Weaving

Program Type: After-school, community center, classroom, museum education activity	***Audience Type:*** Grades 6–8, ages 11–14 (emphasis on Native youth)
Program Length: 1–2 Hours	***Class Size:*** Up to 36 students

Description*:*
Learn traditional knowledge* through the craft of weaving. Participants will explore how the process of weaving can inform us about different cultures.

**Traditional knowledge refers to information, skills, and practices that are developed, sustained, and passed on from generation to generation within a community.*

Topics: weaving, craft revival, natural resources, traditional knowledge

Process Skills Focus: observing, measuring

LEARNING OBJECTIVES

For Next Generation Science Standards, see end of outline.

- Traditional knowledge of weaving is important to many indigenous communities.
- Learning how to weave and gathering the resources necessary for weaving can contribute to an understanding about the environment and Native culture.
- Weaving can be very complex and involves math and pattern skills.

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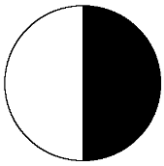
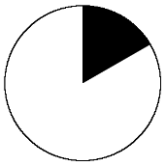
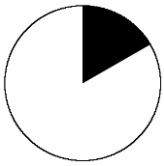
TIME REQUIRED

Advance Prep	Set Up	Activity	Wrap-Up
			
30 minutes	**10+ minutes**	**60+ minutes**	**10 minutes**

PROGRAM FORMAT

Segment	Format	Time
Introduction	Facilitator-led Activity	10 min
Guest Speaker (optional)	Group Activity	30–60 min
Weaving a Loom	Individual Activity	60 min

SITE REQUIREMENTS

- Tables or desks to accommodate students
- A quiet and comfortable setting with chair(s) for optional guest speaker(s)
- A computer, projector, and speakers with internet access is optional to show instructional videos prior to the activity.

SUPPLIES

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Permanent Supplies	Amount
Scissors	1 per student
Rulers	1 per student
Colored pencils or markers*	3–5 per student
Computer with internet access and projector (optional)	1 (total)
Weaving examples from a local Native community (if available)	1–3 (total)

Major Consumables	Amount
Written directions (see “Background Information”)	1 per student
Masking tape	5” per student
Cardboard, approx. 18 cm × 13 cm (7” × 5”)	1 per student
Yarn, 5–10 colors*	1.2 m (4 ft) x 5 colors per student
White string (thick floss or kite string)	3m (10 ft) per student
Popsicle sticks	1 per student

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ADVANCE PREPARATION

- Print one copy of the written directions (see "Background Information") for each student.
- Cut the cardboard into 18 cm × 13 cm (7" × 5") pieces (one for each student).
- Cut the yarn into 1.2 m (4 ft.) lengths
- Practice completing the activity and, if internet access is available, review the videos listed in the Introduction and Individual Activity sections before working with participants.
- See the Resources section for learning and sharing information on traditional practices and environmental science around weaving.
- If your location is close to a *Roots of Wisdom* exhibition (www.omsi.edu/exhibits/row), participants can first visit the exhibit and learn about Cherokee weaving and river cane restoration.
- Reach out to the local Native community and invite a guest speaker to share information on traditional weaving in the local area.
- If a guest speaker is not available, educators are encouraged to find local stories or weaving traditions to share.
- If possible, provide examples of weavings (from local Native cultures if possible) that students can touch and feel.

SET UP

- Lay out all the supplies at the front of the room.
- If available, turn on computer, speakers and projector and navigate to the following videos
  - http://vimeo.com/99194466
  - https://www.youtube.com/watch?v=-ByYj5G4-Hc
- If time is constrained or if the students are particularly young, the cardboard looms can be pre-made:
- Using a ruler, draw eight 0.6 cm (¼ inch) long lines along the top and bottom of the loom. The lines should be around 0.6 cm (¼ inch) apart and should line up with one another from top to bottom. Use a pair of scissors to cut along the 0.6 cm (¼ inch) long lines on both the top and bottom of the loom – you're only making short cuts 0.6 cm (¼ inch) long!

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- Tape the string down on the left side of the loom. This will be the back side of the loom. Wind the string through the slots, creating vertical warp strings. Tape the end of the string to the back of the loom (see Image 1). You can add more tape if you'd like to secure all of the strings. Be sure to save about 1 inch of tape for later (see Image 1).

Image 1

INTRODUCTION

10 minutes

Let students speculate before offering answers to any questions. The answers given are provided primarily for the instructor's benefit.

Suggested script is shaded. Important points or questions are in **bold**. Possible answers are shown in *italics.* Feel free to improvise as needed.

Today we are going to learn about the ancient practice of weaving and what it can tell us about different cultures. People from all over the world have been making baskets for thousands of years. Although baskets are quite common, it can be extremely difficult to gather the materials needed to make a basket and learn how to weave different patterns and designs.

Recommended Introduction to Weaving

Before we make weavings of our own, we're going to hear from a local Native Elder about the current and historical practices of weaving in our region. I'd like to introduce _____ (name), an Elder from the _____ tribe/ community.

Facilitator is encouraged to reference the *Voices from our Community* activity guide for information and protocol on interviewing a Native Elder. The guide is available on the *Roots of Wisdom* website at: http://www.omsi.edu/exhibitions/row/education-resources/.

What did you learn from _____ (name) about how basket weaving is important in this area?

Alternative Introduction to Weaving

Before we make weavings of our own, we're going to watch a video talking about how important basket weaving is to the Eastern Band Cherokee in North Carolina. After the video, I am going to ask you what you learned that makes this craft so important to the Cherokee people.

Show video: http://vimeo.com/99194466 [2:19]

What did you learn in the video that makes basket weaving important to the Eastern Band Cherokee?

- *It's a family tradition*
- *It's been happening for a long time*
- *It's important for people not to forget traditions*
- *To learn about the plants used to make baskets*
- *To teach people information about their culture*

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The facilitator can use resources referenced below and/or information from his or her local Native community to discuss why basket weaving is important and its history in the local area. Educators are also encouraged to emphasize patterns and pattern structures and provide examples of complex weaving patterns that students can touch and feel.

INDIVIDUAL ACTIVITY

Weaving a Loom

60 minutes

You can weave all kinds of materials together to make things. Can anyone name a few materials used for weaving?

Today, we're going to be using yarn to weave fabric.

Hold up a completed weaving, on a loom, as an example. Point out each part in of the weaving in turn.

You can see that there are many different parts to this weaving. The weaving is done on a loom – we'll use a cardboard frame for our looms. There are also the strings that provide structure for the weaving – those are called warp strings. And then there's the colorful thread that we use to make our design – those are called weft strings. We're now going to watch a video showing how to assemble one of these looms and how to use it.

Directional video: https://www.youtube.com/watch?v=-ByYj5G4-Hc [3:05]

If internet access is not available, simply read the directions below to the class. (Even if you do show the video, it's also helpful to read these directions to your class.) Use your completed loom as an example so the students can see what they'll be designing.
Hand out a piece of cardboard, the string, ruler, tape, and scissors to each student. Also, hand out the page of written directions, in case students learn better by reading.

I'm handing out a page of written directions. I'll also explain what we're going to do, so you can follow my example, if you wish.

Pick up your piece of cardboard. That's your loom. We're now going to put the warp strings on. Using a ruler, draw eight 0.6 cm (¼ inch) long lines along the top and bottom of the loom. The lines should be around 0.6 cm (¼ inch) apart and should line up with one another from top to bottom. Use a pair of scissors to cut notches along the 0.6 cm (¼ inch) long lines on both the top and bottom of the loom – you're only making short cuts 0.6 cm (¼ inch) long!

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Pick up your piece of string. We're now going to make the warp strings. Tape the string down on the left side of the loom. This will be the back side of the loom. Wind the string through the slots, creating vertical warp strings. Tape the end of the string to the back of the loom (see **Image 1**). You can add more tape if you'd like to secure all of the strings. Be sure to save about 1 inch of tape, which we'll use later.

Image 1

It's now time to design your pattern. What would you like to create? Remember that horizontal lines of color will be the easiest to weave.

Hand out the graph paper and the colored pencils (or markers) to each student.

Pick up your piece of graph paper. Draw a pattern on a piece of graph paper that is the same size as the loom. Use 3–5 colored pencils to represent the colors of yarn that will be used in the weave. The pattern will serve as your guide for when you weave your pattern.

Hand out the yarn and the popsicle sticks.

Choose which color of yarn you will begin with. Tape the popsicle stick to one end of the yarn (see **Image 2**). Moving from left to right, place the popsicle stick over one string and under the next string. Repeat this over/under pattern until you cross all strings. Then wrap the yarn around the last string and move back in the opposite direction (right to left) using the same over/under pattern. Repeat for as many lines as you would like with that color of yarn.

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Image 2

When you want to switch to a different color of yarn, finish an entire row and then switch to new piece of yarn. Do not tie a knot at the end of the yarn to start a new color. Each piece can be simply left hanging off to the side.

Complete your weaving by following the pattern you drew on the graph paper. Weave until the loom is completely full.

When you're finished with your weaving, cut the warp threads on the back of the loom and lift your weaving off of the loom. You have a wall hanging to display!

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RECOMMENDED ACTIVITY

If a Native Elder was not available to speak with the students, read the following optional story to the students as they weave. This story features baskets as a part of Native American folklore.

Basket Woman, Mother of the Stars

Tribe: Skidi Pawnee

Back in the beginning of time, when all things were being created, First Man lived in a forest of tall pine trees. One day while on a hunting trip, he discovered a small lodge. Next to the lodge was a tiny cornfield. "I wonder who lives here," he thought.

The next day, First Man brought his wife, First Woman, through the forest to see the lodge. As they came near, a little old woman came out to greet them. "I am basket woman, or Moon, the mother of the stars. I lured you here." Then she invited her visitors inside. Around a small fire sat four old men: Wind, Cloud, Lightning and Thunder.

The lodge was filled with Moon's daughters. Soon the girls began to sing and dance. Moon's daughters told First Man to watch and listen very carefully so he could teach the sacred songs and dances to others. After the singing and dancing, Basket Woman's Daughters taught First Man and First Woman ceremonies and games.

Evening Star danced in the west and held a basket representing the moon. The basket was made of willow reeds held together with mud, for the earth is filled with trees. Four daughters of Black Star were also there: they danced and moved toward the west and each placed what she carried in Evening Star's basket two swan necks and two fawn skins. These represented the four gods in the west.

The basket woman's daughters taught First Man and First Woman a game. They gave them the Moon basket, plum seeds which represented the stars, and twelve sticks which are the circle of chiefs in the sky. They used the sticks as counters.

When First Man and First Woman had learned all they should, their neighbors from the lodge jumped into their basket and flew away up to the sky to return to their places.

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What is some of the symbolism present in this story? What kind of science can you identify in this story? What does the basket woman represent? What do the twelve sticks represent?

The twelve sticks may represent the twelve constellations of the zodiac (i.e., the constellations that the Sun appears to pass through over the course of a year.)

CLEAN UP

10 minutes

- Throw out any yarn scraps and collect the supplies into a box.
- If students have not finished their weavings, allow them to take home yarn with the directions handout.

OPTIONAL EXTENSIONS

This program can be used in conjunction with the traditional dyes activity also found on the Roots of Wisdom website located at www.omsi.edu/exhibits/row. The dyes made from natural materials could be used to dye yarn for weaving opposed to the fabric referenced in the activity guide.

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BACKGROUND INFORMATION

There are a variety of videos that can be helpful for facilitating and completing this activity.

- Primary Weaving[1]
- Weaving on a Cardboard Loom[2]
- Beginning Basic Weave[3]
- Restarting Basic Weave[4]

This activity is referenced in a website entitled *Craft Revival: Shaping Western North Carolina Past and Present* and has a wealth of information on the history and culture of the Cherokee Nation and references for books and other activities.

- Craft Revival: Shaping Western North Carolina Past and Present[5]
- Referenced Weaving Activity[6]
- Additional Cherokee-themed K-12 Lesson Plans[7]

1 http://www.youtube.com/watch?v=-ByYj5G4-Hc

2 http://www.youtube.com/watch?v=LbtKnvc_9No&app=desktop

3 http://www.youtube.com/watch?v=nkZQtmrIKBM

4 http://www.youtube.com/watch?v=PZgxyWR1Aq8

5 http://www.wcu.edu/library/DigitalCollections/CraftRevival/index.htm

6 http://www.wcu.edu/library/DigitalCollections/CraftRevival/k12/Elem_weavingdraft.html

7 http://www.wcu.edu/library/DigitalCollections/CraftRevival/k12/index.htm

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Weaving Activity Directions

- Create a small handmade loom by cutting a piece of cardboard into a small rectangle (about 5 inches wide by 7 inches long is a good size for starters).
- Using a ruler, draw six to eight ¼ inch long lines along the top and bottom of the loom. The lines should be around ¼ inch apart and should line up with one another from top to bottom.
- Use a pair of scissors to cut along the ¼ inch long lines on both the top and bottom of the loom (See Image 1).
- Cut a long section of white string (about 16 times the length of your loom). Tape the string down on the left side of the loom. This will be the back side of the loom. Using Image 1 as a guide, pull the string up through slot one, down through slot two, up and over slot 3, down through slot 4, etc. Follow this pattern until the string has crossed through all slots. Tape the end of the string to the back of the loom.
- Draw a pattern on a piece of graph paper that is the same size as the loom. Use three to five colored pencils to represent the colors of yarn that will be used in the weave. The pattern will serve as a guide for weaving.
- Choose a color of yarn to begin with. Moving from left to right, place the yarn over one string and under the next string. Repeat this over/under pattern until you cross all strings. Then wrap the yarn around the last string and move back in the opposite direction (right to left) using the same over/under pattern. Repeat for as many lines as you would like with that color of yarn.
- When changing the color of the yarn, finish an entire row and then switch to a different color. Do not tie a knot at the end of the yarn to start a new color. Each piece can be simply left hanging off to the side.
- Complete the weave by following the pattern drawn out on the graph paper. Weave until the loom is completely full.
- Either cut the weave off the loom to make a wall hanging or frame the weave on the loom by making a cardboard frame.

RESOURCES

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Links and resources for cultural guides:

Alaska Native Knowledge Network[8]
Guide to Implementing the Alaska Cultural Standards for Educators[9]
Indian Education for All - Montana Office of Public Instruction[10]
Navajo Culture[11]

GLOSSARY

Vocabulary	Definition
Elder	A person who has gathered knowledge and wisdom about his or her culture; not all elderly people are elders
Indigenous/Native	An individual who has an ancestral claim to a particular environment or region
Traditional knowledge	Wisdom held by elders that is passed down to younger generations
Ways of knowing	Information gained by patient observations, life wisdom, and accumulated knowledge
Western science	A system of knowledge which relies on certain laws that have been established through the application of the scientific method to phenomena in the world around us

NEXT GENERATION SCIENCE STANDARDS

[8] http://ankn.uaf.edu/Publications/Knowledge.html
[9] https://education.alaska.gov/standards/pdf/cultural_standards.pdf
[10] http://opi.mt.gov/programs/indianed/IEFA.html
[11] http://serc.carleton.edu/research_education/nativelands/navajo/culture.html

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Practices
- Planning and carrying out investigations
- Obtaining, evaluating, and communicating information

Crosscutting Concepts
- Patterns
- Cause and effect

	Disciplinary Core Idea	K	1	2	3	4	5	MS	HS
Physical Science									
PS1	Matter and Its Interaction	n/a	n/a		n/a	n/a			
PS2	Motion and Stability: Forces and Interactions		n/a	n/a		n/a			
PS3	Energy		n/a	n/a	n/a				
PS4	Waves and Their Applications in Technologies for Information Transfer	n/a		n/a	n/a		n/a		
Life Science									
LS1	From molecules to organisms: Structures and processes			n/a					
LS2	Ecosystems: Interactions, Energy, and Dynamics	n/a	n/a			n/a			
LS3	Heredity: Inheritance and Variation of Traits	n/a		n/a		n/a	n/a		
LS4	Biological Evolution: Unity and Diversity	n/a	n/a			n/a	n/a		
Earth & Space Science									
ESS1	Earth's Place in the Universe	n/a			n/a				
ESS2	Earth's Systems		n/a						
ESS3	Earth and Human Activity		n/a	n/a					
Engineering, Technology, and Applications of Science									
ETS1	Engineering Design								