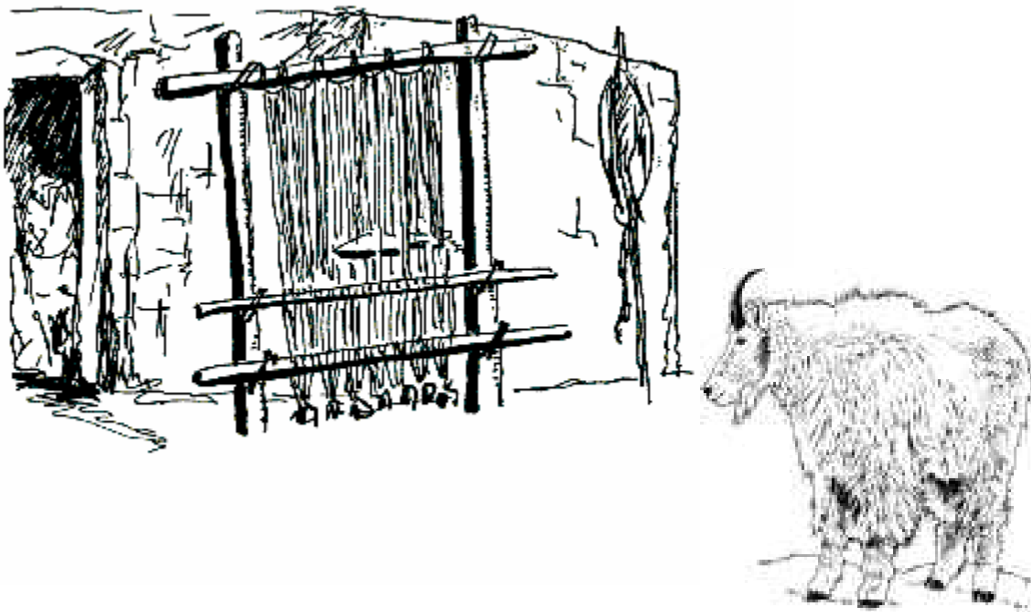


The Goat in the Rug



American Textile History Museum
Traveling Textiles Program
TEACHER'S GUIDE

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Massachusetts 01854

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Introduction

The American Textile History Museum in Lowell, Massachusetts, recreates the “museum experience” in school classrooms through the Traveling Textiles program. Our educational programs and Museum exhibitions aim to provide enjoyable opportunities for both personal growth and discovery through exposure to America’s diverse textile history and its impact on today. We provide the information and artifacts for students to make this connection. Along the way, we showcase the creativity and problem solving skills shown by earlier American textile producers, both at home and in business, and encourage students to appreciate these skills and, most importantly, to develop their own.

How to Use this Guide

This guide is intended to provide educational materials supporting the main lesson which will be presented by a Museum teacher. Included are optional lesson plans for before and after the main lesson for those who wish to teach an entire unit on the subject, descriptions of related follow-up activities (without lesson plans), as well as background information, vocabulary, an annotated suggested readings list, bibliography, and connections to the Massachusetts Curriculum Frameworks (- the main lesson is not included). The pre-lessons are intended to give students a context for the arrival of the Museum teacher, one exploring the concept of a museum as someone’s collection, and another exploring useful background context information for the main lesson. The post-lessons relate to and reinforce the main lesson subject matter.

We ask everyone to complete and return the enclosed evaluation form to help us monitor and improve our offerings.

Objectives

An objective of the Goat in the Rug program is to provide students with a basic understanding of the fundamentals of cloth production, as well as its significance to the Navajo culture. It also aims to promote understanding and appreciation of diverse cultures and their traditions, and introduces students to museums.

Program Description

Optional pre and post lessons are provided for program reinforcement. In the main lesson, Goat in the Rug, students are introduced to the definition of a number of textile terms and words. They are taught the steps required to produce

cloth from wool fiber by observing a demonstration provided by the instructor. They are also given a brief description of the Navajo culture with particular focus on the tradition of handweaving.

Students will listen to a story, The Goat in the Rug, as told by Geraldine, a goat whose mohair is transformed into a rug. Students will then use paper strips to weave their own interpretation of a Navajo pattern place mat. When finished, students will be given the opportunity to present their weaving to the class.

Lesson Plans

Pre-Lesson Plan

Title: Collections and Museums
Program: Traveling Textiles – Goat in the Rug
Grade Level(s): K-3
Length of time for Lesson: 45 minutes
Lesson Prior:

Objective(s):

- Students will recognize elements involved in collecting items.
- Students will understand what a museum is.
- Students will understand the role of a museum in a community.

Materials: blackboard/chalk

- Steps:**
1. Ask: Does anyone here have a collection?
 - Make a web diagram of responses on board, with "Collections" in the center
 2. Ask: What makes these "collections"?
 - Define collection: a group of objects having something of importance in common
 - Identify the common element in each collection on the board (i.e. similar objects, from the same time period, all related to pets, etc.)
 3. Ask: Why did you start your collection?
 - Make a list on the board. Possible responses:
 - objects are interesting
 - possible future value and historical importance
 - curiosity (educational interest for self)
 - interest in objects' common thread (time period, topic, etc.)
 4. Ask: Have you ever wanted to show your collection to others?
 - Discuss
 5. Ask: How would you show your collection?
 - Discuss
 - Define "museum" as a place to display a collection, where
 - people can see and admire art and artifacts
 - people can learn about art and history
 - people can learn about other cultures
 6. Ask: Has anyone ever visited a museum?
 - Name some local museums
 - Ask if the following are museums: a zoo, aquarium, botanical garden, planetarium, children's museum (they all are in their own way)
 7. Tell the class that you will have a visit from a teacher from the American Textile History Museum who will teach and show items having to do with how we make fabrics and clothing items (this museum's common thread).

Pre-Lesson Plan

Title: Who are the Native Americans?

Program: Traveling Textiles - Goat in the Rug

Grade Level(s): K-3

Length of time for Lesson: 45-60 min.

Lesson Prior: Collections and Museums (optional)

Objective(s):

- Students will understand the historical origins of the Native American peoples
- Students will understand how local surroundings can affect developing cultures
- Students will appreciate Native American contributions to life today in the United States

Materials:

globe

“Major Native American Cultural Areas in North America” map
(optional – one per student)

crayons (optional)

Steps:

1. Ask: Who do you think were the very first people (we know of) to live in the United States? Using a globe to illustrate, tell them:
 - the first occupants of North, Central, and South America came from Asia, crossing over the Bering Strait in Alaska and then traveling south and east
 - this migration started over 30,000 years ago, filling the Americas by 8,000 BC
 - about 1 million Native (or original) Americans lived in the land on this continent north of Mexico before the Europeans came in 1492
 - the Native Americans' common origin meant they shared some basic physical features (dark eyes, straight black hair, copper/tan skin tones)
 - the Native Americans also shared some common cultural knowledge (could make fire, used tools made from stone, wove baskets, had domesticated dogs)
 - the Native American tribes (or groups) had many differences, too, including individual languages, customs, religious beliefs, ideas, and ways of dealing with their natural surroundings.
2. Ask: If your family was the first to live in a new, vacant land, what local features would most influence your daily life? Lead a discussion about adapting to your local surroundings and the materials available there (i.e. how would your environment dictate what your house looked like?, what your ate for dinner?, what your wore?)

3. Tell students there are 10 major Native American cultural areas in N. America above Mexico, each having some differences related to their surroundings (see map). Write the following chart on the board:

Important Local Animals:

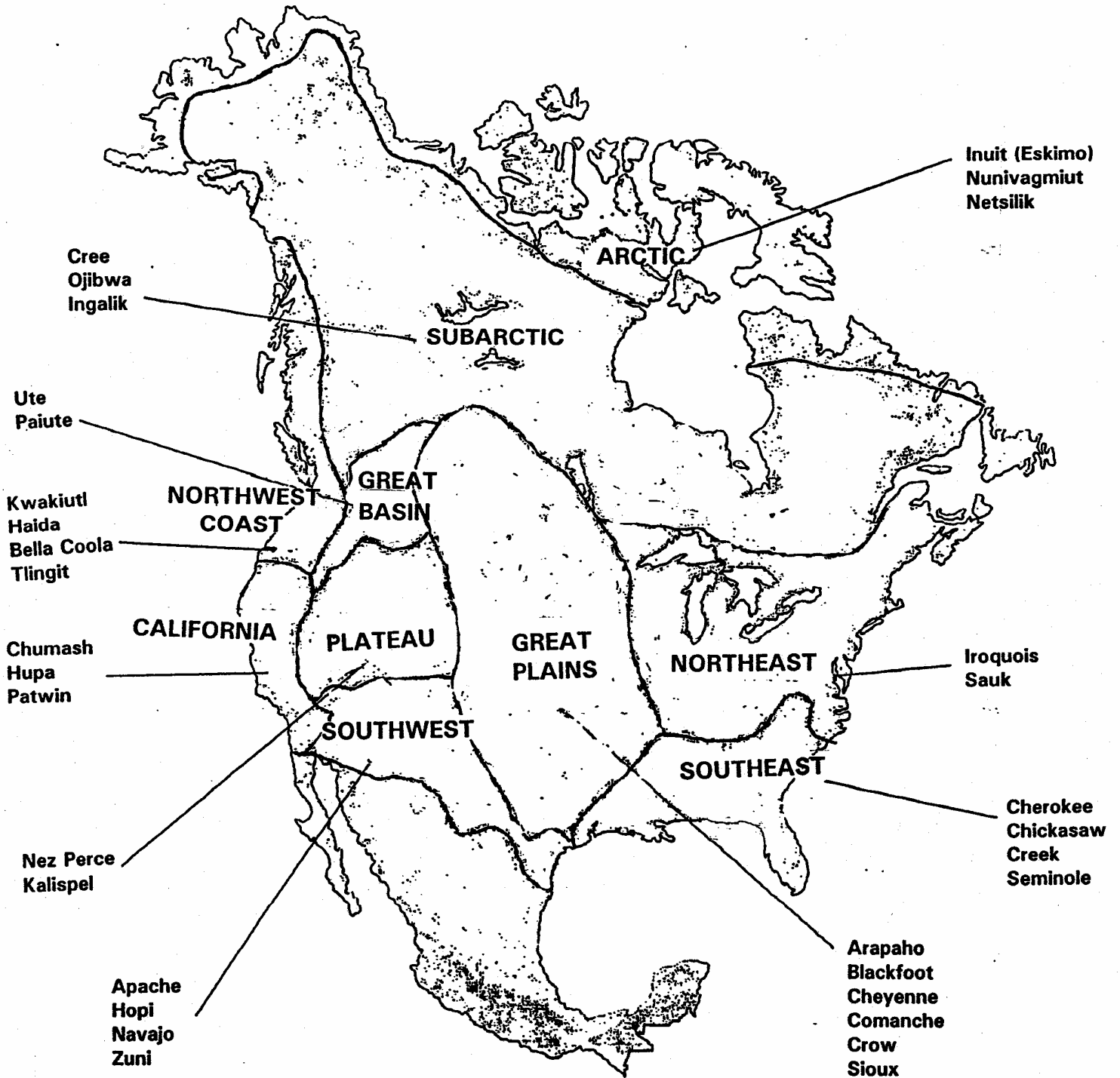
Buffalo	Plains	Tepees, clothes made from hides Ate buffalo meat
Caribou	Subarctic	Nomadic to follow herds
Salmon	Northwest Coast	Nomadic to follow herds Fishing is major activity

Variations in Homes Built with Available Local Materials:

Bark	Northeast	Iroquois long houses
Mud bricks	Southwest	Pueblo multi-storied apartments
Bark & mud	Southwest	Navajo cone-shaped hogans
Earth lodges	Plains	Pawnee, Omaha round lodges
Buffalo hide	Plains	Cheyenne, Arapaho tepees

4. Ask: Does anyone know what common items we have today that were brought to us by the Native Americans? (snow shoes, moccasins, toboggans, corn, maple syrup, tomatoes, potatoes; - they taught the Europeans who came here later how to survive in the wilderness)
5. Ask: Where are the Native Americans today?
- today there are over 250 Native American tribes or groups
 - most Native Americans are unable to live the way they did in the past, but now dress like most Americans do, have TVs, cars, and appliances in their homes
 - some now live on reservations, or tracts of land given to them by the U.S. government, after defeat in wars in the 1800s, and some live in the population at large
 - some Native Americans still make traditional crafts for use or sale, i.e. rugs, blankets, jewelry, pottery, baskets, beadwork
6. Tell your class that you will have a visitor who will read a story to the class about a Navajo woman who is a weaver today.
7. (Optional) Distribute copies of the Native American Cultural Areas map, have students put a star where they live on the map, and color it.

Major Native American Cultural Areas in North America



Post-Lesson Plan

Title: Where Does Cloth Come From?
Program: Traveling Textiles - Goat in the Rug
Grade Level(s): K-3
Length of time for Lesson: 45 min.
Lesson Prior: Goat in the Rug

Objective(s):

- Students will know that cloth is made from various raw materials
- Students will know the steps in how cloth is made
- Students will review and solidify their understanding of information from a previous lesson

Materials: Steps of Woolen Cloth-making chart
"Where Does Cloth Come From" worksheet (one per student)
crayons or markers

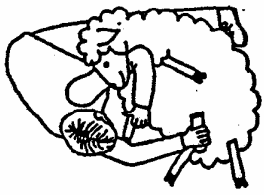
Steps:

1. Say: We just had a visitor who told us about how wool is used to make rugs. Who remembers the steps to change a goat's wool into a rug? (Refer to chart):
 1. Cut the wool off the goat (shearing)
 2. Wash it
 3. Pick out sticks, etc.
 4. Comb it straight (carding)
 5. Make yarn by spinning it
 6. Weave yarn to form cloth
2. Ask: Does anyone know some other animals that have wool or other fiber that can be made into cloth? (sheep, llamas, angora rabbits, camels)
3. Say: Rugs aren't the only useful items we can make from wool. Is anyone wearing something made from wool? (Mention clothing items that are typically made from wool - sweaters, scarves, socks, suits, mittens)
4. Ask: What are some of the properties of wool that make it a fiber that is useful for clothing and other products? Examples:
 - rough, crimped fibers cling together = wool is easy to spin into yarn
 - crimped fibers trap air in in-between spaces = wool is warm
 - many air spaces = wool cloth is light weight
 - crimp makes wool cloth retain its shape
 - rough fibers make wool absorb water = waterproofing effect
 - hollow wool fibers hold air = heat control effect

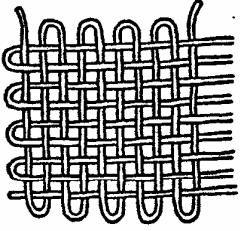
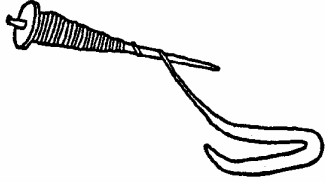
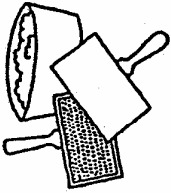
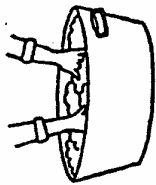
5. Say: Fibers to make yarn or threads can come from some other sources, as well. Can anyone guess from where? Mention:
- Other animals: silkworms (filaments from cocoons make silk)
 - Plants: cotton
flax (the fabric is called "linen")
jute (used to make burlap)
 - Man-made: made from chemicals, altered wood pulp
i.e. nylon, acetate, rayon, polyester
- Identify examples of some of these fabrics amongst the students' clothes.
6. Say: Once you have prepared the yarn or threads, the process to make cloth is basically the same (weaving or knitting) for most fabrics.
7. Distribute worksheet and give instructions to color pictures of how cloth is made from different raw materials. Briefly discuss the cloth making sequences shown. (Option for older students: Write below each picture a name for the step represented in the process of getting from a raw material to a piece of cloth. See answer key for teachers below.)

Wool	Shearing	Washing	Picking	Carding	Spinning	Weaving
Cotton	Growing	Harvesting	Cleaning	Spinning	Thread	
Silk	Moth (lays eggs)	Caterpillars spin cocoons	Heating cocoons to remove glue	Unraveling cocoons	Weaving silk threads	
Man-made	Collecting recycled plastics	Shredding plastic	Melting plastic	Making chemical solution	Extruding into strands	Collecting on spools

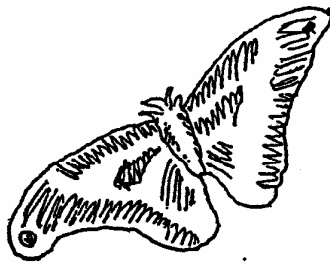
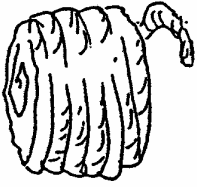
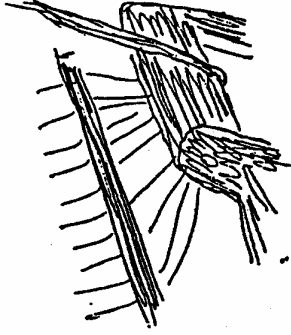
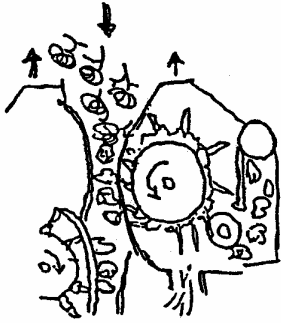
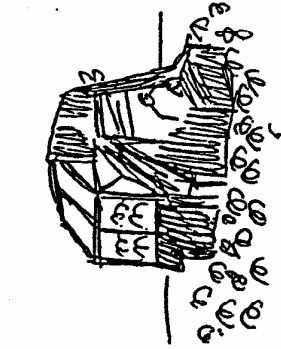
Where Does Cloth Come From?



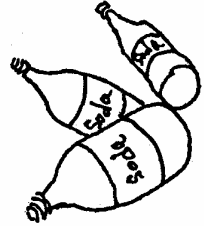
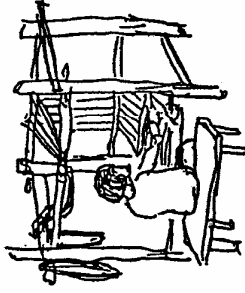
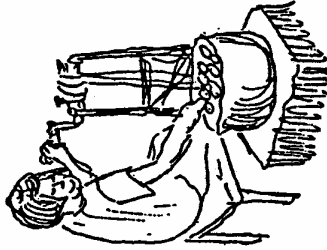
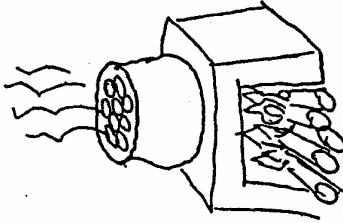
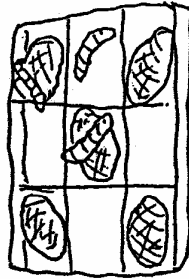
Wool



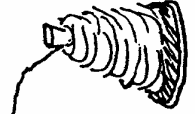
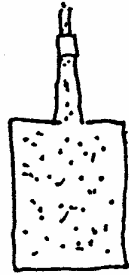
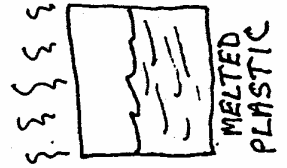
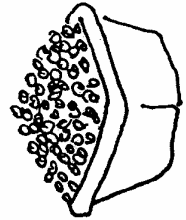
Cotton



Silk



Man-made



Post-Lesson Plan

Title: Using Symbols in Cloth Design (Making a Rebus)

Program: Traveling Textiles - Goat in the Rug

Grade Level(s): K-3

Length of time for Lesson: 45 min.

Lesson Prior: Goat in the Rug-Navajo Method of Cloth Making or
Where Does Cloth Come From?

Objective(s):

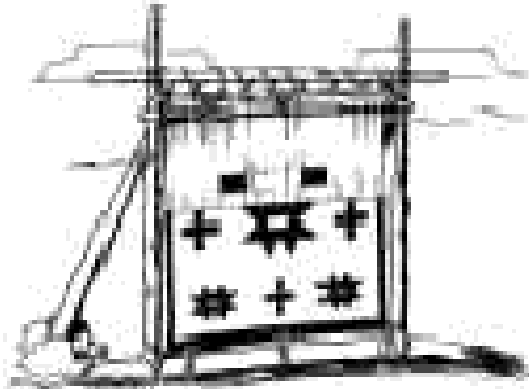
- Students will know that symbols represent ideas or events
- Students will know the significance of the Navajo symbol system as seen on their textiles
- Students will use symbols to express their own ideas on their own design creations

Materials: Native American symbol chart (one per student or copy on board)
blackboard/chalk
paper/pencils
student projects (previously made place mats) (optional)

Steps:

1. Say: We just had a visitor who helped us make Navajo style place mats. The Navajo sometimes wove symbols with special meanings into their weavings. Some of us chose to add some of these symbols onto our place mats. (Show one if you have it.)
2. Hand out symbol sheet.
3. Choose several symbols to discuss. Draw one symbol on board.
4. Ask: How could we tell what this symbol refers to even if we didn't have the chart to tell us? Some possible answers:
 - looks like referent
 - refers to referent common in Navajo culture (tepee, horse tracks)
5. Ask students to draw some of their own symbols for things/people in their own range of experience: (Some possibilities):
 - weather - (rain, sun, snow, etc.)
 - toys - (doll, blocks)
 - sports equipment - (baseball, soccer ball, bat)
 - action words - (run, sleep, eat)
 - people words - (I, Mom, Dad, friend)
6. Ask some students to share/explain their symbols with the class as they draw them.
7. Ask students to write/draw a (sentence, paragraph, short story) using their own symbols instead of words as often as possible. Tell them they are creating a REBUS (Reason and Examine By Uncovering Symbols), in this case writing with picture symbols in it that the reader has to interpret in order to make sense of the writing

- Mention that all art is personal – it's whatever the artist and viewer make of it
8. Ask students to share their work with the class.
 9. Have students add some of their own symbols to their paper place mat design if they wish to.
 - Mention that some symbols that appear in Navajo rugs are personal to the weaver and are not meant to be interpreted by the public



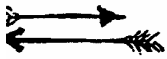
Native American Artistic Symbols



Crossed Arrows - Friendship



Broken Arrows - Peace



Passing Arrows - Mutual Friendship



Hogan - Permanent Home



Teepee - Temporary Home



Thunderbird - Messenger of the Gods, Sacred Bearer of Happiness



Horse - Journey



Bear Tracks - Good Omen



Eagle Feathers - Chief



Turkey Track



Man - Human Life



Fence - Guarding Good Luck



Paths Crossing



Big Mountain - Abundance



Days and Nights - Time

Bird - Carefree, Lighthearted



Snake - Defiance, Wisdom



Butterfly - Everlasting Life



Spider - Good Luck



Buffalo Eye - Alertness



Buffalo Horns - Success



Frog - Swamps



Deer Tracks - Plenty of Game



Sun Rays - Constancy



Sun Symbols - Happiness



Morning Stars - Guidance



Running Water - Constant Life



Rain Clouds - Good Prospects



Cactus - Sign of the Desert



Cyclone - Force



Post-Lesson Plan

Title: Attributes Critique

Program: Traveling Textiles – Goat in the Rug

Grade Level(s): K-3

Length of time for Lesson: 45 min. – 1 hour

Lesson Prior: Goat in the Rug – Navajo Method of Cloth Making

Objective:

- Students will identify like attributes in a grouping
- Students will identify negative attributes in a grouping
- Students will be able to classify objects by attribute categories

Materials: student projects

Steps:

1. Display class projects so all can see them.
2. Scan projects to identify ways to sort them by attribute, then ask class to classify grouping members amongst their projects:
 - a. Identify a grouping, then ask class to discover the common attribute OR
 - b. Identify an attribute, then ask class to identify members of that group

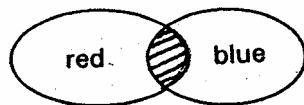
Some possible attribute groupings:

All projects that have: a color (red, blue, ...)
 a clothing item (hat, skirt, long skirt, shoes, ...)
 long hair (short hair, braids, ...)
 blue eyes (brown, closed, looking to the left, ...)

All projects that have ... 2 or more attributes

All projects that don't have ... (negative, or missing, attributes)
no shoes (no socks, lace, yarn, ...)
no printed patterns on the material used (no solid colors,
no plaids, ...)
not smiling
not wearing earrings

3. Option: Create Venn diagrams using 2 or more attributes with their over-lapping sections. Identify student projects that fit the resulting categories.



4. Invite students to think of attribute groupings themselves and ask the class to solve it, as above.

5. Add to the information already on the board:

- Constructive Critics

1. Say what you liked the most about the project
2. Give one suggestion – something they could have added, done differently, etc.

6. Begin critique:

- Have students present their work to the group one at a time
- After each presentation, have the class take turns giving feedback (Depending on time constraints, decide how to do this. You could have all students make a comment one at a time, or ask those interested in commenting to raise hands, and choose just three per presenter.)

***Please Note: Students can feel sensitive toward class critiques, or self-conscious in front of a group. Please be flexible in how you format your critique – according to the needs of individuals in the class. Try to reinforce those students with positive feedback. In order to avoid awkward situations, make sure you set clear expectations that students be ready to comment on EVERYONE'S work, and you will call on as many as possible as time permits.

Related Follow-up Activities

Textile Traditions

The Navajo people have a rich textile history which is unique to their culture. Every ethnic group has its own textile traditions which are a special part of its heritage. The many different approaches to cloth-making throughout the world help students recognize the interest and beauty in diversity.

Ask each student to find out a little about his/her own culture and traditions. To do this, they can talk to their parents or grandparents or they could even find a children's book which deals with one of their ancestors' countries. Ask them to focus on their textile history. The types of fibers that are traditionally used in the culture, the styles of clothing and blankets, and the colors used may be topics of research. (See the chart on the next page for ideas.)

Ask students to share what they find. Maybe someone in the class has a grandmother who does traditional Irish knitting or Italian lace. Perhaps a family member might have a traditional costume that the student could bring in to share with the class. The students may have their own fiber skills, such as making traditional Christmas ornaments from straw, that they would like to share with the class. Discuss the differences and the similarities of the variety of cultures found among the students. Mention the importance of respect and appreciation for diversity.

Textile Traditions by Country

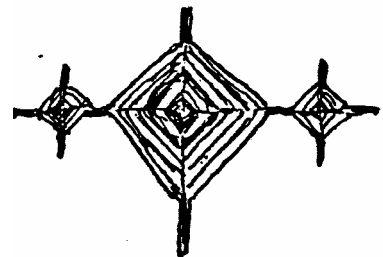
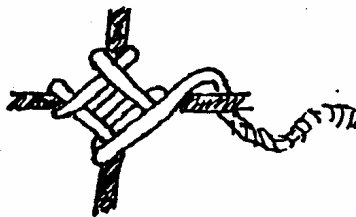
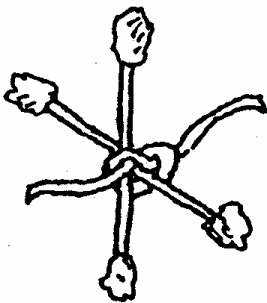
Continent/Country	Textile	Description
Africa		
Ghana (Asante peoples)	Kente Cloth	woven silk strip cloth for ceremonial occasions
Zaire (Kuba peoples)	Kuba Cloth	embroidered tie-dyed raffia cloth of palm leaf fiber
East Africa	Kanga	rectangle of pure cotton cloth, bordered, printed
Nigeria (Yoruba peoples)	Yoruba Egungun	mask/costume of multicolored & textured fabric
Ghana/Ivory Coast	Adinkra Cloth	hand printed & embroidered "good-bye" cloth
Nigeria (Yoruba peoples)	Adire	indigo resist-dyed cloth
Mali (Bogolan)	Bogolanfini	hand-printed mud cloth
Sahara Desert (Tuareg)	Eseber	large straw/leather mats with abstract graphics
S. Africa	Dashiki	loose fitting long robe of brightly colored cotton
Asia		
Central Asia	Carpets	heavy woven wool floor coverings
India	Madras	fine textured, brightly colored cotton or silk cloth
India	Rilli	cotton applique & reverse applique
India	Sari	long cloth used as a garment; significant draping styles
Tibet	Wangden meditation weaving	unique carpet weaving style, used for meditation mats
Tibet	Thangkas	silk applique hangings
China	Sleeve bands	elaborately embroidered sleeves
China	Cheongsam (Qipao)	long dress
Japan	Kimono	long, loose, wide-sleeved robe worn with a broad sash
Korea	Wrapping cloths	traditional dress
S. China (Hmong)	Paj Ntaub	flower cloth, symbolic designs & patterns
Cambodia	Krama	cotton scarf worn around head or hips
Indonesia	Batik (used on sarongs)	intricate wax dyeing method for cloth
Malay	Baju Kurung	loose tunic worn over long skirt
Malay	Kebaya	2 piece costume, tight blouse & batik skirt
Polynesia	Tapa (bark cloth)	various traditional textiles made from bark
Tonga	Tupenu	wrap around skirt-like cloth
Tonga	Ta'ovala or kie kie	decorative wrap worn around waist
Hawaii	Featherwork	cloaks, leis, helmets, etc. made of feathers
Hawaii	Hula skirt	grass skirt
South America		
Andes	Arpillera	3-D art quilts
Maya/Mexico	Huipil	handwoven brocade rectangular outer garment
Aztec/Mexico	Feather weaving	use of fluffy chicken feathers on huipils, etc.
Peru	Feather textiles	an ancient art form, symbolic designs
Andes (Peru/Bolivia)	Manta	rectangular fabric shawl with distinctive weave
North America		
Haiti	Voudou flags (drapo)	sequined, artistic flags
USA	Quilts	layered fabric bed covering decoratively stitched together
USA	Samplers	cloth embroidered with alphabet, designs, poems, etc.
USA	Coverlets	bedspreads
Navajo Nation	Baskets	containers made from interlaced plant or tree materials
Navajo Nation	Blankets	handwoven wool, meaningful designs
Europe		
Scotland	Kilt - plaid/tartan	belted plaid short cloak
Spain	Flamenco dress	low necked dress with frilled skirt
Russia	Shawl	cloth worn as head/neck/shoulder covering
Belgium	Lace	delicate thread fabric made in open weblike pattern
Scandinavia	Tablet weaving	weaving technique using cards to make narrow textiles
Scandinavia	Sprang	stretchy intertwined braid for stockings, hammocks, etc.
Europe - various	Tapestry	heavy woven cloth wall hanging showing scenes

Ojo de Dios or God's Eye

This is a simple and easy weaving project. Traditionally, God's Eyes were sacred decorations made by Pueblo and Mexican Indians. They were believed to bring good luck, happiness, good health, and long life since they symbolized the powerful eyes of God in his goodness. In Mexico, they are hung on display yearly during the Green Squash Festival in October. God's Eyes can be hung up as decorations on walls, windows, hung freely as mobiles, used as jewelry, or carried as "good luck charms."

MATERIALS: colorful yarn (or thread or string)
2 equal length sticks (twigs, popsicle sticks,
cotton swabs, plastic stirrers, flat toothpicks, etc,)

- METHOD:**
1. Cross the 2 sticks, making the 4 "legs" of equal length.
 2. Tie 1 end of your yarn around the center of the crossed sticks, tying them together. Make this a tight knot.
 3. Holding the sticks in one hand and the yarn in the other, weave the yarn over one leg and then around that same leg. Go to the next leg and repeat, continuing around. Push the weave snugly toward the center each time.
 4. Change yarn color by tying the 2 ends of the different colors together and continuing on.
 5. Finish by tying the end of the yarn around 1 of the legs.
 6. The front side will appear smooth and flat. The other side showing the wrapped crossed sticks is the back.
 7. Variations: To build a more elaborate God's Eye, add another cross stick to one or more leg ends in the same way around that cross.

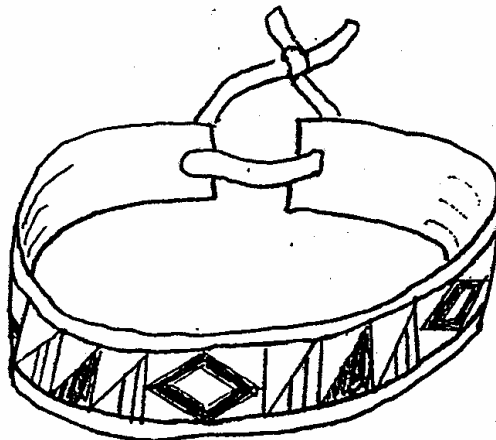


Native American Headband

Numbers of Native American tribes wore headbands, often with feathers attached.

MATERIALS: felt strips 1" X 16" [or fabric or heavy paper (grocery bags) 2" X 16" folded to 1" X 16"] with a hole punched into each end
assorted material scraps, sequins, glitter, feathers, etc.
crayons and/or markers
elasticized cord 8" long
white glue
hand punch

METHODS: 1. Decorate one side of the strip with scraps, etc., gluing them sparingly. If using heavy paper, fold in half lengthwise and use markers or crayons to decorate with geometric designs, etc..
2. Thread the elasticized cord through the holes you punched and tie ends, fitting the headband to the wearer's head.

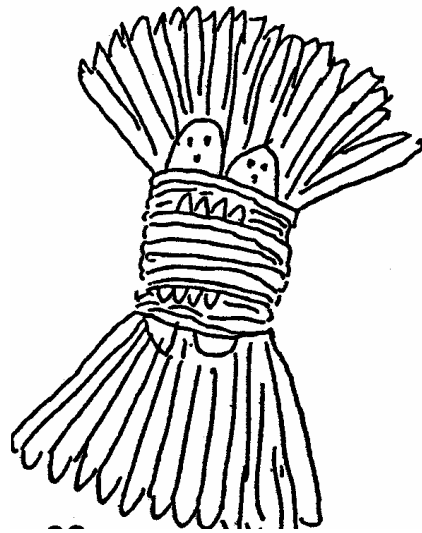


Navajo Prayer Bundles

The Navajo made these bundles depicting a family with children wrapped together with yarn. They would place it in a special spot in the home, believing that the Great Spirit would then watch over the family. Ask your students what they feel the bundle could mean or represent.

MATERIALS: self-hardening clay
paint
wool
thin sticks

METHOD: 1. Make 2 elongated finger shapes less than 2" long out of the clay. Let them dry.
2. Paint faces on the clay shapes.
3. Cut enough 3" long pieces of wool yarn to make a bed for the clay shapes to lie on (about 30 pieces).
4. Place the clay shapes on top of the 3" wool pieces the long way and wind some wool around the middle.
5. Place some thin sticks (as many as you want children in the family) on top of the wound wool. Continue winding the yarn, this time around the children, too.
6. Cut the yarn when finished winding and tuck the end in to secure it.



Exploring Natural Dyeing

Dye some yarn and use it for a project. 100% wool yarn absorbs dye better than cotton or synthetic fibers, but you can use your dyes on all of them, as well as on paper, fabrics, egg shells, natural found items like feathers, cornhusks, straw – use your imagination. Try socks and T-shirts, too. Instructions follow:

Dyeing involves pots of very hot water, and steam, and needs to be supervised carefully by an adult to prevent burns.

Introduction

Natural dyes need time to develop strong colors, so be prepared to spend two to four days on the whole process. For darker, stronger colors, let wool sit in the dye pot for two nights, instead of one, or use more dyestuff (the raw materials that yield the dyes) and less yarn.

These dye recipes use alum (a food-safe aluminum product) and cream of tartar (both found with the spices in the supermarket), or white vinegar to set the colors in the yarn. These items are safe for you to use – no risk of poisonous chemicals – but they don't make dye colors last as well as other, more dangerous chemicals that dyers use. Your yarn will fade after long exposure to sun and after frequent washing.

Wool yarn will absorb the dyes best while most synthetics won't, so these directions are for 100% wool (other results will vary). Remember that wool has to be handled with care to keep it from shrinking and matting together (called "felting").

Preparing the Dye Pots

Use stainless steel or enamel pots, since minerals leaching from cast iron pots will make colors dull and gray, and dyes can ruin non-stick-finished pots. Aluminum pots are also fine for dyestuff that needs alum to set the color (as in most of these recipes) – they just add a little extra alum to the dye. Although all the following recipes are food-safe, you may want to dedicate some pots for this use alone. Also, use stainless steel spoons or wooden spoons or rods for any stirring required.

Plan to strain the dyestuff out of the pot once the color has simmered out of it, returning the liquid to the pot. (You can add the wool directly to the pot with the dyestuffs and pick the dyestuffs out later if you want to obtain a bit more color.)

When finished dyeing, dump your dyes in a stainless steel sink and rinse it well.

Preparing the Yarn

Buy yarn that is skeined for easy dyeing (not long-looped or with many overlaid layers) and keep it skeined so it won't tangle when handled. Note the weight of the yarn to get the dye recipe right. Wash the wool in Woolite detergent – follow directions on bottle but use less for small amounts of wool. Rinse thoroughly, adding 2 tablespoon of white vinegar to the rinse water, then rinse again. Soak the wool in very warm water until you put it in the dye pot (within the next few hours)

Drying the Dyed Yarn

After dyeing, remove the cooled yarn from the dye pot and rinse thoroughly until the water runs clear. Squeeze the rinse water from the skeins gently, roll them in old towels or paper towels, and squeeze to remove more water. Open the skeins to let them dry quicker and more evenly, hang them on a towel rack, and catch the drips in a tub (wool is very absorbent).

DYE RECIPES

Spice Dyes:

Paprika	Reddish-Orange
Tumeric	Golden-Yellow
Mustard Powder	Yellow
Nutmeg	Brown

1 oz. spice **per** 1 qt. water **per** 8 oz. yarn **per** 2 tsp. Alum + ¼ tsp. cream of tartar

Simmer spice in water 1 hour and cool slightly. Add alum and cream of tartar to 1 cup of warm water and stir to dissolve thoroughly, then add this to the dye pot. Prepare the yarn as described above, remove it from the soak water, and add it gently to the dye pot. Don't stir a lot. Slowly bring the dye pot to a gentle simmer (take about 1 hour for this – heating too fast will tangle and felt the wool). Simmer for 2 hours, then turn off heat and let the pot sit covered overnight. Dry as described above.

Vegetable and Fruit Dyes:

Golden-yellow Dye: (grape leaves, red rose petals, onion skins, goldenrod)

8 oz. dyestuff **per** 8 oz. yarn **per** 2 tbsp. alum + 2 tbsp. cream of tartar

Weigh out a portion of dyestuff (leaves and flowers) equal to the weight of the wool you want to dye. You can use various dyestuffs together, but more onion skins makes the dye more brown, more goldenrod makes it more yellow. Chop and crush the dyestuff and put it in the pot. Cover dyestuff with 1 gallon of water and boil for 1 hour until the water looks colored and the plants look bleached out. Turn off heat and let sit overnight. If desired, strain the dyestuff out (or leave it in for more coloring and pick out bits later). Heat the dye pot slightly. Mix the alum and cream of tartar with 1 cup of hot water and add to pot. Prepare the yarn as described above, add it to the pot, and bring pot slowly to a gentle simmer. Simmer for 2 hours, then turn off heat and let yarn cool in pot. Let sit overnight, then rinse and dry as described above.



Reddish-purple Cabbage Dye: 1 red cabbage (weighing about 1-2 pounds) *per* yarn weighing equal to the cabbage *per* ½ cup vinegar

Chop the cabbage in a food processor or blender, adding some water to make the machine run smoothly (or chop the cabbage by hand wearing gloves). Put the cabbage mixture in the dye pot, cover with water, and let sit overnight. Bring to a boil, simmer 1 hour, then turn off the heat and let the pot cool overnight. Prepare the yarn as described earlier. Heat the dyestuff slightly, then add ½ cup vinegar and the prepared yarn. Slowly bring the pot to a gentle simmer, simmer 1 hour, then turn off heat and cool overnight. Dry the yarn as described earlier.

Blue Cabbage Dye: 1 red cabbage (weighing 1-2 pounds) *per* yarn weighing equal to the cabbage *per* 2 tsp. alum and ¼ tsp. cream of tartar

Prepare cabbage dye as for reddish-purple dye, but instead of adding vinegar dissolve alum and cream of tartar in a cup of hot water and add to the dye pot. Simmer and dye yarn as described earlier.

Pinkish-red Flower Dye: 8 oz. cosmos “Diablo,” cosmos “Sunny Red,” and/or coreopsis (a wildflower) *per* 8 oz. of yarn *per* 2 tbsp. alum and 2 tsp. cream of tartar

Break apart the flowers and put them in the dye pot with 1 gallon of water. Bring to a boil and boil for 2 hours. Cool overnight. Prepare yarn as described earlier. Heat the dye slightly, mix alum and cream of tartar with 1 cup of hot water, and add to the dye. Add the prepared yarn and bring the pot slowly to a gentle simmer. Simmer for 2 hours, then turn off the heat and let the yarn cool in the dye pot. Let sit overnight, then rinse and dry as described earlier.

Brown Walnut Dye: About 2 dozen walnut hulls or 4-5 foot-long pieces of bark *per* 8 oz. of yarn

You need to get the outer hulls of walnuts (not the shells), and the bark of walnut trees from the ground under a walnut tree. The hulls are green on the tree, black and leathery when they dry. They can be used fresh or dried, so you can collect them until you have enough for dyeing. Handle with care because their juice stains. Break up the bark and hulls into small pieces, wearing gloves to prevent staining your hands and covering your work surface to protect it. Put the dyestuff into the dye pot with 1 gallon of water and boil overnight. Prepare the yarn as described earlier. Heat the dye slightly and add the yarn. Bring slowly to a gentle simmer and simmer for 1 hour. Turn off the heat and let sit overnight. Rinse and dry as described earlier.

Reddish-purple Fruit Dye: 1 gallon ripe plums, red grapes, raspberries, cherries (over-ripe is fine) *per* 8 oz. of yarn *per* ½ cup white vinegar

Mash the fruit and add it with the vinegar to 1 gallon of water in the dye pot. Cover and let sit for 2 days. Put the pot on the heat and just barely simmer – don't boil, as this spoils the color. Turn off the heat and let cool overnight. Prepare the yarn as described earlier. Strain the fruit out of the dye (it's too mushy and gray to leave it in), and return the dye to the dye pot. Heat the dye slightly and add the yarn. Just barely simmer for 1 hour, then turn off the heat and let sit overnight. Rinse and dry as described earlier.

Metal Dye:

Sea-foam Green Copper Dye: 1 sheet of copper (from a craft store)
+ 2-3 tbsp. white vinegar + 2-3 tbsp. salt

Be sure to wear gloves for this and do this dyeing project in an out-of-the-way corner to avoid spills and stains. Sheet metal has sharp edges, so you may want to cover the edges with masking tape, especially the corners. Lay out the copper on a styrofoam plate or other disposable waterproof container. Wet the surface of the copper with a little vinegar. Sprinkle with a little salt – enough to make a thin, grainy paste of wet salt; if the salt looks dry, add a little more vinegar, but you shouldn't have big puddles of vinegar with no salt. Rub the salt and vinegar onto the copper with the back of a plastic spoon to scratch the surface of the copper. Turn the copper over and repeat. Let stand overnight.

Wearing gloves, rub skeins of damp yarn onto the copper, lifting off the green (called verdigris). Turn the copper over to get all the green from both sides. Skeined yarn will have variegations (areas of white and green). If you want evenly colored yarn, untwist the skein and run it through the green – being careful not to tangle the yarn. You may have to repeat the process of making the verdigris on the copper and rubbing your yarn in it until you're happy with the results. The metal can be reused repeatedly.

Let the dyed yarn sit with the grainy verdigris on it overnight, then rinse it in warm water to remove all the salt crystals. [You may want to experiment with the rinse water itself by adding undyed yarn or swatches of white cotton cloth to it and setting them to dry without rinsing. You may get some green coloration.] Dry and hang as described earlier.



Native American Games

Knotty

For this native American guessing game, all that is required is a length of stout cord or a piece of thin rope. One rope 18 inches long is needed for each two players.

Two players sit face to face with about 8 feet between them. One player begins with the rope and the other player is the guesser. When the player who is guessing says "Ready!" the other player puts his cord behind him and makes any number of simple, single knots on it, from none to four. When he has made the knots, which he should do as speedily as possible, he brings his empty hand in front of him and his opponent then guesses how many knots there are on the cord. He has only one guess.

Once the guess is made, the cord is held out in front of the player who made the knots, in order to prove the guesser right or wrong. After he/she guesses correctly, the players switch roles.

What Do I Hold?

The game is played with all sorts of small, natural objects such as a tree leaf, blade of grass, one of several berries, pebbles, shells, pieces of cloth, earrings, and other objects small enough to conceal in the hand. One player holds an object in one closed hand while the other players guess what the object is.

When the guessers have difficulty in guessing they may ask yes/no questions. The player who first guesses correctly takes the place of the one who has hidden the object. Modern players playing indoors have a greater choice of small objects that may be easily concealed in one hand than the Native American children who usually played this game outdoors, using objects donated by Mother Nature.

Weave a Yarn Basket

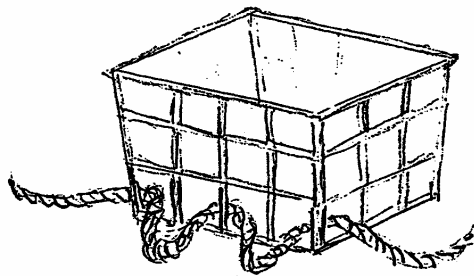
The Navajo people are known for their beautiful basketry work that they often decorate with meaningful and distinctive designs. Here is an easy way for young people to weave a basket of their own.

MATERIALS: plastic open-weave berry baskets (found at the supermarket)
colorful yarn or ribbon

- METHOD:**
1. Collect enough plastic berry baskets so you have one for each student. Choose baskets with square openings big enough for little fingers to work. You could also have a few extras in case some break from rough handling. A glue gun for repairs might be handy, too.
 2. Have students choose a color to begin with and cut a long length of yarn for each.
 3. Begin weaving around the sides of the basket, using an over 1, under 1 pattern. Leave 2-3 inches at the end of the length of yarn hanging, ready to tuck in when enough weaving has been done to secure it.
 4. Continue weaving round and round until the sides are fully covered. Start a new piece of yarn when you want to change colors or your piece runs out. Tuck all ends into the weave.
 5. Weave back and forth across the bottom using the same over 1, under 1 pattern.
 6. You can add a handle by tying a length of yarn to opposite sides of the basket rim. To be fancy, you can braid three strands of yarn and tie that as the handle.



Braid



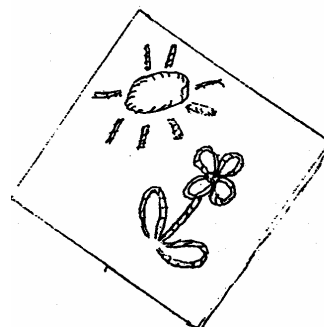
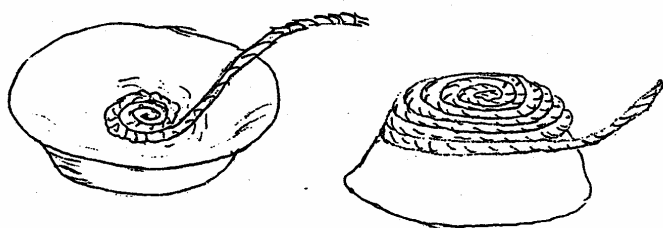
Huichol Yarn Art Baskets

The Huichol (WEE-chol) Indians, who live in the northwestern part of Mexico, are known for their beautifully colored yarn paintings, made by pressing yarn into warmed bees wax. Their designs are often meaningful, telling of their religion and history. The basket art below imitates their style by pressing yarn into glue.

MATERIALS: paper bowls (one per student)
colored yarn
glue (school glue or Elmer's Glue)

- METHOD:**
1. Squeeze glue in a circular pattern around the inside of the bowl bottom.
 2. Cut a long length of yarn and begin wrapping it around in a spiral, starting in the center of the glued bowl bottom. Press the yarn down into the glue to secure it.
 3. Continue the spiral of glue and yarn around the entire inside of the bowl. Then flip the bowl over and do the same on the outside, starting at the top center.
 4. Change colors as you wish.
 5. When inside and out are completed, finish the rim off with another ring of yarn.

P.S. This technique can also be used to create yarn pictures on a piece of cardboard.



Additional Information

Background Information

I. The Definition of the Word "Textile"

- A. The word "textile" refers to cloth made from fibers that are spun into yarns, and then woven or knitted into fabric
 - 1) A fabric is a textile structure made of interlacing yarns
 - a) Fabric can also be non-woven (felt)
 - 2) Clothing, carpets, curtains, canvas shoes, and upholstery are all examples of textiles

II. The Steps of Woolen Cloth Making

- A. Shearing - the sheep (or goat) is given a haircut
- B. Washing - the wool is washed to remove grease, dirt, and other impurities
- C. Picking - remaining debris, like twigs or grass, must be picked out of the wool
- D. Carding - combing the fibers to straighten them for spinning
- E. Spinning - twisting the carded fibers together to make yarn
- F. Weaving - producing cloth by interlacing two sets of threads at right angles to one another
- G. Dyeing - using natural ingredients or chemicals to color the fibers, the yarn, or the finished cloth; this optional step can be done after washing, spinning, or weaving the wool

III. Navajo Culture

- A. Origins from Asia, crossing the Bering Sea
 - 1. The Navajo people are a Native American tribe
 - 2. The tribe is located in northeastern Arizona and contiguous parts of New Mexico and Utah
 - 3. They are closely related to the Apache Indians and originally emigrated from areas in the north
 - 4. The name "Navajo" is derived from a Keresan Indian word. They had originally called themselves the "Dine" and many members of the tribe prefer this name today
- B. History
 - 1. The Navajo were originally nomadic until they learned the technique of dry farming to grow corn, squash, and beans
 - 2. In the 18th and early 19th centuries, Spanish settlers introduced horses, sheep, and goats to the Navajo people although there was conflict between the two groups
 - 3. In 1863, due to warfare with American troops, 8000 Navajo people were captured and were sent on foot to a reservation at Fort Sumner in New Mexico

4. In 1868, a new treaty was signed and the surviving Navajo were allowed to go back to the reservation and were given sheep and cattle

5. The Navajo Tribal Council was founded in 1923 in order for the tribe members to deal collectively with whites

C. Navajo Weaving Tradition

1. Weaving traditions are passed down from generation to generation

2. Girls are first taught to herd sheep, then to card and spin, and then they are taught how to weave on upright looms

3. Navajo textiles must be functional in order to be considered beautiful. Blankets were often worn instead of store-bought coats

4. Weaving is sacred to the Navajo. Praying, singing, and story-telling are all part of the process

5. The blankets tell stories, myths, legends. They also record history

6. The patterns and shapes woven into the blankets are symbolic

D. Life Today

1. The Navajo people are known for their pottery, baskets, silver jewelry, and fine, durable blankets, which are both beautiful and useful

2. The Navajo tribe is one of the largest in the U.S. They own the greatest area of reservation land (15 million acres)

Vocabulary

CARDING	Combing and straightening fibers to prepare for spinning
CLOTH	Fabric or material formed by weaving, knitting, or felting (combines pressure, heat, and water) of natural or synthetic fibers
DROP SPINDLE	A stick with a tapered end, 9-15 inches long, with a weight at the tapered end called a whorl that helps keep the spindle turning. This portable tool is used for spinning fiber into yarn
DYE	Any substance used to color cloth or other materials
FABRIC	A textile structure produced by interlacing yarns or fibers
FIBER	Fine, hair-like filaments which are twisted together to make yarn
LOOM	Any equipment that is used to weave yarns; a frame that holds a set of parallel yarns under tension so that other yarns may be woven through them
SHEARS	Large-sized scissors used to remove the hair from a sheep or goat
SPINNING	Twisting fibers together to make yarn
TEXTILE	Cloth made from fibers that are spun into yarns and woven or knitted into fabric (see Cloth)
TRADITION	Practicing and passing down elements of a culture from generation to generation. The weaving of Navajo- style blankets on a vertical loom is a tradition

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Buchanan, Rita. A Weaver's Garden. Loveland, Colorado: Interweave Press, 1987.

"Indian Designs." and "Indian Symbols." U. of Arizona Library – Special Collections. 26 October 2001. 26 October 20 <<http://www.library.arizona.edu/branches/spc/pams/indigen.html>>.

Dunwell, Steve. The Run of the Mill: A Pictorial Narrative of the Expansion, Dominion, Decline, and Enduring Impact of the New England Textile Industry. Boston: David R. Goodine, 1978.

Suggested Readings

Castaneda, Omar S. Abuela's Weave. New York: Lee and Low Books, Inc., 1993. In Guatemala Esperanza and her grandmother (abuela) weave and sell traditional textiles. Because the abuela is afraid her facial birthmark will provoke a superstitious fear and hurt sales, the two pretend not to know each other. Appreciation for their fine work leads to rapid sales, and the two return home proudly and together on the bus. Recommended age: 4-8

Cherry, Lynne. A River Ran Wild. New York: Harcourt Brace Jovanovich, Publishers, 1992. This is an account of the Nashua River (New Hampshire and Massachusetts), tracing its history over 500 years from the time of the Algonquin Indians into the present. Presents environmental history, destruction by industrial pollution, and reclamation of the river stimulated by one citizen. Illustrations in the borders detail inventions of the 19th century. Maps and a timeline place events in context. Some illustrations are sentimental (chieftain weeps into the river) but makes water pollution theme accessible to a young audience. Recommended age: 6-10

Chetkowski, Emily. Amasa Walker's Splendid Garment. Farmington, Maine: Heritage Publishing, 1996. Created from a work written by Amasa Walker around 1850, recalling the processes from fleece to fabric in order to have a surtout (coat) made for himself in 1811. Recommended age: 7-12

- de Paola, Tomie. **Charlie Needs a Cloak**. New York: Simon & Shuster, 1982.
A shepherd shears his sheep, cards and spins the wool, weaves and dyes the cloth, and sews a beautiful new red cloak. Recommended age: 5-8
- Eversole, Robyn Harbert. **Red Berry Wool**. Morton Grove, Illinois: Albert Whitman & Co., 1999. Lalo the lamb wants to have a bright sweater like the one the shepherd boy wears, but Lalo has a very hard time washing, spinning, and dyeing his own wool. Both Lalo and the boy understand the true meaning of “knit” – bring together – sharing a special bond. A simple story about care, friendship, and literal-mindedness. Recommended age: 4-8
- Graimes, Nikki. **Aneesa Lee and the Weaver’s Gift**. New York: HarperCollins, 1999. Thirteen interrelated poems celebrate a girl’s love of weaving. The young weaver is herself a tapestry of black, white and Japanese heritage. The poems describe the art and craft of weaving, gathering the natural materials for making dyes, spinning yarn, warping the board, and completing the tapestry. The poems also express her shifting emotions. The themes are family, community, artistic vision, and dedication to craft and love. A glossary of weaving terms and a picture of a fully labeled loom precede the poems. Recommended age: 7-10
- Grossman, Virginia. **Ten Little Rabbits**. San Francisco, CA: Chronicle Books, 1991. This beautifully illustrated 1-10 counting book celebrates Native American traditions by depicting cultural aspects of a different tribe on each page, from Navajo weaving, to Pueblo corn dances, to Kwakiutl carved wooden drums. The cultural significance of each page is described at the end. Recommended age: 2-6
- Hale, Sarah Josepha Buell (1788-1879). **Mary Had a Little Lamb**. New York: Orchard Books, 1995. Fabric relief illustrations accompany this familiar nursery rhyme about a young girl whose lamb follows her to school. Includes information about the history of the rhyme. Recommended age: All
- Lasky, Kathryn. **The Weaver's Gift**. New York: Fredrick Warne, 1980. This book takes you through the many steps required to make a soft blanket from a sheep’s fleece. [Out of print, but available in libraries]
- Livingstone, Star. **Harley**. New York: SeaStar Books, 2001. Harley is a guard llama, protecting sheep from coyotes and befriending a cantankerous ram. Harley wins a prize for his fleece at a county fair. Recommended age: 6-10, Easy Reader

- Millen, C.M. **A Symphony of Sheep**. Boston: Houghton Mifflin Co., 1996.
This playful read-aloud poem is a wonderful celebration of sheep told in four parts by the shearer, the spinners, the weavers, and the knitters. Beautiful hand-colored woodcuts, sturdy, earthy, and of good cheer. Author's note suggests ways of reading text aloud. Recommended age: 5-8
- Oughton, Jerrie, Lisa Desimini, and Jerrie Cughten. **The Magic Weaver of Rugs: A Tale of the Navajo**. Boston: Houghton Mifflin Co., 1994. When two Navajo women pray for help for their cold and hungry people, Spider Woman teaches them how to build looms, dye wool, and weave with their very souls. Daunted by fear and lack of trust, the women weave an imperfect rug and are banished; however, the gift - knowledge of weaving - distracts the women from their suffering and later saves their people. Lush dark illustrations evoke an otherworldliness and mythical wonder. Recommended age: 5-10
- Sanders, Scott Russell. **Warm as Wool**. New York: Simon & Schuster, 1998.
When Betsy Ward's family moves to Ohio from Connecticut in 1803, she brings along a sockful of coins to buy sheep so that she can gather wool, spin, and weave in order to make clothes for her children. Patience, strength, and determination are necessary for the pioneer family to survive discomforts and disappointments.
Recommended grade level: K - 3rd
- Sloat, Teri. **Farmer Brown Shears His Sheep: A Yarn about Wool**. New York: Doris Kindersley Publishing, 2000. Follow the farmer as he shears his sheep and then takes the wool to be carded, spun, and dyed. All the while he is unaware of the unrest amongst the shivering sheep. When he realizes the problem, he sits to knit colorful sweaters for them all. Informative on the processing of wool, with high energy and humor. Recommended age: 5-7
- Ziefert, Harriet. **A New Coat for Anna**. New York: Alfred A. Knopf, 1986.
A mother struggles to provide a new winter coat for her daughter Anna during the difficult times following World War II. She must engage a spinner, weaver, and tailor in the process, with all celebrating when the coat is done.

The Goat in the Rug

Connections to the Massachusetts Curriculum Frameworks

History and Social Science Curriculum Frameworks

Core Knowledge:

The United States

4. Expansion, Reform, and Economic Growth (1800-1861)

History Strand, Learning Standard 2: Historical Understanding

History Strand, Learning Standard 4: Society, Diversity, Commonality, and the Individual

History Strand, Learning Standard 5: Interdisciplinary Learning: Religion, Ethics, Philosophy, and Literature in History

Geography Strand, Learning Standard 8: Places and Regions of the World

English Language Arts

Literature Strand, Learning Standard 9: Students will identify the basic facts and essential ideas in what they have read, heard, or viewed.

Literature Strand, Learning Standard 11: Students will identify, analyze, and apply knowledge of theme in literature and provide evidence from the text to support their understanding.

Science and Technology

Strand 3: Understanding and Using Technology

Mathematics

Strand 2: Patterns, Relations, and Functions

Arts

Thinking and Responding Strand, Learning Standard 3: Students will use imaginative and reflective thinking during all phases of creating and performing.

Connecting and Contributing Strand, Learning Standard 5: Students will investigate the cultural and historical contexts of the arts.