

# EXPERIENCE SUSTAINABILITY - GRADE 8

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This is a cross-curricular project between Science and Geography that allows students the opportunity to explore, research, and ‘experience’ sustainability with a focus on water in their local and global community. It is suggested that this project be assigned in the latter part of the school year. Since the environment is a central focus in both the Science and Geography curriculums, it will build on the students’ prior knowledge. In this project, students are encouraged to bring awareness and/or take action on an environmental water issue. In doing so, the students gain a deeper understanding about the issue, about themselves, and about their responsibility to be stewards of the environment. Students will choose a topic of their choice, conduct specific research/learning for that topic, and then create a poster board and interactive activity/activities in order for others to essentially ‘experience sustainability’. The purpose behind this project is to help people learn about environmental issues using a hands-on approach and actions that they can take to minimize their environmental footprint. A suggestion for the culminating activity is to organize an Eco-Fair for the students to display and present their projects to the rest of the school and/or the community. Please note that this project does not need to be cross-curricular between Science and Geography. It can absolutely be a stand-alone for each subject. Other curricular areas could be integrated such as Visual Arts, Literacy or Mathematics.

## GRADE LEVEL/COURSE CODE:

8

## STRAND(S) AND UNIT(S):

Science: Understanding Earth & Space Systems - Water Systems

Geography: Global Settlement - Patterns & Sustainability

## INQUIRY FOCUS:

Key words that students should focus on and/or use in their projects:

- Clean
- Environment
- Impact
- Interrelationships
- Pollution
- Sustainability
- Technologies & Innovations
- Water & Water Quality

## KEY QUESTIONS:

- How do human activities impact the environment?
- What does it mean to have access to water/clean water?

- What is sustainability?
- What can we do as citizens of the planet? What can we change?

**TIMELINE:**

The timeline of this project is really dependent on scheduling and other factors at the individual schools as well as teacher/class timetables and number of working class periods. It is suggested this project be assigned closer to the end of the school year so students have some background knowledge of both the Science and Geography curriculums as well as having some prior experience discussing and working on environmental issues in both subject areas. Another suggestion is that the teacher link this project with the school's Eco-Team and help promote other types of environmental awareness such as Earth Day/Week, Eco-Month, Outdoor Learning Spaces, etc.

**GENERAL TIMELINE:**

4 - 6 Weeks (2 - 3 working periods per week)

Initial lessons are teacher-directed, while the rest of the working periods are student-dependent based on their area(s)/topic(s) of interest for their project.

**BIG IDEAS:**

- Local and global sustainability
- Impact(s) of technologies and innovations
- Implications of social, political, economical, and environmental issues relating to water systems/water quality

**OVERALL EXPECTATIONS:**

Science: Understanding Earth & Space Systems - Water Systems

- Assess the impact of human activities and technologies on the sustainability of water resources.
- Investigate factors that affect local water quality.
- Demonstrate an understanding of the characteristics of the Earth's water systems and the influence of water systems on a specific region.

Geography: Global Settlement - Patterns & Sustainability

A1. Application: Analyse some significant interrelationships between Earth's physical features and processes and human settlement patterns, and some ways in which the physical environment and issues of sustainability may affect settlement in the future.

A2. Inquiry: Use the geographic inquiry process to investigate issues related to the interrelationship between human settlement and sustainability from a geographic perspective.

**SPECIFIC EXPECTATIONS:**

## Science: Understanding Earth & Space Systems - Water Systems

### Relating Science & Technology to Society and the Environment

- 1.3. Assess the impact on local and global water systems of a scientific discovery or technological innovation.

### Developing Investigation & Communication Skills

- 2.2 Investigate how municipalities process and manage water.
- 2.4 Use scientific inquiry/research skills to investigate local water issues.
- 2.6 Use appropriate science and technology vocabulary in oral and written communication.
- 2.7 Use a variety of forms to communicate with different audiences and for a variety of purposes.

### Understanding Basic Concepts

- 3.1 Identify the various states of water on the earth's surface, their distribution, relative amounts, and circulation, and the conditions under which they exist.
- 3.3 Explain how human and natural factors cause changes in the water table.

## Geography: A. Global Settlement - Patterns & Sustainability

### A1. Application: Interrelationships between Settlement and the Environment

- A1.2 Analyse how processes related to the physical environment may affect human settlements in the future.
- A1.3 Describe possible features of a sustainable community in the future and analyze some challenges associated with creating such a community.

### A2. Inquiry: Human Settlements and Sustainability

- A2.1 Formulate questions to guide investigations into issues related to the interrelationship between human settlement and sustainability from a geographic perspective.
- A2.2 Gather and organize data and information from a variety of sources and using various technologies to investigate issues related to the interrelationship between human settlement and sustainability from a geographic perspective.
- A2.3 Analyze and construct various print and digital maps as part of their investigations into issues related to the interrelationship between human settlement and sustainability from a geographic perspective, with a focus on investigating the spatial boundaries of the issue.
- A2.5 Evaluate evidence and draw conclusions about issues related to the interrelationship between human settlement and sustainability.
- A2.6 Communicate the results of their inquiries using appropriate vocabulary and formats appropriate for specific audiences.

### A3. Understanding Geographic Context: Settlement Patterns and Trends

- A3.2 Identify and describe some ways in which the physical environment can influence the general location and patterns of human settlements.
- A3.5 Describe various ways in which human settlement has affected the environment.
- A3.6 Describe some practices that individuals and communities have adopted to help make human settlements more sustainable.

**KEY CONCEPTS:**

- Water quality
- Access to water/clean water
- Environmental sustainability

**PRIOR SKILL SETS:**

- Research skills (print and digital sources)
- Collaboration skills for group work
- Time management

**PRIOR KNOWLEDGE:**

Students should have been exposed to local and global environmental issues in the other Science and Geography strands/units/lessons prior to this project. Using the Ontario Curriculum as a guide, students need to have multiple and varied exposure to real-life examples outside of the classroom that relate to environmental impacts. This does not necessarily need to be only in these two subject areas, as they can be exposed to these issues in other curricular areas. By providing students these opportunities, it should enable them to develop better critical thinking skills beyond themselves and how actions affect the world around them.

**MATERIALS AND EQUIPMENT:**

Since this project is student-driven, materials required are based on the nature of their research. However, such items may include:

- Poster boards
- Art materials (paint, construction paper, glue, scissors, etc.)
- Items for each hands-on interactive project (such as items from a dollar store or donation items)
- Access to computers/laptops/iPads/tablets/internet
- Print resources such as textbooks and library books

A good idea is to begin collecting 'items' that students could potentially use for this project at the beginning of the school year by putting out announcements to staff, students, and the community and beginning a collection.

**SAFETY:**

This is based on the materials that are chosen by the students. Adult supervision will be required for students wanting to use such cutting materials as an Exacto knife. For those students choosing to use spray paint or other decorative materials on their poster boards, an open area may be required for effective ventilation.

**INSTRUCTIONAL PLANNING AND DELIVERY:**

Refer to the attached lesson outlines. Below are brief outlines:

#### Lesson #1: Introduction/Brainstorm (1 - 2 work periods)

- Students will view videos and/or explore articles about water quality and sustainability to engage them in thinking critically about human impacts on the environment.
- Students will brainstorm their ideas using graphic organizers and eventually organize themselves into smaller working groups.

#### Lesson #2: Working Groups (3 - 5 weeks)

- Now that the smaller working groups are formed, students will begin to explore and research an issue(s) and begin to put together their interactive activity/activities.
- Teacher will be conducting smaller lessons throughout this process as each group will require different types of instruction and direction for their chosen 'issue'.

#### Lesson #3: Presentations (1 -2 work periods)

- Each group will present their projects to the class and will be evaluated by the teacher.
- These presentations are a good practice for a potential Eco-Event/Eco-Fair.

#### Lesson #4: Reflections and Individual Student Reports (2 - 4 work periods)

- The students will be writing up their own individual reports that will be submitted to the teacher.

#### Lesson #5: Eco-Fair (Optional)

### **STUDENT SUPPORT RESOURCES:**

- Refer to the attached student handouts:
- Project Explanation Sheet - Experience Sustainability
- Proposal Evaluation Rubric
- Presentation Evaluation Rubric
- Poster Evaluation Rubric
- Personal Reflection Evaluation Rubric

**RELATED BACKGROUND RESOURCES AND/OR LINKS:**

- Websites and web articles to be included upon final approval
- Student textbooks to be included upon final approval

**ASSESSMENT OPPORTUNITIES:**

- As outlined in the lesson plans and the evaluation sheets

**ADDITIONAL NOTES:**

- Everything outlined within this unit is at teacher discretion and can be changed or adapted to fit the needs of the students/class/school.

**FUTURE OPPORTUNITIES/EXTENSIONS:****Eco-Event/Eco-Fair**

A natural extension to this project is an optional Eco-Event/Eco-Fair where the students have the opportunity to engage with younger students and community members in their interactive exhibits. This is a great way to get the school and community involved and excited, especially if there is a connection with the school's Eco-Team and used during Earth Week/Month.

**Cross-Curricular**

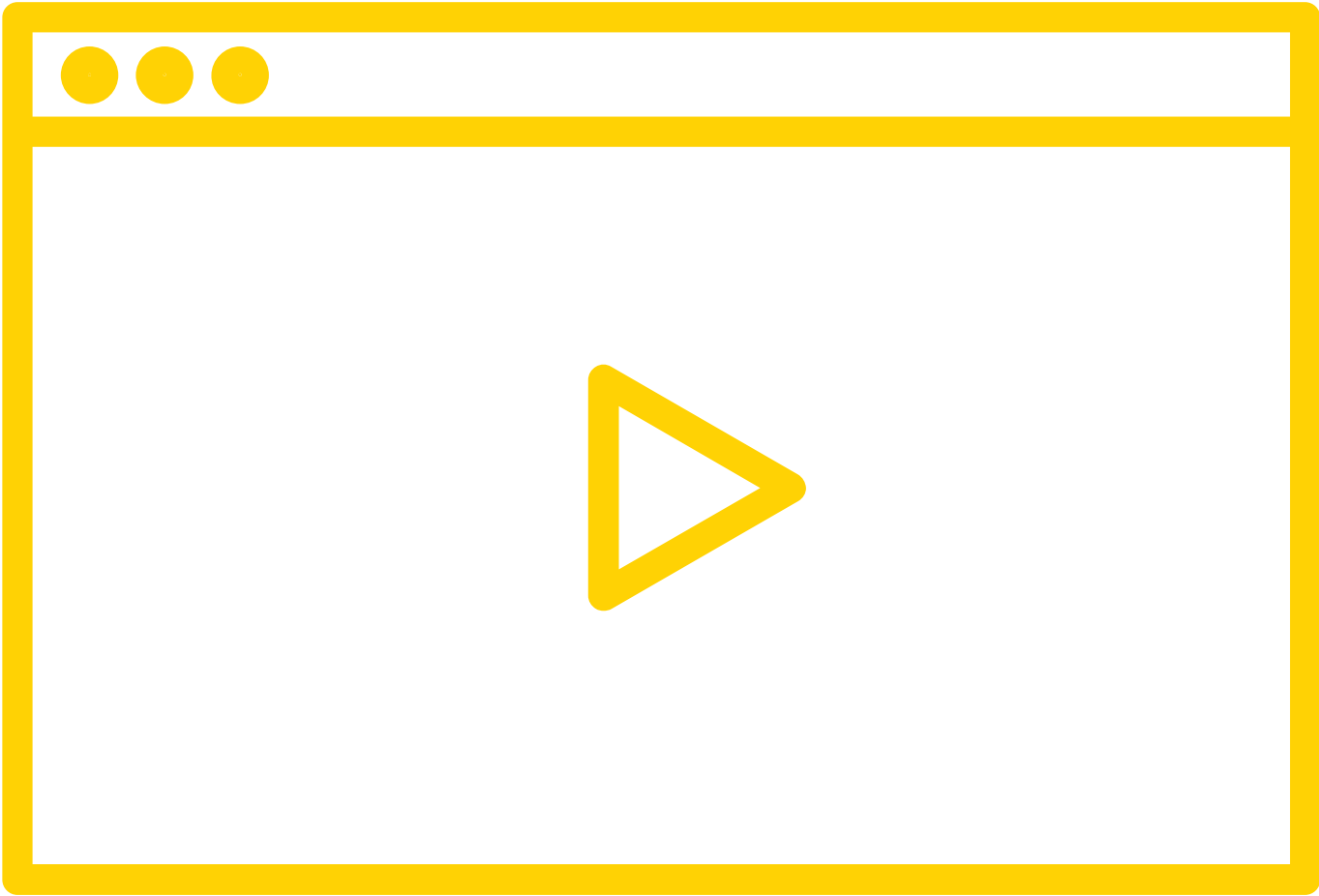
Though not necessarily required to be a cross-curricular project, this does lend itself more naturally to a Science and Geography connection project. However, there are natural connections to Literacy, Mathematics, and Visual Arts that can be easily incorporated into the lesson outlines and final evaluations, such as report writing and research skills, visual presentation of the poster boards and the hands-on activity, measurements, and survey analysis of environmental issues. Note that this project could also be a stand-alone for either Science or Geography. All of the collaborations and cross-curricular aspects of this project will be dependent on other activities/events happening around the school, the school timetable, and the collaborative opportunities that are available throughout the school year. A suggestion is for the grade 8 teachers to discuss this project in their initial planning at the beginning of the school year so that as many teachers as possible are on board and to make it more authentic and encouraging for all students to be involved.



  
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**WATCH THE VIDEO**  
04:43 min

(//www.youtube.com/embed/Lx3KWcTWQ-4?width=800&height=450&iframe=true)

**RESOURCES**

-  Experience Sustainability Lesson 01 ([https://connex.stao.ca/sites/default/files/experience\\_sustainability\\_project\\_lesson\\_01\\_final\\_edit\\_1.doc](https://connex.stao.ca/sites/default/files/experience_sustainability_project_lesson_01_final_edit_1.doc))
-  Experience Sustainability Lesson 02 ([https://connex.stao.ca/sites/default/files/experience\\_sustainability\\_project\\_lesson\\_02\\_final\\_edit\\_1.doc](https://connex.stao.ca/sites/default/files/experience_sustainability_project_lesson_02_final_edit_1.doc))

-  Experience Sustainability Lesson 03 ([https://connex.stao.ca/sites/default/files/experience\\_sustainability\\_project\\_lesson\\_03\\_final\\_edit\\_1.doc](https://connex.stao.ca/sites/default/files/experience_sustainability_project_lesson_03_final_edit_1.doc))
-  Experience Sustainability Lesson 04 ([https://connex.stao.ca/sites/default/files/experience\\_sustainability\\_project\\_lesson\\_04\\_final\\_edit\\_1.doc](https://connex.stao.ca/sites/default/files/experience_sustainability_project_lesson_04_final_edit_1.doc))
-  Student Handouts and Evaluation ([https://connex.stao.ca/sites/default/files/experience\\_sustainability\\_project\\_student\\_handouts\\_evaluation.doc](https://connex.stao.ca/sites/default/files/experience_sustainability_project_student_handouts_evaluation.doc))


## ELEMENT

 Inquiry (</expert-elements/inquiry>)





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