

# Canoes and Canoe Journeys



ANA Grant 2009-2011

Confederated Tribes of Grand Ronde  
Northwest Indian Language Institute

## **Acknowledgments**

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## Introduction to the Canoe Curriculum

Suquamish Tribe Website 2009

“Cedar canoes are the traditional mode of transportation for coastal Native American people of this region. For thousands of years several different types of canoes have played a key role in our survival. There were canoes for times of war, for fishing, for whaling, and even heavy cargo transportation.”

### *Kalapuya Canoes*

Excerpt from “The World of the Kalapuya: A Native People of Western Oregon” by Juntunen, Dasch and Rogers, 2005, pg. 80.

“For water travel, the Kalapuya used dugout canoes and rafts, which they sometimes decorated with animal carvings, skins, paint, or bird feathers. Rafts were used to traverse lakes and slow-moving rivers and streams. These were constructed of logs lashed together and were maneuvered with poles.

Kalapuya fashioned their dugouts by hollowing out logs. To make them, they felled trees and cut logs to suitable length. With woodworking tools, they created an outer shape, and hollowed out the logs by chopping, burning, and scraping.

The most common type of dugout was shovel-nosed. Its bow was broad and flat, and it rested low in the water. Dugouts were made in different sizes; a member of the Marys River Band said that the dugouts of his people measured anywhere from 14 to 30 feet in length. An early explorer wrote that the Yoncalla, the southernmost band, used a different type. With a long, narrow bow that stood high above the water, a Yoncalla dugout resembled those used on the Columbia River by the Chinooks. Perhaps it was traded upriver from the Lower Umpqua people.

Paddles measured from three to four feet in length. In shallow, swift-flowing water, the travelers guided their craft with hardwoods poles that measured about ten feet long and a couple of inches in diameter.”

## Scope and Sequence

This Canoe and Canoe Journeys unit has been designed as part of a place and culture based curriculum for children of the Confederated Tribes of Grand Ronde. Lessons have been piloted primarily in the preschool and kindergarten Chinuk Wawa immersion programs. Teachers of older students may need to adapt the lessons to higher grade levels.

### Section 1. Introduction to Canoes

Students will be introduced to the concept of a canoe, its traditional and current uses, and its different forms. They will then look at canoes inside and out, learning about parts of the canoe, its lifecycle and how to care for it. This section includes one storybook.

Lesson 1	Building a Model of a Canoe
Lesson 2	Canoe Measurements
Lesson 3	Life Cycle of a Canoe with Storybook
Lesson 4	Canoe Parts

### Section 2. What Goes in a Canoe

Several hands-on activities have been developed related to traditional items that were used with canoes and their modern day counterparts. Lessons include: what to bring on a canoe journey, what to eat and to wear. Two storybooks are in this section.

Lesson 5	What Goes in a Canoe? (with storybook and language arts activities)
Lesson 6	Paddles and Pulling
Lesson 7	Making a Paper Paddle
Lesson 8	What is a Bailer?

Lesson 9	Making a Paper Bailer
Lesson 10	What do I Bail? (with storybook)
Lesson 11	Bailing Sand
Lesson 12	Why Canoes Leak
Lecture	Personal Gear
Lesson 13	Personal Gear Worksheet
Lesson 14	Life preserver
Lesson 15	Dry Bag
Lesson 16	Pretend Weather Activity
Lesson 17	Food

### **Section 3. Going on a Canoe Journey**

Either through simulation or an actual journey, teachers are encouraged to provide a “canoe journey” experience for their students.

Lesson 18	Bailing Song and Dance
Lesson 19	Buoyancy
Simulation	Suggestions for a Simulation of a Canoe Journey
Description	A Traditional Potlatch
Map	2011 Canoe Journey

On the following pages, we have chosen sample lessons from the curriculum that highlight various skills: math, science, language arts, art activities, physical education.

Building a Model Canoe	page 7
Canoe Measurements	page 9
Canoe Parts	page 12
Paddles and Pulling	page 22

The Bailing unit which includes:

What is a Bailer?	page 25
What do I Bail?	page 27
Bailing Sand	page 29
Bailing Song and Dance	page 31
Buoyancy	page 34
Making a Paper Bailer	page 38

**The ‘*What do I Bail*’ storybooks can be downloaded individually on the Resource page.**

“What do I Bail?” is an original book that focuses on the tradition of bailing canoes. The books are available in color and black and white in Chinuk Wawa and in black and white in English. All books can be found on the Northwest Indian Language Institute Resources webpage under “Canoe Curriculum.”

Link: <http://pages.uoregon.edu/nwili/resources>

If you have any questions or would like more information about this curriculum, please contact the Northwest Indian Language Institute at:

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You may also contact Kathy Cole, Cultural Resources Department Program Manager for the Confederated Tribes of Grand Ronde, at:

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**Level: K–5**

**Unit: Canoes**

**Lesson Topic: Intro to Canoes–Building a model of a canoe**

## **Building a Model of a Canoe**

### **Standards**

K.3.1 Identify the measurable attributes (e.g. length, weight) and non-measurable attributes (e.g. color) of an object.

K.3.3 Compare the lengths of two objects both directly (by comparing them with each other) and indirectly (by comparing both with a third object).

**Objectives:** What do you want students to do/learn by the end of this lesson?

- Students will model the shape of a canoe
- Students will learn about shapes and colors unique to Grand Ronde canoes

**Outline:** What are you and the students going to do for each part of the lesson?

### **DAY 1**

Talk about the Grand Ronde canoe shape.

Use canoe images in Pre/Post Test section to discuss canoes (or the Grand Ronde Family canoe).

- Vertical stern can be flush or have a short extension.
- Bow has a heart, ears and a nose.
- The bow arches more dramatically than Salish in Salish canoes.

Ask children to vocalize what they see.

Give students their portion of clay. With rulers, show them approximately how long they should make their canoes– no more than 9 inches.

With younger children, mold along with them so they are coached in forming their canoes.

## **DAY 2**

Paint the canoes black on the outside and red on the inside. No other decorations or images are used. In former times, canoes were burned or charred on the outside.

**Cultural Component:** The canoe shape unique to Grand Ronde will be pointed out in this lesson.

**Assessment:** How can students show what they're learning?

Students will be able to talk about their canoes and why it looks like a Grand Ronde canoe. The shapes they make may not be accurate but their perceptions will be.

**Materials/Preparation:** What advance arrangements need to be made?

- Modeling clay
- Simple carving tools if they work with the chosen clay
- Black and red paint for the canoes
- Protection for the tables if needed with the clay
- An accurate model, drawing or photos of a Grand Ronde canoe

For older children there is Balsa-foam which is easily carved and shaped with tools for more accurate canoe portrayal.



**Level:** K–5

**Unit:** Canoes

**Lesson Topic:** Introduction to Canoes / Measurement

# Canoe Measurements

## Standards

### **Measurement: Compare and order objects by attributes**

K.3.1 Identify the measureable attributes (e.g., length, weight) and non-measureable attributes (e.g., color) of an object.

K.3.2 Compare, sort, and order objects according to measurable (e.g., longest to shortest, lightest to heaviest) and non-measurable (e.g. color, texture) attributes.

K.3.3 Compare the lengths of two objects both directly (by comparing them with each other) and indirectly (by comparing both with a third object).

**Objectives:** What do you want students to do/learn by the end of this lesson?

- Students will learn about non-standard and standard measurement
- Students will develop skills in distinguishing measureable from non-measureable traits.

**Outline:** What are you and the students going to do for each part of the lesson?

- Measure handmade canoes against one another for length and rank them largest to smallest
- Measure handmade canoes with rulers and record mark their length on the response sheet. With older children they can record the actual measurements in inches and parts of inches.
- Weigh handmade canoes in a balancing bucket. Rank from lightest to heaviest.

- Discuss non-measurable similarities and differences of canoes when compared to one another (roughness, smoothness, color intensity, shape)
- Compare handmade canoes as to whether they float or not.

**Cultural Component:** This topic was addressed in the previous lesson

**Assessment:** How can students show what they're learning?

Students will record their data about their canoes on the provided data sheet. They will then takes turns other students in their group to talk about each of their canoes. One adult will be seated with each group to facilitate the discussion and to assess what students have gained.

**Materials/Preparation:** What advance arrangements need to be made?

Rulers or measurement tools for each student

Response sheet for each student

Crayons

Items of equal weight to put in the balance bucket to measure the weight of each canoe (marbles, unifix cubes or new erasers etc.)

Weighing Balance buckets for weighing

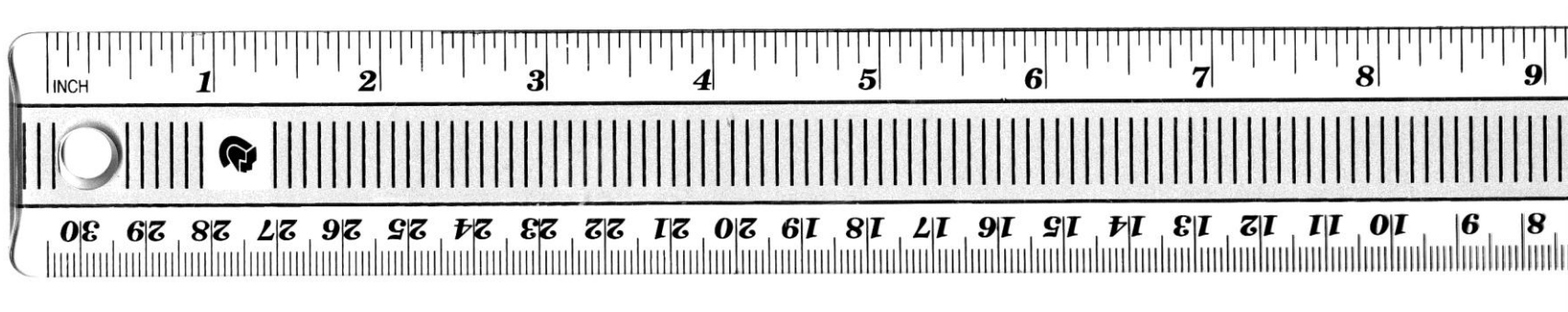
Water/Sink for a sink or float test

# Ruler page

Response Sheet Math Component/ Intro to Canoes

nim: \_\_\_\_\_

1. How long is your canoe? Mark the measurement on the ruler.



2. How heavy is your canoe? (erasers, marbles?) Write # below and circle which object you used.

\_\_\_\_\_ erasers or marbles

3. Which canoe is the heaviest? Yours \_\_\_\_\_ Friends \_\_\_\_\_

4. What kind of canoe is yours? (circle)      nootka      chinuk      dugout

5. Does your canoe sink or float? \_\_\_\_\_

6. What color is your canoe?    hi?il \_\_\_\_\_    liblo \_\_\_\_\_    p<sup>h</sup>il \_\_\_\_\_    tk'up \_\_\_\_\_

**Level: K–5**

**Unit: Canoes**

**Lesson Topic: Introduction to Canoe Parts/Language Arts**

## **Canoe parts**

### **Standards**

#### **Benchmarks:**

K–5: Students will know and be able to identify 6 names for parts of the canoe.

K–5: Students will know how to spell 6 names for parts of the canoe.

#### **Language Arts: Reading and writing**

**Read:**

**Concepts of Print**

Follow words read aloud from left to right and from top to bottom of the page.

Know that print is spoken words written down and has meaning.

Recognize that sentences in print are made up of separate words.

**Phonemic Awareness**

Listen to spoken sentences and recognize individual words in a sentence.

Understand that the sequence of letters in a written word represent the sequence of sounds in a spoken word.

**Decoding and Word Recognition**

Blend sounds to read one-syllable decodable words.

**Vocabulary**

Identify and sort common pictures/words into basic categories.

**Informational Text: Demonstrate General Understanding**

Correctly answer simple questions about a text read aloud.

**Writing:**

Write by moving from left to right and from top to bottom.

Write first name, and begin learning to write own last name.

**Spelling**

Use phonemic awareness and letter knowledge to spell independently.

**Handwriting**

Closely approximate the correct shape and placement of the letters.

**Objectives:** What do you want students to do/learn by the end of this lesson?

- Students will learn the oral and written words for five parts of a canoe.
- Students will learn how to write these five words.

**Outline:** What are you and the students going to do for each part of the lesson?

- Enlarge the canoe diagram, titled *ikta miłayt k<sup>h</sup>apa kənim*, onto a 11X17 sized paper and use as a poster in the room.
- The teacher will read the first section of the canoe parts workbook, titled *ikta miłayt k<sup>h</sup>apa kənim*.
- The teacher will help the students repeat the names of the canoe, pointing to the pictures in the workbook or canoe poster to help them associate the words with the appropriate canoe part.
- The teacher will help the students fill in the blanks in the second section, titled *ikta ukuk?*
- First, have the students write their name on the line after *q<sup>h</sup>ata mayka nim?*
- Then help the students write the words of the canoe parts on the line below each picture.

**Cultural Component:** What cultural component do you want students to learn or experience?

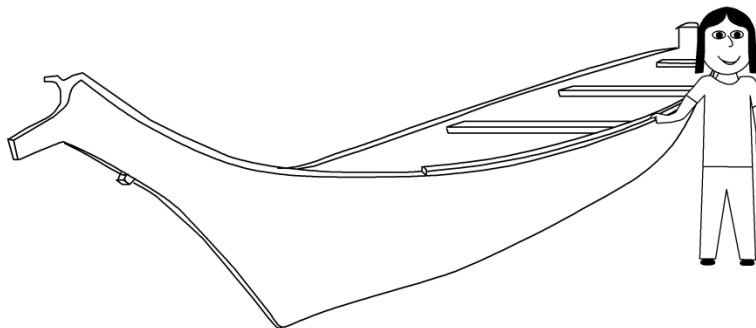
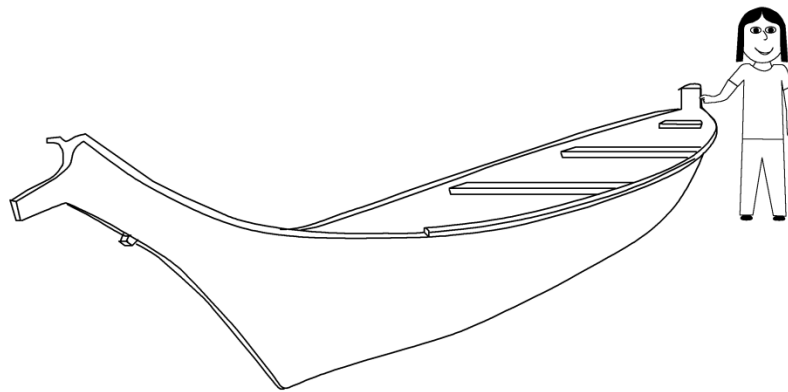
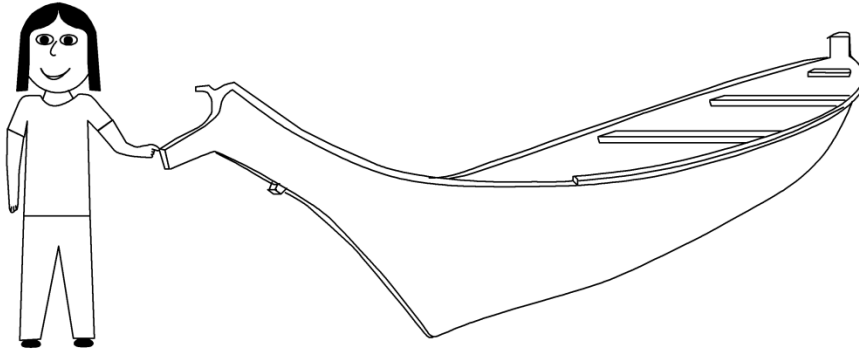
- Students will become more aware of the details of a canoe.
- By teaching students the part of the canoe called the “heart”, they will learn canoes have life and are perceived as living beings.

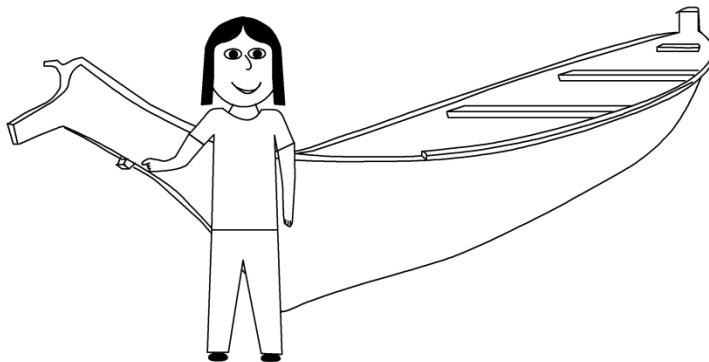
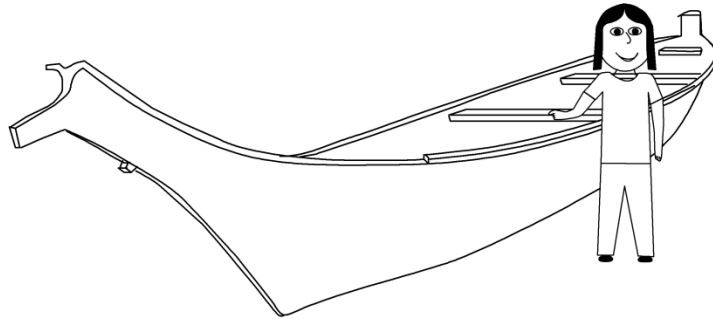
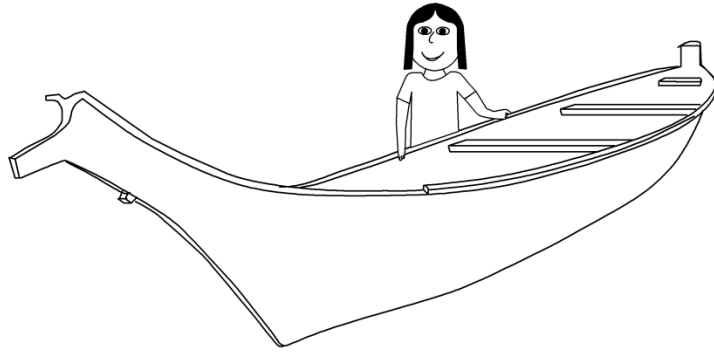
**Assessment:** How can students show what they're learning?

- Students will identify and name 6 canoe parts.
- Students will write 6 canoe parts.

**Materials/Preparation:** What advanced arrangements need to be made?

- Enlarge the canoe diagram titled, *ikta miłayt k<sup>h</sup>apa kənim*, onto a 11X17 size paper and use as a poster in the classroom.
- Make enough copies of the canoe workbook for each student.
- Pencils

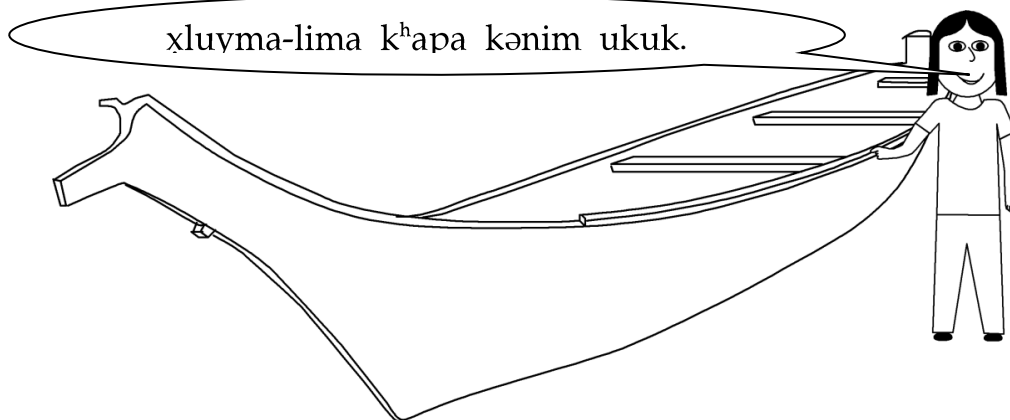
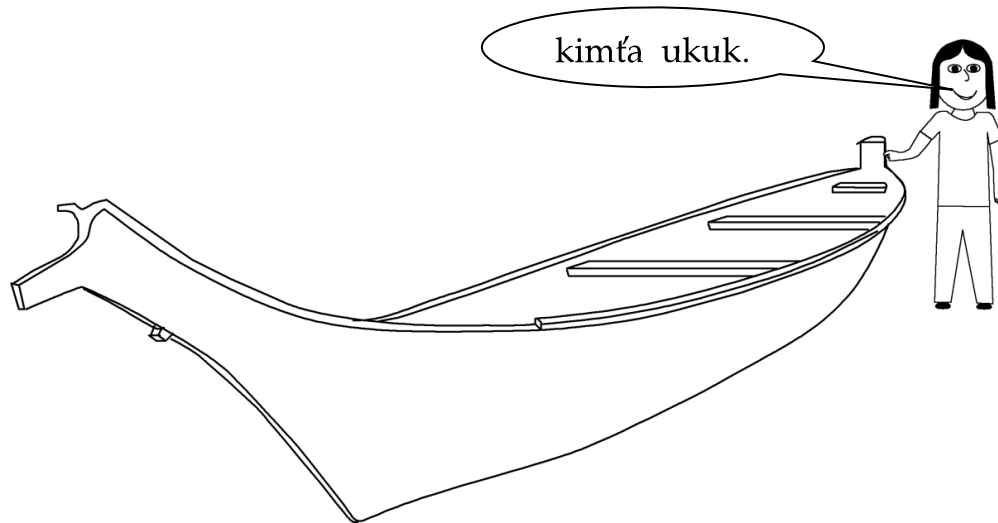
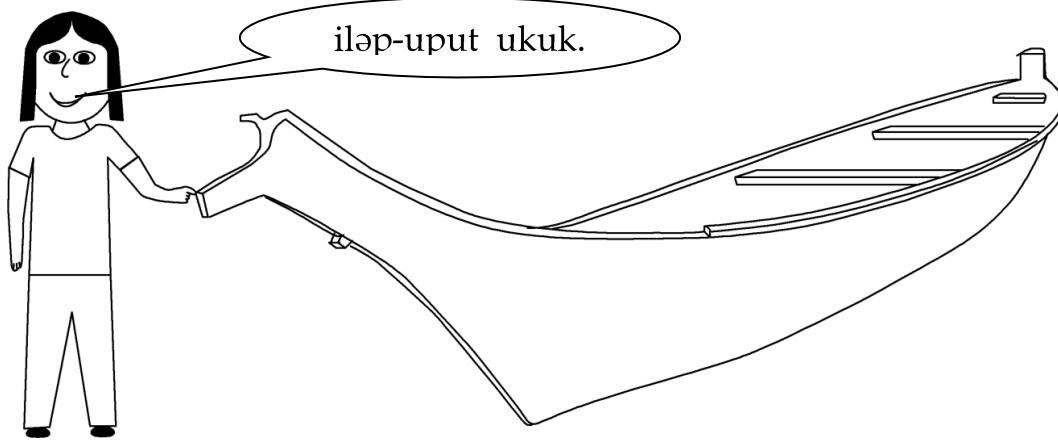




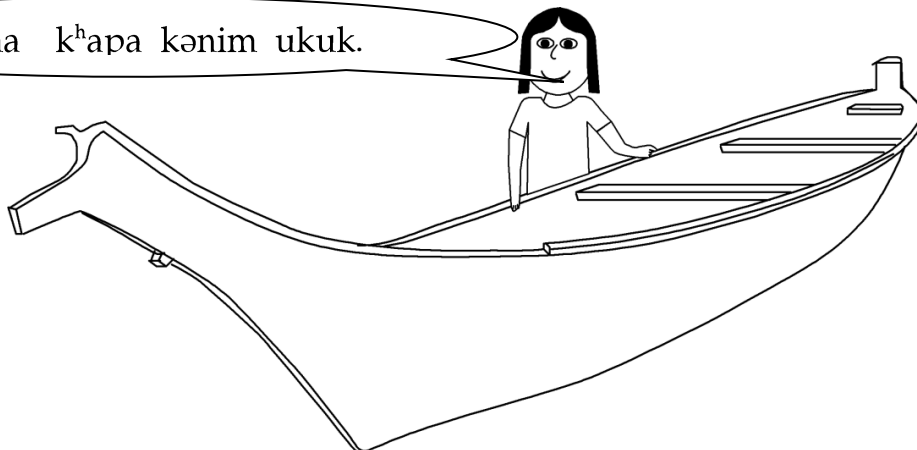


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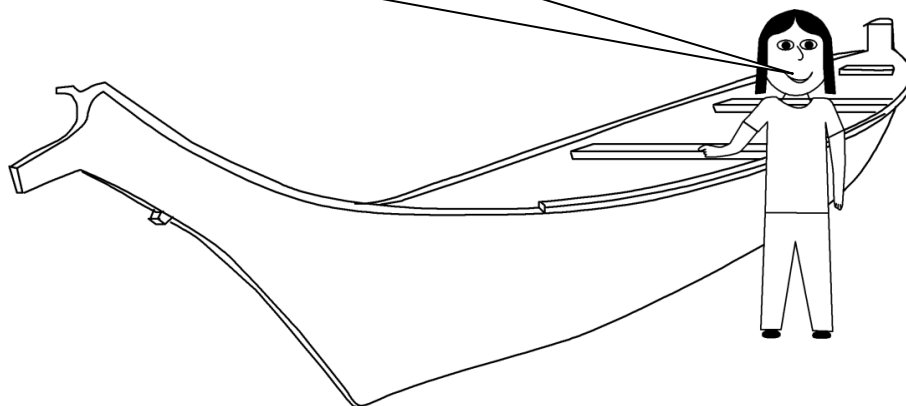
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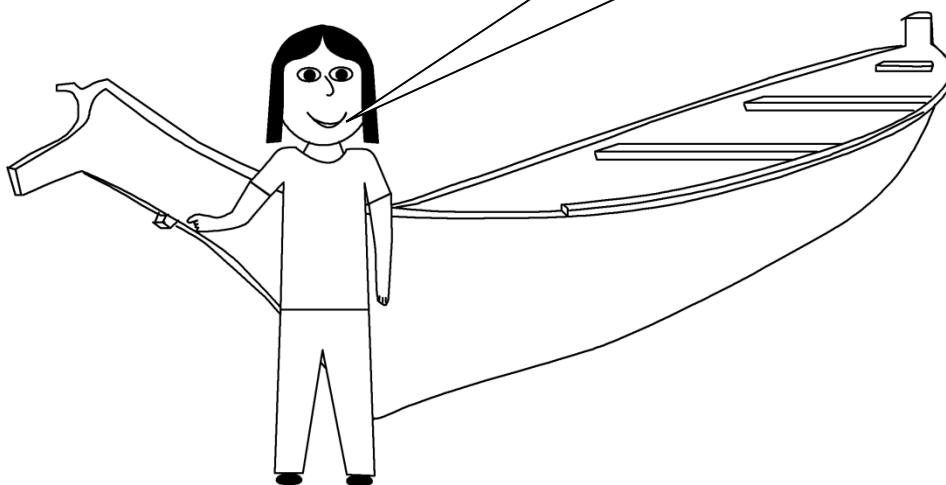
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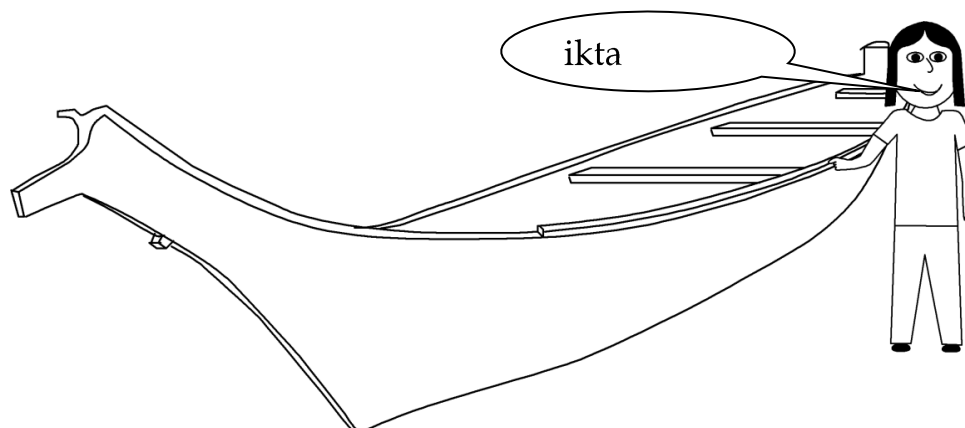
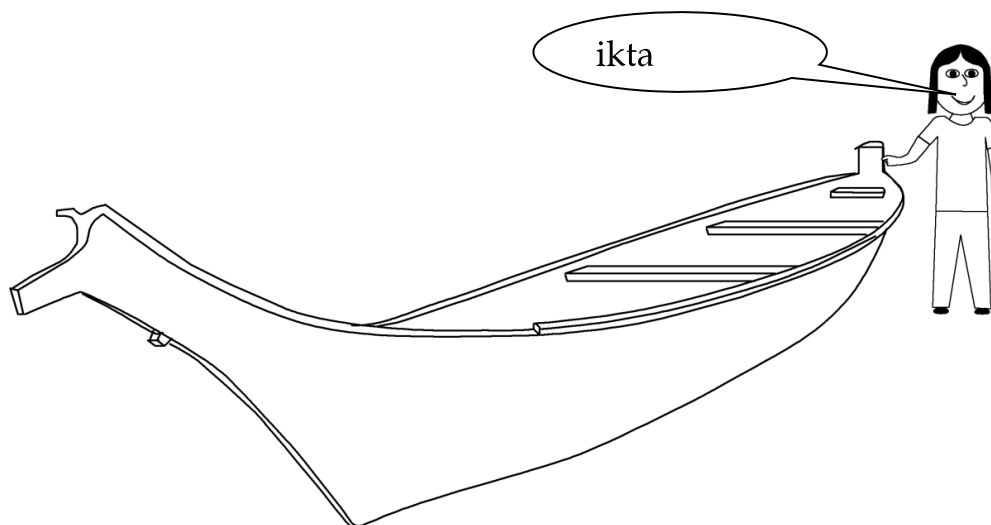
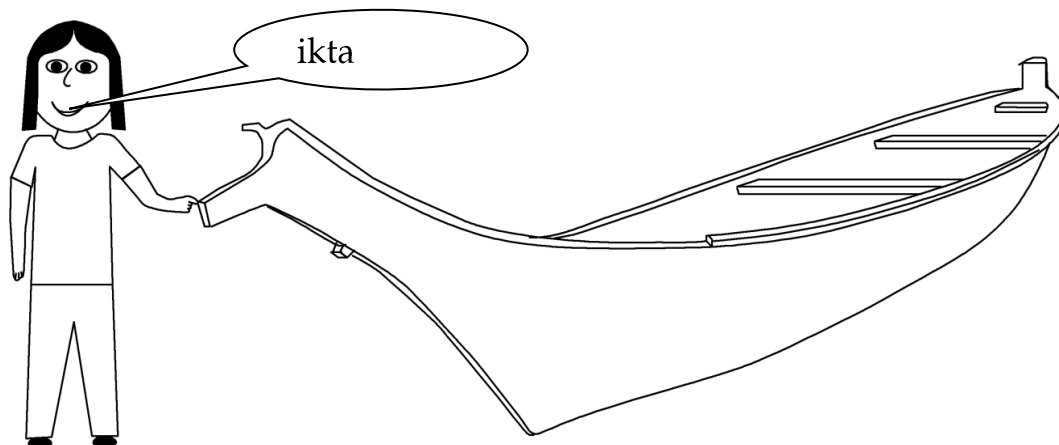
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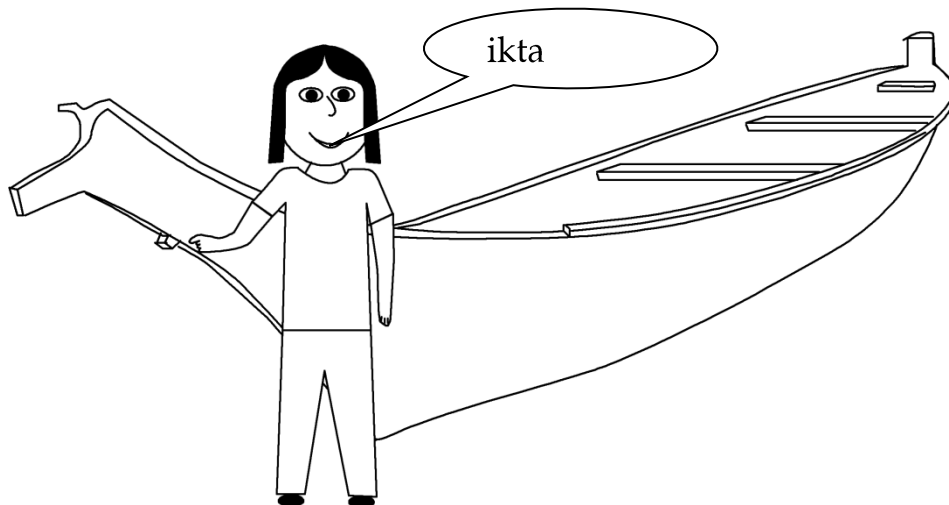
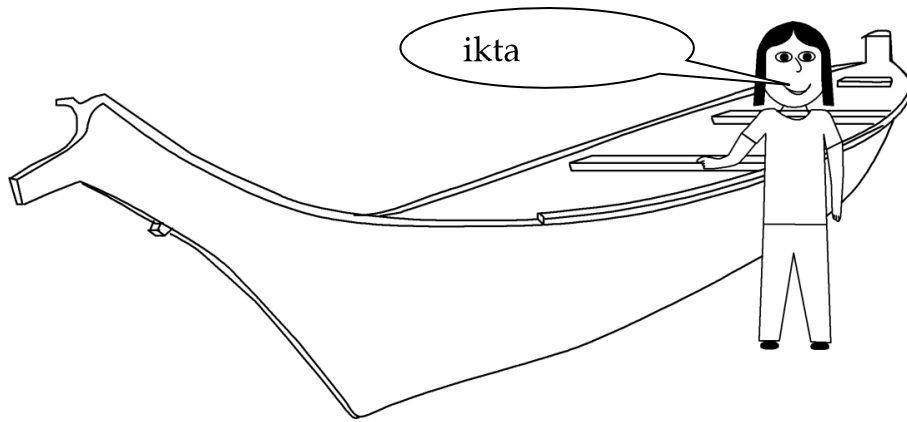
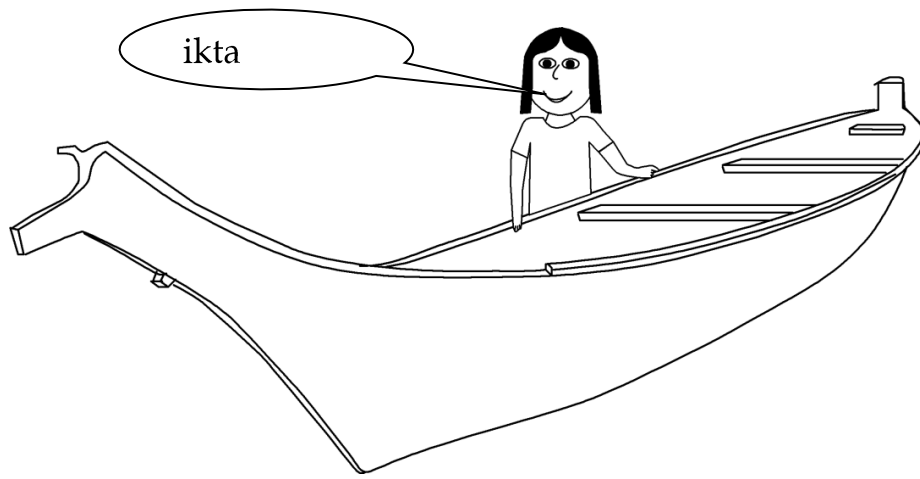


təmtəm k<sup>h</sup>apa kənim ukuk.

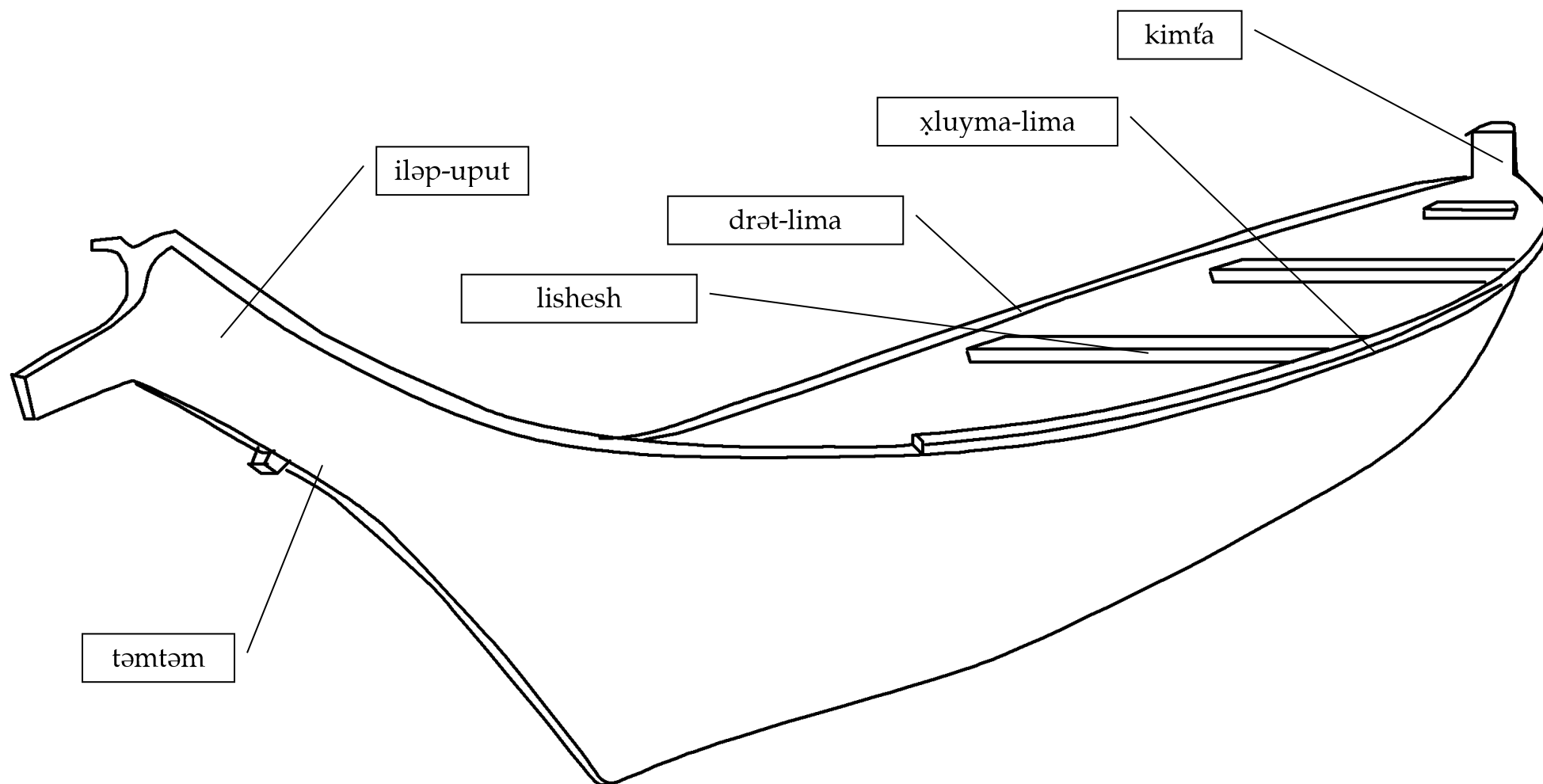


ikta ukuk?





# ikta miłayt k<sup>h</sup>apa kənim



**Level: K–5**

**Unit: Canoes**

**Lesson Topic: Paddles and pulling**

**Language feature: Directional terms**

## Paddles and Pulling

**Objectives:** What do you want students to do/learn by the end of this lesson?

- Students will learn the different canoe commands and what they mean.
- Learn the roles held in a canoe and their importance. (Skipper and lead pullers)
- Learn ‘right’, ‘left’, ‘forward’ and ‘backwards’
- They will work together and learn the importance of cooperation and teamwork.
- Work on gross motor skills.

**Outline:** What are you and the students going to do for each part of the lesson?

- Lay out a long piece of string or rope in the shape of a canoe on the ground. (You will either have the students sit on the ground or put two rows of chairs inside the “canoe” with just one in the back.)
- Give each student a dance paddle.
- Explain to the students why Grand Ronde paddles are half-moon shaped at the top (for pushing off of roots, harvesting wapato etc.) and share with students the many different uses of canoes (harvesting, hunting, fishing, visiting, traveling, war).
- Introduce one of the teaching staff as the skipper of the “canoe” and have them explain that when in or around a canoe students are

expected to ask before they do anything and listen to whatever the skipper of the canoe tells them.

- Show them where the skipper sits.
- The skipper should now instruct the students to get in the “canoe” starting with the seats up front.
- The skipper will teach the canoe commands at this point with one of the other teachers acting them out in front of the canoe.

### Commands:

“munk–isik”

“paddles up”

“pull backwards”

“brake”

“left side”

“right side”

“all together”

- The skipper should note that we put the paddles up as a way to tell tribes we don’t want to fight “nsayka shiksh uk tilixam, munk–saḡali isik, wik nsayka shiksh, munk–kikwəli isik!”
- Now the skipper will teach the significance of the two front seats in the canoe (the lead pullers). It is important that all the other pullers try to paddle like the two in the front and that the two in the front pull together.
- At this point the skipper will run the students through the canoe commands making sure the students try to stay together and follow directions.

**Cultural Component:** Students will learn about the traditional roles of the skipper and the lead paddlers as well as the significance of putting the paddles up to show lack of hostility.

Invite a canoe skipper to class to talk about the importance of his/her job.

**Assessment:** After the lesson is complete ask students if they know how to act in a canoe and what all the canoe commands are with their meanings.

**Materials/Preparation:** What advance arrangements need to be made?

## Dance paddles

## Two lines of chairs

## String or rope

## Vocabulary to teach

isik

skipper

lead pullers

regular rowers

## Commands:

“munk-isik”

row

“paddles up”

“pull backwards”

“brake”

“left side”

“right side”

“all together”



**Level: K-5**

**Unit: Canoes**

**Lesson Topic: What Is a Canoe Bailer – Culture/Physical Education/Science**

# What Is a Bailer?

## Standards

### **Oregon State Standards for Kindergarten**

#### **Physical Education:**

Understand and apply movement concepts:

No standards currently exist for this CCG (but the activity requires repetitive gross-motor movement and eye-movement coordination)

#### **Science:**

Matter: Understand structure and properties of matter.

SC.03.PS.01 Describe objects according to their physical properties.

Force: Understand fundamental forces, their forms, and their effects on motion.

SC.03.PS.03 Describe an object's position and how to affect its movement.

The Dynamic Earth: Understand the properties and limited availability of the materials which make up the Earth.

SC.03.ES.01 Recognize physical differences in Earth materials.

**Objectives:** What do you want students to do/learn by the end of this lesson?

- Students will know what a canoe bailer is.
- Students will know how a canoe bailer is used.

**Outline:** What are you and the students going to do for each part of the lesson?

- Using the wooden, cedar bark and plastic bailers, the teacher will show the students the different types of canoe bailers.

- The teacher will teach the students the different names for the bailers.
- Using a container filled with water, use all three bailers to remove the water.
- Allow the children to remove the water using the bailers.

**Cultural Component:** What cultural component do you want students to learn or experience?

- Students will learn the different kinds of canoe bailers and how they are used.

**Assessment:** How can students show what they're learning?

- The teacher will ask the students what the words are for the canoe bailers.
- The students will demonstrate their knowledge of how to use a bailer by bailing water out of the container.

**Materials/Preparation:** What advanced arrangements need to be made?

- Water container, such as a bucket
- Water
- Wooden bailer
- Cedar bark bailer
- Plastic bailer made from a bleach bottle.

**Vocabulary needed:** What vocabulary will have to be refreshed or taught in this lesson?

- bailer
- wooden bailer
- cedar bark bailer
- plastic bailer
- cedar bark bailer

**Level: K-5**

**Unit: Canoes**

**Lesson Topic: Read, “What Do I Bail?” – Language Arts**

## **“What Do I Bail?”**

### **Standards**

#### **Oregon State Standards for Kindergarten**

##### **Language Arts: Reading and writing**

##### **Reading:**

##### **Concepts of Print**

Follow words read aloud from left to right and from top to bottom of the page.

Know that print is spoken words written down and has meaning.

Recognize that sentences in print are made up of separate words.

##### **Phonemic Awareness**

Listen to spoken sentences and recognize individual words in a sentence.

Understand that the sequence of letters in a written word represent the sequence of sounds in a spoken word.

##### **Decoding and Word Recognition**

Blend sounds to read one-syllable decodable words.

##### **Vocabulary:**

Identify and sort common pictures/words into basic categories.

##### **Informational Text: Demonstrate General Understanding**

Correctly answer simple questions about a text read aloud.

**Objectives:** What do you want students to do/learn by the end of this lesson?

- Students will become familiar with the book, “What Do I Bail?”

**Outline:** What are you and the students going to do for each part of the lesson?

- Read the book, “What Do I Bail?” to the students.

**Cultural Component:** What cultural component do you want students to learn or experience?

- “What Do I Bail?” is an original book from NILI and is centered on bailing. This book focuses on the tradition of bailing and canoes.

**Assessment:** How can students show what they’re learning?

- The teacher will ask the students what the child in the story tried to bail. The teacher will then ask was the child able to bail.
- The teacher will ask the students what was the correct thing to bail.

**Materials/Preparation:** What advanced arrangements need to be made?

- Story book, “What Do I Bail?”

**Level: K–5**

**Unit: Canoes**

**Lesson Topic: Bailing Sand**

# **Bailing Sand – Culture/Physical Education/Science**

## **Standards**

### **Oregon State Standards for Kindergarten**

#### **Physical Education:**

Understand and apply movement concepts:

No standards currently exist for this CCG (but the activity requires repetitive gross-motor movement and eye-movement coordination)

#### **Science:**

Matter: Understand structure and properties of matter.

SC.03.PS.01 Describe objects according to their physical properties.

Force: Understand fundamental forces, their forms, and their effects on motion.

SC.03.PS.03 Describe an object's position and how to affect its movement.

The Dynamic Earth: Understand the properties and limited availability of the materials that make up the Earth.

SC.03.ES.01 Recognize physical differences in Earth materials.

**Objectives:** What do you want students to do/learn by the end of this lesson?

- Students will know what a canoe bailer is.
- Students will know how a canoe bailer is used.

**Outline:** What are you and the students going to do for each part of the lesson?

- The teacher and students will use the plastic bailers to fill the canoe in the playground full of sand.
- The students will then remove the sand with the bailers.

**Cultural Component:** What cultural component do you want students to learn or experience?

- Students will experience the traditional act of bailing a canoe.

**Assessment:** How can students show what they're learning?

- The teacher will ask the students word for bailer, plastic bailer and bailing.
- The students will demonstrate their knowledge of how to use a bailer by bailing sand out of the canoe.

**Materials/Preparation:** What advanced arrangements need to be made?

- Playground canoe
- Sand
- Multiple plastic bailers made from bleach bottles. The scoop of the bailers should be downsized to the bailing abilities of the children.

**Vocabulary needed:** What vocabulary will have to be refreshed or taught in this lesson?

- bailer
- plastic bailer
- bail (verb)

**Level: K–5**

Unit: Canoes

Lesson Topic: Bailing Song and Dance–Arts/Culture/Physical Education

## **Bailing Song and Dance**

### **Standards**

#### **Oregon State Standards for Kindergarten**

##### **Arts**

Create, present and perform works of art.

AR.03.CP.01 Use experiences, imagination, essential elements and organizational principles to achieve a desired effect when creating, presenting and/or performing works of art.

Express ideas, moods and feelings through the arts and evaluate how well a work of art expresses one's intent.

AR.03.CP.03 Create, present and/or perform a work of art that demonstrates an idea, mood or feeling.

Understand how the arts can reflect the environment and personal experiences within a society or culture, and apply to one's own work.

AR.03.HC.03 Describe how art from the student's community reflects the artist's environment and culture.

##### **Language Arts**

Vocabulary: Increase word knowledge through systematic vocabulary development; determine the meaning of new words by applying knowledge of word origins, word relationships, and context clues; verify the meaning of new words; and use those new words accurately across the subject areas.

(Students will work on pronouns through the bailing song.)

##### **Physical Education:**

Understand and apply movement concepts:

No standards currently exist for this CCG (but the activity requires repetitive gross-motor movement and eye-movement coordination)

**Objectives:** What do you want students to do/learn by the end of this lesson?

- Students will learn the bailing song.
- Students will learn the bailing dance.
- Students will learn what a canoe bailer is and how it is used.

**Outline:** What are you and the students going to do for each part of the lesson?

- The teacher will teach the students the bailing song.
- Sing the song and have the students hold a bailer and make bailing motions in sync with the rhythm of the song.
- Now sing the song and have the students walk in sync with the song as they make the bailing motions.

**Cultural Component:** What cultural component do you want students to learn or experience?

- The students will sing.
- The students will do the bailing dance.
- The students will learn how to bail.
- The students will experience singing in conjunction with full body movement.

**Assessment:** How can students show what they're learning?

- The teacher will observe the students singing, moving and dancing.

**Materials/Preparation:** What advanced arrangements need to be made?

- Bailers
- Know the bailing song

**Vocabulary:** What vocabulary will have to be refreshed or taught in this lesson?



**Song:**

- |  |   |
|--|---|
| ○ nayka mash–tsəqw                           | I am throwing water                         |
| ○ nayka mash–tsəqw k <sup>h</sup> apa kənim  | I am throwing water from the canoe          |
| ○ nayka mash–tsəqw                           | I am throwing water                         |
| ○ nayka mash–tsəqw k <sup>h</sup> apa kənim  | I am throwing water from the canoe          |
|  |   |
| ○ mayka mash–tsəqw                           | You are throwing water                      |
| ○ mayka mash–tsəqw k <sup>h</sup> apa kənim  | You are throwing water from the canoe       |
| ○ mayka mash–tsəqw                           | You are throwing water                      |
| ○ mayka mash–tsəqw k <sup>h</sup> apa kənim  | You are throwing water from the canoe       |
|  |   |
| ○ nsayka mash–tsəqw                          | We throw water                              |
| ○ nsayka mash–tsəqw k <sup>h</sup> apa kənim | We are throwing water from the canoe        |
| ○ nsayka mash–tsəqw                          | We throw water                              |
| ○ nsayka mash–tsəqw k <sup>h</sup> apa kənim | We are throwing water from the canoe        |
|  |   |
| ○ msayka mash–tsəqw                          | You folks throw water                       |
| ○ msayka mash–tsəqw k <sup>h</sup> apa kənim | You folks are throwing water from the canoe |
| ○ msayka mash–tsəqw                          | You folks throw water                       |
| ○ msayka mash–tsəqw k <sup>h</sup> apa kənim | You folks are throwing water from the canoe |

**Level: K-5**

**Unit: Canoes**

**Lesson Topic: Buoyancy/Science/Mathematics**

## **Buoyancy – Science/Math**

\*Oregon Standards are listed at the end of the lesson.

**Objectives:** What do you want students to do/learn by the end of this lesson?

- Students will learn about buoyancy.
- Students will know and be able to explain that a canoe full of water holds less weight than a canoe empty of water.

**Outline:** What are you and the students going to do for each part of the lesson?

### **Part A: A Canoe Full of Water**

- The teacher will fill a container with water.
- Put a model canoe in the water and show them that it is floating on the water. If a model canoe is not available, use a toy boat or bowl and explain that it is like a canoe.
- Put small human figures in the canoe. The teacher can cut out the attached paper dolls and bend them at the waist so they sit up in the canoe.
- Explain to the students the people are dry inside the canoe.
- Now put water in the canoe.
- Show the students how the people in the canoe are wet, and the canoe does not float.

### **Part B: A Floating Canoe Holds More Weight than a Sinking Canoe**

- Remove the people and water from the canoe and place it back on the water.
- One-by-one, put weights in the canoe until it sinks. Count with the students the number of weights it takes to sink the canoe. The teacher may need to hold the canoe so it does not tip. The idea is you want to show that the canoe sinks from filling it with weights, not from tipping.
- Now, remove the weights from the canoe and put the canoe back in the water and fill it  $\frac{3}{4}$  full of water.
- One-by-one, put weights in the canoe until it sinks. Count with the students how many weights it takes to sink the canoe. Again, the teacher may need to hold the canoe so that it does not tip.
- Compare the weight it took to sink the canoe when it was empty of water versus when it was  $\frac{3}{4}$  full of water.
- Be sure the students understand a canoe empty of water holds more weight. This is because of the property of buoyancy.

**Cultural Component:** What cultural component do you want students to learn or experience?

- The carving of a canoe is an ancient, ancestral skill of the Grand Ronde people that involves understanding physics of both wood and water. Through hands-on experience, students will begin to understand the physics of buoyancy.

**Assessment:** How can students show what they're learning?

- The teacher will ask the students which canoe will hold more weight: a canoe empty of water or full of water. The students will respond with their answers.

**Materials/Preparation:** What advanced arrangements need to be made?

- Water container, such as a bucket, sink, tub.
- Water
- Model canoe, a toy boat or bowl.
- Small human figure: action figure, small toy doll or paper dolls.
- Weights. The teacher should use items of uniform weight and size, such as, quarters, bolts, nuts, rocks, etc.

**Vocabulary needed:** What vocabulary will have to be refreshed or taught in this lesson?

saxali-k<sup>h</sup>upa-tsəqw floating

ʔtip sink

p<sup>h</sup>at full

hilu-ikta miłayt empty

ikta-hayash-t<sup>h</sup>il weight

## **Oregon State Standards for Kindergarten**

### **Mathematics:**

K.1 Number and Operations and Algebra: Represent, compare, and order whole numbers, and join and separate sets.

K.1.2 Connect numbers, including written numerals, to the quantities they represent, using various physical models and representations.

K.1.3 Count forward by ones beginning with any number less than 30.

K.3 Measurement: Compare and order objects by attributes.

K.3.1 Identify the measurable attributes (e.g., length, weight).

K.3.2 Compare, sort, and order objects according to measurable (e.g., longest to shortest, lightest to heaviest).

### **Science:**

Matter: Understand structure and properties of matter.

SC.03.PS.01 Describe objects according to their physical properties.

Force: Understand fundamental forces, their forms, and their effects on motion.

SC.03.PS.03 Describe an object's position and how to affect its movement.

The Dynamic Earth: Understand the properties and limited availability of the materials which make up the Earth.

SC.03.ES.01 Recognize physical differences in Earth materials.

Forming the Question/Hypothesis: Formulate and express scientific questions or hypotheses to be investigated.

SC.03.SI.01 Make observations. Based on these observations, ask questions or form hypotheses, which can be explored through simple investigations.

Designing the Investigation: Design safe and ethical scientific investigations to address questions or hypotheses.

SC.03.SI.02 Plan a simple investigation. Collecting and Presenting Data: Conduct procedures to collect, organize, and display scientific data.

SC.03.SI.03 Collect data from an investigation.

**Analyzing Data and Interpreting Results: Analyze scientific information to develop and present conclusions.**

SC.03.SI.04 Use the data collected from an investigation to explain the results.

**Level: K-5**

**Unit: Canoes**

**Lesson Topic: Making a Paper Bailer/Art/Measurement**

## **Making a Paper Bailer**

### **Standards**

**Create, present and perform works of art.**

AR.03.CP.01 Use experiences, imagination, essential elements and organizational principles to achieve a desired effect when creating, presenting and/or performing works of art.

Apply the use of ideas, techniques and problem solving to the creative process and analyze the influence that choices have on the result.

AR.03.CP.02 Explore aspects of the creative process and the effect of different choices on one's work.

Express ideas, moods and feelings through the arts and evaluate how well a work of art expresses one's intent.

AR.03.CP.03 Create, present and/or perform a work of art that demonstrates an idea, mood or feeling.

Evaluate one's own work, orally and in writing.

AR.03.CP.04 Describe how one's own work reveals knowledge of the arts, orally and in writing.

**Objectives:** What do you want students to do/learn by the end of this lesson?

- Students will learn what a cedar bark bailer is and how to make one from paper.

**Outline:** What are you and the students going to do for each part of the lesson?

- The teacher will show the students the cedar bark bailer and explain they will be using paper to make a bailer.
- The teacher will use the following instructions in helping the students make a canoe bailer with the paper bailer template.

- Cut the page in half along LINE A-B.
- Take the side labeled BAILER, and roll the paper as illustrated in Figure 1. This will help the paper bailer keep its shape when complete.
- Now unroll the paper.
- Cut from the edge of the paper to G.
- Cut from the edge of the paper to H.
- (At this point, as an option, the teacher may want to allow the students to draw or paint on the bailer before they put it together.)

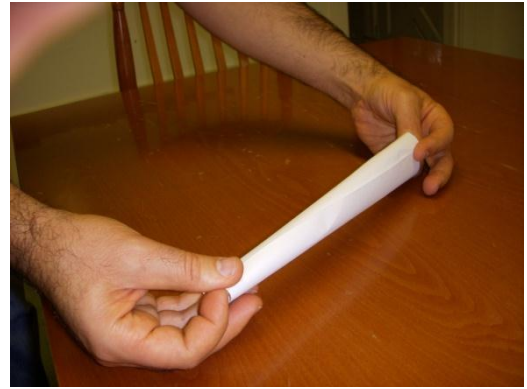


Figure 1: rolling the bailer

- Fold the paper along LINE C-D to a 90° angle.
- Fold the paper along LINE E-F to a 90° angle.
- Fold the sides of the BAILER as illustrated in figure 2.
- Take the paper labeled HANDLE and cut the ends of the paper off along LINES I-J and K-L.

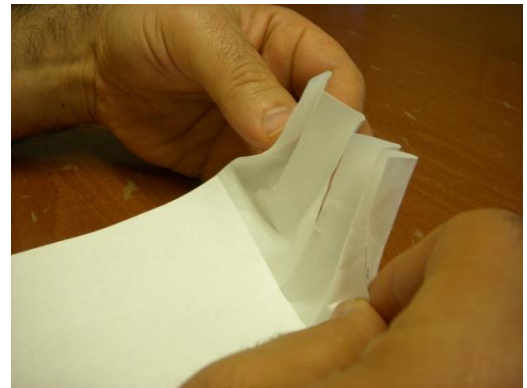


Figure 2: folding the sides of the bailer

- Roll the paper into a handle as illustrated in figure 3.
- Use tape to hold the handle into a roll.
- Attached the handle to the bailer as illustrated in figure 4.



Figure 3: rolling the handle



Figure 4: attaching the handle to the bailer



Figure 5: paper bailer

- The final product will be a paper bailer as illustrated in figure 5.



**Cultural Component:** What cultural component do you want students to learn or experience?

- The children will learn how a cedar bark bailer is made.

**Assessment:** How can students show what they're learning?

- The children will make a paper bailer.

**Materials/Preparation:** What advanced arrangements need to be made?

- attached paper bailer template
- scissors
- tape

**Vocabulary needed:** What vocabulary will have to be refreshed or taught in this lesson?

- bailer
- cedar