Exploring the Salmon Life Cycle

Essential understandings

☐ Since time immemorial	☐ Tribal government	X Language
☐ Sovereignty	☐ Identity	☐ Treaties with the United States
☐ History	X Lifeways	☐ Genocide, federal policy, and laws

Learning outcomes

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

- Demonstrate their understanding of the salmon life cycle by creating a stream scene sculpture showcasing different habitats and life stages of salmon.
- Utilize the elements of shape and form to create a sculpture with multiple natural structures and organisms.

Essential questions

How do salmon travel through their ecosystem during the different stages of their life cycle?

Why are the salmon an important part of the Coquille Indian Tribal people's lives?

Logistics

- Where does the activity take place? *Classroom*
- How are the students organized?

☒ Whole class ☒ Teams: 3-4 ☐ Pairs ☒ Individually

Time required

5 - 30-45 minute class periods

Oregon standards

Oregon Science Standards:

- 3.LS1.1 - Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

Oregon Language Arts Standards:

- 3.W.8 - Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

Oregon Visual Arts Standards:

- VA.1.CR1.3.3 Constructively use and explore materials in creating a work of art or design to communicate an idea.
- VA.2.CR2.3.3 Individually or collaboratively construct representations, diagrams, or maps of places that are part of the students' everyday lives.

Materials

- Long rectangular cardboard sheet for each student
- Construction paper or colored cardstock (blue, green, brown, various accent colors)
- Pebbles/rocks and natural objects
- Hot glue gun(s)/ hot glue sticks
- Washable glue sticks
- Scissors for each student
- Fine line sharpie or pen for each student
- YouTube video: https://www.youtube.com/watch?v=2xG6waimZnI
- White printer paper

Vocabulary

- Alevins – just hatched salmon which still have yolk sacs attached to their bodies.
- Brackish- Slightly salty, such as the mixture of river water and seawater in estuaries.
- Estuary- Body of water where freshwater river meets the ocean.
- Coquille (ko-kwel) Indian Tribe : A federally recognized group of indigenous people who have lived on the southern Oregon Coast since time immoral.
- Element of Form – One of elements of art. Form refers to objects that are 3-Dimensional, or have length, width, and height. Form is utilized in the artistic process of sculpting.
- Fish weir- An obstruction placed in tidal waters or across a river or stream on trap fish.
- Freshwater- Water that does not have much salt, such as rivers, lakes, and streams.
- Fry – young salmon that have eight fins and feed on microscopic organisms.
- Kelts – the last stage of the salmon life cycle after spawning.

- Miluk- One of the three traditional languages of the Coquille people.
- Parr – young salmon that have passed the fry stage and have developed vertical stripes and spots for camouflage.
- Redd – a gravel nest for salmon eggs.
- Salmon - several species of ray-finned fish in the family Salmonidae that are native to the rivers and streams flowing into both the North Atlantic and Pacific oceans.
- Saltwater – water that contains salt such as ocean water and water in coastal wetlands .
- Smolt – 1-3 year old salmon that travels to the ocean to feed.
- Smoltification – the process of salmon transitioning to survive from freshwater to salt water.
- Spawn – to release or deposit eggs and produce new salmon.
- Nuu-wee-ya'- One of the three traditional languages of the Coquille people.
- Watershed- Land area that channels rain and melted snow through streams and rivers to the ocean.

Extension Activities

- **Students can write the story of their salmon's journey in their salmon workbook.**
- Students can create additional salmon out of paper, and attach them to popsicle sticks to create salmon "puppets".

Students can practice telling their salmon stories with their artwork used as an illustration or narrative aid.

Overview

In this lesson students will learn about the different stages of the salmon life cycle. They will also learn about how the salmon moves from freshwater to the ocean during the different stages. Students will demonstrate their knowledge of the salmon life cycle and their ecosystem through a diorama.

Background for teachers

"Salmon" is the common English name for several species of ray-finned fish in the family Salmonidae that are native to the rivers and streams flowing into both the North Atlantic and Pacific oceans. Salmon are typically—but not always—*anadromous*, which means they hatch in fresh water, migrate to the ocean, then return to fresh water to reproduce.

For millennia, the various species of salmon indigenous to the Pacific Northwest have served as a keystone species, a living organism that helps sustain an entire ecosystem. They have also played an integral role in the subsistence and flourishing of Indigenous people in Oregon since time immemorial. Many features of Native lifeways in the Pacific Northwest are rooted in, oriented around, or influenced

by the salmon life cycle. Some Native peoples even view salmon as relatives to be treated with respect, such as through honoring the first salmon caught each season and not overfishing or wasting any salmon caught.

As with other Native peoples, the Coquille Indian Tribe has long relied on Chinook salmon for cultural, spiritual and subsistence reasons. This past and continuing importance of salmon is reflected in the representation of salmon or fishing in the emblem of the Coquille Indian Tribe (which includes a fishing harpoon) as well as those of several other federally recognized Tribes in Oregon. The Tribe maintains and teaches traditional cultural practices related to the harvesting, preparation, and consumption of salmon, and works on its own and in collaboration with others to maintain healthy native runs of Pacific Salmon in the estuaries and watersheds of coastal Oregon. This includes working with the Oregon Department of Fish and Wildlife to raise salmon in hatcheries and protecting and restoring salmon habitat.

To prepare for this lesson teachers should

- Review all materials for this lesson.
- Prepare classroom audiovisual technology to display the YouTube videos.
- Gather and organize papers and sculpting materials in a central location in the classroom. (see "Materials" section above).
- Write the lesson objectives and key vocabulary on the classroom writing surface.

References

Aadland, C. (February 2022). "Working to save Chinook salmon." *Indian Country Today*. **https://ictnews.org/news/working-to-save-chinook-salmon**

Hall, R. (1995). *People of the Coquille Estuary: Native use of resources on the Oregon Coast*. Words and Pictures Unlimited.

Krohn, E., & Segrest, V. (2017). Cedar box teaching toolkit. Muckleshoot Indian Tribe. **http://www.npaihb.org/download/authoring_project/weave-nw/Cedar-Box-TeachingToolkit.pdf**

Stewart, H. (1977). *Indian fishing: Early methods on the Northwest Coast*. Douglas and McIntyre.

Resources

Salmon news on the Coquille Indian Tribe website: **https://www.coquilletribe.org/?cat=24**

Videos teaching about the salmon life cycle: https://www.youtube.com/watch?v=2xG6waimZnI

https://www.youtube.com/playlist?list=PL-zJ-ZL58PjKN91wyO-SyTk7eon4mYmuc&jct=SmVH1Hgi3jnjDIYAdGUf3kBDf7sPfg

Considerations for teachers

Assessment

Students will present their dioramas to small groups of students explaining their ecosystem and where and why they placed the different stages of the salmon life cycle in their diorama.

Practices

- Small groups – use small groups for the end of the lesson when students present their dioramas.
- Classroom discussion – students will watch the YouTube videos and have whole group discussions following. As a whole group students will discuss the important vocabulary and topics learned that should be written down in their "Salmon notes" booklet.

Learning targets

- I can demonstrate my understanding of the salmon life cycle by creating a stream scene sculpture showcasing different habitats and life stages of salmon.
- I can utilize the elements of form and shape to create a sculpture with multiple natural structures and organisms.

Activities

Activity 1

Warm-Up | *15 minutes*

Overview: Students engage in a warm-up activity to activate their prior knowledge and prepare for the lesson.

Step 1: Students will create a "salmon workbook" out of blank printer paper. Each student will take 3 pieces of paper and fold them in half. On the front of the paper write the title "Salmon Workbook". This is where students will keep notes on what they have learned about the Salmon Life Cycle.

Step 2: Discuss everything the class already knows about the salmon life cycle. As well as anything they already know about how the salmon were important to the Coquille Indian Tribe. Write down their answers in the Salmon Workbook.

Activity 2

Life Cycle Video | *30 minutes*

Overview: Students will watch a video and take notes in their Salmon Workbook.

Step 1: Students will watch the video "Life Cycle of the Pacific Salmon." The teacher will pause the video throughout to assist the students in their notetaking. Writing down any important vocabulary terms, focusing on the life cycle and where the Salmon live in their ecosystem during the different stages of the life cycle. Throughout the video, pause and ask:

What shapes do you notice in the salmon at this stage?

Practice sketching some of the shapes of salmon in different stages of their life cycle, and have students label them in their salmon workbook.

Activity 3

Building a Diorama | *2-3 class periods 30 minutes each*

Overview: Students will take what they have learned about the Salmon life cycle and construct a diorama. Their diorama will include shapes of the salmon constructed out of cardstock at the different stages of the life cycle, and various natural objects to add form to their diorama.

Step 1: Brainstorm with the students how they can use the provided materials to create the ecosystem for salmon. Discuss what their ecosystem is and how it changes throughout their lifecycle. Have students flip through their Salmon Workbook to remember what they have learned about the Salmon life cycle and the shapes used to create illustrations of salmon at different stages. Explain that they will not only be creating the ecosystems but will also be placing cut outs of the different stages of the life cycle in their ecosystem. Demonstrate cutting out and piecing together salmon shapes in some different stages of the life cycle, so students can see how it works.

Step 2: Have students draw and cut out their salmon shapes out of colored cardstock. Allow time for them to use glue sticks to piece the shapes together, and encourage them to add visual details with additional, smaller cut out shapes or fine line pens or markers.

Step 3: Give each student a rectangular piece of cardboard to construct their ecosystem on. Their diorama should include all the different locations of the salmon life from the beginning to the end of their life cycle. Demonstrate cutting large pieces of colored paper to lay a background, and show students how to glue their salmon shapes on top.

Step 3: Explain to students that you will be adding forms to your diorama. Review the definition of form, and have students brainstorm different forms that they saw in the various locations of the salmon ecosystem (e.g. plants, river, rocks, grass, etc.) Have the provided sculpting materials in a central location for students to collect what they need. Encourage students to add details like plants, rocks, and other river creatures to enhance their stream scene sculpture. Set up a hot glue station where students can get assistance hot gluing their sculptural details.

Activity 4

Presenting | *30 minutes*

Overview: Students will present their dioramas in small groups.

Step 1: Place the students in small groups with their completed dioramas. Each student should take turns presenting their ecosystem. Tell the students they should be explaining where the salmon are in the different stages of their lifecycle, making sure to use the correct name for the different stages. They will also explain what they have learned about why salmon is so important to the Coquille Indian Tribal people.