



Using Inquiry in Social Studies Lessons to Target Environmental Education and Stewardship

Social Studies Inquiry Model

Formulate
Questions

Gather and
Organize

Interpret and
Analyse

Evaluate and
Draw Conclusions

Communicate

Introduction: Is our Local Waterway Sustainable?

This lesson is a field study of a local waterway that utilizes digital technologies to provide students with an opportunity to investigate the natural resources within their own community. Following field work, student observations and data will be analyzed within a collaborative, knowledge building framework.

Considerations for Planning

Prior to this lesson, students will need:

- experience working collaboratively in small groups;
- some understanding of sustainable practises, including exposure to initiatives in diverse regions;
- experience with field studies; and,
- experience examining local and provincial maps of waterways.

Resources and Materials

numerous images of waterways similar to their local, natural/constructed waterway (may be found on Google Maps), access to technology (Internet)/digital technologies which enable photography, e.g., iPad, digital camera, several dictionaries, thesauruses, clipboards or other portable writing surface for each student.

BLM 2.1 – Field Study: Observing a Local Waterway

BLM 2.2 – Small Group Assessment

BLM 2.3 – Group Observations/Data: Field Study: Observing a Local Waterway

BLM 2.4 – Exit Card: Social Studies Inquiry: Is Our Local Waterway a Sustainable Environment?

How does this lesson link to Environmental Education?

Students develop strategies which allow them to better understand and appreciate the “dynamic interactions” related to “the dependency of our social and economic systems on...natural systems” and “the positive and negative consequences, both intended and unintended, of the interactions between human-created and natural systems”.

Shaping Our Schools, Shaping Our Future: Environmental Education in Ontario Schools (2007), p. 6

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Revised (2013) Social Studies History and Geography Curriculum

Lesson: Is our Local Waterway Sustainable?

This lesson is a field study of a local waterway that utilizes digital technologies to provide students with an opportunity to investigate the natural resources within their own community. Following field work, student observations and data will be analyzed within a collaborative, knowledge building framework.

Learning Goals:

By the end of this lesson students will understand and be able to:

- follow an inquiry-based approach (gather, organize, interpret and analyse data);
- examine the impact of human activities on waterways;
- consider multiple perspectives regarding an issue or problem; and,
- identify a few examples of sustainable practices.

Curriculum Expectations and Concepts of Social Studies Thinking

Grade 4: People and Environments: Political and Physical Regions in Canada

Overall expectation:

- Use the social studies inquiry process to investigate issues and challenges associated with balancing human needs/wants and activities with environmental stewardship in one or more political and/or physical regions of Canada. FOCUS ON: Perspective.

Specific expectations:

- Gather and organize information and data from various sources to investigate issues and challenges associated with balancing human needs/wants and activities with environmental stewardship in one or more of the political and/or physical regions of Canada.
- Interpret and analyse information and data related to their investigations, using a variety of tools.

Big Ideas: Human activity and the physical environment have an impact on one another.

Human activities should balance environmental stewardship while managing human needs and wants.

Framing Questions to Guide the Lesson: What impact can human activities have on the physical environment? Why is it important to consider the long-term impact of human activities?

How do we find the balance between environmental stewardship and human needs and wants?

Integrated Expectations across Subject Areas

Language: Oral Communication

- Use speaking skills and strategies appropriately to communicate with different audiences for a variety of purposes.

Language: Writing

- Generate, gather and organize ideas and information to write for an intended purpose and audience.

Science

- Analyse the effects of human activities on habitats and communities.

Relevant Terminology

interrelationships, natural environment, industry, habitat, stewardship, physical environment, sustainable

Minds On: Connecting Background Knowledge

Establishing Definition for Sustainable Environment

Large and small group activities (approximately 20 minutes)

- Organize students into small groups.
- Provide the following definition to each group:
 - A sustainable environment means an environment that can be maintained at a steady level without exhausting natural resources or causing severe ecological damage.

(Source: <http://www.thefreedictionary.com/sustainable>)

- Suggest: Within your groups, reword the meaning of the term, sustainable environment, to emphasize and develop a greater understanding of the consequences which human activities may have on the physical environment. Information sources may be utilized as needed (dictionary, thesaurus, computer), and suggest that images may also be included to add further clarity and enhance group definitions.
- Post all definitions on chart paper.
- Consolidate to a “class explanation”.

Assessment Tools and Strategies:

Assessment for Learning - Observation/notes, *consider*:

- group definitions reflect understanding of intended/unintended environmental consequences which result from human activity

Action

Preparing for Field Study

Large and small group activities (approximately 40 minutes)

- Suggest to students: We will be participating in a field study at a local waterway, where we can observe and gather data. Based on our observations and collected data, we hope to make a reasonably informed decision regarding whether the waterway is sustainable in its current state.
- As a large group, formulate questions to guide observations/data collection (Who uses/depends on the waterway, and in what ways? What features make a waterway sustainable?). Revisit and reference the class definition of a sustainable environment to reinforce understanding, as related to waterways.
- Post all questions on chart paper. Discuss and prioritize.
- Suggest that students examine images of similar waterways and note observations, in preparation for the field study.
- Organize students into small groups of three or four and distribute several images of waterways to each group.
- Allow time for observations/discussion amongst group members, based on the questions generated by the class.
- Invite comments and revisit questions, if needed.
- Ask students to consider some ways, other than noting observations, that you could use to present your observations/data while on the field study. Do you think a visual image is a good way to document observations? Why or why not? Would you find it helpful to bring (accessible) technology (digital camera, iPad, etc.) on the field study to record your observations?

Gathering Data through Observations

Small group and individual activities (approximately 60 minutes, depending on location)

- Discuss field study behaviour, protocols, safety prior to going outside.
- Distribute **BLM 2.1 – Field Study: Observing a Local Waterway**, along with a clipboard and pencil to each student.
- Suggest: Students record questions on **BLM 2.1** to guide their inquiry.
- Organize students into small groups.
- Suggest and encourage students/groups to generate and record additional, relevant questions throughout the field study.
- Distribute digital technologies to each group, if possible. **If using a note-taking app on an iPad (such as Evernote), suggest that students annotate notes as needed to highlight evidence. Suggestions: iNaturalist, Project Noah.
- Embark on the field study.
- Upon return, distribute **BLM 2.2 – Small Group Assessment** for each student to complete.

Assessment Tools and Strategies:

Assessment as Learning - **BLM 2.2 – Small Group Assessment**, *consider:*

- students' data collection practices

Consolidation and Debrief

Analyzing Observations, Examining Perspectives

Large, small group activities (approximately 40 minutes)

- Within their field study groups, ask students to consolidate all data, observations, images to complete **BLM 2.3 – Group Observations/Data: Field Study: Observing a Local Waterway**. Suggest that groups consider/incorporate information from **BLM 2.2** to improve collaboration as needed.
- If needed, ask students to consider the requirements of the plant and animal habitats/ecosystem along the waterway, plus the impact of local human activities on the surrounding natural environment. Based on these considerations, as well as gathered evidence, groups discuss whether the waterway seems sustainable in its current state.
- Ask each group to present their observations, data and position/perspectives.
- Create a large, class data collection chart by posting each group's **BLM 2.3** side by side.
- Discuss and highlight issues and perspectives that differ between groups.
- Suggest to students: Consider next steps to maintain/ensure/enable the sustainability of the waterway. Use your own understanding and build upon others' knowledge/ideas/solutions.

Exit Strategy

Large group and individual activity (approximately 15 minutes)

- Distribute **BLM 2.4 – Exit Card: Social Studies Inquiry: Is Our Local Waterway a Sustainable Environment?** to each student.
- Ask students to reflect on the challenges and successes throughout the field study as they relate the definition of a sustainable environment to their observations/data. Invite comments.
- Ask students to consider how human activities have an impact on the sustainability of the waterway. What are some next steps to enable/maintain/ensure its sustainability?

- Students complete **BLM 2.4** independently.

Assessment Tools and Strategies:

Assessment as Learning - BLM 2.4 – Exit Card: Social Studies Inquiry: Is Our Local Waterway a Sustainable Environment?, *consider:*

- students identify human activities which have an impact on the waterway, based on the data/evidence/information/images that were collected through field study
- students suggest a few activities which involve environmental stewardship to enable/maintain/ensure sustainability of the local waterway

Further Opportunities for Learning

Using Primary Sources to Establish Local/Provincial Initiatives

Students use a variety of primary sources (newspaper/magazine articles, policy documents, maps, interviews, etc.) to examine plans suggested by the municipal and/or provincial government related to sustaining natural resources, such as local waterways.

Considering Multiple Perspectives

Consider human activities from a variety of viewpoints, such as:

- the perspective of a Developer who wants to build low-cost housing on a woodlot;
- an environmental activist, concerned about the destruction of natural habitats;
- families who may benefit from affordable housing; and/or,
- community members who use local resources (a waterway) for leisure activities.

Students may orally debate or write a persuasive essay which advocates a particular perspective.

Related Resources and References

Websites

- Ministry of Education
<http://www.edu.gov.on.ca/eng/teachers/enviroed/education.html>
- Ministry of Education
<http://www.edu.gov.on.ca/eng/curriculum/elementary/sshg.html>
- Natural Curiosity
<http://www.naturalcuriosity.ca>
- The Peel Water Story
http://www.peelregion.ca/pw/waterstory/big_w_ideas.htm

References

Ministry of Education. Acting Today, Shaping Tomorrow; A Policy Framework for Environmental Education in Ontario Schools. Ontario, 2009

The Laboratory School at the Dr. Eric Jackman Institute of Child Study. Natural Curiosity: Building Children's Understanding of the World through Environmental Inquiry. University of Toronto (2011)

BLM 2.1 – Field Study: Observing a Local Waterway

Who and/or what depends on the waterway? How?

Questions/inquiry concerning the waterway/surrounding environment (I wonder....?)

What features make a waterway sustainable?

BLM 2.2 – Small Group Assessment

Reflect on the efforts of your small group throughout the field study.

Circle the level that best reflects your group work while on the field study at the local waterway.

Focus/on task	Our group was on task all of the time without reminders from the teacher	Our group was on task most of the time	Our group was on task some of the time	Our group was hardly ever on task
Work habits	All group members completed assigned tasks	Group members completed most assigned tasks	Group members did not follow through on some of the assigned tasks	Our group did not complete the assigned tasks
Listening, questioning and discussing observations, images, data within the group	Group members respectfully listened, participated in discussions and asked questions and solved problems	Group members respectfully listened, participated in discussions and asked questions	Some members of the group had trouble listening with respect, took over discussions without letting other people speak, etc.	Some members of the group did not listen with respect, argued with others, and did not consider others' ideas
Gathering data, information, images	Group members always gathered relevant data, information, images and shared ideas	Group members usually gathered relevant data, information, images and shared ideas	Group members sometimes gathered relevant data, information, images and at times shared ideas	Group members did not gather relevant data, information, images or share ideas
Attitude	Group members maintained a positive attitude about the task(s) and the contributions of others	Group members usually maintained a positive attitude about the task(s) and the contributions of others	Group members sometimes made fun of the task(s) or the contributions of others	Members of our group often made fun of others' contributions, and some members maintained a negative attitude
Collaboration	All team members contributed equally	Some members of our group contributed and assisted others	Some members of our group completed their work, but would not others in need	Some group members contributed little to the group effort during the field study

BLM 2.3 – Group Observations/Data:

Field Study: Observing a Local Waterway

Questions/inquiry concerning the waterway/surrounding environment (I wonder....?)	Description of data, evidence, information, images collected by the group (attach images/drawings)	Does the data, evidence, information, image indicate that the waterway <u>is</u> or <u>is not</u> sustainable in its current state? Explain.
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BLM 2.4 – Exit Card

Explain how human activities have impacted the sustainability of the waterway.
Give evidence to support your opinions.

Suggest a few next steps to enable/maintain/ensure the sustainability of the waterway. Explain your thinking using the definition discussed in class.
