Lesson 3 - Litter

**Problem statement (**Students could use the background information in this lesson to construct a solution to the problem.)

Picture this: It’s a beautiful summer day and your family goes to the lake to swim. When you arrive there is a large sign that reads “Lake closed for swimming due to pollution.” While you are bummed out, you overhear a lifeguard stating that he hasn’t seen any salmon either. This gets you thinking about the connection between not being able to swim and the missing salmon.

The health of the environment is at a critical point. The government agency that oversees this, The Environmental Protection Agency (EPA), has lost a big portion of its budget. That means that they are unable to have enough employees to help make sure people are following the laws. Since people are not being held accountable, some people are breaking the laws and causing damage. One piece of the environment that is greatly impacted is the water. Bodies of water, like lakes and rivers, provide homes to many different types of plants and animals. When pollution enters these ecosystems the damage done is difficult to repair.

The Environmental Protection Agency is looking for new ideas to solve the water pollution problem. You will need to convince the EPA that your plan is the right one to solve this problem and save the fish!

**Learning Objectives:**

* I can explain the impact of litter on water quality.
* I can name five different types of litter that affect water quality.
* I can give an example of how to remove litter from a water environment.
* I can make a cause and effect connection between humans and water quality based on my knowledge of litter.

**Lesson standards (NGSS, CCSS, CTE):**

**4-ESS-2: Cross Cutting Concept:** Cause and effect relationships are routinely identified and used to explain change.

**4-LS-1 and 4-LS-2 Cross Cutting Concept:** A system can be described in terms of its components and their interactions.

**4-LS-1:** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

If relevant to lesson, include:

*Soft skills:*  Environmental literacy, Critical Thinking and Problem Solving, Communication and Collaboration

*Locally and/or personally relevant for students:* Students most likely all have the experience of seeing litter in their own environment or in local waterways, lakes, or ponds.

*Connections to career and educational pathways:* EPA, water quality professionals

**Materials:**-Google Slides Lesson 3 Litter  
-Articles printed out  
-Water Quality Science Journals

**Lesson preparation:** Preview the video and read through the articles so you have background on the topics. You can print the articles for your students as well.

**Time required:** 60 minutes

**Grouping of students for instruction:** Have students sit next to their partner in whatever way works best for your students.

**What is the instruction?**

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| --- | --- | --- |
| **Time** | **Teacher** | **Student** |
| 5 min  25 min  25 min  10 min  10 min | \*Gather students in a way that works for your classroom. Introduce problem statement.  \*Review the KLEWS chart  \*Read students the book “Just a Dream” by Chris Van Allsburg or play the youtube video of it being read aloud.  \*After the book, discuss their noticings and wonderings as a class.  \*Ask them what they think our topic will be about today.  \*Display google slide title “Lesson 3, litter” Ask students what they think litter is.  \*Write down their ideas in a place everyone can see.  \*Tell them you will be discussing the most common types of litter and you want them to be thinking about how it impacts animals and their environment.  \*As you are going through the slides, have them take notes in their science journals.  (As you are going through the Google Slides make sure you read the notes for each slide. You want them to be thinking about how they could research this for the PBL and litters impact on salmon without telling them directly)  \*Ask students how litter can impact Lake Washington.  \*Add to the KLEWS Chart, what they learned. Give them each a sticky note and write something they learned about litter in our water.  \*Have them take any additional notes in their science journals about what they learned.  Conclusion  \*Teacher will give exit slip to gauge understanding of the lesson material. | \*Listening to problem statement.  \*Students listen as you read.  \*Have a class discussion about the book, let it be an open conversation with the class. Their thoughts, feelings, noticings and wonderings.  \*Students share what they think our topic will be about.  \*Students will talk to a partner in a turn and talk, also called “Think, Pair, share”. Give them a minute to think then have them turn to their partner and discuss then share with the class.  They will write their ideas down on a sticky note to add to the KLEWS chart in the K column  \*Attend to presentation while taking notes and asking questions.  Think, Pair, Share throughout and take notes.  \*Think, Pair, Share  \*They write on a sticky note something they learned.  \*Students document how what they have learned can help them solve the PBL  \*Students will fill out exit slip in order to demonstrate their learning. |

**Accommodations:**

* Set up groups ahead of time to support different student learning needs.
* For students with vision needs, arrange for the to sit closer to the presentation or print out copies for personal use.
* Lesson may be broken up into parts if needed.
* Alternative to exit ticket may be used if the classroom has other strategies that work for assessing student growth and learning.

**Extensions:**

* Have students go outside and locate different types of litter. Assess how this litter could end up in the local watershed.
* Create posters or signs for the school about being responsible by disposing of litter in the appropriate ways.
* Check with local waste management or water districts to see if they have any presentations that can come to the school to demonstrate or explain these concepts in more detail.

**Assessment:**

Exit ticket based on learning objectives: Lesson 3 - Exit Ticket

**References/Resources:**

Article on Microplastics

<http://vancouversun.com/news/staff-blogs/microplastics-in-the-ocean-are-moving-up-the-food-chain-study-says>