



## Module 4

### WHO ARE THE NORTHERN ARAPAHO PEOPLE?

#### Lesson Plan # 7 (STEM) 9<sup>th</sup> – 12<sup>th</sup> Grade

**LESSON PLAN DEVELOPED BY:** Alberta Oldman - Northern Arapaho

#### **COMMON CORE STANDARDS ADDRESSED IN LESSON:**

(See Standard Definition at end of lesson)

##### **9<sup>th</sup> – 10<sup>th</sup> Grade**

CCSS.ELA-LITERACY.RH.9-10.1 – Key Ideas and Details

CCSS.ELA-LITERACY.RH.9-10.4 - Craft and Structure

CCSS.ELA- LITERACY.RH.9-10.5 - Craft and Structure

CCSS.ELA-LITERACY.RH.9-10.9 – Integration of Knowledge and Ideas

##### **11<sup>th</sup> – 12<sup>th</sup> Grade:**

CCSS.ELA-LITERACY.RH.11-12.1 – Key Ideas and Details

CCSS.ELA-LITERACY.RH.11.12.3 – Key Ideas and Details

CCSS.ELA- LITERACY.RH.11-12.9 – Integration of Knowledge and Ideas

#### **WYOMING STANDARDS ADDRESSED IN LESSON:**

##### **Social Studies Standards (2018) at the end of 12<sup>th</sup> Grade**

(See Standard Definition at end of lesson)

WY Standard 2 – SS12.2.3

WY Standard 4 - SS12.4.1 - SS12.4.4

**DURATION** (estimated 45 minute class periods)

**Day 1:** Introduction: Video- “Who are the Northern Arapaho People?” = 8:24, Video Questions, Class Discussion focused on Heritage.

**Day 2:** Review lesson from day 1 (check for understanding). Shelters Lesson Packet

**Day 3:** Project: Planning

**Day 4:** Project: create miniature tipi and STEM activity

#### **LEARNING OBJECTIVES:**

Students will demonstrate an understanding about the importance of heritage and preservation of traditions and values of the Northern Arapaho Tribe that reside on the Wind River Reservation located in Wyoming through viewing a video, completing a hands-on project, score a 70% or higher on the shelter packet, and using mathematical measurements accurately.



**MATERIALS REQUIRED:**

**Day 1:**

Video #4 – “Who are the Northern Arapaho People?”, video worksheet, and pencil

**Day 2:**

Shelters Packet (attached), pencil

**Day 3: Project-Planning Day**

[‘Planning’ handout](#), paper, pencil, clear tape, colored pencils, markers, Elmer’s glue, ruler, , variety of colors of construction paper, 3-4 blank 11 17 or larger sheets of paper or bulletin board paper, tipi pattern (attached in packet) and 8 index cards that need to be labeled as follows:

Card 1- write ‘8 inches’

Card 5- write ‘12 inches’

Card 2- write ‘9 inches’

Card 6- write ‘13 inches’ (the next three cards

Card 3- write ‘10 inches’

Card 7- write ‘14 inches’ require the students

Card 4- write ‘11 inches’

Card 8- write ‘15 inches’ to convert measurement)

White/Brown paper bag or some container to store cards for random drawing.

**Day 4: Project- Create miniature tipi and STEM (math) Activity**

Completed ‘Planning’ handout, poster board, tape, scissors, pencil, and pattern students made from day 3.

(Optional) Video – “How to set up a tipi,” White Buffalo Lodges.

<https://www.youtube.com/watch?v=2VxDRJ4HEf4>

**KEY VOCABULARY:**

Heritage –

Treaty –

Reservation –

Values –

Traditions –

Ceremony –

Humility –

**Mathematical Vocabulary:**

Cone

Area

Axis

Volume

Right cone

Slant height

Oblique cone

Height

Altitude



## **DESCRIPTOR:**

Students will be introduced to one of the two tribes who reside on the Wind River Reservation in Wyoming, the Northern Arapaho. After viewing the video, the students will complete a shelters packet that focuses on the tipi, home for the Northern Arapaho people before modernized housing came about and participate in a hands-on project that requires them to create a miniature tipi model.

## **LESSON INTRODUCTION:**

Teacher: Ask, *Who knows the definition for 'heritage'?* Definition - Something that is handed down from the past, as a tradition. Allow students to respond in whole group discussion. Once discussion has been completed write the definition on a whiteboard or use the technology device in the classroom.

Teacher: Tell the students, *we will now list some traditions from our own families to share with others and when we are done we will compare and contrast our class list as whole group.* Write down responses as students share their traditions. Analyze the similarities and differences of the list created.

Teacher: Say, *Now that we have background information on the vocabulary word 'heritage', we are now going to extend our lesson and learn about the one of the tribes living on the Wind River Reservation here in Wyoming. Can anyone name the two tribes on the Wind River Reservation?* Share responses as whole group. (Northern Arapaho & Eastern Shoshone) Say, *Although there are two tribes who live on the Reservation, we will focus on the Northern Arapaho in this lesson.*

Teacher: Say, *We will now be watching video #4 – "Who are the Northern Arapaho People?" This is the fourth video in a series of six that are about the Wind River Reservation and both tribes but in this short video, we will learn about the Northern Arapaho Tribe and the importance of preserving their way of life. We will also be provided with information about their history, culture, and heritage (Preserving the ways). When we get to the end of this lesson, we will be completing a packet about their first homes- the tipi, the history of it, and making a miniature model of it.*

Teacher: Say, *Just a reminder, at the end of this unit, you should be able to define 'heritage', explain why history is important to ALL the people living in the State of Wyoming, and use two mathematical formulas to find the Area and Volume of a tipi.*

## **STEP BY STEP PROCEDURE:**

### **Day 1- Introduction**

Introduce the lesson using the dialogue above.

1. Hand out the 'Video #4 – Who are the Northern Arapaho People?' Question and Answer Worksheet and read aloud the directions. Read each question aloud to the students. Have them reread them again silently and as they do, have them circle any key words that will assist them in answering the questions on the worksheet as they view the video.

2. Play video #4 (Emphasize to students to listen for the key words they circled previously)
3. Allow time for students to write the answers to any of the questions on the worksheet (independent work).
4. Replay video #4 and have students fill in the answers that they could not complete in step 3 (independently).
5. Gather worksheets to check for understanding of content.
6. If time allows, discuss the questions and answers for the worksheet.
7. Closure: Review key points about the video.. Inform the students what the remainder of the lesson will include: A shelter packet that provides information about the tipi and that they will be constructing a miniature model of one on the last two days. Assessment will be based on 70% accuracy on the shelter packet, tipi model, and use of appropriate mathematical equations for volume and area.

### **Day 2: Shelter Packet (begin integrating math standards G.CO A.5 and/or G.CO D.12)**

(Review Day 1 activity very briefly)

1. Ask students what shape the tipi resembles? Cone
2. Have students define the terms on a sheet of lined paper: cone, axis, right cone, oblique cone, altitude, height, slant height, area, and volume.
3. Ask students if it is possible to find the area and volume of a tipi? If so, what formula would be used?  $A = \pi r^2$   $V = \frac{1}{3}\pi r^2 h$
4. Hand out shelter packet to students. Read as whole group. Complete pages according to directions.
5. Closure: Ask the students what they found the most interesting in today's lesson? Ask if they think it would be difficult or easy to set up a real tipi and to explain 'Why' they responded the way they did. After class discussion, inform students they will be making a small model of a tipi starting tomorrow.

(Depending on how long it takes to get through packet, Day 2 may proceed into Day 3)

### **Day 3: Project: Create Miniature Tipi Model**

(Teacher may want to make a variety of different sizes of the tipi pattern. This way all students will have to use different measurements for their size of the tipi model OR use the attached pattern and have the students draw a number at random that determines the height of their model)

1. Hand out the pattern for the miniature tipi (attached), scissors, planning sheet, 3-4 blank 11 x 17 or larger sheets of paper, scotch tape, and pencil.
2. Break students up into groups of 3-4. (teacher can decide to assign groups or let students

create their group)

3. Have one student from each group come to the front of the room and have them draw an index card from the brown/white bag or container. This determines how tall their miniature tipi needs to be.  
Have the student take the index card back to their group and have each member of the group write their name on it. (Helps teacher remember groups and the height requirement)
4. Distribute 'Planning' handout and go over each section.  
['Planning' Handout](#)
6. Have students cut out the pattern.
7. Fold it in half so the bottom corners match up and have the students measure the center along the crease. (from bottom to the top) This will show the student how tall the pattern is and will be used to guide each group in the process of meeting their height requirement.
8. Next, have students start filling out the project 'Planning' handout.  
\*\*In the 'DESCRIPTION' section, have each group describe the project. (check for understanding.  
\*\*In the 'ACTION PLAN' section, have each group write down each step they will perform from beginning to end. Emphasize 'How' they plan to use the pattern height to meet the requirement and if it doesn't work, 'How' are they going to do it differently?  
(NOTE: Several changes may be made on this section once students start the actual project)  
\*\*In the 'TO DO' section, have students assign tasks for each group member.  
\*\*In the 'MATERIALS' section, write down all supplies used.
9. Finally, have the groups start following their 'ACTION PLAN' to see if they met the height requirement that they drew in step 3. Students will need to use the large sheets of paper at this point. It may take several trials before the group figures out how to meet their height. They will need to cut out a new pattern each time they revise the measurements.

To measure the height, the group needs to cut out a pattern with the new measurement(s). Next they will tape the tipi together where it shows the letter 'B' and below the door (circle). Once taped together, set the model on the table/desk and make sure the bottom of the tipi is 'even' all the way around. Finally, insert the ruler (inside) from the top of the tipi to the table. Measure the height from table to the 'V' shape of the tipi (the 'V' should have a crease from the fold in step 7. If the required height is not met, the group needs to determine another plan that will correct the problem. **REMINDER: THE NEW MEASUREMENTS SHOULD MAKE THE PATTERN LARGER IN ITS ENTIRETY.**

10. Continue to monitor each group as they work through each step.

11. Closure: 5 minutes before class is released, have students clean up and gather materials.  
Suggestion: Keep project in the classroom if possible. Prevents loss of materials or papers. Ask for volunteers to see if anyone completed the project with the required height? Remind students that the 'Planning' handout should reflect each step that was taken to complete the project. Inform students that the paper model needs to be completed first in order to move on to the next phase using the poster board.

#### **Day 4: Project- Create miniature tipi and STEM (math) Activity**

1. Once the paper model is completed, the group will now use the poster board to create the final product.
2. Trace the paper model, cut it out, and tape together.
3. Using your poster board model, find the Area and Volume of your tipi. Use the following formulas:

$$A = \pi r^2 \quad V = \frac{4}{3}\pi r^3$$

4. Use the remainder of class to complete day 3 and 4 activities.
5. Closure: Reflection- Ask the groups what was the most challenging part of the project? How did they overcome the challenge?

#### **EXTENSION ACTIVITY:**

If time allows, have students practice finding area and volume of the different size tipi's that were created by the other groups.

(Optional) Video – “How to set up a tipi,” White Buffalo Lodges.

<https://www.youtube.com/watch?v=2VxDRJ4HEf4>

#### **REVIEW:**

(Highlight terms and ideas you want to review with the students at the end of the lesson)

See all highlighted areas

#### **EVALUATION:**

Students will be assessed by correctly answering the Shelter Packet questions with 70% accuracy.

Using the hands-on project, Students will demonstrate an understanding of Area and Volume based on accurate measurements and mathematical formulas used to determine their final response to meet the 8<sup>th</sup> Grade Math standard-Geometry 8.G

Observation/Participation of class discussion to show awareness about the Northern Arapaho Tribe.



**Video #4 – Who are the Northern Arapaho People?  
Question and Answer Worksheet**

Name \_\_\_\_\_ Date \_\_\_\_\_

**Directions:**

1. Watch and listen to the video for the first time. Then answer as many questions as you can, using complete sentences. (Restate the question in your answer)
2. Watch the video for a second time and complete the worksheet. For the key vocabulary, write down the definition of each word.
3. In whole group, discuss the answers to each question to gain an understanding of what the purpose of the video was intended for.

**KEY VOCABULARY:**

Heritage-

Treaty-

Reservation-

Values-

Traditions-

Ceremony-

Humility-

1. In what year did the Northern Arapaho Tribe start calling the Wind River Indian Reservation their home? \_\_\_\_\_
2. How do the Northern Arapaho maintain the traditions?  
\_\_\_\_\_, \_\_\_\_\_, and  
\_\_\_\_\_
3. Families are still traditional, what do they do? \_\_\_\_\_ and  
\_\_\_\_\_.
4. Who are three of the chiefs that are mentioned in the video? \_\_\_\_\_,  
\_\_\_\_\_, and \_\_\_\_\_
5. Families, extended families, and other tribes throughout the country share one thing in common, what it is? \_\_\_\_\_



6. True or False When people tease each other, a lesson is embedded within.
7. If respect is present amongst one another, can it be meant that you are friends for life?  
YES or NO
8. Humility is a big value amongst the Arapaho. When things are done for others, it is not to be recognized for the praise but because it's a part of their \_\_\_\_\_.
9. What three values do the Northern Arapaho have?  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
10. When were the Northern Arapaho supposed to get a reservation of their own? And why did they not get one from the government?
11. What time frame does the Northern Arapaho Tribe go from a Chief leader to the current form of government of a Business Council? \_\_\_\_\_
12. How big is the Wind River Reservation? \_\_\_\_\_
13. Who teaches the traditions to the youth? \_\_\_\_\_
14. When did the Northern Arapaho Tribal members start going to school and begin vocational programs? \_\_\_\_\_
15. True or False Students on the Wind River Reservation attend the same kind of schools like other students in the State of Wyoming.
16. Short Answer: What did you find the most interesting?





## SHELTERS

**LESSON:** Shelters of the Plains specifically the Northern Arapaho

**GRADE LEVEL:** 8<sup>TH</sup>

**SUBJECTS:** Social Studies, Foreign Language/Culture

**MATERIALS:**

“Shelter” handout, Title IV-A Curriculum Development Project

(Optional) Video – “How to set up a tipi,” White Buffalo Lodges.

<https://www.youtube.com/watch?v=2VxDRJ4HEf4>

Venn diagram (attached)

**DESCRIPTION:**

Students will learn about the shelter used by the Northern Arapaho People.

**OBJECTIVES:**

Students will be able to describe the composition of the structure that the Northern Arapaho lived in.

Students will be able to identify the parts of a tipi.

Students will work construct a model of a tipi. (Individually, pairs, or small groups of 3-4)

**VOCABULARY:**

Tipi –

Buffalo Hide “Canvas” –

Slender Pine “Poles” –

Tipi Door –

Smoke Flaps “Ears” –

Straight Sticks “Red Willow Pins” –

Red Willow Pins/Stakes –

Rope -

**PROCEDURE:**



*Anticipatory Set:* Begin lesson by asking students to describe houses they live in today. Students should talk about characteristics such as rooms in their homes, sizes/shapes of their houses, and furniture/appliances/content found within the home. Record students' responses on the Venn diagram. Talk about how tipis were constructed and record those responses on the Venn diagram. Discuss the similarities and differences between the student's present homes and a tipi.

**LESSON FOCUS:**

Read the "Shelters," packet that was produced by Title IV-A Curriculum Development Project.

**ACTIVITY:**

Complete the Venn Diagram (compare and contrast). Follow the directions.

Complete the 'Parts of a tipi' worksheet by following the directions.

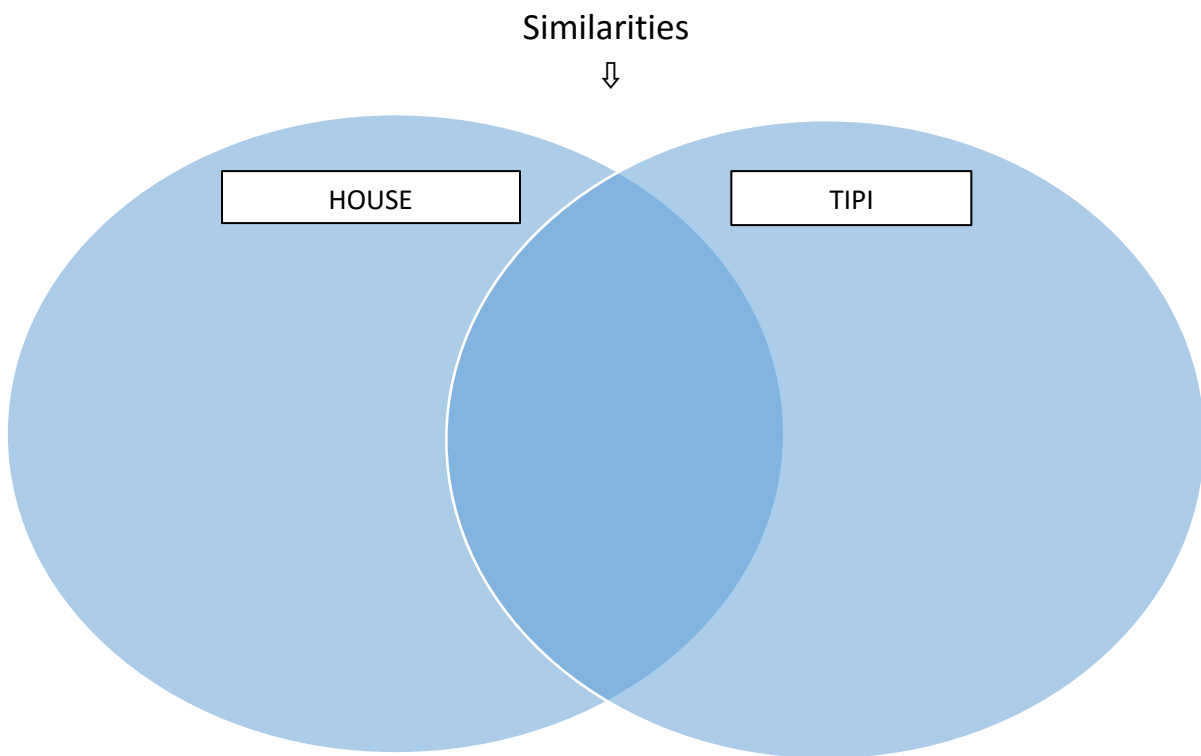
**CLOSURE:**

Ask students to share what part of the 'Shelters' packet they found most interesting? Ask students if they would have been able to live in a tipi like the Northern Arapaho tribal members did prior to modern homes? Finally, ask students about 'how' they think the tribal ancestors survived the harsh winters in tipi's and would they be able to do the same?

# VENN DIAGRAM

## SHELTERS

Directions: Write down a minimum of 5 similarities in the middle of the Venn diagram. Then write down a minimum of 5 differences between the house and tipi under the correct heading.



Title IV Curriculum Materials

(Adapted and condensed for the 8<sup>th</sup> Grade)

Haas, Merle, and Alonzo Moss . "Shelter." Shelter, 1979, Nii'Eihii Koyih'o Cultural Resource Center.

## Shelters

The early homes of the Plains Indians were tipis. It is not known when the Arapahos began constructing tipis, but it could have been after they moved onto the Plains in the early 18<sup>th</sup> century. The tipi proved to be a very sturdy, yet portable shelter. It was ideally suited to the tribal lifestyle of the time. Before the arrival of the horse, the tipi was made quite small. The women and the domestic dog had the responsibility of transporting the tipi. Since the introduction of the horse in the 17<sup>th</sup> century, the tipi was made bigger, stronger and in one large piece.

The first tipis were made from tanned buffalo hides, supported by the framework of long, slender pine, cedar, or other wood (known as poles). These poles were trimmed of all the bark and made smooth, then dried before use so they wouldn't be heavy. When a tipi was erected, sixteen to twenty-two poles were used and brought together about three to four feet from the top.

During the time when buffalo were plentiful, tipis were made exclusively from tanned hides. The covering for the pole framework took from fifteen to twenty tanned hides depending on the size and the number of hides available. They were sewn together to make one that had small pockets at the tips and were held up by long poles. The tips of the poles fit into the pockets and the poles were leaned against the tipi. The ears could be adjusted to control ventilation of the tipi.

The Arapahos erected their tipis beginning with a tripod base. Three poles were measured against the height of the hide cover and tied together. These three poles were then stood up, and thirteen more poles were leaned into place at even intervals to form a circle. All of these poles were then tied securely into place with a long rope. The remaining length of rope was

wrapped around one of the tripod base poles and tied near the ground. This framework supported the hide covering of the tipi. The last pole used in the framework was tied to the top of the hide cover, between the two smoke flaps, and used to lift the cover into place. Once the cover was up, it was wrapped around the pole framework to enclose the living area. This cover was fastened together down the front with red willow stakes, and the entire cover was staked to the ground with stakes of red willow. The stakes were driven into the ground at the base of each pole, and these stakes held the entire structure firmly in place.

A cover was fashioned from a large piece of hide for the entrance. This cover was fastened to the bottom of the row of stakes that held the tipi closed. Straight sticks (known as pins) were attached to the door cover at the top and bottom to hold it in place. The entrance always faced east.

Tipis always had a liner made to fit the inside “walls”. The liner was also made of buffalo hide, and later on, canvas. This liner was about six feet high and was suspended from the poles, reaching to the ground. The lining of the tipi served many purposes. It helped keep the tipi warm and it prevented rain from dripping off the poles into the living area. It also prevented casting of shadows from the fire and gave the family more privacy. These linings were usually decorated. The male occupant of the tipi would draw or paint his brave deeds on it. This decoration represented a story of some accomplishment or a vision. At other times, the liner was painted with purely decorative designs and symbols that were used among the Northern Arapaho Tribe.

Inside the tipis, one would see a fireplace (heat/stove) that had a tripod base with pouches (cooking pans) used to cook with. Beds made of slender willow rods that were raised about a foot off the ground, placed close to the walls. Parfleches (storage boxes) that were used for food and other articles.

There were no great differences between tribal styles of tipis- the basic was the same throughout the Plains. Tribal differences were shown in the size and height of the tipi, the number of poles used, and perhaps most clearly, by the manner of decorating the tipi. Among the Arapaho quilled pendants and medallions frequently decorated the outside of the tipi.



Directions: Use the following vocabulary terms to identify the parts of a tipi.

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(Title)

TIPI

BUFFALO HIDE "CANVAS"

SLENDER PINE "POLES"

TIPI DOOR

SMOKE FLAPS "EARS"

STRAIGHT STICKS "RED WILLOW PINS"

RED WILLOW PINS/STAKES

ROPE



## **COMMON CORE STANDARDS ADDRESSED IN LESSON:**

### **9<sup>th</sup> – 10<sup>th</sup> Grade**

#### **Key Ideas and Details:**

CCSS.ELA- LITERACY Literacy.RH.9-10.1

Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.

#### **Craft and Structure:**

CCSS.ELA- LITERACY.RH.9-10.4

Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.

CCSS.ELA- LITERACY.RH.9-10.5

Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.

#### **Integration of Knowledge and Ideas:**

CCSS.ELA- LITERACY.RH.9-10.9

Compare and contrast treatments of the same topic in several primary and secondary sources.

### **11<sup>th</sup> – 12<sup>th</sup> Grade:**

#### **Key Ideas and Details:**

CCSS.ELA- LITERACY.RH.11-12.1

Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.

CCSS.ELA-LITERACY.RH.11.12.3

Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.

#### **Integration of Knowledge and Ideas:**

CCSS.ELA- LITERACY.RH.11-12.9

Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.

## **WYOMING STATE STANDARDS ADDRESSED IN LESSON:**

### **Social Studies Standards (2018) at the end of 12<sup>th</sup> Grade**

#### **9<sup>th</sup> – 12<sup>th</sup> Grade Social Studies (2018)**

#### **Social Studies Content Standard 2 - Culture and Cultural Diversity**

Students demonstrate an understanding of the contributions and impacts of human interaction and cultural diversity on societies.

#### **Rationale**



Culture helps us to understand ourselves as both individuals and members of various groups. In a multicultural society, students need to understand multiple perspectives that derive from different cultural vantage points. As citizens, students need to know how institutions are maintained or changed and how they influence individuals, cultures, and societies. This understanding allows students to relate to peoples of local, tribal, state, national, and global communities.

SS12.2.3 Evaluate how the unique characteristics of cultural groups, including Indigenous Tribes of Wyoming, have contributed and continue to influence Wyoming's history and contemporary life (e.g., tribes, explorers, early settlers, and immigrants).

### **Social Studies Content Standard 4 - Time, Continuity, and Change**

Students analyze events, people, problems, and ideas within their historical contexts.

#### **Rationale**

Students need to understand their historical roots and how past events shape the present, and may shape the future. Students must know what life was like in the past to comprehend how things change and develop over time. Students gain historical understanding through inquiry, and through researching and interpreting events affecting individual, local, tribal, state, national, and global histories.

SS12.4.1 Describe patterns of change (cause and effect) and evaluate how past events impacted future events and the modern world.

SS12.4.4 Describe the historical interactions between and among individuals, groups, and/or institutions (e.g., family, neighborhood, political, economic, religious, social, cultural, and workplace) and their impact on significant historical event.





