Lesson 2 - Environment and Organisms

**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 discuss fish migration.
* I can define the word “environment”.
* I understand the salmon life cycle.

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

**4-LS1-1 and 4-LS1-2: Cross Cutting Concept**: A system can be described in terms of its components and their interactions.

**LS1.A: Structure and Function:** Plants and animals have both internal and external structures that serve various functions in growth, survival, 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 in the Pacific Northwest may be aware of the Hiram Chittenden Locks. Elsewhere, look for a fish ladder or migration route near you.

Connections to career and educational pathways: Fish ladder, hydrologist, dam engineer

**Materials:**

-KLEWS Chart  
-Water Quality Science Journals

-Problem Statement

-Lesson 2 - Organisms and Environments Slide Presentation

**Lesson preparation:**

Set up KLEWS chart.

**Time required:**  65 minutes

**Grouping of students for instruction:** pre-assigned small groups of 4 at the most or partners

**What is the instruction?**

|  |  |  |
| --- | --- | --- |
| **Time** | **Teacher** | **Student** |
| 5 min  15 min  10 min  25 min.  10 min | Gather students in a way that works for your classroom. Remind of problem statement.  Review the KLEWS chart  Introduction to Organisms  \*Ask the students, “what is an organism?”  \*Show the students the *presentation slides* that has many different organisms. Tell students that the photos are all of organisms.  \*Ask the students again about what an organism is now that they have seen the slides. Come to a conclusion as a class about what an organism is.  (An organism is any living thing, including plants and animals)  \*Tell students that all organisms are living or alive. Ask students, “how do you know if something is living?”  Living things need to:  Breathe, eat, eliminate waste, reproduce (have babies)  \*Ask students, based on what we talked about is a rock alive? Why or why not?  \*What about water?  \*What about salmon?  Introduction to Environments  \*Ask students “what is an environment?”  \*Show the students the *presentation slide* that has many different environments. Tell students that the photos are all of environments.  \*Ask the students again about what an environment is now that they have seen the slides. Come to a conclusion as a class about what an environment is.  (Tell students that an environment is everything that surrounds and influences an organism. It has both living and non-living things!)  Organisms in Environments - Salmon in Lake Washington  \*Have a discussion with the class similar to the script below:  Our classroom is an environment because it has us, the living humans and lots of other non-living things that we use!  Salmon are an organism that also live in an environment.  What environment do you think that salmon live in?  Now that we understand what an organism is, we are going to study a specific organism that is important to our Lake Washington Environment: Salmon.  Salmon are a very special fish because they can live in freshwater (rivers) AND saltwater (ocean). Most other fish can only live in one type of water.  They eat\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_ eats them.  +Young salmon eat insects,  invertebrates, and plankton.  +Adults eat other fish, squid, eels,  shrimp.  \*Show students slide 13 in Lesson 2 - Organisms and Environments Slide Presentation   * Discuss the phases along with the presentation   Salmon life cycle (ways to help students relate to salmon development included)  1. Salmon eggs  2. Alevins - first hatched - baby salmon  3. Fry - kindergarten salmon  4. Smolts - rebellious teenage salmon  5. Ocean life - college salmon  6. Migrating to spawn - adult salmon  7. Spawning - salmon starting a family  8. Death - deceased salmon  Salmon always travel back to the stream they were born in. They will travel back up a river to the place they were born to lay their eggs.  \*This is a good place to show salmon videos from resources below, such as the Salmon Life Cycle Song  \*Have students fill out Lesson Reflection Book  Conclusion  \*Teacher will give exit slip to gauge understanding of the lesson material. | Listening to problem statement.  \*Students will talk to a partner in a turn and talk, also called “Pair, share”.  They will write their ideas down on a sticky note to add to the KLEWS chart in the K column  \*Attend to presentation  \*Pair, share.  \*Pair, share.  \*Pair, share.  \*Pair, share.  \*Pair, share.  \*Students will pair, share and then will write their ideas down on a sticky note to add to the KLEWS chart in the K column  \*Attend to presentation  \*Pair, share.  \*Students will respond to questions when asked and engage in pair, share  “Salmon live in oceans and rivers!”  Young salmon eat insects, invertebrates, and plankton.  Adults eat other fish, squid, eels, shrimp.  \*Have students draw life cycle as it is presented on plain white paper.  \*Can also include movement with the names of the developmental stages to help solidify the vocabulary  1) Students make a circle with hands  2) Rock arms like rocking a baby  3) One finger wiggling  4) One sideways open hand waving  5) Two hands together swimming  6) Two arms imitating swimming  7) Dance  8) Arms across chest  \*Try to match life cycle movements to life cycle videos  \*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 write or draw an ideal environment for salmon or another fish local to your area. Make sure they include living and non-living materials and that they can explain why the materials included are important.

Have students measure the distance of salmon migration from the Sammamish River through the Puget Sound (eventually leading to the Pacific Ocean) using the last slide in the Lesson 2 - Organisms and Environments Slide Presentation

Create an art project about salmon and/or salmon life cycle

**Assessment:**

Exit ticket based on learning objectives: Lesson 2 - Exit Ticket

**References/Resources:**

Lesson 2 - Organisms and Environments Slide Presentation

Supplemental Resources

Did you know? Fish migrate too.

<https://www.youtube.com/watch?v=KzlBtMFc43s>

Chinook Salmon Run

<https://www.youtube.com/watch?v=uqR2g8darqs>

Salmon Life Cycle

<https://www.nps.gov/olym/learn/nature/the-salmon-life-cycle.htm>

Salmon Life Cycle Song

<https://www.youtube.com/watch?v=qV30UZ9aF04>

Pacific Salmon Marine Phase Identification

<http://www.adfg.alaska.gov/static/fishing/pdfs/sport/SalmonID2014.pdf>