



# **Air and Water in the Environment**

Understanding **Earth** and  
Space Systems

**Grade 2**



# Overall Expectations

- 1. Assess ways in which the actions of human have an impact on the quality of air and water, and ways in which the quality of air and water has an impact on living things;**
- 2. Investigate the characteristics of air and water and the visible/invisible effects of and changes to air and/or water in the environment;**
- 3. Demonstrate an understanding of the ways in which air and water are used by living things to help them meet their basic needs**



# Specific Expectations

**1.1 assess the impact of human activities on air and water in the environment, taking different points of view into consideration (e.g., the point of view of parents, children, other community members), and plan a course of action to help keep the air and water in the local community clean**

**1.2 assess personal and family uses of water as responsible/efficient or wasteful, and create a plan to reduce the amount of water used, where possible**

**2.1 follow established safety procedures during science and technology investigations (e.g., use caution around hot kettles and the steam they produce; clean up water spills as soon as they happen)**

**2.3 investigate, through experimentation, the characteristics of water (e.g., water takes up space, flows or moves when not contained, has mass) and its uses (e.g., living things need water to stay alive; water makes things move: spins a water wheel; water makes certain activities possible: keeps a white-water raft afloat)**

**3.3 describe ways in which living things, including humans, depend on air and water (e.g., most animals, including humans breathe air to stay alive; wind generates energy, disperses seeds; all living things need to drink or absorb water to stay alive; water is used for washing and bathing, transportation, energy**



# Big Idea

- ***Air and water are a major part of the environment***  
(Overall expectation 1,2 and 3)
- ***Living things need air and water to survive***  
(Overall expectation 1 and 3)
- ***Our action affect the quality of air and water, and its ability to sustain life*** (Overall expectation 1,2 and 3)



# Learning Goals:

## We are learning about:

- the impacts of human actions on the quality of air and water and the ways in which the quality of air and water has an impact on living things
- Living things need air and water to survive

# Success Criteria:

## We will know that we are successful when we

- understand how our actions affect the quality of air and water and its ability to sustain life
- implement strategies to reduce and efficiently use the amount of water we use



# Agenda:

- Video - Water Song
- RAN Chart
- Video - Water
- Safety Review
- Oil Spill disaster - Activity



# The Water Song



# RAN Chart

Q.1 Why is water important for all living things?

Q.2 What will happen if we do not have clean water?

Q.3 Name some sources of water?

**SCIENCE**  
**WATER AND AIR**

**RANCHART (WATER AND AIR)**

What we think we know	Confirmed	Misconception	New Learning	Wonderings

**Big Idea**  
Our actions affect quality of air and water and its ability to sustain



**What do you notice about this Albatross?**



**Albatross**



# Video Water



# Review of Safety Procedures



## Science Safety Contract

1. I will listen carefully and follow all the teachers direction.
2. I will not touch anything without the teachers permission
3. I will use all materials and tools responsibly
4. I will work hard to keep myself and my friends safe.
5. I will wash my hands after science activities



## Oil Spill Disaster - Activity

**Scenario:** There has been a massive oil spill in an environmentally sensitive area! The Prime Minister of Canada, Justin Trudeau, has requested Mrs Williams' grade 2's class to help solve this problem.

Your goal is to make sure that you use the most efficient methods.



# Oil Spill Disaster - Activity

**Problem:** Your group must simulate (duplicate or mimic) the oil spill in order to test all the materials and methods. You may assign roles, placed on your table to each members of your group. These roles include: Project Engineer, Project scientist, Project Mathematician, Principal Investigator. You decide as a group.

- In your group, you will need to solve the oil spill problem.



# Students Roles:

## Project Engineer

- Responsible for ensuring all technology activities are conducted accurately
- Reports technology findings on tracking sheets

## Project Scientist

- Responsible for ensuring all science experiments are conducted accurately
- Reports science findings on tracking sheets

## Project Mathematician

- Responsible for ensuring all math activities are conducted accurately
- Reports math connections on tracking sheets

## Principal Investigator

- In charge of managing group
- Lead the group by conducting the activity or by assigning duties to the other members of the group
- PI is in charge of safety



## **Oil spill Disaster Activity**

### **Instructions:**

- **Each group must take a cup containing vegetable oil**
- **Add 1-4 drops of food coloring. (The oil represents crude oil and the food coloring represents chemicals trapped inside of the oil).**
- **Mix both the materials using a popsicle stick|**
- **Next, carefully pour the dyed oil into the center of the container with water**
- **Float a small craft stick in the middle of the oil spill.**  
**The craft stick represents a ship.**
- **What are the best materials to remove the oil.**

**You have a budget to follow! Complete this as a group.**

- **After you have tried all other provided materials, add a few drops of the dishwashing soap or other liquid and record your results**



# Oil Spill Disaster - Activity

## Oil Spill Disaster

Fill out this order form by choosing materials to help you clean up the oil spill.

Your team has a **\$60** budget to buy the materials

Type of material	Cost	Quantity	Cost x Quantity
Large Sponge	\$ 30		
Small sponge	\$ 10		
Q-tip	\$ 2		
Cotton Ball	\$ 5		
Pipet	\$ 20		
Total			



# Observation Sheet

## Observation Sheet

Type of material used	Materials role Was it an - absorber ?  Did it break up the oil into small droplets?	How well did the material work on a scale of 1- 5 5 being 😊  1 being ☹️	Write or draw your observations



# Consolidation

- What part of the activity did you enjoy the most?
- What part of the activity did you find challenging? Why?
- What happened to the oil when you poured the dish soap? Why?
- What was the colour of the water when you added all the materials?



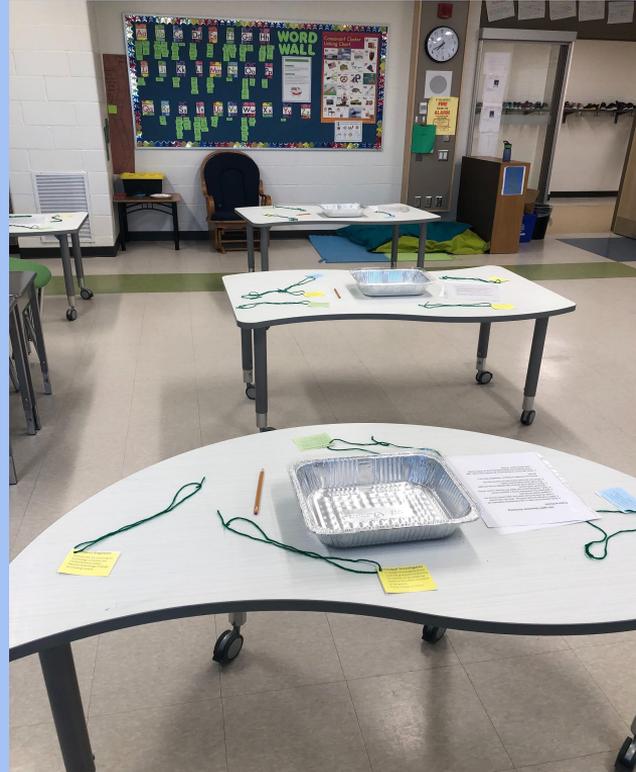
# Required Resources

- Projector
- Video: “The Water Song” - Mary Lou Smoke  
<https://www.youtube.com/watch?v=kIHxDXx5st8>
- Video: “The Water: Looking after our Planet”  
<https://www.youtube.com/watch?v=bGWr5jXJfbs>
- Items required for the oil spill disaster activity
  - Shampoo - I used Johnson’s baby
  - Dish washing soap
  - 3 small plastic containers (to put materials)
  - Cotton swabs
  - Cooking oil
  - Sponges - large and small
  - Cotton balls
  - Pipet
  - Rectangular Aluminum foil containers for each table/group
  - Popsicles sticks

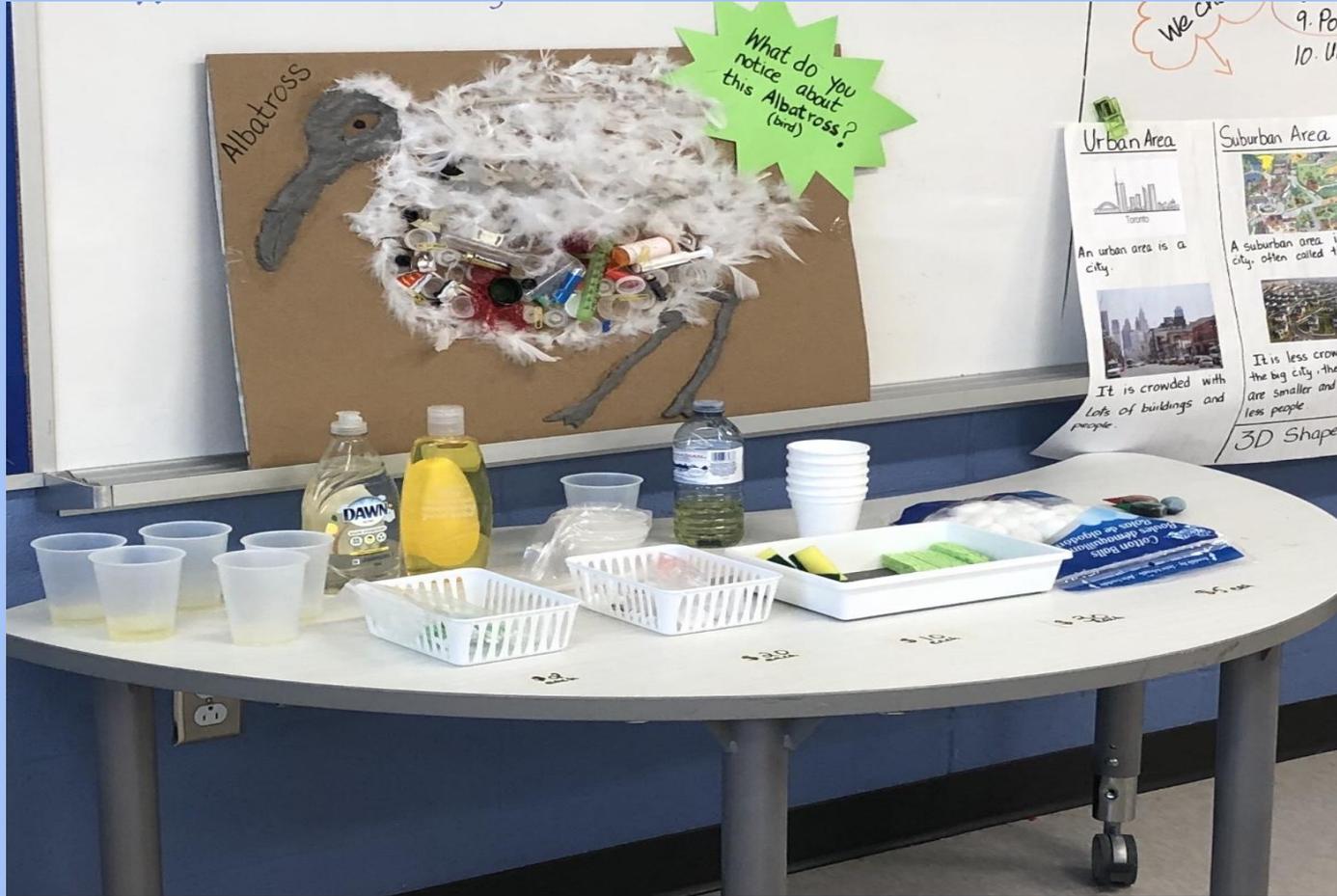


# Required Resources

- Observation sheet - each table/group
- Student Roll Tags - each table/group
- Food colouring
- Water
- Order form sheet
- Pencil - each table/group
- Label the cost of the materials they will need



# Required Resources



# Notes

The oil spill activity uses inquiry based learning by stimulating a real world situation (oil spill) and provides students an opportunity to make their learning more relevant to their lives. This activity promotes and celebrates scientific reasoning and understanding through creating problem-based learning/STEM.

This lesson seamlessly integrates

- Mathematic
- Social studies
- Technology,
- FNMI perspective and
- Social Justice.

## **The Lesson/Activity**

This 90 minute lesson begin with a video - Mary Lou Smoke an indigenous woman (belonging to the Bear Clan) sings “The Water Song” (the children sing along) which is followed by a short discussion and an educational video about water pollution



# Notes - Continued

and the importance of water on our planets and how it impacts living things. The teacher asks the students a few questions and instructs the students to write/draw their answers on sticky notes which she places on the RAN Chart. She also adds new vocabulary words on the RAN Chart .The students also examine a scale model of a cross section of the albatross (which was created by the teacher) which shows the stomach contents (plastic bottle caps, hypodermic needles, discarded batteries,small plastic containers) that led to the birds demise.

The teacher then goes over the safety procedure before the students begin the inquiry. The students have been placed in small groups. Each student is assigned a particular role, wherein they recreate an oil spill (with water, vegetable oil, food colouring. The oil represents crude oil and the food colouring represents chemicals trapped inside the oil). The students have to record their observations and brainstorm solutions of how to clean up the



# Notes - Continued

oil spill. They were tasked with purchasing various items to clean up the oil spill and were given a budget of \$60.

The students in their groups had to collaboratively decide what to buy (cotton balls, pipet, sponges, Q-tips) to solve the problem.

They were also given a small amount of detergent to see if that would help or hinder the situation.

The students were asked to record their observations on the observation sheet. After the completion of the inquiry, the teacher asks the students a number of critical questions as part of the consolidation of the lesson and to ensure that the students understand the Big Idea.



**Extension of this Activity:  
Language**



# Overall Expectations - Writing

1. Generate, gather, and organize ideas and information to write for an intended purpose and audience;
2. Draft and revise their writing, using a variety of informational, literacy, and graphic forms and stylistic elements appropriate for the purpose and audience;
3. Use editing, proofreading, and publishing skills and strategies, and knowledge of language conventions, to correct errors, refine expressions, and present their work effectively;

# Overall Expectations - Media Literacy

1. Create a variety of media texts for different purpose and audiences, using appropriate forms, conventions, and techniques;



# Specific Expectations - Writing

***1.1 identify the topic, purpose, audience and form for writing***

***2.1 write short text using several simple forms (e.g., a friendly letter; a factual recount of a **scientific** or mathematical **investigation**; a recipe describing the procedure for cooking a favourite food; directions for playing a game; a paragraph describing the physical characteristics of a familiar story, modelled on the stories read; their own variations on a patterned poem; an advertisement for a toy)***

***2.2 establish a personal voice in their writing, with a focus on using familiar words that convey their attitude of feeling towards the subject or audience (e.g., words that convey admiration for a character: a cool person)***

***2.8 produce revised, draft pieces of writing to meet criteria identified by teacher, based on the expectation***

***3.3 confirm spelling and word meanings or word choice using a few different types of resources (e.g., locate words in alphabetical order by using first and second letters in a primary dictionary, on a word wall, or in an online picture dictionary)***



# Specific Expectations - Writing

*3.5 use parts of the speech appropriately to communicate their meaning clearly with a focus on the use of: proper nouns for local, provincial, and national place names and for holidays; the personal object pronouns me, you, him, her, us, them; adjectives to describe a noun; verbs in the simple prepositions of places and time (e.g., under, with, before, after)*

*3.6 proofread and correct their writing using a simple checklist or a few guiding questions developed with the teacher and posted for reference (e.g., Does each sentence make sense? Are the ideas and information presented in a logical order? Does each sentence begin with a capital letter and end with a period, question mark, or exclamation mark? What resource can I use to check the spelling of a word if it doesn't look right?)*

*3.8 produce piece of published work to meet criteria identified by the teacher, based on the question*



# Specific Expectations - Media Literacy

*3.4 produce media text for specific purpose and audiences, using a few simple media forms and appropriate conventions and techniques (e.g.,*

- *a story illustrated with diagrams and digital images*
- *A sequence of pictures and/or photos graphs telling the story of a class event or celebration*



# Learning Goals:

## We are learning about:

- the impacts of human actions on the quality of air and water and the ways in which the quality of air and water has an impact on living things
- Living things need air and water to survive
- Organizing ideas and information to write for an intended purpose and audience

# Success Criteria:

## We will know that we are successful when we

- understand how our actions affect the quality of air and water and its ability to sustain life
- implement strategies to reduce and efficiently use the amount of water we use
- Establish a personal voice in our writing using familiar words that convey/express our feelings towards the subject or audience



# Agenda:

- Video - Fresh water
- RAN Chart
- Write letter - Parents / Friend / Government Official expressing concerns about Water Pollution
- Create a Word Cloud



# Video Freshwater



# Write a Letter - Parents / Friend / Government expressing concerns about Water Pollution

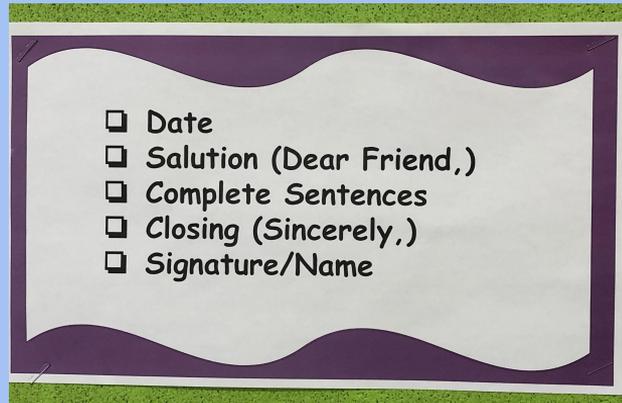
Dear Sir,

I would .....

.....

.....

Sincerely,  
Mrs. Kashif





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