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**Disclaimer:** Activities contained in this publication were initially developed by Dr. Marty Henry of the McREL (McREL) Eisenhower High Plains Consortium for Mathematics and Science, Aurora, CO under grant R168R50025-97 from the National Eisenhower Mathematics and Science Programs, U.S. Department of Education. These materials do not necessarily reflect the views or policies of McREL, the Department, or any other agency of the U.S. Government.
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CARY JOHN FRANKLIN
COMPOSER

Cary John Franklin began his musical studies at age five in Cedar Rapids, Iowa. He studied at Macalester College, University of Minnesota, and the Aspen Music Festival.

Mr. Franklin is a conductor of broad experience having worked in opera, choral, and orchestral music. He currently is the Chorus Master of Opera Theatre of Saint Louis, Music Director of the Civic Orchestra of Minneapolis and the Master Singers of Milwaukee. He is also an active guest conductor having conducted the Minnesota Orchestra, Kansas City Symphony, Minnesota Opera, The Washington Opera, and the Plymouth Music Series.

As a nationally recognized composer, he has completed commissions and performances for the Minnesota Orchestra, Nashville Symphony, Cedar Rapids Symphony, St. Paul Chamber Orchestra, Kansas City Symphony, Opera Theatre of Saint Louis, The Washington Opera, Madison Opera, Dale Warland Singers, Chanticleer, and the Plymouth Music Series. He has written two highly successful children’s operas for Opera Theatre of Saint Louis, The Very Last Green Thing and The Thunder of Horses, that have received multiple productions across the United States. Mr. Franklin’s new opera, Loss of Eden, will be premiered by the Opera Theatre of Saint Louis in June of 2002.

Mr. Franklin is currently serving as President of the American Composers Forum and is a member of the American Society of Composers, Authors, and Publishers. He is the recipient of numerous awards and honors including a National Endowment of the Arts Fellowship, Meet the Composer Awards, and fellowships from the Minnesota Arts Board and Schubert Club of St. Paul.
is the resident stage director of the Opera training programme at the University of Toronto’s Faculty of Music, where he has staged over twenty operas including the Canadian premieres of Debussy’s *L’Enfant Prodigue*, Paisiello’s *Il Barbiere di Siviglia*, and Benjamin Britten’s *Paul Bunyan*. For three summers (1991 - 94) he was the resident stage director of Opera Studies at the Chautauqua School of Music.

Recent directorial credits include *Le Comte Ory* for the Manhattan School of Music, the Canadian premiere of Benjamin Britten’s *Paul Bunyan*, a new dialogue version of *Die Fledermaus* for Opera Hamilton, *Gianni Schicchi* for the Canadian Opera Company, *Il Barbiere di Siviglia* for Wolftrap and a new production of Offenbach’s *La Belle Helene* for Opera Theatre of St. Louis.

Future engagements include *Die Fledermaus* for the Kentucky Opera, Chabrier’s *L’Etoile* for L’Universite de Montreal and *The Barber of Seville* for the New York City Opera national tour.

In addition to his directorial assignments, Mr. Albano is a frequent contributor to the Canadian Broadcasting Corporation, for which he has devised the documentaries *Love Letters*, *Wit, Wisdom and Song* and *Edward and Mrs. Simpson*. He has written and directed *An Evening with Noel Coward*, starring John Neville for Toronto’s *CentreStage* which was subsequently broadcast coast to coast over the CBC’s *Arts National*.

Michael Albano has written two opera librettos devised for performance by children: *The Very Last Green Thing* and *The Thunder of Horses* (with music by Cary Franklin) have enjoyed over a dozen productions throughout North America.

In 2000, Mr. Albano will direct two operas to librettos of his own invention, *The Last Duel for Music Canada 2000* and *Loss of Eden*, (based on the lives of Charles and Ann Lindbergh) for Opera Theatre of St. Louis.
Introduction to *The Thunder of Horses* and the Blackfoot Culture

Grades K-8

This lesson is designed to hook students into the opera and the learning experiences. Take the inferences the students make and record them with no evaluation of their accuracy. Use this time to gather information on the student's background knowledge and to assess how much they learned following viewing the opera and experiencing the learning activities.

Missouri Curriculum Framework

**SC/I.A/K-4/2/a** Carefully distinguish actual observations from ideas and speculations

**Objective:**

The student will be able to:

1. infer some information about American Indians and the opera from objects related to the opera;
2. correct their inferences from information gleaned from the opera and the other learning experiences.

**Materials:**

- box or bag large enough to hold the other objects
- small drawstring pouch--leather if possible
- ammonite fossil (may be obtained from a local rock shop or earth science classroom)
- horse (may be a horse artifact or small plastic horse)
- buffalo (may be a buffalo or bison artifact or small plastic buffalo)
- braid of hair
- drum (preferably a wood and skin drum)
- stars and/or pictures of constellations
- arrow (spear, bow and arrow)
- jerky
- travois
- chart paper
- markers
- masking tape
- other objects as applicable

While seated in a circle, students will draw objects from the box or bag one at a time. That student and the others will infer what the object has to do with the Blackfoot culture. Record inferences on a separate piece of chart paper for each object. Post the chart paper around the room. As lessons are completed, add information to the flip charts as a record of what the students have learned about the Blackfoot.

**Assessment:**

Following the viewing of the opera and completion of the unit activities, students should go back to the charts and record how each object relates to the opera. Students should support their decisions with information they have learned. Assess students on the accuracy of their connections.
Patterns

Grades K - 8

Missouri Curriculum Frameworks

FA/II.B/K-4/1 Know that music consists of several elements
FA/II.B/K-4/2 Know that melody can be described with reference to its placement and movement, that instruments and voices can be combined to create different textures and timbres and harmonic combinations
FA/II.B/5-8/2 Know that while many combinations of musical elements are possible specific groupings have evolved
FA/II.B/K-4/3 Know that manipulating pitch, rhythm, dynamics and tempo affects the creation and interpretation of music

Objective:

In this lesson, students will identify patterns in music, visual art, and architecture.

Materials:

keyboard or pitched instrument such as a xylophone
visual art representations that contains repeated patterns in shape and/or design, i.e. posters, books, slides or the real thing
excerpts from *The Thunder of Horses*

Procedure:

1. Select a copy of a painting and pick out repeated patterns or shapes found in the work.

2. Ask students to look at the architecture of their school building and find repeated patterns in the shape and/or design of the building.

3. With a pitched instrument, play three quarter notes on any three pitches and repeat the pattern over and over. Ask the students to create their own pattern comprising any number of notes and pitches. This pattern of repeated notes is called ostinato, a technique found throughout *The Thunder of Horses* opera.

4. Play your original three-note pattern over and over for an ostinato effect and ask the class to sing the melody to “My Country Tis of Thee” while the three-note ostinato pattern serves as accompaniment to the melody.

5. Using the excerpt below, play the ostinato pattern from *The Thunder of Horses* on a pitched instrument. Add the melody line to experience the composer’s musical effect.

Assessment:

Students are able to identify patterns found in art, nature and music.
Musical Themes

Grades K - 8

Missouri Frameworks

FA/II.A/5-8/1 Know a sampling of musical works and artists representative of the various styles in Western Music, both contemporary and historical

FA/II.B/K-4/3 Know that music elements have different levels of importance and complexity in various types of music

FA/II.B/5-8/2 Know that while many combinations of musical elements are possible specific groupings have evolved

FA/II.C/K-4/1 Know that an aesthetic response to a piece of music consists of an immediate emotional reaction and an intellectual one based on the student’s knowledge of expressive musical elements

Objective:

In this lesson, students will learn how music describes an event or a character.

Materials:

keyboard
CD’s or tapes of popular music
Beethoven’s 5th and 9th Symphonies

Procedure:

1. Ask students to bring in a CD or tape of popular music to be played in the classroom; play a song and ask students to write down what the song is about.

2. Next listen to the same selection and concentrate on listening to the music only and not the words. Think about how the music describes the main theme of the song. If it sounds happy, what elements make it happy, i.e. tempo, rhythm, key signature, etc.

3. Discuss how composers use music to elicit feelings or describe characters, events, etc. To illustrate this idea in classical music, compare and contrast the opening notes of Beethoven’s Symphony #5 with the “Ode to Joy” theme found in the fifth movement of Beethoven’s 9th Symphony. How are these two themes different? What do they describe?

4. Using the printed example titled “Journey and Ordeal” from The Thunder of Horses on the next page, play the music on the keyboard and ask the students for their interpretations of the music. This music may sound mysterious or unsettled due to the augmented triad - E G# C. This theme appears in the opera whenever a journey is about to take place.

5. Using the cassette tape of The Thunder of Horses, play the opening of the piece and ask the students to raise their hands when they hear the “Journey Theme.”

Assessment:

Have students read the libretto. Play the overture (the opening instrumental section, approximately two minutes long before the opening chorus) to The Thunder of Horses and ask students to describe the parts of the story the music is describing.
The Thunder of Horses
Thematic Material

1. “Journey and ordeal” (ostinato)

2. “Story theme”

3. “A story unborn’

3a “Magic” motive

But with the telling comes the magic

4. “Remembrance”

We remember, we remember...

5. “Adversity” (Misfortune)

6. “Drums” (Pounding of Hooves)

7. “Elk Dogs’
8. “Willow Flower”

It is not that we were born without parents for no one comes into this world without...

9. Ostinato—“Orphan motive”

10. Ostinato—“Sound of the earth and stone”

11. “Solitude”

12. Ostinato—“The Quest”

You are to travel for three days and three nights

13. “Child From Under the Water”
Where Did the Blackfoot Live?

Grades 2-8

In this experience, students will build a topographic map of North America and locate the Blackfoot tribes and their neighbors. They will infer how the area supports a culture and why conflicts may arise among neighbors.

Missouri Curriculum Frameworks

SS/LE/K-4/2/e Discover patterns in geographic information and data.
SS/LE/5-8/2 Where are locations of significant places?
SS/LE/5-8/2/h Apply acquired information to different contexts.

Objectives:

The student will be able to:

1. describe the section of the northern hemisphere inhabited by the Blackfoot;
2. describe the topography of the area;
3. infer the advantages and disadvantages of living in the area of the Blackfoot.

Materials:

salt and flour building mixture or modeling clay that hardens
2 topographic maps of the northern US and southern Canada in the area of Saskatchewan, Southern Alberta and northern Montana (these can be obtained on the Internet or from the US Geologic Survey) per student group
settlement map of the Blackfoot Nation
thin-tipped markers

Younger students may need to be instructed on making 3-D models of topographic maps. Using a topographic map, cut around each level. Use this template to build the structure from the bottom up making each layer solid so that each succeeding level builds upon the bottom ones. You should end up with a model that clearly illustrates the altitudes in the area.

In groups, allow students to make the 3-D map of the area. Older students can determine a way to illustrate actual altitude. Compare that altitude to the altitude of the place in which you live. If you have traveled in the northern US or Southern Canada, what do you remember about the differences in that area from your own home? Infer the differences that may exist in temperature, land forms, vegetation, animals, etc. How might these differences affect the way the Blackfoot live in these areas?

After the clay has dried, use marking pens on these topographic maps to outline the areas of the reservations after 1888 occupied by the Blackfoot Nation. (Southern Peigan - North Central Montana; Bloods (Kainai), Blackfoot (Siksika) and Northern Peigans - Canadian Reserves; 49th parallel divides the two regions)

Assessment:

Accept inferences that are consistent with the understanding of the students and the information they have about the altitude and land-forms. Higher altitudes generally mean lower temperatures, evergreen forests instead of deciduous. Deer, elk, and high plains buffalo were present during the late 1700’s to mid 1800’s.
How the Blackfoot Captured Buffalo

Grades K-8

Missouri Curriculum Standards
- SC/VI.B/K-4/5 The surface of the Earth changes slowly or quickly.
- SC/VI.B/K-4/7 Earth’s surface features are constantly changing.
- SS/III.E/K-4/8 How do people define and use resources?
- SS/III.E/5-8/4 How does human activity make use of and affect physical environments?

Objective:
The students will be able to
1. demonstrate one method of capturing buffalo for food;
2. describe the ways the Indian used parts of the buffalo.

Materials:
- one layer of a sheet cake, un-iced
- small buffalo models
- small Indian models
- small models of horses with Indians on them if possible
- powdered sugar

Bake the sheet cake and remove it from the pan. Place it on a piece of cardboard or a plate that allows easy movement from place to place.

The top of the cake is a mesa over which the buffalo grazed. Place the buffalo models on top of the cake in random order. Cut a curved “u” out of one side of the cake (see diagram on next page). You have created a “kettle” that was used by the Indians to capture buffalo (B). One Indian (I) would place himself near the middle of the “u” and make a sound like a female buffalo. The buffalo would begin to move toward the Indian. In the meantime, other Indians on horses (X) would herd the buffalo toward that kettle. Place the Indians on horses around the perimeter of the buffalo pointing toward the kettle. Other Indians were on the lower level (the plate) making a barrier so that if any buffalo survived the fall into the kettle they could not escape. Place other Indians on horses in a semi-circle around the top of the cake.

Ask the students what they think will happen in this situation. They will probably predict that the buffalo will run over the edge of the cliff...they may have seen this in movies. Have them infer what would happen then. (Most buffalo were killed as they fell from the cliff. Others were captured or may have been allowed to go free.)

The Indians spent several days at this site harvesting the buffalo. They would use each buffalo part. Choose a buffalo part in which you are interested (hide, muscle, tongue, horns, etc.) and research how that part of the buffalo was used. Report to the class on what you found about each part of the buffalo and its value to the Blackfoot.
Assume that it is winter. The high altitudes are covered with snow. Sprinkle powdered sugar on your mesa, cut it, eat it, and enjoy!

Record what you learned about this process on one of the sheets on the wall.

Assessment:
Look for accuracy in the reports given by the students and the connections students make between buffalo, horses, and Indian life.
Isn’t a Kettle for Cooking?

Grades 3-8

Missouri Curriculum Standards
SC/VIII.A/K-4/3  People depend on other living organisms and Earth’s resources for food, shelter, and clothing.
SC/VI.B/K-4/5  The surface of the Earth changes slowly or quickly.
SC/VI.B/K-4/7  Earth’s surface features are constantly changing.
SS/III.E/K-4/8  How do people define and use resources?
SS/III.E/5-8/4  How does human activity make use of and affect physical environments?

Objective:
Students will be able to
1. describe how the topography of an area is used by the animal populations
2. write a creative story about the buffalo in its environment.

Materials:

Procedure:
In the previous lesson, you learned how the buffalo hunters used “kettles” to capture buffalo. You also saw that in the winter, snow falls in the area, winds blow, and it gets very cold and bitter.

Imagine you are a buffalo in the area and it is getting very cold. You and your herd have to look very hard under the snow to find grass. Your furry coat protects you, but you are still very cold. Some of your herd are old and have been killed by the cold.

How would you use a kettle if you were a buffalo?

Let younger students discuss this as a class. Older students can meet in small groups, research the buffalo, then report out. Some possible answers are as protection from blowing snow or rain, hiding places from predators, to find grass in winter where snow may not have been completely covered.

Following your discussion, let students write a story, play, or song about their experience as a buffalo in inclement weather and how they use kettles.

Assessment:
Assess students on their ability to incorporate information discussed in class on how the buffalo used the topography of the land into their stories.
How Did the Blackfoot REALLY Obtain the Horse?

Grades 3-8

Missouri Curriculum Standard

CA/I/K-4/1/o  Distinguish between fact and fiction.
CA/I/K-4/1/j  Read, view, and recognize a variety of genres.
CA/I/K-4/2/a  Read, listen to, and respond to culturally diverse literature.
CA/I/5-8/1/c  Compare and contrast various communications.
CA/I/5-8/2/b  Analyze communications to determine how they reflect particular cultures or eras.

Objective:

The student will be able to
1. compare myth and historical accounts of the same event;
2. analyze different accounts of the same event;
3. infer the origin of myths in a culture.

Materials:

myth represented in the opera (American Indian Myths and Legends, Endres and Ortiz)
audio or video of the opera The Thunder of Horses

Procedure:

Students should read the myth or listen to/view the opera. Discuss the story represented in the myth. Tell the students that scientists and anthropologists believe that horses were obtained by the Blackfoot through trade with the Mandan Indians by the year 1754.

In small groups, have students compare these two accounts of the same event. Have them list the things that are similar in the story and those that are different. Which story do they believe? What value to the Blackfoot might this story be? Explain how these two accounts may represent the same event in the history of the Blackfoot.

Are there stories in your culture? (Use these examples as appropriate with younger children. Easter Bunny, Santa Claus, clouds bumping their heads when there is thunder, etc. Of what value are these stories? (They assist in our understanding of an event that is not understandable.)

Assessment:

The student’s developmental level is critical in this assessment. Some students may not be able to understand or delineate similarities in these accounts. Younger children should connect to the fact that both are about how horses are obtained. Older students should begin to connect the trip by Long Arrow to the long journey to the Mandan village to obtain horses, etc.

The Thunder of Horses video is available through the Cooperating School Districts; call 314/872-8282 to arrange a broadcast directly into your classroom. If your school does not subscribe to the services of CSD, call Ross Bell at 314/963-4248 to arrange for a copy.
Advantages of Having Horses

Grades 4-8

Missouri Curriculum Frameworks

SS/I.C/K-4/3 How have changes in communities and transportation led to changes in responsibilities of citizens?

Objective:

The students will be able to

1. identify the value of horses in one part of the Blackfoot life;
2. analyze the problems associated with keeping horses.

Materials:

Procedure:

In a large group, set up this situation:

Imagine that you are moving with your family to a distant place. You are walking there and you can only take what you can carry. What would you take that would be necessary for your survival?

Let students share what they would take and justify it. Don’t challenge their choices, just make sure they justify their choices to the group.

In small groups, tell the students to analyze this problem. You now have one horse per family. How would you use this horse to help you move? What would the horse enable you to do?

Have small groups report out to the class. Record on the board the advantages of having the horse. Transfer to chart paper for later use.

In the same small groups, challenge them to address this problem. Now that you have a horse and you realize how important it is to you, what do you need to know about the horse in order to keep it alive and healthy? What problems does keeping this horse healthy pose for you and your family? Is the horse a help or a problem for your family?

Assessment:

Students should realize that although horses carry more things farther, the maintenance requires that horses have access to a food supply and requires energy from the tribe (family) that might go for other things.
Other Jobs for the Horse

Grades 3-8

Missouri Curriculum Frameworks

SS/I.C/K-4/3 How have changes in communities and transportation led to changes in responsibilities of citizens?

Objective:

Students will be able to
1. analyze the effect horses have on the food gathering of the tribe;
2. work in cooperative learning groups to solve a problem.

Materials:

chart paper and markers
masking tape

Procedure:

Put the students into two groups. Give the groups this situation.

Your group is a tribe of the Blackfoot Nation that has been living in the Northern Plains area. You have been hunters and gatherers. You hunt buffalo, deer, elk and other game and you gather roots and berries to eat. Your tribe has obtained five horses through trade. How might this affect your life?

One group should look at the positive things that may occur and the other group should consider the negative things. Have each person make a list of these things in their group. After about 15 minutes, take two from each group and regroup them into smaller groups of 4 with 2 positive and 2 negative representatives. Have the pairs share what they discovered in their large groups. The small groups should come up with the five most powerful positive reasons for having horses and five most powerful negative things that may occur.

Give each group a sheet of chart paper and a marker to record their positive and negative inferences. Post them in front of the room. Analyze the lists to see which reasons emerge most often. Come to consensus on the class’ 5 positive (+) and 5 negative (-) things that could occur with horses. Record this on the appropriate classroom chart.

Some things that may come from the students are:

+ hunt farther + interact with other tribes
+ carry heavier loads - teepees + could get enough food for the tribe
- need more resources to support horses - young people may want to leave the tribe
- may be raided by others to get your horses - your culture may erode by invasion of other cultures

Assessment:

Depending on the level of the students, accept logical positive and negative implications of horses on the tribe and culture.
Conservation of the Environment—Indian Style

Grades 3-8

Missouri Curriculum Frameworks

SC/VIII.A/K-4/1 All living organisms interact with each other and their environment.

SC/VIII.A/K-4/3 People depend on other living organisms and Earth’s resources for clothing, shelter and food.

SC/VIII.B/K-4/1 All organisms cause changes in their environments that can be either beneficial or harmful to the organisms in the ecosystem.

SC/VIII.B/K-4/3 Human activities can change the environment in ways that affect the health and survival of all living organisms.

Objective:

The student will be able to
1. describe one way Indians preserved their environment;
2. evaluate a government conservation policy.

Materials:

Procedure:

Indians living on the plains set a seasonal burning of the grasslands. They found that this burn caused more grass to grow the next season, thus attracting more bison to the area. This ensured a continuous food supply and did not require as much moving around for the tribes in order to find food.

Many pine trees in our forests today do not drop their seeds unless there is a fire in the forest. Other forest trees cannot take hold and grow unless the underbrush is burned away by a forest fire.

When Yellowstone Park burned many people were upset and there was a major effort by governmental agencies to put out the fires rather than let them burn. On the other hand, foresters and conservationists were advocating a free burn for the forest.

In small groups research this issue and discuss what you would have done when Yellowstone was burning. What argument can you give for allowing a free burn? for putting the fire out?

Assessment:

Students should be assessed on their ability to identify some of the advantages of a burn to plants and animals in the area. Assess also on the students support of their position with facts.
Species Depletion

Grades 3-8

SC/VIII.B/K-4/3 People depend on other living organisms and Earth’s resources for clothing, shelter and food.

SC/VIII.B/K-4/4 Changes in an environment can be beneficial or harmful to the organisms living in that environment.

SC/VIII.B/5-8/2/a Identify human activities that affect the equilibrium of an ecosystem.

Objectives:

The student will be able to

1. infer some factors for depletion of one species in Missouri;
2. develop a persuasive argument and present it to the class.

Materials:

picture of a grouse from the Department of Conservation, Jefferson City, MO; call 573-751-4115 to request a poster.

Procedure:

Look at the grouse pictures. This bird was once very plentiful in Missouri. Missouri sits on the eastern edge of the high plains. Following settlement of Missouri, several native species of grouse were lost. The Department of Conservation has worked very hard to restore native habitat and reintroduce this species to the state.

Some people attributed the decline in the grouse population to a loss of habitat due to man’s settlement and farming. Others blame the lack of seasonal burning from natural forces (lightening) that was controlled by man.

In small groups, take one side of this issue and develop an argument to support your position. Give a short talk to the class and try to persuade your classmates that your reason for the disappearance of the grouse is probably the actual reason.

Assessment:

Students should include several factors that cause depletion of a species in the speech.
Friends or Enemy?

Grades 4-8

Missouri Curriculum Framework

SS/II.A/K-4/4 How does sharing values help prevent conflicts in places where there is diversity?

SS/II.A/K-4/3 How does diversity sometimes lead to problems, such as discrimination, misunderstanding, and conflict?

SS/II.A/5-8/3 How may diversity benefit society and also serve as a source of conflict?

Objective:

The student will be able to
1. use maps and information from library research to come to a decision on a problem;
2. determine what causes different groups of people to become allies or enemies.

Materials:

maps showing the location of tribes near the Blackfoot
reference books (see reference list and/or schedule time in the library)

Procedure:

Think about who your friends are. List on the board why they are your friends. Older students can extend this thinking to include a discussion of the friends of the US. Why are we friends with these nations?

Below are lists of the friends and enemies of the Blackfoot nation. In small groups choose one of these tribes and research it. Determine the factors that influenced why they may have been either friends or enemies of the Blackfoot Nation. Look for reasons such as competition for food or resources, similar language, etc. Use the map showing the location of the tribes to assist your research.

<table>
<thead>
<tr>
<th>Blackfoot Friends</th>
<th>Blackfoot Enemies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gros Ventres (Atsina)</td>
<td>Shoshone</td>
</tr>
<tr>
<td>Sarsi</td>
<td>Crow</td>
</tr>
<tr>
<td>Cheyenne</td>
<td>American settlers</td>
</tr>
<tr>
<td>Arapaho</td>
<td>Cree</td>
</tr>
<tr>
<td></td>
<td>Assiniboin</td>
</tr>
<tr>
<td></td>
<td>Sioux</td>
</tr>
<tr>
<td></td>
<td>Plains Cree</td>
</tr>
</tbody>
</table>

Report your results to the class.

Assessment:

Students should be assessed based on the factors that support friendships or cause competition among the tribes. Answers will vary with each tribe but will center on language and cultural differences, resource allocation, and land.
Reasons I Like Living in a Herd!

Grades K-8

Missouri Curriculum Frameworks

SS/I.B/K-4/4 How do family groups and communities influence a person's daily life, view of self, and personal choices?

SS/I.B/5-8/1 How do people learn knowledge and skills in the context of culture?

SS/I.B/5-8/4 How do groups influence the thinking and behavior of their members?

Objective:

Students will be able to
1. compare and contrast grouping among various species of animals;
2. evaluate the advantage and disadvantages of living in human family groups.

Materials:

pictures or videos of various groups of animals that live in groups

Procedure:

Bison are herbivores that live in herds. A herd is a group of bison that move and live together. What other animals live in groups? Record student responses on the board.

In small groups, allow students to choose one group of animals and find out the special name of this group. Also determine what are the advantages of living in large groups together?

Examples:

<table>
<thead>
<tr>
<th>Grouping</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>school</td>
<td>Protection--gives the impression of being a large fish rather than many small ones</td>
</tr>
<tr>
<td>Monkeys</td>
<td>troop</td>
</tr>
<tr>
<td>Lions</td>
<td>pride</td>
</tr>
</tbody>
</table>

Students should report their findings to the class.

What may be some problems in living in large groups? Record students’ responses on the board.

Example:

limited food supply; group must slow down for young or old animals; easier to be spotted by predator.

View videos of animals living in groups (You can make your own video by contacting the St.
Louis Zoo and accessing their IMRY system) Other resources are the National Geographic videos especially the work by Diane Fossey; PBS videos and programs, and the Missouri Department of Conservation Videos that are available for loan to Missouri residents.

Following the viewing of the videos, add the list of advantages and disadvantages students discover by students.

Assessment:

Give small groups of students this problem. It can be used as an assessment activity. Humans live in groups called families or communities. Do you think this is a good idea? Are there problems with this arrangement? What are the positives and negatives of this living arrangement?
Things of Value

Grades K-8

Missouri Curriculum Frameworks

Objectives:
   The student will be able to
   1. describe the importance of the ammonite to the Blackfoot;
   2. determine items that represent things of importance to them.

Materials:
   ammonite fossils (available from the local rock shop or earth science classroom)
   small leather drawstring pouch 
   small plastic or cloth bag

Procedure:
   Show students an ammonite. Ask them what they think it is. Let students discuss it for
   awhile. Explain that it is a fossil stone of a shelled creature (a spiral-shelled cephalopod) similar
   to a snail that lived in the oceans many thousands of years ago. They can be found in areas of the
   US that were once covered by oceans.

   Blackfoot thought that they illustrated the gift of game (bison) to the Blackfoot Nation. Ammonites
   looked to the Blackfoot like a curled-up, sleeping Bison. Blackfeet kept these in
   bundles (small pouches). Before the bison hunt, they took them out and rubbed them with red
   ocher to symbolize the life given to them by the Almighty. Today Blackfoot families call them
   iniskim and keep them as tokens for general prosperity.

   Ask students to determine what objects are special enough to them that they would put
   them in a special pouch and keep them with you for luck, prosperity, and a good life? Give each
   student a small plastic or cloth bag and have them collect objects they feel are important to them.
   Have them bring the objects to class and share them with others in the class.

Assessment:
   Students should share some of their special items with the class.
The Contribution of Women

Grades 4-8

Missouri Curriculum Frameworks

SS/IV.C/K-4/1 How have actions of private citizens had an impact upon the lives of people in my family and community?

SS/II.B/K-4/5-8/2 How do people’s needs and responsibilities change as they get older?

Objective:

The student will be able to
1. describe one role of the women in the tribe;
2. dramatize a story of a tribal woman.

Materials:

Procedure:

Recall the advantages and disadvantages of having horses in the tribe. To maintain horses required a lot of resources and energy of the tribe that could be used for other activities such as making arrows, cooking, feeding the members of the tribe, taking care of the children, making clothing and tepees, etc.

Because of this, many tribes did not raise horses but traded for them or took them from other tribes that raised them. Horses were considered very valuable and were symbols of prosperity and power on the plains. Anyone in the tribe who could obtain horses for the tribe was honored and held important places of honor in the tribal council.

Many women took part in obtaining horses. They often accompanied their husbands on raids to other camps to seize horses. A Piegan Blackfoot woman, Running Eagle, led many raids as did other women in the tribe.

In addition, a woman is said to have found the first iniskim (fossil ammonite) and she brought it and the song to call the buffalo herd [back] to the tribe.

Read the myth that describes how Weasel-Woman got the ammonite and the song (Wissler & Duvall, 1995, p. 85-89). If you were a member of the woman’s tribe, how would you react to this woman when she came back to the camp with the ammonite and the song. In small groups, write a story or create a play that illustrates your idea.

Assessment:

Students should be assessed on their interpretation of the story as portrayed in their creative product.
Role of Women in the Tribe

Grades K-8

Missouri Curriculum Frameworks

SS/IV.C/K-4/1     How have actions of private citizens had an impact upon
the lives of people in my family and community?

SS/ILB/K-4/5-8/2     How do people’s needs and responsibilities change as they
get older?

Objectives:

The student will be able to

1. compare the role of the Blackfoot woman to that of today’s woman in the family and community.

Materials:

Procedure:

Blackfoot tribes depended on the women to carry on the tasks of the camp. When the
men were away hunting, the women showed bravery, strength, and independence. They cared for
children, transformed all of the raw materials brought to the camp into usable products
(carcasses to tepees, clothes, food, etc.) and protected the camp from invaders. Men were
considered incapable of doing anything other than making weapons and hunting.

Older women of the tribe (called The Old Lady) was an authority and no one would
dispute her word.

In small groups, discuss the role of women in your family. Make a chart of what they can
do (what they do) and what responsibilities are assumed by other members of the family (men
and children and the extended family). How are these responsibilities like those of the Blackfoot
Women? How are they different? Are there any women in your family who could be called The
Old Lady? Does she have the respect of other members of the family line the Old Lady of the
Blackfoot Tribe? What can you do to show her the respect of The Old Lady?

Assessment:

Students should be able to show that some roles are the same for women today and some
are different. Do not allow students to assign a value to these roles, just to identify and recognize
that different cultures have assigned different roles to their members in order to maintain the
viability of the culture. If you have students from various cultural backgrounds, this list will be
very rich with differences. Take this opportunity to enhance the richness brought to your
classroom by these various cultures.
Preservation of Food

Grades K-8

Missouri Curriculum Framework

**SC/II.B/5-8/1** Important contributions in science have been made by many different people in different cultures.

**SC/III.A/K-4/3** Physical properties of matter can change if they are exposed to heat, light, or chemicals.

**SC/III.A/K-4/10** Properties of matter can change by interacting with heat.

**Objective:**
The student will be able to
1. describe the process used by Indians to preserve food through the winter months;
2. create a meal using food that could last through many months.

**Materials:**
- raw beef
- beef jerky
- snack foods such as dried fruits, nuts, grains
- corn meal and water
- root crops such as potatoes, turnips, and carrots

**Procedure:**
Show students a piece of raw beef that has been thinly sliced. Ask how long they think it would last if we did not have refrigeration. Record their guesses on a chart. Place the meat in a dish in the room until the smell gets too bad. Compare that length of time with the student’s guesses.

In the meantime, discuss how they think the Indians preserved the Buffalo meat they got from the hunt. Recall with them the environmental conditions...hot, dry, very sunny. How would these environmental conditions assist in preserving this meat?

Show students the piece of beef jerky. Ask students how the piece of raw beef could have become a piece of jerky.

When buffalo were hunted and killed, there was a need to preserve most of the meat. There was no refrigeration so the Indians used the sun to help with this preservation process. They sliced the buffalo meat into long, thin slices and laid them across a rail in the camp. After staying several days in the heat, they were hard and dried (through dehydration), and would last so they could be eaten through the winter.

Pass around small pieces of the jerky. Allow students to taste the jerky and record their observations. Ask students how they would feel about eating only that and a few dried foods over the whole winter.

Design and prepare a meal with your class or parents using only food that would not spoil if left out. What could you serve?
Students could list these foods in groups and small groups could prepare meals for the class, or the whole class could invite parents to a winter Indian meal. Some things that could be used are listed in the materials list, though this is not a complete list. Be creative and have fun.

Today we are beginning to irradiate food in order to kill the harmful bacteria. This food has a long shelf life. Research irradiated food and list the arguments for and against it. Take a position for or against irradiated food and support it with facts from your research through writing or oral presentation.

Assessment:

Assess students on the meal they create. The foods do not necessarily have to be those of the Blackfoot, but should be those prepared to last unrefrigerated over several months. If there is something chosen by the students that would not last a few months, accept that choice and allow them to let the food set out over several months to confirm that it would or would not last.
Cooperative Living

Grades 2-8

Missouri Curriculum Frameworks

SS/II.B/K-4/3 How do groups and organizations meet people’s needs?
SS/II.B/K-4/5 How are families, schools, and communities similar to and different from one another in this and other cultures?
SS/IV.B/K-4/2 What happens when someone fails to carry out his or her responsibility?

Objective:

Students will be able to
1. determine the qualities of a group and individuals that contribute to the well-being of the group;
2. evaluate our family and community for those characteristics.

Materials:

Procedure:

In a large group, discuss with the students:

When you are working with a group of students on a project, what characteristics do students possess that help the group to be successful in completing its task? List the characteristics on the board or on chart paper. Some characteristics would be cooperation, everyone doing their own job, respect for others, completing the task.

The plains Indians valued individualism and cooperation among its members. No one tried to make other people do things...not even parents with their children! People gave their cooperation because it made the society safe and secure. How does this compare to our list of good characteristics for working in groups?

How do we ensure security and safety in our family? In our school, home, or community? How is this different from the way the Blackfoot tribes and other plains tribes keep their society safe and secure? How does this compare to our list of good characteristics for working in groups?

In small groups make some rules for your class that you think would help it work more effectively as a group. Present these rules to your class for discussion. Do you think these rules would work in your home as well as your classroom? Why or why not?

Assessment:

Students should be assessed on their comparisons of characteristics in groups and families/communities. Examine classroom or school rules. Choose two and justify them regarding how they contribute to the well-being of the community (class or school).
Social Groups

Grades 2-8

Missouri Curriculum Frameworks

<table>
<thead>
<tr>
<th>Code</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS/II.B/K-4/3</td>
<td>How do groups and organizations meet people’s needs?</td>
</tr>
<tr>
<td>SS/II.B/K-4/5</td>
<td>How are families, schools, and communities similar to and different from one another in this and other cultures?</td>
</tr>
<tr>
<td>SS/II.B/9-12/2</td>
<td>How do young people learn knowledge, skills, and values?</td>
</tr>
<tr>
<td>SS/II.B/9-12/3</td>
<td>How do groups influence the thinking and behavior of members?</td>
</tr>
</tbody>
</table>

Objective:

The student will be able to
1. infer the positive aspects of being a member of a peer group;
2. identify peer groups of the Blackfoot.

Materials:

Logos from the Boy Scouts, Girl Scouts, Campfire Girls, and other social or religious groups

Procedure:

The teacher should lead a discussion similar to the following:

Look at these logos from some organizations with which you may be familiar. Are you a member of any of these organization? Are you a member of other organizations? Why do you belong to them? List these reasons on the board. What other kinds of organizations are in your community? (Lions Club, Rotary, Chamber of Commerce) Why do people belong to these organizations?

In Blackfoot tribes, social groups called the All-Comrades’ Societies were formed. Usually they were based on the age of the male or female. Common groups were for boys in their teens, youths entering adulthood, adult couples, elderly men retired from hunting and war, and women leaders who performed the rituals of the hunt.

In small groups, choose one of the Blackfoot All-Comrades’ Societies and think about why these groups were formed. What were the advantages of belonging? What did they contribute to the tribe?

Assessment:

Students should list some positive reasons for the individual and the tribe that come from membership in these organizations. Reasons could focus on the development of the young tribe member, socialization, maintenance on the tribe’s rituals, etc.
But He’s (She’s) So Different!

Grades 4-8

Missouri Curriculum Frameworks

SS/III.B/K-4/3 How do people treat one another? What happens when people treat other kindly/unkindly?

SS/III.B/5-8/3 What role is cultural diversity playing in events and developments in this and other societies?

Objective:

The student will be able to:

1. examine some differences among peers;
2. examine their feelings about people who are different;
3. give some strategies for dealing with people who are considered different.

Materials:

tables of people from other cultures in their native dress. These can be found in National Geographic magazines.

Procedure:

Look at these pictures. What do you notice about these people? (Students will probably point out the differences in physical characteristics clothing.) When you see someone who has different clothing or hair style, how do you feel/what do you think? Allow students to express their opinions but be sure they are phrased so as not to insult another student’s culture or way of life.

In the Blackfoot tribes, women wear two braids and men wear three braids. In 1972 when the American Indian Movement (AIM) was being established to work for the good of the Indian nations, two young AIM men visited the Blackfoot Reservation. These men wore their hair in two braids. How do you think the Blackfoot responded. Do you think the organizers were successful in bringing the Blackfoot into the AIM movement? (They were not.) Why or why not?

What do you think these young Indians should have done if they wanted the Blackfoot to listen to what they had to say? (Research the customs of the tribe and approach them in a respectful manner. Learn about the people they were dealing with.)

If you had a new student from one of the cultures represented in the pictures enter your classroom, how could you make him or her feel comfortable in your class or community?

Assessment:

Assess students on their ability to express a need to understand the culture of the other student as well as help the student understand the culture in which they will be working. Suggestions may include having the student share information about her or his home and culture, sharing information about our culture, inviting the student to your home, sharing toys, studying together, accepting them in your group at school, etc.
Games People Play

Grades K-8

Missouri Curriculum Frameworks

CA/II/K-4/5-8/1 Communicate with various audiences for a variety of purposes.

HP/IV.D/K-4/3/a Recognize and apply mechanical principles that impact the quality of movement principles.

HP/IV.A/5-8/1/a Combine locomotor, non-locomotor and manipulative skills in sequences of specific movement forms.

HP/IV.A/5-8/1/b Detect, analyze, and correct personal errors.

HP/IV.A/5-8/2 Games present an opportunity to participate in enjoyable activities while developing physical and social skills.

Objective:

Students will be able to
1. play a Blackfoot game;
2. compare a Blackfoot game to today’s games.

Materials:

several sticks
a marker (rock, chip, any small object)
hula hoop
long pole (broom handle or dowel rod)

Procedure:

Game I

Divide into two teams. The teams sit facing one another. On one team some members have the sticks. These members pound the floor and sing while the other members of that team pass a marker between them trying to hide it from the other team. When the singing and pounding stop, the second team has to guess who has the marker and in which hand it can be found. Teams then switch roles.

1. Is this similar to a game you play?

Game II

Players have poles about three feet long. A large hoop is rolled in front of them and they attempt to spear it (catch it with their poles).

What skills did this develop in young men of the tribe? (ability to spear accurately so they could hunt)

2. Write a paragraph on the importance of games in the Blackfoot culture or your culture.

Assessment:

Analyze student responses as to the games’ similarities and differences to today’s games.
But I Can’t Understand What You Are Saying!

Grades 2-8

Missouri Curriculum Frameworks
CA/IV/K-4/5-8/2 Analyze and evaluate a decision-making process involving language use.

Objectives:
The student will be able to
1. point out some differences in our language and that of the Blackfoot;
2. infer the effect of language on the place of people in a society.

Materials:
Handouts of the letters and phonemic spellings of the Blackfoot Languages

Procedure:
Put these two sentences on the board:
1. She ran into the house and called her brother.
2. He ran into the house and told me what had happened.

What does the word “she” or “her” tell you?
Who did the telling in the second sentence? Can you describe of that person?

It was probably easy for you to tell that the person in the first sentence was a girl and the second one was a boy. Our language has pronouns that refer to the gender of the person...he or she. The Algonkian language of the Blackfoot does not have these distinctions. Their language differentiates whether an object is animate or inanimate (alive or not). How do you think this makes a difference in how they view males and females in their tribe? If tree is an inanimate word and skunk and man are animate words, could the Blackfoot tell the difference between skunk and man using just the word that means animate?

Create a word for all things that are animate and another for all things that are inanimate. Use them in the first sentences above and discuss how it changes the meaning of the sentence. What do you know or not know about who is doing the action in the sentences. Use these words in your speaking language in school for awhile and see if you feel differently toward your classmates.

In American schools, Blackfoot children have trouble using the correct pronoun. How do you think this affects their school work and success in school? How could you assist a Blackfoot student if that student sat by you in class?

Assessment:
Assess students on their understanding that by having a word for all living things, there is no difference between males and females. Male and female attributes such as aggression (males) and desire to achieve in school (females) cannot be distinguished by merely gender classification when the same word can refer to both males and females.
Grades 2-8

Missouri Curriculum Frameworks

Objective:
   The student will be able to
   1. identify some differences and similarities in our alphabet and the Blackfoot alphabet;
   2. create a secret code using the Blackfoot alphabet

Materials:
   The Blackfoot alphabet

Procedure:
   Pass out the sheet with the Blackfoot Alphabet on it. These letters make up the Blackfoot language. Can you translate some English words to Blackfoot? What difficulties do you have? How do you think these letters are pronounced?

   Use this alphabet as a secret code with your friends. Send them a letter using this code.

Assessment:
   Assess students on their completion of a coded message and their ability to decode one from another student.

   More information about this language can be found on the Internet at:
   http://192.108.254.18/~napoleon/blackfoot/phonetics.html
Blackfoot Phonetics/Phonology

Blackfoot Consonants

<table>
<thead>
<tr>
<th>Category</th>
<th>Consonants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stops</td>
<td>p</td>
</tr>
<tr>
<td>Fricatives</td>
<td>s</td>
</tr>
<tr>
<td>Affricatives</td>
<td>ts</td>
</tr>
<tr>
<td>Nasals</td>
<td>m</td>
</tr>
<tr>
<td>Glides</td>
<td>w</td>
</tr>
</tbody>
</table>

There are no voiced non-sonorant consonants in Blackfoot nor are there any liquids. Stops are not aspirated but they are released (except those marked). Length is contrastive.

Blackfoot Vowels

Phonemically, in Blackfoot, there are only three vowels /i/, /o/, and /a/. However, an inventory of eleven tense and lax allophones of those three phonemes is evident. Vowel length is contrastive, although only tense vowels have length. Vowels may also be voiceless in certain environments.
Following Directions

Grades K-8

Missouri Curriculum Frameworks
CA/III/K-4/5-8/3 Analyze and solve problems involved in oral communications.

Objective:
The students will be able to
1. analyze her or his ability to follow directions.

Materials:
small horse models

Procedure:
The teacher should “hide” horses around the school. Some can be in other teachers’ rooms, behind book shelves, etc. They should not be easily visible.

Tell students: In the opera, Long Arrow is given explicit directions about how to find and bring back the horses. These directions were not written. How well could you follow oral directions? Would you have been successful in bring back the horses?

Give each student different oral directions to find one of the horses you have hidden. See how successful they are in bringing horses back to the tribe. Use multiple steps appropriate to the age of your students. Make sure they all return with the horse behind their backs, not looking at them. You can lead them to other teachers’ rooms, coat closets, through certain school areas, and into others. Be creative. See how successful your “tribe” of students would be in returning with horses.

Assessment:
Students will be successful when they discover the horse and return with it behind their backs. Students who bring back horses could be given a place of honor in the tribe for the day. Other students should be given other opportunities to find their horses but will have a lower place in the tribe.
Walking a Mile in My Moccasins

Grades 1-8
SS/II.A/K-4/2  How may diversity be beneficial in groups, communities, nations?
SS/II.A/K-4/3  How does diversity sometimes lead to problems such as discrimination, misunderstandings, and conflict?
SS/II.A/5-8/3  How might diversity benefit a society and also serve as a source of conflict?

Objective:
The student will be able to
1. describe how it feels to respond to adults as a Blackfoot child would;
2. appreciate cultural differences.

Materials:

Procedure:
In a large group discuss with the class:

Have you ever had an adult say to you, “Look at me when I talk to you!”

Have you ever tried very hard to win a game, and cheered when you did?

Blackfoot children think it shows disrespect when they look at an adult directly so they lower their head when they address an adult. Likewise, they believe it is bad manners to show off their abilities, so they will not raise their hand in class to answer a question or be competitive in games or sports.

Try to be a Blackfoot child for one day. How would you behave in class, on the playground, or at home?

Report to the class the next day how you felt. What happened when you tried not to show your ability? What occurred in your family when you lowered your eyes when you spoke to an adult?

Write a paragraph about what new understandings you would have if a Blackfoot child came to your class. How would you treat the child in a group? How would you expect the child to act on the playground?

Assessment:
The students should address the new information about Blackfoot children in their paragraph and show some understanding for cultural differences.
Grades 2-8

Missouri Curriculum Frameworks

SS/IV.E/K-4/1 How do people use land and resources in adapting to their physical environment?
SS/III.B/K-4/3 How do people treat one another? What happens when people treat other kindly/unkindly?
SS/III.B/5-8/3 What role is cultural diversity playing in events and developments in this and other societies?
SS/IV.E/K-4/5 What are examples and results of poor geographic decisions in communities?
SS/IV.E/5-8/1 How do humans actions and uses of technology affect the environment?

Objective:
The student will be able to
1. identify connections in events between 500 and 1970 AD;
2. infer what conditions influenced the disappearance of the buffalo.

Materials:
Time line

Procedure:
In small groups, look at the timeline. Focus first on the appearance and disappearance of the buffalo from the plains. Try to identify factors that may have had an influence on the buffalo. Pick out two factors that you believe influenced the disappearance of the Buffalo and support your answer.

Assessment:
Students should support their choices with facts from history and science.
TIME LINE

- Wounded Knee Protest
- American Indian Movement founded

1955
- Relocation of Indian tribes into cities

1940-45
- Indians served in the Armed Forces in World War II
- Economic depression, Midwest and plains under drought (Dust Bowl)
- Plains Reservations set up under Dawes Act
- Wounded Knee Massacre, Sitting Bull murdered, Beginning of Ghost Dance Religion
- Buffalo Herds Disappear
- Custer's Last Stand, Many tribes disperse due to Treaty of Laramie
- Agriculture moves to west of Mississippi
- Many tribes search for fur trade, roam the high plains, in wars with white people

1750-1775
- Dakota, Blackfoot, Gros Ventres, Crow use horses; Mandan and Hidatsa begin trading horses

1700-1725
- Sioux and Cheyenne move to North Dakota, Wichita, Caddo, Pawnee, and southern Sioux use horses
- Indians begin to use horses
- Spanish ranches established
- Coronado explores some tribes (Wichita)

1500
- Shoshone settle in Wyoming, Apache in Colorado, Blackfoot on Northwest Plains; Farming towns are fortified.

1000-1300
- Farming villages begin in Central Plains and move up the Missouri to North Dakota
- Bow and arrow; Apache enter Northwest Plains

Grades 2-8

Missouri Curriculum Frameworks
SS/III.C/K-4/3 What do I consider to be the most important events in my history?
SS/III.C/5-8/2 Which events are turning-point events?

Objective:
The student will be able to
1. express the positive contributions they have made to their world or want to make;
2. choose a method of telling others about themselves.

Materials:
pictures of famous people of various races and cultures

Procedure:
Show the pictures to the students. Let them share why these people are famous. Ask them what contributions these people have made to the world. Have they been positive influences? What contribution did Long Arrow make to his family and tribe? (brought back horses) The opera is a story about Long Arrow’s contribution.

Ask students what they want to be remembered for. What contributions have they made or do they want to make to their class, family, community or world?

Each student will write a paragraph (paper), create a song or opera using a story that could be told about their contribution to future generations.

Assessment:
The story should be assessed on the student’s expression of their positive contribution. The technical aspects of the story can be assessed also.
Dealing with Disabilities

Grades 3-8

Missouri Curriculum Framework

SS/II.A/K-4/1  What forms of diversity are found in a family/community?
SS/II.A/K-4/2  How may diversity be beneficial?
SS/II.A/K-4/3  How does diversity sometimes lead to problems?
SS/II.A/K-4/4  How does sharing values help prevent conflicts?
SS/II.A/5-8/3  How may diversity benefit society and also serve as a source for conflict?

Objective:
The student will be able to
1. be able to share a story about a handicapped person who achieved at a high level;
2. identify characteristics that make people successful achievers.

Materials:
stories about disabled people who have achieved and contributed to their community such as Helen Keller, Christopher Reeve, and Steven Hawking.
Resources can be obtained from the St. Louis Association for Retarded Citizens (SLARC), the Special Olympics, St. Louis School for the Deaf, and other associations that work with persons with disabilities.

Procedure:
Long Arrow was deaf. Many people have this and other disabbling conditions. Some cannot see, walk, or use their hands. Often because they have a disability we think they aren’t as smart or capable as others without the disability.

Read a story about a person with a disability who has succeeded. Look for the characteristics in this person that helped her or him to be successful. You may know a person with a disability. Instead of reading a story, you may want to interview this person and report to the class what you found.

Following the reading or interviews, have students share some of the stories they discovered. Discuss the special characteristics that people with disabilities use to overcome their disability.

Assessment:
Assess students on their understanding of the characteristics needed by a person to achieve in spite of a disabbling condition.
The Sounds of Nature

Grades K-8

Missouri Curriculum Frameworks

SC/III.B/K-4/3  Sound is a form of energy which results from vibrations in
the air or in other matter. Sound has the qualities of
loudness and pitch.

SC/III.B/K-4/7  Sound travels better in some materials than others.

FA/III.D/K-4/1  Know assigned roles and interact in improvisations.

FA/III.D/K-4/2  Know how to arrange environments for classroom
dramatizations.

FA/III.E/K-4/3  Know the elements to use to create an environment
appropriate for drama.

FA/III.DK-4/5  Know the playing spaces for classroom dramatization.

FA/III.D/5-8/1  Know acting skills to portray characters who interact in
scenes.

Objectives:

The student will be able to
1. identify the variables that cause sounds to vary in pitch;
2. manipulate a variable to create a desired pitch;
3. create a play to illustrate your thoughts without words.

Materials:

long, flexible tubes of varying lengths
scissors

Procedures:

In the opera, the performers illustrated the sound of the wind by using long tubes that
they swung around. Using plastic tubes of various lengths and diameters, swing them and see
what you can observe. List what you found when you tested the tubes.

What are the variables that can be changed? (length and diameter)

Design tubes to make the sounds you want. See if you can make sounds that represent
different types of wind...breeze, gusts, storms.

Create a play without words that uses only the tubes and present it to the class.

Assessment:

Assess students on being able to design the tube to meet their objectives. Young students
should be assessed on being able to pick out a tube or design a tube that makes the sound they
want to make.
Reflecting

Grades 3-8

Missouri Curriculum Frameworks

SC/III.B/K-4/1 The sun is the primary source of light for the Earth
SC/III.B/K-4/8 Light spreads from a source and travels in a straight line. Light can be transmitted, reflected, refracted, or absorbed by different materials.

Objectives:

Students will be able to
1. describe reflection;
2. use a reflection to illuminate an object.

Materials:

- mirror
- flashlight
- picture of yourself
- dark room

Procedure:

Long Arrow thought he saw his reflection in the pool of water. Have you ever looked into a pool and seen your reflection? Look in a mirror at yourself. Compare it to a picture of yourself. Are they the same?

Young students could see which objects in their environment reflect. Shine a flashlight on different objects as they walk down the hall of the school and different objects at home. Make a list of objects that reflect and those that don’t. What characteristics do the reflectors have in common? (metals, shiny, slick)

Older students could continue with the activity begun above. Put the picture on a flat surface. Place the mirror down the center of your face so it reflects one side of your face and forms a complete face with the picture. Does this look like you? Do the same on the other side. What do you see there? Is the right side of the picture the right side of your face?

Reflection requires a source of light. You see objects because light from some source is bouncing off of that object. Can you think of something you can see at night because of reflected light? (moon) Our nights when the moon is full (reflecting light from its complete surface facing us) are very bright. When there is no moon (no reflected light from the moon) the nights are very dark. Using the flashlight and the mirror, try to illuminate some object in a dark room by reflecting the light to shine upon it. Shine the flashlight into the mirror and move the mirror or flashlight to direct the light beam to shine on the object. Try to illuminate another object.

What did you notice about the reflected light? (Discuss brightness, direction, etc.) How were you able to focus the reflected light? (angle that the light reaches the mirror is equal to the angle at which it leaves the mirror; angle can be adjusted by moving the mirror or the flashlight). If it was a dark night, what does the flashlight represent? (sun) What is the mirror? (moon) What is the object? (Earth or other heavenly bodies that receive light reflected by the moon.)

Assessment:

This activity should be assessed on the improvement the student makes for her or his age in controlling and manipulating variables.
Guided by the Stars

Grades 2-8

Missouri Curriculum Frameworks
SC/V.B/K-4/6 Different patterns of stars can be seen in different seasons.
SC/V.B/K-4/3 Constellations are patterns of stars.

Objective:
The student will be able to
1. identify some of the constellations in the night sky;
2. create a story about a cluster of stars.

Materials:
picture of the night sky for that time of the year (Found in each month’s Science and Children from the National Science Teachers Association)
reference book with constellations
hammer
nail
tin cans
paper

Procedure:
Ask students to look at the night sky before you begin this lesson. Have them report what they see. Ask if the stars are in clusters or evenly spaced. (in clusters) Ask if they are all the same size or brightness. (no)

Show students some of the constellations. Tell them a story about one of the constellations. Travelers of long ago used the stars and these constellations to guide them in long journeys before there were compasses and maps. They knew that the constellations were in the night sky in specific places each season.

Show the students the night sky map from Science and Children. Give them a copy and let them try to find the constellations in the sky that night.

Let students pick out a particular cluster of stars and create a new constellation and story, perhaps an Indian story, about that constellation.

Using the cluster of stars, make tin-can constellations. Make a template of the cluster of stars that fits the flat bottom of a tin-can. Using a nail and hammer, punch holes into the bottom of the can in the shape of the cluster. (Be sure to reverse the position of the cluster before you nail it into the can so that when the light shines up through the can, the cluster will be in the right position on the wall or ceiling. You can do this by copying the constellation, turning the paper over and making black dots where the stars are on the other side.) Using a flashlight in a dark room, shine the light through the can and show the cluster on the ceiling or wall of the room. Share the stories or act out the stories with the class as the cluster is shown on the ceiling.

Older students can research the different constellations in the Southern Hemisphere. Compare them to those seen in the Northern Hemisphere.

Assessment:
Students should present a completed myth and constellation can to the class.
Colors from Plants
(from the Mid-continent Regional Educational Laboratory/High Plains Consortium)

Grades K-8

Missouri Curriculum Frameworks

FA/IV.A/K-4/3 Know that many cultures contributed to the culture of the US.

FA/IV.A/5-8/4/a Explain effects of technological advances on the development of styles, artists, or art movements.

FA/IV.A/9-12/1 Know that a variety of cultural themes and artistic styles exist.

SC/III.A/K-4/3 Physical properties can change if they are exposed to heat, light, or chemicals.


SC/III.A/5-8/7 Physical properties of a solution are determined by the nature and concentration of the material being dissolved

Objective:

Students will be able to
1. make dyes that may have been used by Native Americans;
2. identify some natural plants used to make dyes
3. devise a method to dye chosen fabric to a desired color.

Materials:

- wool cloth (white or natural)
- tea
- vinegar
- turmeric
- 5 quart pan
- heat source
- various types of cloth, silk, wool, jute, yarn
- berries or flowers or bark or other plant parts

Procedure:

There were no artificial dyes in packages that the Indians could purchase at the supermarket. However, we have all seen the beautiful colors used by the Indians to decorate their tents, clothing, horses, and themselves. The following recipes will allow you to recreate dyes you can use for decorating.

Some dyes require a substance, called a mordant, in order to work. The word “mordant” is from the French language, and means “to bite.” Mordants are metallic salts with an affinity to fibers and dyes that improve the color fastness of the dye. In the tea dye method, the vinegar serves as a mordant. The Ojibwa used local clays, grindstone dust, water in which iron had rusted, and wood ashes as mordants. Navaho people used juniper ash water. The sulfur springs in New Mexico provide pure alum used by the Navajo for mordanting light, pure colors.

For each recipe, try to determine the best mixture of plant product and liquid. How will you test these combinations? Keep a record of your procedure so you can report to the class.
Recipes

Procedure:
Use clean, greaseless, 5-quart pots that are stainless steel, enameled, Pyrex, or ceramic. Dissolve solid in hot water. Add liquid and stir. Heat slowly. Immerse textile and stir occasionally. Simmer for 30 minutes or longer. Cool in dye bath. Remove textile and rinse thoroughly in running water. Do not use soap. Dry in the shade.

1. Tea (experiment with the amounts to make the color you want but you will need close to 20 tea bags worth)
   - water
   - vinegar (mordant)
   - wool
   Soak tea in boiling water for several hours then follow previous directions. For another color, follow these directions then add vinegar to tea mixture in an iron pot. Simmer for one hour. Let cool. Place fabric into the liquid. Follow directions above.

2. 1 1/2 ounces turmeric spice
   - lemon juice or vinegar (1 cup)
   - wool, cotton, jute, linen, silk

3. Staghorn Moss Lichen
   - water
   - silk or wool

4. Cranberries
   - water

5. flower petals
   - water

6. other colored plant material
   - water

7. bark
   - water

Allow students to experiment with amount of the substance, the type of fabric and the mordant. Report to the class on the results.

Assessment:
Assess students on their ability to develop a method to dye the chosen fabric. Assess older students on their ability to test the variables involved in dying a fabric to the desired color.
Reference List


