



SCIENCE

Wisdom From Time Immemorial: Traditional Ecological Knowledge

ESSENTIAL UNDERSTANDINGS

- **Since Time Immemorial**
- **History**
- **Lifeways**

LEARNING OUTCOMES

Student will understand

- what traditional ecological knowledge is, and
- how Oregon Tribes use TEK to sustainably harvest native plants.

ESSENTIAL QUESTIONS

- What is traditional ecological knowledge (TEK) and how was it developed since time immemorial?
- What does TEK tell us about sustaining local plants and ecosystems?

TIME REQUIRED

- 30 minutes

Overview

This lesson focuses on the deep, ancestral connection that Oregon's tribal nations have to their lands, cultures, and traditions. Students will learn about Tribes' traditional ecological knowledge (TEK) and how this type of knowledge enables them and others to engage in sustainable harvests and ecosystems. As an example, students will have opportunities to watch a video about camas harvesting, engage in discussion, and process their thinking in a quick write.

Background for Teachers

This lesson addresses the Essential Understandings, History, Lifeways, and Since Time Immemorial. These concepts are fundamental to Indigenous worldviews, oral traditions, and legal systems because they emphasize Native Tribes' continuity, stewardship, and sovereignty over their lands long before external settlers arrived. There are nine



federally recognized Tribes in Oregon. Each is made up of numerous smaller Tribes, nations, and bands. These Tribes have been present on the land in Oregon since time immemorial, predating written history and colonial records.

While Oregon Tribes are each distinct sovereign nations with distinct traditions and languages, each has always lived in a balanced relationship with their lands and waters, relying on what is called Traditional Ecological Knowledge (TEK). Up until the arrival of settlers, the Indigenous peoples of Oregon lived subsistence lifestyles, where survival depended on informational accuracy and concerted sustainability efforts. Even small environmental indicators such as squirrel behavior in the fall, or caterpillar markings, can illustrate a TEK data set that has been established and relied on for other traditional activities, such as gathering or hunting and/or fishing." This type of knowledge has been accumulated, tested, and refined since time immemorial through careful observation and interaction with the environment. TEK is still used today.

Oregon Tribes' relationship with their lands is based on an understanding that they are an integral part of the ecosystem in which they live. The local plants, animals, and other elements are members of their extended family and important teachers for whom they have a responsibility to care. Their TEK includes an understanding of when and how to harvest plants, hunt animals, and fish in ways that promote a healthy environment, so that year

STANDARDS

Oregon Science Standard

- **3-LS4-4.** Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

KEY WORDS and IDEAS

- **Time Immemorial:** So long ago that no one can remember when it started.
- **Traditional Ecological Knowledge (TEK):** What Native people have learned about nature by living close to the land for a very long time. This knowledge is passed down from elders to children through stories, songs, and doing things together.
- **Sustainable harvesting:** Gathering food in a way that ensures the land and plants will still be healthy in the future.
- **Ecosystem:** A community of living and nonliving things that support each other in their environment.



after year they can continue to harvest and hunt.

For many years, Oregon Tribes have sought to reclaim their traditional lands. For example, the Cow Creek Band of Umpqua Tribe of Indians have fought to regain control of the Cow Creek watershed to retain fishing rights and preserve the area. They now have an agreement with the Oregon Department of Fish and Wildlife that gives them say in the management of the areas they traditionally hunted, fished and harvested. Similar efforts to reclaim and heal traditional homelands exist across the nine Tribes.

MATERIALS

What materials are needed for students to engage in this activity?

- Slide deck
- Information cards about traditional harvesting practices of Oregon Tribes
- Student notebooks or paper for quick writes
- Student self-assessment

Considerations for Teachers

Practices

While teaching this lesson, the following principles can help guide your decision-making and engagement with students.

- Focus on teaching the Essential Understanding(s) through discussions of sustainable harvests.
- When sharing content with students, address the “why” not just the “what”.
- Highlight the strengths/struggles of Oregon’s Indigenous peoples today while also acknowledging their history and tradition.
- Ensure your teaching practices are accessible and appropriate for Native and non-Native students.
- Be clear that traditional ecological knowledge is not a historical artifact but continues to be practiced and developed today.
- Avoid generalizing across all Native American groups.

Assessment

During this lesson, observe and listen to students during discussions and as they work independently and collaboratively to determine how their learning is

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progressing. Write down what you notice about what students say and do in relation to the success criteria. Use this formative information to provide feedback to students and plan next steps.

At the end of the lesson, provide students with an opportunity to reflect on their learning through a self-assessment. Students can indicate their level of learning relative to specific success criteria. They can also write out an explanation of why they feel they are at that learning stage.

Success Criteria

- I can explain what "since time immemorial" means for Oregon's Tribes.
- I can describe an example of traditional harvesting practices.
- I can explain how tribal ecological knowledge helps maintain healthy ecosystems.

For the following activities, use the slide deck to support your implementation.

Opening

Time: 10 minutes

Step 1:

Begin the lesson by introducing the concept of Traditional Ecological Knowledge (TEK) and explaining that today the class will be learning about how Oregon Tribes use this knowledge to sustainably harvest native plants.

Step 2:

Present the essential questions that will guide the lesson:

- What is traditional ecological knowledge (TEK) and how was it developed since time immemorial?
- What can TEK teach us about taking care of local plants and ecosystems?

Give students time to wonder about these questions and share their initial thoughts.

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Step 3:

Ask students, "What are some things you know about plants and animals? How did you learn about them?"

List their ideas on the board and have students discuss in pairs or small groups.

Say, "Today we're going to be learning about ways Native Tribes in Oregon learn about plants and animals. Some of those ways will be the same ways you learn, and others will be different. We'll also explore how Tribes use their knowledge of plants and animals to support their environments."

Step 4:

Introduce the definition of TEK: "Say, "Native American Tribes in Oregon learn about the living things around them through what's called Traditional Ecological Knowledge which is what Native people have learned about nature by living close to the land for a very long time. This knowledge is passed down from elders to children through stories, songs, and doing things together.

Step 5:

Discuss the meaning of "time immemorial" - emphasize that tribal nations were created in this place and have existed here since the beginning of time, developing deep knowledge of the land, plants, and animals throughout countless generations.

Share the quote: "From the coast to the interior valleys to the plateau and to the great basin, tribal peoples maintain continuous and balanced relationships including land and water."

Ask students to do a quick turn and talk: "In your own words, explain to a friend what time immemorial means."

Step 6:

Explain: "An ecosystem is a community of living and nonliving things that support each other in their environment."

Show the image of a pond ecosystem in the slide deck and ask students to identify elements and how they might support each other.



Say, "Can you also think about the ecosystem of a meadow or forest that has plants and animals that live outside of the water too? How do you think they support one another?"

Ask for a few volunteers to share with the whole group.

Step 7:

Explain: "An ecosystem is a community of living and nonliving things that support each other in their environment."

Step 8:

Review the learning outcomes and the success criteria with students.

Main Activity

Time: 15 minutes

Step 1:

Show students the map of Oregon highlighting the locations of the nine federally recognized Tribes.

Say to students, "Today we're going to be learning about the traditional ecological knowledge of Oregon Tribes. Though each Tribe has a lot in common, each Tribe developed their traditional ecological knowledge in relation to the specific area where they live. Can you find the Tribe closest to you? Take a minute to think about what the land is like there and what you might also know about it."

Step 2:

Show the slide with the image of people harvesting camas in a field of blooming camas plants.

Explain to students that many Oregon Tribes have been harvesting native plants such as acorns, huckleberries, and camas for a long, long time.

Explain that camas is a plant with a blue flower and a nutritious root that can be eaten when cooked and was an important food source for many Oregon Tribes.



Note: There is also a camas with a white flower that is deadly called Death Camas. This is different from the camas harvested by Native Tribes in Oregon.

Step 3:

Show the video "Rooted in Culture: Oregon's Wild Camas" featuring the Confederated Tribe of Warm Springs Elders harvesting camas. Video link: <https://youtu.be/kl-mc70jm98?feature=shared>

After the video, ask students to reflect on what they learned. Ask, "Could camas have been impacted and harvested by other tribes in Oregon?"

Step 4:

Explain that sustainable harvesting means gathering food in a way that ensures the land and plants will still be healthy in the future.

Review the sustainable harvesting techniques for each plant.

Asks students to move into pairs.

Distribute cards to students with information about harvesting acorns, camas and huckleberries to each student pair.

Ask students to work in pairs to create flashcards with the images. They can cut out the text and images and paste or tape them together. After, they can check each other's knowledge to see if they can recall the various sustainable harvesting practices for each plant.

Step 5:

Show the images of watersheds and traditional fishing practices to students.

Discuss as a class: How could these types of sustainable harvesting practices help solve environmental problems we face today?

Explain to students that many tribes are working with government agencies to help manage natural resources using their traditional knowledge.



Closing

Time: 5 minutes

Step 1:

Ask students to complete a quick write in their notebooks using the sentence frames:

- "One thing I learned about traditional ecological knowledge is _____."
- "This knowledge is important because _____."

Remind students that Oregon Tribes continue to practice and share this knowledge today.

Emphasize that this knowledge developed since time immemorial continues to be valuable for solving environmental challenges in our modern world.

Step 2:

Ask students to self-assess based on the success criteria. They can pick their level of learning (not yet, sort of, or yes) and share with a peer, or you can print out the self-assessment and ask students to fill it out and turn it in.

Additional Resources

Kindergarten Lesson: [Animals on the Reservation](#) by [The Confederated Tribes of the Grand Ronde Community of Oregon](#)



Cow Creek Band of Umpqua and ODFW develop co-management agreement:
<https://www.cowcreek-nsn.gov/odfw-and-cow-creek-adopt-co-management-agreement/>



Handout: Student Self-Assessment

Name:

Directions: Read the lesson success criteria in the first column. Then decide, can I do this now or not yet. If you chose Not Yet, share one thing you can do as a next step. If you chose Yes, share what you did well.

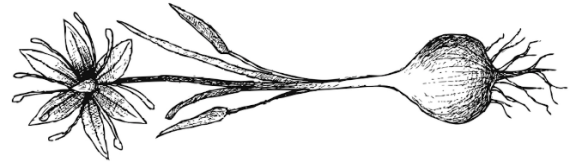
Success Criteria	Not Yet	Yes
"Can I..."		
explain what "since time immemorial" means for Oregon's Tribes?		
describe an example of traditional harvesting practices?		
explain how tribal ecological knowledge helps maintain healthy ecosystems?		



Handout: Printable Cards

Camas sustainable harvesting techniques

- Replant smaller bulbs.
- Use careful digging techniques.



iStock.com/Iamnee

Huckleberry sustainable harvesting techniques

- Use careful pruning techniques.
- Select the time to harvest for less disruption.



iStock.com/Marharyta Areshnikava

Acorn sustainable harvesting techniques

- Collect fallen acorns.
- Leave enough for wildlife and regrowth.



iStock.com/ilbusca

