Adapting and Interacting   **M2.1**

TIME
500 minutes

OVERVIEW
Students explore the interactions among plants, animals, and people. They examine the concept of plant and animal adaptations, gathering information on a plant or an animal found in a habitat of the local area or in Manitoba. After identifying and explaining the structural and behavioural adaptations of a plant or an animal, students apply their learning to create a fictitious specimen that has the necessary adaptations to survive in the selected habitat. They conduct interviews to investigate environmental stewardship and sustainability within their homes, school, and community.

SPECIFIC LEARNING OUTCOMES AND LITERACY WITH ICT CONTINUUM DESCRIPTORS
Think about the intent of this learning experience (LE) and how you will facilitate instruction and assessment to meet your students' learning needs.
- What do your students need to know, be able to do, think, and feel at the end of this LE?
- What specific learning outcomes (SLOs) will guide instruction, learning, and assessment through this LE?

During instruction and assessment, students build understanding of interdisciplinary content through English language arts (ELA) and literacy with ICT. Therefore, target the SLOs in ELA and the descriptors in the Literacy with ICT Continuum that reflect your students' learning needs at this time of the year. Target two or three SLOs from each of the other subject areas for instruction and assessment. While additional SLOs will be uncovered and demonstrated, they may not be the focus of assessment. The targeted SLOs, descriptors, and criteria for observation can then be copied to the Focused Observation Form available online at <www.edu.gov.mb.ca/k12/cur/multilevel/blm/blm_5.doc>.

English Language Arts
- 2.2.2 *Connect Self, Texts, and Culture*—Identify similarities and differences between personal experiences and the experiences of people from various cultures portrayed in oral, literary, and media texts [including texts about Canada or by Canadian writers].
- 2.3.3 *Vocabulary*—Expand knowledge of words and word relationships [including homonyms, antonyms, and synonyms] using a variety of sources [such as print and electronic dictionaries, thesauri, people . . .].
- 3.1.2 *Ask Questions*—Ask general and specific questions on topics using predetermined categories.
- 3.1.3 *Contribute to Group Inquiry*—Identify relevant personal knowledge of a topic and possible categories of questions and purposes for group inquiry or research.
- 3.1.4 *Create and Follow a Plan*—Select and use a plan for gathering information.
- 3.2.1 *Identify Personal and Peer Knowledge*—Record, select, and share personal knowledge of a topic to focus inquiry or research.
- 3.3.1 *Organize Information*—Organize information and ideas in logical sequences using a variety of strategies [such as clustering, webbing, charting from a model . . .].
- 3.3.2 *Record Information*—Make notes of key words, phrases, and images by subtopics; cite authors and titles of sources alphabetically.

- 3.3.3   *Evaluate Information*—Examine collected information to identify categories or aspects of a topic that need more information.
- 3.3.4   *Develop New Understanding*—Use gathered information and questions to review and add to knowledge; consider new questions regarding the inquiry or research process and content.
- 4.2.1   *Appraise Own and Others' Work*—Share own stories and creations in various ways with peers; give support and offer feedback to peers using pre-established criteria when responding to own and others' creations.
- 4.4.1   *Share Ideas and Information*—Prepare and share information on a topic using print and non-print aids to engage and inform a familiar audience.
- 4.4.3   *Attentive Listening and Viewing*—Demonstrate appropriate audience behaviours [such as listening to opposing opinions, disagreeing respectfully, expressing opinions . . .].
- 5.1.2   *Relate Texts to Culture*—Explore cultural representations in oral, literary, and media texts from various communities.
- 5.1.3   *Appreciate Diversity*—Connect the insights of individuals in oral, literary, and media texts to personal experiences; discuss connections in representations of cultures in oral, literary, and media texts; discuss personal participation and responsibility in communities.
- 5.2.2   *Work in Groups*—Take roles and share responsibilities as a group member.
- 5.2.4   *Evaluate Group Process*—Show appreciation and offer constructive feedback to peers and seek support from group members; evaluate own group participation and adjust behaviour accordingly.

Science
- 4-1-01   Use appropriate vocabulary related to their investigations of habitats and communities.
  Include: habitat, physical adaptation, behavioural adaptation, traditional knowledge, technological development, population, community, food chain, food web, organism, producer, consumer, herbivore, omnivore, carnivore, predator, prey, scavenger, endangerment, extinction, conservation.
- 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 . . .
- 4-1-05   Investigate alternate explanations of plant or animal adaptations based on traditional knowledge from a variety of cultures.
- 4-1-06   Investigate how technological developments often mirror physical adaptations.
  Examples: fishnet—spider web, diving fins—webbed feet . . .
- 4-1-07   Investigate and describe a variety of local and regional habitats and their associated populations of plants and animals.
- 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.

Social Studies
- 4-KL-023   Identify issues related to environmental stewardship and sustainability in Manitoba.
- 4-VL-006   Appreciate Manitoba's natural environment.
- 4-S-102   Interact fairly and respectfully with others.
- 4-S-201   Organize and record information in a variety of formats and reference sources appropriately.
  Examples: maps, charts, outlines, concept maps . . .
- 4-S-301   Consider advantages and disadvantages of solutions to a problem.
- 4-S-302   Draw conclusions based on information and evidence.
- 4-S-402   Support their ideas and opinions with information or observations.
- 4-S-403   Present information and ideas orally, visually, concretely, or electronically.

Aboriginal Languages and Cultures
3.1 Home
3.1.2 Belongings and Physical Environment
- 3.1.2: G-4 Identify household products that could be reduced, recycled, or reused.
- 3.1.2: H-4 Identify the use of energy-efficient practices (e.g., turn off lights when not in use, turn off tap water while brushing teeth, take short shower) in the home.

3.2 School
3.2.2 Physical Environment
- 3.2.2: C-4 Illustrate the connection of things in the physical environment to natural and human resources development (e.g., the wooden parts of tables are made from trees by people who work in manufacturing plants).
- 3.2.2: D-4 Plan and participate in a classroom project to take care of things in the physical environment (e.g., care for a flowering plant throughout its life cycle, tracking its growth and changes over time).

3.3 Within the Community
3.3.2 Daily Life and Sustenance
- 3.3.2: E-4 Suggest ways in which the local environment is or can be respected, maintained, and sustained (e.g., recycling, renovations, road repair, respect for private property).

3.4 Outside the Community
3.4.1 Living Things and Natural Resources and Phenomena
- 3.4.1: A-4 Describe ways in which living things depend on each other (e.g., animals help distribute pollen, food chains and food webs).
- 3.4.1: C-4 Give examples of the life processes and cycles of living things (e.g., migration, hibernation, changes in colour and covering) in the local area.

4.2 Other Cultures: Connections and Influences
4.2.3 Our Environment
- 4.2.3: B-4 Describe the traditional Aboriginal perspective on natural resources (e.g., no ownership of natural resources, resources are to be shared).
- 4.2.3: C-4 Discuss how knowledge of plant and animal populations and interactions helped Aboriginal peoples to survive in the past.
- 4.2.3: G-4 Give examples of traditional and contemporary teachings of Aboriginal cultures that illustrate respect for the land (e.g., planning an activity for Earth Day celebrations).

Literacy with ICT Continuum
Plan and Question
- P-1.1   recalls and/or records prior knowledge and asks topic-related questions
- P-2.1   constructs "how and why" questions, predictions, hunches, educated guesses, and hypotheses and identifies information needs

Gather and Make Sense
- G-1.1   finds and collects information (text, images, data, audio, video) from given media sources
  examples: within applications, CD-ROMs, the Internet, broadcast media, email . . .
- G-1.2   identifies sources of information and provides bibliographic/reference data
  examples: titles, authors, publication dates, URLs, standard bibliographic formats . . .
- G-1.3   records data or makes notes on gathered information and ideas using given categories and given ICT
  examples: tables, graphic organizers, spreadsheets . . .

Produce to Show Understanding
- Pr-1.1   participates in establishing criteria for student-created electronic work
- Pr-1.3   edits electronic work according to established criteria, conventions, and/or standards
  examples: text, images, sound, concept maps, multimedia presentations, email, tables, spreadsheets, graphs, video, animation, web pages, wikis, blogs . . .
- Pr-2.2   revises electronic work to improve organization and clarity, enhance content and artistry, and meet audience needs, according to established criteria, feedback, and personal preferences
  examples: by creating and/or critically revising text, images, and/or sound to enhance electronic work; by revising audio/video clips or effects; by adjusting the pace and transitions in multimedia presentations; by adding animation to web pages . . .

Communicate
- C-1.1   displays and/or discusses electronic work
  examples: text, images, sound, concept maps, multimedia presentations, email, tables, spreadsheets, graphs, video, animation, web pages, wikis, blogs . . .
- C-2.1   discusses information, ideas, and/or electronic work using tools for electronic communication
  examples: email, electronic whiteboards, web pages, threaded discussions, videoconferences, chats, instant messages, camera phones, wikis, blogs, podcasts, online whiteboards . . .

Reflect
- R-2.1   invites and shares constructive feedback, related to established criteria, to reflect on using ICT to learn
  example: explains selection of ICT . . .

SUGGESTED LEARNING RESOURCES
Software
- painting or drawing
- concept mapping
- multimedia presentation
- word processing

Internet
- IMYM Links Database. <www.edu.gov.mb.ca/k12/tech/imym/resources/links.html>.

Print
- Appendix C: Index of Teaching, Learning, and Assessment Strategies
- Bezner, Andy, and Ken De Smet. *Manitoba Birds.* Edmonton, AB: Lone Pine Publishing, 2000.
- Caduto, Michael J., and Joseph Bruchac. *Keepers of the Earth: Native Stories and Environmental Activities for Children.* Calgary, AB: Fifth House Publishers, 1997.
- ---. *Teacher's Guide to Keepers of the Earth: Native Stories and Environmental Activities for Children.* Saskatoon, SK: Fifth House Publishers, 1991.
- Manitoba Education and Youth. *Independent Together: Supporting the Multilevel Learning Community.* Winnipeg, MB: Manitoba Education and Youth, 2003.
  (See BLM 5: Focused Observation Form, available online at <www.edu.gov.mb.ca/k12/cur/multilevel/blm/blm_5.doc>.)
- *Science and Technology: Habitats.* Don Mills, ON: Addison-Wesley Longman Ltd., 2000.
- Senecal, Catherine. *Pelicans to Polar Bears: Watching Wildlife in Manitoba.* Winnipeg, MB: Heartland Publications, 1999.

BLMs
- BLM M2.1#1: Traditional Knowledge of Adaptations Learning Centre
- BLM M2.1#2: Food Webs Learning Centre
- BLM M2.1#3: Animals: What Do They Eat?
- BLM M2.1#4: What Are We Already Doing? Learning Centre

TBLMs
- TBLM M2.1#1: Group Processing Checklist—Form B
- TBLM M2.1#2: Sample Word Cycle

Materials
- digital camera

SUGGESTIONS FOR INSTRUCTION
Preparation and Set-up
- Work with the class to develop student-generated criteria for the work students produce.
- Review school or school division policy on Internet publishing for students.
- Prepare a class blog. Assist students in posting entries.
- Set up an electronic version of BLM M2.1#3: Animals: What Do They Eat? if you want students to copy and paste during this sorting task.
- Review OLE.5: Share the Learning, OLE.6: Collaborative Learning, and OLE.10: Electronic Collection.
- Review ICT.1: Toolbox Binder, ICT.2: Write This Down, ICT.4: Looks Like This, ICT.5: Inspired, ICT.6: Caught in Action, ICT.7: Make Your Point, and ICT.8: Look for It.

Activating Strategies
- Using concept-mapping software, students brainstorm for various ways in which plants, animals, and people interact. Students work together to create a class collage depicting these interactions among plant, animal, and human communities.

- Students discuss vocabulary (e.g., herbivore, carnivore, omnivore, predator, prey, scavenger, producer, consumer) and how organisms interact and are classified in food chains or webs.

Acquiring Strategies
- Students select a plant or an animal that is found in a local habitat or in Manitoba. Working together, students develop questions for inquiry on the adaptations of plants and animals. They work individually, in pairs, or in small groups to gather information, and share their inquiry findings using a class chart to compare their results with those of the class.
- Students design a fictitious plant or animal that would survive in a selected environment, and draw the specimen using painting or drawing software. Students insert their image into an electronic presentation and describe the structural and/or behavioural adaptations of their creation.
- Students participate in learning centres:
  — BLM M2.1#1: Traditional Knowledge of Adaptations Learning Centre
    After reading a story about a traditional cultural perspective on adaptations, students represent their learning by creating a storyboard by hand or electronically.
  — BLM M2.1#2: Food Webs Learning Centre
    Students collaborate to sort and categorize animals according to what they eat, using BLM M2.1#3: Animals: What Do They Eat? They create a Venn diagram game to sort organisms from a local habitat into the categories of predator, prey, or both.

Applying Strategies
- Students participate in a learning centre:
  — BLM M2.1#4: What Are We Already Doing? Learning Centre
    Students conduct interviews with family and school members to identify current practices that support environmental stewardship and sustainability. They create a blog to share the successes and encourage dialogue for further efforts.
- Students complete a Word Cycle to demonstrate their understanding of vocabulary (see TBLM M2.1#2: Sample Word Cycle).

SUGGESTIONS FOR ASSESSMENT
- Observe how students are involved in the inquiry process. Do they ask questions and contribute to the group inquiry? How do they record information? Can they draw conclusions?
- Assess students' ability to work in collaborative groups using TBLM M2.1#1: Group Processing Checklist—Form B.
- Check student understanding of vocabulary using TBLM M2.1#2: Sample Word Cycle. Can students explain the connections between terms?
- Use students' fictitious plant or animal design to assess their understanding of adaptations. Have they used new information or learning in their design? Are the adaptations suitable to the environment?
- Use Venn diagram games from BLM M2.1#2: Food Webs Learning Centre to assess student understanding of predator and prey.

CONNECTION TO **CANADIAN YOUTH FORUM: CELEBRATING COMMUNITY AND DIVERSITY**
- Students broaden their understandings of the interactions among and adaptations within communities. They will apply this learning, as well as their discoveries of local initiatives in stewardship and sustainable development, in the culminating task of the *Canadian Youth Forum*.

BLM M2.1#1: Traditional Knowledge of Adaptations Learning Centre

Overview
At this learning centre, you will read stories about a traditional perspective on plant and/or animal adaptations to create a storyboard presentation.

Resources
- stories (in books or online)
- paper, colours
- painting or drawing software or multimedia presentation software

Tasks
- Come to a consensus in selecting a story about a traditional perspective on plant and/or animal adaptations that your group will read.
- After reading the selected story with your group, discuss the adaptations explained in the story. Share your perspective on the plant and/or animal adaptations with the group.
- Create a storyboard presentation, by hand or electronically.

Suggestion(s) for Collaboration
- Share the workload so that each group member is involved in the task.

What to Do with the Results of This Learning Centre
- Post the completed storyboard to be shared with the class.

Assessment Criteria
- Your storyboard meets the class criteria.
- You have presented the main ideas in a logical order.

BLM M2.1#2: Food Webs Learning Centre

Overview
At this learning centre, you will sort and categorize animals according to what they eat. You will create your own sorting game called Predator or Prey?

Resources
- magazines
- digital camera
- paper, colours
- BLM M2.1#3: Animals: What Do They Eat?

Tasks
- Using BLM M2.1#3: Animals: What Do They Eat?, sort the listed animals into the correct categories.
- Work together with your group to create a sorting game, using a Venn diagram, for other students to play. Your Predator or Prey? sorting game will need
  — a Venn diagram game board with clear instructions
  — animal cards—some predators, some prey, and some that are both (use digital pictures or pictures cut from magazines to represent different animals)

Suggestion(s) for Collaboration
- When reviewing the sorting task with your group, respectfully explain any differences.

What to Do with the Results of This Learning Centre
- Exchange games with another group so they can try your creation.

Assessment Criteria
- Your Predator or Prey? sorting game meets the class criteria.
- You have provided clear instructions for your game.
- Your game board and cards are complete and show predators and prey accurately.

BLM M2.1#3: Animals: What Do They Eat?

Name   _____   Date   _____

What Do These Animals Eat?			
Frog	Duck	Rabbit	Raccoon
Grasshopper	Coyote	Garter snake	Earthworm
Mouse	Moth	Bear	Hawk
Raven	Bacteria	Dragonfly	Caterpillar

Sort the animals listed above by cutting the names and then pasting them in the correct columns of the table below according to what the animals eat.

Herbivores Eat Plants	Omnivores Eat Plants and Meat	Carnivores Eat Meat	Decomposers Consume Dead or Decaying Material

BLM M2.1#4: What Are We Already Doing? Learning Centre

Overview
At this learning centre, you will prepare for and conduct an interview to identify what people are already doing to support environmental stewardship and sustainability. You will add your findings to the class blog.

Resources
- class blog site
- word-processing software

Tasks
- Decide as a group in which area you would like to conduct your interview: home or school.
- Develop a script that you will use to explain your purpose to the person you interview.
- Work together with your group to create a list of five to ten interview questions. These questions must focus on stewardship and sustainability: understanding, actions, and plans for the future.
- After all group members have completed the interviews, discuss your results. Share your discoveries and insights. Then have each person in your group write a summary.
- Share first drafts of the summaries with your group, and make any necessary changes.

Suggestions for Collaboration
- Come to a consensus on the interview area, script, and questions.
- Give constructive feedback on interview summaries.

What to Do with the Results of This Learning Centre
- Add summaries to the class blog.

Assessment Criteria
- The script for your interview explains the purpose.
- You have prepared specific questions for your interview.
- You have recorded your interview answers clearly.
- Your written summary is in paragraph format, and includes the important ideas from your interview.
- Your summary is edited by you and by at least one peer.

TBLM M2.1#1: Group Processing Checklist—Form B*

Topic _____ Date _____

Student Names	Listened to Ideas and Opinions of Group Members	Contributed Ideas and Opinions	Discussed Viewpoints and Feelings	Paraphrased Others' Ideas and Opinions	Disagreed Politely	Contributed to Group Consensus	Used Time Effectively

_____

* Source: Manitoba Education and Training. *Kindergarten to Grade 4 English Language Arts: A Foundation for Implementation.* Winnipeg, MB: Manitoba Education and Training, 1998. BLM–31.

TBLM M2.1#2: Sample Word Cycle

Students can use word-processing or concept-mapping software to create a Word Cycle using the selected terms. Students arrange the words in an order so that each term relates or connects to the word that follows. They use joining words to show the connection.

Terms Used			
• herbivores	• omnivores	• prey	• producers
• carnivores	• predators	• scavengers	• consumers

Sample

herbivores

like plants, are eaten by   eat plants, unlike

producers   carnivores

eat   eat meat, as do

consumers   omnivores

are   are

scavengers   predators

can be eaten by   get food by hunting

prey