

Canoe Design



Goal: Students will become familiar with the transportation used by the Natives of the Pacific Northwest and the process they went through to make canoes.

Oregon Common Core Standards:

- 6-8.RST.1 Cite specific textual evidence to support analysis of science and technical fields.

Next Generation Science Standards:

- MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

Oregon Social Sciences Academic Content Standards:

- Geography 8.12 Explain how current and historical technological developments, societal decisions, and personal practices influence sustainability in the United States.

Objectives:

- Students will be able to identify the type of transportation Native American people used in the Pacific Northwest.
- Students will be able to describe the different types of canoes used by Native Americans.
- Students will be able to construct a model canoe that meets the requirements and constraints of the experiment.

LESSON PLAN

Unit: Grand Ronde Tribal History

Lesson Title: Canoe Design

Rational: The only form of transportation for the Native people long ago was on foot or on the water by canoe. Natives had to use what was around them in order to provide for their families and construct transportation out of the resources in the natural world. The Canoes were hollowed out by fire and then carved out of cedar trees. Then they were steamed open using water and hot rocks. The Canoes were used for travel, fishing, and gathering or for use when trading. There were canoes of all sizes and shapes depending on where you came from or what you were using them for. For example, an ocean going canoe would be bigger with a bigger nose and higher sides than a river going canoe would be. Natives were great engineers of their time and although technology has advanced greatly since their time, they too once were expert engineers and at utilizing resources around them.

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LESSON PLAN

Material Needed:

- ✓ Canoe read aloud
- ✓ Vocabulary sheet
- ✓ Build a Canoe packet
- ✓ Pipe cleaners
- ✓ Glue
- ✓ Popsicle sticks
- ✓ Paper clips
- ✓ Pennies
- ✓ Pencils
- ✓ Water
- ✓ Small tub to fill with water to see if canoe will float
- ✓ String
- ✓ Scissors

Time: Two 50 minutes sessions

Anticipatory Set: Pose this question: Before there were cars and bicycles how do you think Native Americans traveled and got where they needed to go? Give students a moment of individual think time and then ask for students to share with the class.

➤ Lesson Steps:

➤ Day 1

1. Go over the vocabulary sheet with students. This can be done as a whole class or individually.
2. Present students with the canoe read aloud. Have students volunteer to read.
3. Assign students into groups of three.
4. Pass out the “Build a Canoe” packets to each student and explain to the students they will be building a model canoe out of various materials and placing it a tub of water to see if it will float. Go through the directions of the assignment.
5. Allow enough time for students to complete the planning stage of this experiment.

➤ Day 2

1. Have students get into their groups and gather the materials they will need to start building their canoe.
2. Once students have built their canoes allow for them to see if they float in water.
3. Have students answer the questions at the end of the “Build a Canoe” packet.
4. If time allows, have students share their findings with the rest of the class.

Differentiation: This activity can be done in partners. It can also be spread out for more than two days if time allows.

Early Finisher Activity: If groups finish early have them draw a sketch of another canoe if they were to have a second chance to build one.



LESSON PLAN

Assessment:

	Yes	No	Notes
Students were able to complete the Build A Canoe packet with a 90% accuracy rate			
Student was able to participate in their group to assist in building their canoe			

Notes/Other: Students may benefit from being assigned jobs in their group, such as a recorder, someone who's in charge of building and someone who's in charge of the materials, etc. You could also show YouTube video of Grand Ronde members building a canoe and of the Canoe Journey that the members of the Confederated Tribes of Grand Ronde participate in.

<https://www.youtube.com/watch?v=2xP0FetCbzM>

Attachments:

- ✓ Canoe read aloud
- ✓ Vocabulary sheet
- ✓ Build a Canoe packet



Vocabulary

Canoes

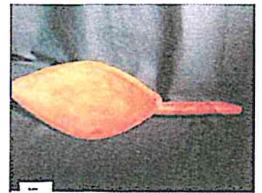
Bailer

Canoe

Mats

Definitions:

Bailer- a tool used for getting water out of the canoe if water came in over the sides - they were carved from wood or bark.



Canoe- A narrow wooden structure similar to a boat with pointed ends, propelled by paddles – the only form of transportation Native people long ago had besides on foot. They were the most efficient method of travel. There are several styles of canoes, from Chinookan western style with a nose to shallow river canoes. The Chinookan canoes are meant for deeper and swifter water and the river canoes are meant for shallower and slower waters.

Mats- woven from cattail or tule - would be used inside the canoe to either sit or kneel on – they were also used to cover the canoe once it was on land.



Cattail- a tall, reedlike marsh plant with straplike leaves and a dark brown, velvety cylindrical head of numerous tiny flowers.



Tule [too-lee]- a large bulrush that is abundant in marshy areas of California.



Transportation Read-Aloud page



The only form of transportation for the Native people long ago was on foot or on the water by canoe. There were many foot paths throughout Oregon to get from one place to another. But if you were going quite a ways it might be faster to go by canoe. The Canoes were hollowed out by fire and then carved out of cedar trees. Then they were steamed open using water and hot rocks. The Canoes were used for travel, fishing, and gathering or for use when trading. There were canoes of all sizes and shapes depending on where you came from or what you were using them for. For example, an ocean going canoe would be bigger with a bigger nose and higher sides than a river going canoe would be.

There were many sizes and shapes of the paddles as well. The shape and size of your paddle would also be determined by where you came from and which canoe you were using. Natives from different tribes have different patterns for their paddles and the size and shape of the paddle also changes if you are using an ocean going canoe or a river canoe. The paddles would be carved from hard wood (ash) that wouldn't be prone to breaking.

Every canoe would have a bailer on board. The bailer would be used for getting water out of the canoe if some water came in over the sides. These bailers would be carved from wood or bark. Mats from cattail or tule would be used inside the canoe to either sit or kneel on. The mats would also be used to cover the canoe once it was on land.

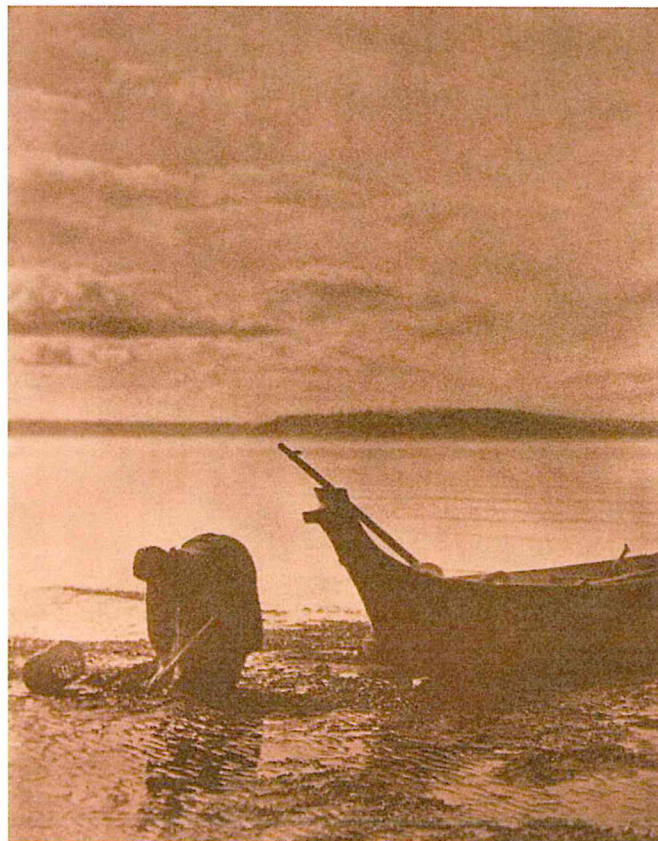
The traditions with canoes are being brought back in Native Communities today. Every year The Confederated Tribes of Grand Ronde are part of the canoe journey. Members of our tribe travel by canoe to the next closest tribe. At the new tribe the canoes are welcomed and fed with singing and dancing to follow. Everyone camps for the night and then the canoes travel to the next tribe, with the tribe that has hosted the previous evening joining the group. That pattern is continued until we reach the final destination. Each year the destination changes so that each tribe will hopefully have the chance to host the event.

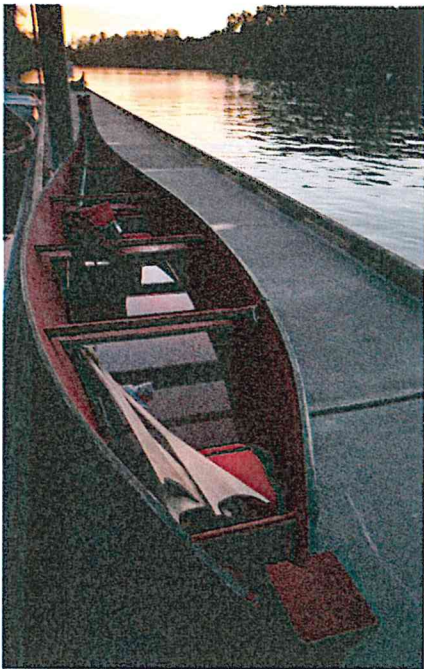


BUILD

A

CANOE





Names of Group Members: _____

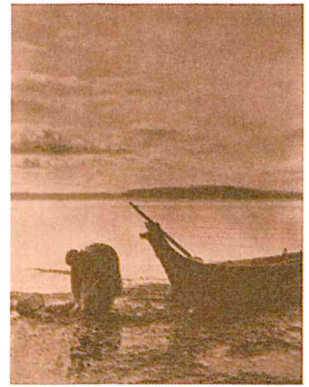
Instructions:

With your group you will be building a canoe, such as the ones that Native Americans traveled in. Your canoe will be tested to see if it floats and also if it can hold a load of supplies. The goal is for your canoe to float for at least three minutes and be able to hold supplies. You will be given options for material to build your canoe. If during the construction of your canoe your group feels it could benefit from other materials your group may negotiate with other groups for supplies. This must be done in a civil way and if a group does not want to negotiate they do not have to. Before you start building your canoe construct a plan with your group members. Consider the following:

- Think about the shape of your canoe
- Consider the materials you have to build your canoe
- Think about the water conditions. Are rivers always calm? Will your canoe hold up during rough waters? Will your canoe travel in other bodies of water, such as the ocean? Will it be able to withstand the

Make A Plan:

With your group decide on a plan. What shape will your canoe be? What materials will you use? What are the steps you will use to build your canoe? Sketch your canoe in the box below. Make sure to label the canoe with the materials you'll be using.



Materials Needed:

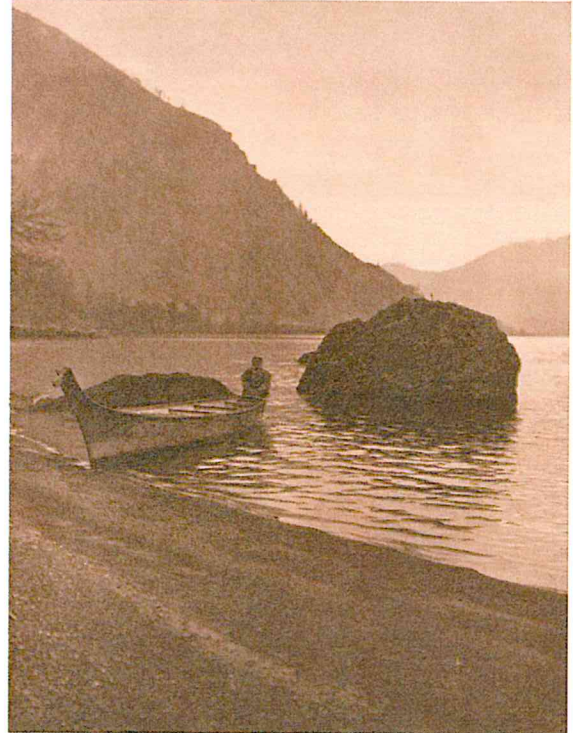
Draw Your Design

Be sure to: Label the parts and include the bottom and sides of your canoe

What materials will your groups use?

Test Your Canoe!

Test your canoe in a tub of water designated for this experiment. Once you set your canoe in the water make sure to start the timer! Once your canoe has stayed afloat for at least one minute start to add supplies and see if it holds. See if the canoe can stay afloat for another two minutes. If your canoe continues to float with supplies, make the water a little wavy to see if it'll continue to stay afloat.



Evaluation:

Did your group succeed in creating a canoe that floated for at least one minute and then another two minutes holding supplies? If not, why did it fail?

Test#1 _____

Test#2 _____

Test #	Adjustments
Test # 1	
Test # 2	

Did your group follow the plan you had made or did they stray away from the plan? If your group strayed away from the plan, why?

6. If you had to do it all over again, how would your planned change? Why?
