, 5, 6, 7, 8, 11, 13, 20, 21, 22, 23, 24, 25, 27, 26, 29, 30, 32, 34, 33, 35, 36. Available online at <www.edu.gov.mb.ca/k12/esd/poster.html>.

Activity Directions:

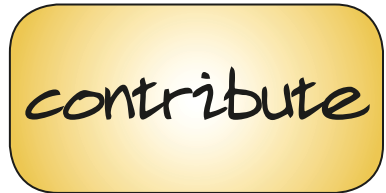
In the “How Does this Help?” activity, students work in pairs to sort the picture cards into “natural agents of change” and “human agents of change.”

For the “How Does this Help?” activity, in a pair-share activity, students can examine a set of cards and then record how the actions in the card help to conserve plant and animal populations. You might also have them record how they could personally help. When all groups have had a turn examining the cards, their thoughts can be shared during a group discussion.

Targeted Outcome/Intended Learning:

Physical Education/Health Education: 3. Safety

K.3.4.B.4: Recognize roles of individuals in school and community who provide safety services (e.g., school staff, crosswalk patrols, police officers, Block Parents, firefighters, doctors, nurses, elders, ski patrols, snowmobile patrols, forest rangers, coast guards . . .).



Background:

This activity could serve as an application activity where students can use the knowledge they gained during class discussion to create job descriptions for various community leaders who provide safety services.

Assess students' understanding of safety service providers based on the contents of the job descriptions they create.

Materials:

- classified section of local newspapers
- Suggested K-4 ESD Poster picture cards: 31. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.
- Suggested K-4 ESD Poster word cards: think, protect, safety, teach, distinguish, consequences, evaluate, respect, recognize, predict, care, contribute, citizen, depend, cooperate, share, organize, identify, understand, communicate, listen, help. Available online at www.edu.gov.mb.ca/k12/esd/poster.html.

Activity Directions:

For “Employment Opportunity,” have students choose one of the following positions: school principal, teacher, school bus driver, caretaker, crosswalk patrol, police officer, Block Parent, firefighter, doctor, nurse, elder, ski patrol, snowmobile patrol, forest ranger, coast guard, etc. Invite them to create a job description and a classified advertisement to promote the position that they have chosen. Encourage them to use the word cards for vocabulary, and to follow the format of one of the advertisements from the classified section of the newspaper for their own classified ad. Remind them to emphasize parts of the job that relate to protecting and caring for people and their safety.