

A STUDY OF SCHOOL GROUP SOCIAL INTERACTION

AT THE HISTORY COLORADO CENTER

by

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ABSTRACT

This paper presents the results of an observational study focused on the social interactions occurring in school groups participating in the *Colorado Time Travelers Program*, a guided-program for elementary school age children at the History Colorado Center in Denver, Colorado. This study seeks to identify, describe, and categorize the social patterns that occur between the various members of the guided program which include the school program facilitator, the students, the chaperones, and the classroom teachers. The purpose of this study is to help the History Colorado Center better understand the social nature of their school programs and to act as a preliminary step toward evaluating the success of their school programs. The results of this study will also provide education staff at the History Colorado Center with a set of behavioral codes that can be used in future studies or evaluations of their school group programming. Likewise, this study aims to contribute to the field of museum education by adding to knowledge concerned with the role social interaction plays in museum school group programming.

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CHAPTER 1

INTRODUCTION

According to *Building the Future of Education: Museums and the Learning Ecosystem* (2014), museums in America spend approximately \$2 billion a year on education (p. 9). Furthermore, “the typical museum devotes three-quarters of its education budget specifically to K-12 education” (Merritt, 2014, p. 9). Out of this budget museums develop a variety of educational programs for school groups. The activities that students participate in during these programs are as diverse and unique as the museums that have developed the programs. However, there is an aspect of every school program that is constant-- all museum programs for school groups provide students with opportunities to interact socially with their peers, other members in their school group, and museum staff. Previous studies focusing on school field trips to museums have shown that the social interactions occurring between students and other members of a school group are influential outcomes of field trips (Azmitia, 1996; Birney, 1983; Falk & Dierking, 2013; Griffin, 2003; Martin et al., 1981; Osterman & Sheppard, 2010). Despite this knowledge, museums are only now beginning to understand the significant role social interaction plays amongst members of school groups visiting the museum. Understanding the social aspects of field trips is important for museums as recent research in the field has shown that “social interaction on field trips, if respected and capitalized upon, can result in increased educational benefits,” for students participating in museum programming (Falk & Dierking, 2013, p.158). For instance, studies have been completed that focus on children’s conversations with one another. These conversations focus on the way children describe to other children the ways in which they came to understand newly learned concepts. Results from these studies indicate that these descriptions increase the child’s ability to apply newly learned concepts to new circumstances (Falk & Dierking, 2013).

This thesis presents the results of an observational study focused on the social interactions occurring in school groups participating in the *Colorado Time Travelers Program*, a guided-program for

elementary school age children at the History Colorado Center in Denver, Colorado. Inspired by theorists and experts in the fields of museums and museum education such as John H. Falk and Lynn D. Dierking, this study seeks to identify, describe, and categorize the social patterns that occur between the various members of the guided program which include the school program facilitator, the students, the chaperones, and the classroom teachers. The purpose of this study is to help the History Colorado Center better understand the social nature of their school programs and to act as a preliminary step toward evaluating the success of their school programs. The results of this study will also provide education staff at the History Colorado Center with a set of behavioral codes that can be used in future studies or evaluations of their school group programming. Likewise, this study aims to contribute to the field of museum education by adding to knowledge concerned with the role social interaction plays in museum school group programming.

CHAPTER 2

CONCEPTUAL FRAMEWORK

Over 55 million school students visit American museums each year (American Alliance of Museums, 2014). Museum educators create and implement a variety of museum programs to engage this portion of museum visitors. Museum programs for school groups include, but are not limited to, outreach materials such as classroom kits, museum staff visits to classrooms, and most relevant to this study, guided tours of museum exhibits and gallery spaces (Falk & Dierking, 2013; Fortney, 2010; American Alliance of Museums, 2014). Fortney (2010) suggests that museum educators design “solid” programs for school groups with clear learning objectives (p.31). Learning objectives for guided programs vary with museum type and mission and are dependent upon factors such as audience needs and the special characteristics of a museum’s collection (Fortney, 2010). Despite these differences, similarities exist amongst the learning objectives developed for school programs in various museums. Set against the backdrop of exhibits, the learning that takes place in museums is “experiential,” “immersive,” “self-directed,” “hands-on,” (American Alliance of Museums, 2014, p. 10) and reliant upon social interaction (Falk & Dierking, 2013, p. 28). Consequently, museum educators develop learning objectives that are flexible. Learning objectives allow for the development of personal construction of meaning through interactive and engaging activities, and they incorporate opportunities for meaningful social activity.

Though museum educators have established that the learning that takes place in museums is a highly personal and social activity, understanding exactly *how* learning occurs is much more difficult to discern (Falk & Dierking, 2000; Hein, 2006). Learning theories, intersecting the disciplines of education, psychology, philosophy, anthropology, and others attempt to describe how learning happens by identifying physiological and environmental factors that influence the mental processes of learners. Though experts are still working to describe how learning takes place through research, it has been

accepted by many in the field of education that factors that affect learning include age, personality and genetics, culture and environment, and social interaction (Falk & Dierking, 2000; Falk & Dierking., 2002; Hein, 2006; Twiss Houting et al., 2010).

Social interaction has been identified by theorists such as John Dewey, Jean Piaget, and Lev Vygotsky as playing an influential role in learning (Cole & Wertsch, 1996; Dewey, 1938; Hein, 1991; Vygotsky, 1978). Specifically Lev Vygotsky, a Russian psychologist, pinpointed the important role social interaction plays in the learning processes of children (1978). In his book *Mind in Society* (1978) Vygotsky calls to attention the point that learning for children is highly dependent upon the social interactions that children have with people in their environment. These interactions with other people aid in the mental development of young persons (Vygotsky, 1978). Through his research Vygotsky found that meaningful learning experiences occur within a child's "zone of proximal development." The zone of proximal development is defined by Vygotsky as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 33). Stated otherwise a child's mental development does not progress to the next level of development through the work he or she has already mastered because these concepts have already been internalized. Instead, children progress mentally when they are presented with unfamiliar and complex material, and through the social interaction that occurs with an adult (or a more capable peer), the child gains an understanding of the concept, internalizes the concept, and commits it to memory (Falk & Dierking, 2000).

Learning theories like Vygotsky's that are concerned with the social nature of learning are grouped under the paradigm of constructivism. Constructivism states that individuals construct their own knowledge (Hein, 1991). And social interaction is believed by constructivists to be an imperative part of knowledge construction (Rogoff, 1995). Personal creation of knowledge occurs as people interact

with others and make sense of the world around them. In his article “Constructivist Learning Theory” (1991) Hein outlines 9 principles of learning under a constructivist paradigm; one of his principles states that, “learning is a social activity,” while another states that, “learning is contextual.” In other words people make sense of the world around them through the social interactions they have with others. Furthermore, people make sense of the world through the connections they make between new learning content and their previous understandings of the world. These two principles of constructivism are key components of progressive education, a term used by John Dewey (1938) to describe current educational methods. Progressive education is often depicted opposite of traditional educational methods used before the late 19th century (Dewey, 1938). Traditional education separates the learner from social activity and disregards learners’ experiences and world views, while progressive education recognizes the importance of providing learners with valuable and personally relevant learning experiences (Dewey, 1938). Constructivism, underneath the umbrella of progressive education, acknowledges that the worldview of individuals and the exchange of ideas between individuals, which occurs through language, play significant roles in the processes of learning (Hein, 1991).

People learning in museums rely upon social interaction and their understanding of the world to make sense of the content displayed in exhibitions just as people in other learning environments rely upon the same set of factors. The main difference is that museums provide a unique learning environment—an environment with its own set of experiences and social interactions. Experiences and social interactions relevant to museum settings are described by John H. Falk and Lynn D. Dierking (2013) in *The Museum Experience Revisited*. Under their framework of The Contextual Model of Learning, three contexts overlap and influence the learning that happens in museums: the personal context, the physical context, and the sociocultural context (Falk & Dierking, 2013). The personal context is “embodied” in what Falk & Dierking refer to as the “personal agenda” (2013). A personal agenda includes qualities such as a person’s learning style, age, and his or her interest in the content of the

museum's collection (Falk & Dierking, 2013). The physical context includes the different ways that people arrive at a museum and their interaction with the structural and designed components of a museum such as their perception of the facility architecture, their ability to find their way through the museum, and their interaction with exhibit elements (Falk & Dierking, 2013). The sociocultural context relies upon aspects of culture and social activity (Falk & Dierking, 2013). Culture not only influences the actions of individual visitors, it also influences visitors' perceptions of the museum as an institution within society (Falk & Dierking, 2013). Likewise, Falk and Dierking highlight the fact that the museum experience is a very social experience as evidenced by the many people visiting the museum in groups (2013). Common groups visiting the museum include family groups, adult groups, special interest groups, and school groups (Falk & Dierking, 2013).

School groups attend museums with their own set of needs and their own group dynamics. Members of a school group typically include students, teachers, and staff or parent chaperones. Studies of school groups in museums have shown that social activity between school group members is desirable, and that social interaction plays an important role in learning that occurs on museum field trips (Osterman & Sheppard, 2010). For example, Falk & Dierking (1997) conducted a study that asked people to recall field trips to museums that they had participated in 15 to 20 years ago. Answers from participants in the study found that people could recall social aspects of the visit such as who their peer was on the bus drive to the museum and whether their parent was a chaperone for the field trip (Falk & Dierking, 1997). Likewise, a study conducted by Jane Griffin (2003) attempted to better understand the social aspects of learning taking place during museum field trips by considering conversations between students and adults in museum settings, listening to student and teacher ideas about learning, and defining the evolving and dynamic relationships between schools and museums.

Despite the knowledge resulting from these studies and many others, researchers are still working to share the results of their studies and come to a clear understanding of *how* social interaction

influences the learning processes of children in museum settings (Griffin, 2003; Falk & Dierking, 2013; Leinhardt et al., 2002). As Vygotsky states in *Mind in Society* (1978), “an important concern of psychological research is to show how external knowledge and abilities in children become internalized” (p.35). In other words, it is important that researchers conduct studies which attempt to explain how learning occurs in the brain. Social interactions present researchers with an opportunity to take a closer look at language-related-factors involved in the internalization (or mental processes) of newly learned concepts by children.

Consequently, this study intends to observe the specific ways that school group members socially interact with one another. Specifically, the way that adults introduce, clarify, and help students build upon their existing knowledge, in addition to the ways that students socially interact with one another while participating in guided program activities. The observations will shed light on the specific ways school groups members use language to construct knowledge in relevant or meaningful ways.

Likewise, this study aims to identify, describe, and categorize social interactions occurring amongst school group members participating in the *Colorado Time Travelers Program* at the History Colorado Center. Identifying, describing, and categorizing social interactions will result in a set of social behavioral codes. These codes can then be used to compare and contrast the social interactions occurring during the *Colorado Time Travelers Program*, thereby providing staff at the History Colorado Center with an instrument to evaluate the success of their school programs according to the social interactions occurring most or least often during program stations.

For the sake of clarification this study does not intend to measure learning. It only aims to identify, describe, and categorize the characteristics of school group social activity in museums. This is a crucial and necessary step to take before researchers can move toward understanding by what means social processes aid or result in the complex mental processes of learning.

CHAPTER 3

CONTEXT OF GUIDED PROGRAM

History Colorado Center, located in Denver, Colorado, is part of History Colorado, a 501(c)(3) organization and agency of the State of Colorado (History Colorado, 2015). History Colorado offers public access to 10 museums throughout the state, one of which is the History Colorado Center (History Colorado, 2014). Collectively, History Colorado museums and storage facilities house approximately 200,000 artifacts, 750,000 photographs, and 7,000 linear feet of textual and archival materials relating to the history of Colorado and its peoples (History Colorado, 2011). Their mission is to “inspire generations to find wonder and meaning in [Colorado’s past] and to engage in creating a better Colorado” (History Colorado, 2015).

The History Colorado Center opened as a new facility to the public in April 2012 after serving its visitors in the Colorado History Museum from 1976 to 2010 (Laurie, 2015; PRWeb, 2010; Stephen, 2012). According to History Colorado’s Annual Reports, the History Colorado Center welcomed 366,211 visitors to its new facility during the 2012-2013 and 2013-2014 fiscal years. 67,000 (18%) of those visitors were K-12 school children participating in educational programs at the History Colorado Center (History Colorado, 2013; History Colorado, 2014).

Educational staff at the History Colorado Center developed new educational materials and programs for K-12 students in congruence with the opening of the new museum facility. Educational programs and materials include outreach programs and artifact kits designed for use in classroom and school settings. Additional programs include guided tours of Denver and guided tours History Colorado Center’s exhibits. Guided tours of exhibits were developed to support K-12 curriculum standards while highlighting the special characteristics of History Colorado’s collection and History Colorado Center’s permanent exhibitions (History Colorado, 2015). Guided programs at the History Colorado Center

include *Early Learning* for pre-K students, *Colorado Water Quest* for grades 5-9, *Democratic Principles in Conflict* for grades 6-12, and *Colorado Time Travelers* for grades K-5 which is the focus of this study.

During *Colorado Time Travelers* students participate in guided program activities designed for History Colorado Center's permanent exhibits which include *Colorado Stories*, *Destination Colorado*, and *Living West*. *Colorado Stories* features interactive exhibits focused on the stories of eight community groups within Colorado (History Colorado Center, 2015). *Destination Colorado* depicts life as it existed in the 1920s farming town of Keota, Colorado and shows the important role that the Homestead Act played in the Eastern Plains of Colorado (History Colorado Center, 2015). *Living West* shows how the environment and geography of Colorado influenced the past, and how the environment and geography continue to influence life in Colorado today (History Colorado Center, 2015).

When students arrive at the museum they are assigned to a school program facilitator who guides them through the activities of *Colorado Time Travelers*. School program facilitators are trained volunteers, interns, and museum staff members. Their backgrounds range from staff members working part and full time at the museum, to retired school teachers, to individuals with a passion for history, to young adults and university students interested in museums and community organizations with programs for youth.

Colorado Time Travelers begins as students are introduced to their school program facilitator in the mezzanine of the museum. School program facilitators are assigned school groups of approximately 15-20 students. Each group also includes a teacher and oftentimes adult chaperones. During the 2 hour program students visit 4 out of 8 stations located in the exhibits of *Colorado Stories*, *Destination Colorado*, and *Living West*. Stations are pre-selected for school groups, and are coordinated by museum staff so that one school group is in a station at a time. Museum staff schedule the programs so that all student groups visit *Destination Colorado*, *Colorado Stories*, and *Living West* at least one time during their guided program. Groups spend 30 minutes at each station before moving to the next one.

The guided program begins as school program facilitators tell students that they will time travel to 4 different places and times in Colorado's history. Then students are told that there are a couple of important pieces of information they will need to know: the year that Colorado became a state and Colorado's main landscapes. After students know that Colorado became a state in 1876, and that Colorado has plains, mountains, and the Western slope, the program begins at one of the stations.

CHAPTER 4

GUIDED PROGRAM STATIONS

At the beginning of each station, school program facilitators introduce the name, date, and location of each station. Students are encouraged to think about whether the date of the station occurs before or after the year Colorado became a state. If a map is available the facilitator will point out the location of the station on the map and will ask students whether the location is in the plains, mountains, or Western Slope. The main activities of the station take place after the introduction. Each station concludes with a “wrap up” or review of the learning outcome (Station Outlines 1-9).

The paragraphs that follow will describe each station’s objects, exhibit interactives, learning objectives, and main activity. A vignette of the social interactions will also be provided for each station. Please refer to Appendix F for station outlines which list essential questions, skills and concepts, vocabulary, learning outcomes, introductory activities, main activities, and wrap of activities for each station.

Amache Station

Amache Station activities takes place in *Confined Citizens: The Amache-Granada Relocation Center, 1942–1945*, an exhibit located in *Colorado Stories*. This exhibit focuses on the internment of Japanese and Japanese Americans at the Amache-Granada Relocation Center in Granada, Colorado during World War II. The exhibit is a recreation of a single barrack room for an interned family of five. The barrack contains the meager furniture provided to a family upon their arrival at the internment camp. In addition to the furniture, the barrack also contains the personal items that each family member brought inside of the two suitcases each individual was allowed to bring.

There are two learning objectives for this station. The first learning objective states “students will discover why people were imprisoned at Amache” (Appendix F: Outline 1: Amache Station). The

second states “students will work with objects to discover an interned family’s experience” (Outline 1: Amache Station).

During the main activity students and the facilitator work together to unpack a suitcase filled with objects that interned family members would have brought to the barracks after the facilitator reads a story about Japanese internment. As students unpack the suitcase they match the objects with a luggage tag which acts as an identification card explaining why the object was important to the family members. After students identify each object in the suitcase, students are given five to ten minutes to explore the recreated barrack.

Amache Vignette

Facilitator: What do you all know about WWII? What happened during WWII?

Student: It’s about a war with Germany.

Student: During WWII there were concentration camps.

Facilitator: Very good both of those things are correct. This station is about WWII, and it’s about a specific group of people. It’s about Japanese Americans and people of Japanese ancestry. I’m going to read you all a story about Japanese Americans and WWII. *Chaperone begins to read book.*

Student: *When chaperone gets to the section of the book about the president ordering Japanese people to move to internment camps (Outline 1: Amache Station) a student asks:* Are internment camps the same as concentrations camps?

Facilitator: *The facilitator explains the difference, and then continues to read from the book. When the facilitator gets to the book section about leaving things behind (Outline 1: Amache Station), the facilitator asks,* What would you bring in your suitcase?

Student: My pet.

Facilitator: I’d want to bring my pet too, but they weren’t allowed to bring any pets.

Student: Pictures.

Student: iPad

Facilitator: iPads weren't around in the 1940s. What do you think kids from the 40s would bring?

Student: Toys.

Student: Why didn't they bring bigger suitcases?

Facilitator: *Pointing to the suitcases by the exhibit door, This was the standard size for suitcases at the time. They didn't make them any bigger. Next, the facilitator explains the rules for the next activity: unpacking the suitcase. Pairs of students are given one luggage identification card each. The teacher is observed reading the description on one of the cards to a pair of students. After students match their identification card to an object in the suitcase, each set of partners shares their item and reads their identification card to the group. The facilitator elaborates on suitcase objects when the item is unfamiliar to students.*

Facilitator: Does anyone know what a latrine is? A latrine is like an outhouse. The little boy didn't like to go to the bathroom or outhouse alone at night. So at night he would use the restroom in the coffee can. Now that we've finished identifying each object we are going to explore the internment barrack. *In the barrack the facilitator points out different items around the room.*

Student: *to another student, Look a pair of chopsticks.*

Facilitator: Do you know how to use chopsticks? *Students shake their head no. After students explore the barrack, the facilitator ends the station by asking students what makes the barrack feel like a home and what makes it feel like a prison.*

Bent's Fort Station

Bent's Fort Station activities take place in *Convergence: Bent's Fort, 1833–1849*, an exhibit located in *Colorado Stories*. This exhibit focuses on trading that took place between many different groups of people while they visited Bent's Fort, located on the Santa Fe Trail. The exhibit is a recreation

of an individual trading room. It contains examples of the goods that would have been traded at Bent's Fort such as buffalo hide, cotton fabric, and Native American beadwork.

There are three learning objectives for this station. The first learning objective states "students will learn the difference between goods and services" (Appendix F: Outline 2: Bent's Fort Station). The second states "students will play a trade game to learn what goods and services were traded at the fort" (Outline 2: Bent's Fort Station). The third objective states "students will discover some of the groups of people that traded at fort" (Outline 2: Bent's Fort Station).

The students are divided into six groups that represent some of the people that would have traded at Bent's Fort: Trappers, Ute Indians, Cheyenne and Arapahoe Indians, Military, New Mexican Traders, and St. Louis Traders. After students are assigned to a group, each group is given a set of cards. Each card has a photo on it of a good brought by each group to trade at Bent's Fort. After students have a chance to see what items they brought to trade, the students look at a separate card that lists the goods they *want* and *need* in return for the items they brought to trade. Students are told that items that they need are worth three points. Items that they want are worth two points, and items that their group brings to the fort to trade are worth one point. At the end of the game students tally their points. Groups with the most points will be "expert traders," students with a medium amount of points will be "skilled traders," and students with the least points will be "novice traders." Students then participate in the main activity.

Bent's Fort Vignette

Facilitator: Who's been to Bent's Fort? What was it?

Student: Bent's Fort was a trading post.

Facilitator: That's right. Bent's Fort was for trading. There were six groups that came to trade here: Trappers, Ute Indians, the Cheyenne and Arapahoe, New Mexico Traders, St. Louis Traders, and the Military. What did they trade? *Pulls out beaver pelt.* Who would bring these to trade?

Students: Mountain men.

Facilitator: Yes, the trappers. *Pulls out moccasins.* What about these?

Students: The Indians.

Facilitators: Yes, the Ute Indians are very well known for their beadwork. *Facilitator continues to pull out objects and discuss what groups would bring the items to trade until all of the objects have been identified.*

Student: *After identifying the tea brick,* Can you make tea from it? Do they still make tea like this?

Chaperone: Yes, they still make tea like this. Two things were traded at Bent's Fort: goods and services. What are goods?

Student: Something that's delicious.

Facilitator: Sometimes. Goods can be delicious. Goods are things or objects that people want or like. And services are jobs. *Facilitator explains that students will play a trading game and explains the rules for the game (Outline 2: Bent's Fort Station). Students get divided into groups.*

Teacher: *To student,* Come get in this group.

Then the trading game begins. Students show signs of confusion on their face. One group turns to the teacher and asks what do they do?

Teacher: Look at your cards. These are the items you need. *Teacher reads each item.* So go to another group and see what they have to trade.

Chaperone: *To another group,* You need these things.

Teacher: *To another group,* This is what you guys need (*pointing*). Make sure you get those.

Students: Now we get it.

Student: We need corn meal.

Student: Do you have wool blankets?

Chaperone: *To a group of students,* Don't trade something unless you get something in return.

Teacher: *To a group of students,* You all have furs. What do they have that you can trade furs for?

Student: *To group,* Let's come over here. So we need an ax.

Student: We need ammm-i-nit-

Student: Ammunition.

Students continue to trade for the rest of the time. Adults continue to assist students.

Facilitator: *After students finish trading,* Did anyone get all of their items?

Student: We traded moccasins for the knife and furs for the flint and steel.

Facilitator: Did you all learn anything?

Students: You have to have a reason for people to trade with you.

Facilitator collects cards and reviews station activities with students.

Facilitator: Where is Bent's Fort located?

Student: The plains.

Facilitator: When did people trade at Bent's Fort?

Student: 1830s and 40s.

Keota Station

Keota Station activities take place in *Destination Colorado*. This exhibit focuses on the daily lives of people living in the farming town of Keota in the 1920s. The exhibit features the buildings that would have existed in a small town like Keota such as a railroad depot, a general store, a school house, a homestead house, and a barn. Visitors learn about the stories of actual people that lived in Keota during the 1920s through actors projected on screens throughout the exhibit. Interactive exhibit components such as a life sized cow in the barn that can be milked, and a Model-T Ford that simulates driving, facilitate understanding of daily duties centered around farming in Keota, Colorado.

There are three learning objectives for this station. The first learning objective states "students will discover why people migrated to Colorado and Keota" (Appendix F: Outline 3: Keota Station). The

second states “students will compare and contrast life in the 1920s to life today” (Outline 3: Keota Station). The third objective states “students will understand the physical characteristics of and human features of the Eastern Plains” (Outline 3: Keota Station).

In the main activity students complete the same daily duties or “chores” of people living in 1920s Keota. To help students with the station’s task, students are given “scavenger hunt” cards. On one side of the scavenger hunt card is the name of a real person that lived in 1920s Keota. The same side also depicts a photo of an actor portraying the historical figure named on the card. On the opposite side of the card is a list of five or six chores that must be completed by students in the railroad depot, general store, school house, homestead house, Model-T Ford, or barn.

Keota Vignette

Facilitator asks students to sit on floor in front of a map of Colorado

Facilitator: What city is your school in?

Students: Thornton.

Facilitator: Well then, your school is up here (*points to Thornton on the map*). And we’re here in Denver (*points to Denver on map*). The first station we’re going to time travel to is Keota (*points to Keota*).

What’s it like out there?

Student: Flat. It’s the plains.

Facilitator: That’s right. People moved to Keota in the 1920s because of the Homestead Act. *As students sit at the feet of the facilitator, the facilitator explains the significance of the Homestead Act.* So people came to Keota to farm. Crops need about two feet of water per year to grow. This is about two feet. Everyone show about 2 feet with your hands. *Students model the distance of two feet with their hands.* But Keota gets about one foot of water in a year. Let’s show one foot with our hands. *Students model one foot.* So, the people of Keota farmed for a little while, but life was hard, and eventually people in Keota left because it was so hard to farm. Today Keota is a ghost town. What is ghost town?

Student: A town that is empty.

Facilitator: That's right it's an abandoned town. *Facilitator then explains the station's main activity (Outline 3: Keota Station). Once students are in the exhibit a group of students are observed in the school house. They are taking pictures at two 1920s style desks that have been altered with a camera and computer screen. Students take pictures at the desk and their faces appear on a projector screen in front of the desks. The interface on the screen is designed to look like the page of a yearbook. Students' faces appear inside of 1920s style face frames that are categorized by superlatives such as most athletic.*

Student: *Reads directions for taking picture aloud, then she takes a picture. I'm the best dancer! Look!*
Turns to friend, What do you want to look like?

Student: Should I choose this one? *(points to a face frame)*

Student: Yeah, you should choose this one.

At the back of the school house a chaperone and student walk through the school house.

Chaperone: Do you notice the items in the display case? *The student doesn't respond, but walks toward the desks instead.*

In the general store a group of three students get store credit for the eggs they collected from the barn.

Student 1: Where do you put the eggs?

Student 2: You put them here *(points to egg carton).*

Student 3: How many eggs do you have?

Student 1: Twelve eggs.

Student 2: You get twelve cents. What would you like?

Student 1: I'll buy some gum.

Two students drive in the Model-T-Ford.

Student 4: Dude there's water! Emma look it spits water at you!

Students then meet outside of the Keota exhibit to review activities.

Facilitator: Did you have fun in Keota?

Students: Yes!

Facilitator: What things have changed since the 1920s?

Student: Stores today are bigger.

Student: Things cost less.

Student: The stove.

Facilitator: How was the stove different?

Student: The coals.

Facilitator: Yes, the coals were used to heat the stove. What things were similar?

Student: The car.

Students continue to list things that exist today that are similar to the 1920s. Then the facilitator ends the station.

Facilitator: Next we're going to the Dust Bowl station which has a lot of similarities to Keota. Everyone line up behind me.

Our Mountains Station

Our Mountains Station activities take place in *Living West*. This exhibit focuses on the current environment of the mountains. It illustrates the relationship that exists between the climate and the people, animals, and plants in the Rocky Mountains. The exhibit features taxadermied mountain animals (an elk and pika), a short video called *Denver to Breckenridge* about the history and importance of mountain towns along Interstate 70, and another video about mountain fires. There is also an interactive exhibit about mountain trees and the pine beetle epidemic. An exhibit beside the mountain tree exhibit includes a set of two tubes which depict the relationship between snow fall and snow melt. A recreated ski lodge contains an interactive trivia game about the mountains, along with an interactive

exhibit that allows visitors to vote on the best way to transport visitors to the mountains, and an additional exhibit that demonstrates the effects of carbon emissions.

There are two learning objectives for this station. The first learning objective states “students will explore the *Our Mountains* exhibit to understand how people living in and visiting the mountains use natural resources” (Appendix F: Outline 4: Our Mountains Station). The second states “students will compare and contrast use of resources in different regions and times” (Outline 4: Our Mountains Station).

Students are given individual natural resource cards. On one side of the card is a picture of one natural resource, e.g. water, plants, animals, or rocks and minerals. The other side of the card includes instructions for where to find the natural resource in *Our Mountains* and a question about how that natural resource is used. Students oftentimes work in pairs to find the natural resources and answer the questions. When they complete one card they are instructed to return the card to the school program facilitator and receive another card.

Our Mountains Vignette

Facilitator: We’re in the mountains station. While we’re here we want to think about how things have changed. People living in the mountains have always relied up natural resources. The Native Americans relied on them, and we rely on them too. What are natural resources?

Student: They’re things we can’t live without.

Facilitator: Good. How else can we describe natural resources?

Student: Natural resources are air, water, soil, the sun.

Facilitator: Very good. Those are all natural resources, and we’re going to focus on four natural resources in particular in this station: water, plants, animals, and rocks and minerals. But before we do we’re going to watch this video (*points to Denver to Breckenridge video screen behind her*).

Students watch video and point to the mountain illustration on the wall that follows the story of the video. After video ends, the facilitator reminds students about natural resources.

Facilitator: Each of these towns uses natural resources. The people in the town rely upon natural resources. Now we're going to participate in our activity. *Facilitator explains activity instructions (Outline 4: Our Mountains). Students find a partner and complete directions on resource card. Two students work together to complete directions at an exhibit of a taxadermied elk.*

Student 1: *Reads first page of elk book in front of the display aloud to her partner.*

Student 2: *Reads second page of book aloud to her partner. The partners take turns reading the individual pages of the book.*

Another pair of students take turns reading aloud from the book in front of the taxadermied pika display. A separate pair of students read the directions on their card, but they get distracted by the exhibit that shows the relationship between snow pack and snow melt. They walk over to the exhibit, and one student turns the handle on the exhibit that increases the amount of snow in the first tube. As the student continues to rotate the handle, the second tube gradually fills up with water. The boys then let go of the handle and return their attention to their resource card. The facilitator then called the group together to review the station.

Facilitator: What did we learn about our mountain environment today?

Student: Wildfires can burn down trees.

Facilitator: That's right.

Student: There are a lot of bugs.

Facilitator: Yes, and those pine beetles lay their eggs in the tree which destroys the trees, and leaves a lot of dead trees laying around. Hot weather can lead to fires, and these dead trees can make the fires spread. *The facilitator continues to accept four more answers from students and expounds upon each student answer as she did with the first two answers. The facilitator then ends the station.*

Facilitator: I need a volunteer who can remember the year 2014 and *Our Mountains Station*. *Student raises hand and facilitator selects him to remember the name of the station and the year.*

Mesa Verde Station

Mesa Verde Station activities take place in *Living West*. This exhibit focuses on Ancestral Puebloans living in the Mesa Verde region over 800 years ago. It illustrates the relationship that existed between Ancestral Puebloans and their environment in the Southwestern region of Colorado. The exhibit features a diorama of an Ancestral Pueblo cliff dwelling, and a display case of Ancestral Pueblo pottery. Other exhibits explain how archaeologists date and study Ancestral Pueblo culture. Other exhibit spaces contain short videos about Ancestral Puebloan pottery making processes. One display contains a water pump that allows visitors to see how much water they use in a day by following survey-like questions in a flipbook attached to the interactive piece. A table is set up with twine and an instructional video. Visitors can follow the video to make a piece of cordage using the same technique used by the Ancestral Puebloans. And display cases of materials show visitors the natural materials used by Ancestral Puebloans to make pottery, basketry, and stone tools.

There are two learning objectives for this station. The first learning objective states “students will explore the *Mesa Verde* exhibit to explore how Ancestral Pueblo people used natural resources to meet basic needs” (Appendix F: Outline 5: Mesa Verde Station). The second states “students will compare and contrast use of resources in different regions and times” (Outline 5: Mesa Verde Station).

Students use similar natural resource cards in Mesa Verde Station that were used in *Our Mountains*. On one side of the card is a picture of one natural resource, e.g. water, plants, animals, or rocks and minerals. The other side of the card includes instructions for where to find the natural resource in Mesa Verde and a question about how that natural resource was used by Ancestral Puebloans. When students complete one card they are instructed to return the card to the school program facilitator and receive another card.

Mesa Verde Vignette

Facilitator: The next station we're going to time travel to is Mesa Verde. Has anyone been to Mesa Verde before, or has anyone learned anything about the Ancestral Puebloans that lived here?

Student: The Ancestral Puebloans grew crops and lived in cliff dwellings.

Facilitator: Correct. Some of the crops they grew included corn, beans, and squash. *Facilitator then pulls out a map of Colorado.* The Ancestral Puebloans lived here (*points to Southwestern corner of Colorado*). Sometimes people refer to the Ancestral Puebloans as the Anasazi, but the word Anasazi means ancient enemy in Navajo, so out of respect to Pueblo people living today we call them the Ancestral Puebloans. The Ancestral Puebloans lived about 800 years ago in the 1200s. In this station we're going to think about the ways the Ancestral Puebloans used natural resources. We're going to focus on four natural resources: plants, animals, water, and rocks and minerals. *The facilitator then explains the directions for the station (Outline 5: Mesa Verde Station).* *Students begin the station activity. One student is observed reading his natural resources card that directs him and his partner to find the door to the Ancestral Pueblo house. His partner is interested in the water pump display.*

Student: Come over here. We're supposed to find the door. *The student leaves the water pump and helps his partner find the door to the house. At the cordage table a chaperone reads the label directions to two students.*

Chaperone: It looks like fun!

Student 1: It is fun!

Chaperone: You see you just roll it back and forth. If you let go of the end it will twist. See. There you go.

Student 1: Art is fun.

Chaperone: *To second student,* You did nice! Good job!

A pair of students are observed reading their resource card aloud in front of a display case of Ancestral Pueblo Crops.

Student 1: What types of food did Ancestral Pueblos grow?

Student 2: Corn, beans, and squash.

Student 1: Ok, let's go get another card.

Another group of students complete their card's directions in front of a weighted water pot that simulates the weight of a pot filled with water.

Student 1: Can you lift the pot?

Student 2: *Lifts pot.* Look at how heavy it is.

Student 1: *Lifts pot, then reads label behind pot aloud.*

The facilitator then calls the group back together to discuss findings.

Facilitator: What was the main animal that the Ancestral Pueblos used?

Student: Turkey.

Facilitator: That's right. Sometimes they ate the turkeys, but they also used the feathers to make things like blankets and clothes. How much water did the average Ancestral Pueblos use in a day? *No students raise their hands to answer.* They used about 2.5 gallons every day. Do you know how much water you use in a shower? *Students shake their heads no.* About 25 gallons.

A chaperone observes two students talking while the facilitator talks.

Chaperone: Pay attention. She's talking.

Facilitator: Does anyone have questions or things they wanted to share?

Student: I made a rope.

Facilitator: Nice job.

Facilitator ends station by telling students the next station they will go to.

Dust Bowl Station

Dust Bowl Station activities take place in *Living West*. This exhibit focuses on the events that caused the Dust Bowl in 1930s Baca County Colorado, a county on the Eastern Plains of Colorado with a

strong agricultural economy. The exhibit uses 1930s video footage, and displays 1930s farming tools to illustrate farming techniques used in 1930s Baca County to till the land and plant wheat and corn. The *Black Sunday Theater Show* recreates the experience of being in one of the worst dust storms of the time. The theater show takes place inside a recreated 1930s homestead house. An interactive water table exhibit shows the delicate relationship that exists between water sources, water companies, towns, and farms.

There are two learning objectives for this station. The first learning objective states “students will explore the Dust Bowl exhibit to explore how homesteaders used natural resources to meet basic needs, and what happened when they impacted the environment” (Appendix F: Outline 6: Dust Bowl Station). The second states “students will compare and contrast use of resources in different regions and times” (Outline 6: Dust Bowl Station).

Students watch the *Black Sunday Theater Show* inside of a recreated farm house. The theater show helps students to safely experience a dust storm by using audio and visual technology to recreate sounds and sights that people living in 1930s Baca County would have experienced as they weathered a dust storm inside of their farm house. If there is time after the *Black Sunday Theater Show*, students use natural resource cards like they do in *Our Mountains and Mesa Verde* to look for natural resources in *Dust Bowl*.

Dust Bowl Vignette

Facilitator: We’re in 1930s in Baca County. Does anyone know what happened? *No students raise their hand.* In the 1930s the Dust Bowl happened. There was almost no rain. There was a drought. Do you all know what that is?

Student: When there’s no rain for a long time.

Facilitator: That’s right. It got really windy, and these wind storms happened over and over again. This building behind me is a homestead house-- a house that farmers would have lived in Baca County in the

1930s. There was one Sunday in particular where the dust storm got really bad. This Sunday has become known as Black Sunday. This dust storm along with the others that happened ruined the farmers' crops and livestock. *The children listened intently. They kept their attention on the facilitator.* The Dust Bowl ruined natural resources. What are natural resources?

Student: Something real.

Facilitator: Yes, they are real. Natural resources are things that come from nature. Water is one. Can you all think of others?

Student: Crops.

Facilitator: Yes, plants. What else?

Student: Dirt.

Facilitator: Yes, rocks and minerals. *Facilitator waits for another student to raise their hand.* There's one more. *Facilitator gives hint.* Moooooo.

Student: Cow.

Student: Animals.

Facilitator: Great! We're going to go into this house, and I want you all to look for natural resources. Look for things that are made out of natural resources. *Students enter house and watch the Black Sunday Theater Show. After show is over, a student exclaims to one of her friends.*

Student: That was fun! *The facilitator gathers students on the floor to review the Black Sunday Theater Show.*

Facilitator: Who can tell me what natural resources they saw?

Student: I saw a tree outside of the window.

Student: The animals-- they were dying.

Student: The rocks and the dust.

Facilitator: Yes, dust was a big part of the Dust Bowl. Does anyone know who that guy was on the wall?

The guy in the picture?

Student: President Roosevelt.

Facilitator: Which one?

Student: Franklin.

Facilitator: That's right. He worked really hard to help people get through the Dust Bowl. At this time there was also the Great Depression. One thing Franklin did was help people be better farmers. Farmer's practices changed a lot after the Dust Bowl.

Student: How did they make the Dust Bowl stop?

Facilitator: They had to wait until things got better-- about six to seven years. Alright that's our last station. Let's do our timeline activity to wrap things up.

San Luis Station

San Luis Station activities take place in *Colorado Stories*. This station focuses on the culture of the people that have lived in San Luis, Colorado's oldest town, since the 1850s. The station does not have a corresponding exhibit like the other stations in *Colorado Stories*, *Living West*, and *Destination Colorado*. Instead, this station is set up in an open space area in *Colorado Stories*. Station activities take place around a large map of San Luis that lays on the floor. The map contains illustrations of major buildings in the San Luis region. The buildings have a mixture of Spanish and English labels to identify the structures. The map also includes illustrations of important bodies of water and livestock which are a part of the way of life in the San Luis Valley.

There are three learning objectives for this station. The first learning objective states "students will play a version of the Spanish Bingo game *La Loteria*" (Appendix F: Outline 7: San Luis Station). The second states "students will explore objects that early Hispanic settlers used in daily life" (Outline 7: San

Luis Station). The third states “students will find connections to the early settlers in their own experience” (Outline 7: San Luis Station).

For the main station activity students are given bingo or *La Loteria* cards with photos of artifacts. The artifacts relate to the culture and people of San Luis. The school program facilitator pulls the artifacts from a cart one at a time. As the school program facilitator pulls the items out of the cart, he or she explains the item’s importance to the people of San Luis, and places it on the map near a building or region that seems relevant. The students look for the item on their bingo card, and if they have the item on their card they cover it. When a student covers all of the photos on his or her card the student says, “bingo” or, “loteria.”

San Luis Vignette

Facilitator: We have landed in the 1850s in San Luis. I wish we had a map, but we don’t have one at this station. Imagine the state of Colorado in your head. San Luis is in the central southern part of Colorado. People in San Luis came from New Mexico. They were Hispanic which means they spoke Spanish. San Luis became a town before Colorado became a state. This is map of San Luis that you all are sitting around. Have any of you ever made a map? *Students shake their heads yes. The facilitator then tells students the cardinal directions of the map.* What differences do you notice about the two different water sources?

Student: One is curvy and one is straight.

Facilitator: Good. The curvy one is called Culebra Creek. The straight one is called the San Luis People’s Ditch. Do you think the ditch was made by nature?

Student: No.

Facilitator: That’s right. The Culebra Creek is made by nature because it’s curvy. *The facilitator then points to each building on the map and explains what each building was used for* (Outline 7: San Luis Station). What does una casa mean?

Student: A house.

Facilitator: Does anyone know what a hornos is? *No students raise their hand.* A hornos is an adobe brick oven. *Facilitator explains the directions for the main activity (Outline 7: San Luis Station). Then the facilitator reads the clues on the card and has students raise their hand if the students thought they knew the object that matched the card clue. The facilitator gave more information about the object after students guessed the name of the object. An example is provide below.*

Facilitator: I'm a holy object made of wood. You might see me on top of a church in San Luis. What object am I?

Student: Wooden Cross.

Facilitator: Yes. This cross is a religious symbol. Religion was, and still is, very important to the community of San Luis. Many people there are Catholic. *The facilitator reviewed the station after identifying each of the 18 objects.*

Facilitator: Who can remind me what time we're in?

Student: 1850s.

Facilitator: And when and where did we travel to before this station?

Student: Bent's Fort in the 1830s.

Facilitator: We're going to travel to Keota next.

Silverton Station

Silverton Station activities take place in *Top of the World: A Silverton Silver Mine*, around 1880, an exhibit in *Colorado Stories*. This station focuses on the daily and dangerous duties of hard rock miners. The exhibit facilitates understanding of the skills miners needed to complete the tasks of mucking (shoveling ore), drilling, and blasting. The exhibit includes an elevator like contraption, called the cage, which simulates what it would have been like for miners to descend down in the mines. There is also a mine shaft with a life-sized mule that depicts the hard life of mine. A video depicts how miners

used manual tools to drill holes for dynamite before automatic drills were invented, and a final mine shaft provides visitors with an interactive exhibit that shows how miners set off dynamite in a controlled pattern.

There are three learning objectives for this station. The first learning objective states “students will discover the skills required to mine” (Appendix F: Outline 8: Silverton Station). The second states “students will work together to complete mining tasks” (Outline 8: Silverton Station). The third states “students will understand the role communication and cooperation played in mining” (Outline 8: Silverton Station).

During the station students muck, drill, and blast rock in the mine. First, students take turn mucking- lifting blasted ore from the previous work day into mine carts. After students muck they feed Daisy, the mine mule that takes ore carts to the top of the mine. Then students work in pairs to drill holes in the wall for dynamite. They use a faux drill and hammer to simulate the activity of manually drilling a hole in the mine’s wall. For the final activity students work in groups and use a computer simulated activity to set dynamite off in a controlled pattern which must be done so that miners stay safe.

Silverton Vignette

Facilitator: We’re in Sunnyside Mine. We’re in the 1880s. There’s three things you all are going to learn to do here today. Everyone repeat after me: mucking, drilling, and blasting. *Students repeat each word.* Who can say all three?

Student: Mucking, drilling, and blasting.

Facilitator: Whose teacher took attendance this morning? *Some students raise their hand.* Well, just like your teachers, the miners had a way to take attendance when they got to the mine. Each miner was assigned a brass tag and a number. When miners got to the mine they put their brass tag up on the

board underneath their assigned number. When they went home they took their tag down. So is miner 46 in the mine or at home.

Student: The mine.

Facilitator: What about miner 34?

Student: Home.

Facilitator: Hard rock mining was a very dangerous job. So it was very important for miners to remember to put their brass tag up on the board when they got to work and remove it once they left. This way if something bad happened down in the mine, the people up at the top would know you were in the mine and that you needed to be rescued. Before we go in to the mine let's talk about this (*points at lunchbox*). Miners were from England and Wales, and they brought their lunch to work every day. Let's go through the lunch box to see what a miner packed. *The facilitator goes through each level of lunch box and explains the food inside of it.* So you all are miners and it's very dangerous so you have to be sure to listen. Who remembers the first thing we're going to do?

Student: Mucking.

The facilitator explains how miners entered the mine through the cage and that it took 30 minutes to reach the bottom of some mines. After students exit cage they watch the video about mining.

Facilitator: So this is how you muck (*models lifting shovel*). After you muck you need to feed Daisy the mine mule. Remember the pasty miners brought in the lunch? They would feed the crust to the mule. *Students take turn mucking and feeding Daisy. One student makes a comment to their teacher.*

Student: Mrs. M, I would rather do this then go to school.

Facilitator: Who remembers what we are going to do next?

Student: Drilling. *Students enter the drilling section of the exhibit, and watch a short video about using a manual drill.*

Facilitator: Everyone find a partner. We're going to do double jacking. *Facilitator models the activity of double jacking, and she shows students how to signal to stop.* Miners had to use hand signals to communicate because it was loud in the mine. You had to pay attention to the signals otherwise you could hurt your drilling partner. *Students work with a partner to practice double jacking.*

Teacher: Signal your partner to stop. Remember you have to turn the drill.

Chaperone: No, you don't turn the hammer. The drill gets turned.

Student: *To peer,* This mine is scary because of the sounds and the ghosts. *After students finish drilling they enter the blasting room. The facilitator plays the mining video.*

Facilitator: We're going to do the hard level of blasting because you all are so well behaved. Find a partner and make a line. *Students find a partner and line up.* I'm going to give each pair of you a number. You and your partner must remember your number, and push the dynamite sticks in the wall together. The dynamite has to be set off in order so remember your place in line. *The facilitator gives each pair of students a number then has the students circle through to see their number and practice. While in line a student read a line of a label aloud, and other students discuss their numbers and matching dynamite sticks.*

Student: *To another pair of students,* Those twos are ours.

Facilitator: *To the same pair of students,* You have to remember your number and which dynamite are yours.

After the practice round, students circle through the line and set off their dynamite. After everyone pushed in their dynamite sticks the students count 3,2,1 before setting off dynamite. The students cheer when the video explains that they set the dynamite off in a controlled and successful pattern. The facilitator then gathers students at the mine's exit.

Teacher: Pay attention fourth grade! *Students quiet down.*

Facilitator: What did you learn?

Student: Mucking is heavy.

Student: It's scary.

Student: You have to do it correctly.

Student: You have to have good partnership.

Facilitator: When are we?

Student: 1880s.

Facilitator: Before that where were we?

Student: 1920s.

Facilitator: Now we're going to the 1830s. Follow me.

Timeline Activity

The Timeline Activity takes place at the end of the two hour program. It is completed in the last station of the guided program. As the final activity it acts as a review and summary of the 4 stations that were visited in addition to the year that Colorado became a state. The facilitator shows students posters that contain the pictures and dates of the four stations they visited in addition to a poster that states the year that Colorado became a state. Volunteering students are selected from the group to hold one poster each, and with the help of the facilitator and the rest of the school group, the students with the posters arrange themselves in a timeline in the order that the events on the posters happened.

There are three learning objectives for this station. The first learning objective states "students will sequence the four stations that they visited" (Outline 9: Timeline). The second states "students will understand the order of key historical eras in Colorado history" (Outline 9: Timeline). The third states "students will summarize the main learning outcome of the four stations" (Outline 9: Timeline).

Timeline Vignette

Facilitator: Alright let's do the timeline activity. I need 5 volunteers. We're going to make a living timeline. *Facilitator passes each student a laminated sheet with the names and dates of the four stations*

they visited and the year Colorado became a state. Alright now you all have to get in order from the earliest year to the latest.

Student: I have 1880s.

Student: I have 1830s.

Facilitator: So which came first 1830s or 1880s. *Students put themselves in order with assistance from the facilitator. Then the facilitator reviews each laminated sheet and station.* The first thing that happened was Bent's Fort. Why did people go to Bent's Fort?

Student: To trade.

Facilitator: Next, Colorado became a state. Why are we the Centennial state?

Student: Because we became a state 100 years after the United States became a country. *Students were able to answer the facilitator's questions about each station. At the end the facilitator asked students which station was their favorite. One student said Dust Bowl, another said Keota, and others said they liked all of the stations.*

The guided program ends after the Timeline Activity. Students, teachers, and chaperones are thanked for participating, and are encouraged to come back to the History Colorado Center at a later date.

CHAPTER 5

METHODS

Results for this study were obtained using observational methods. Observations of school groups took place on Mondays and Fridays between November 17, 2014 and December 19, 2014. The researcher observed school groups for a total of nine days. Approximately 1,776 students were observed, the majority of whom were 4th graders (others were 3rd graders).

The researcher rotated between activity stations every fifteen to twenty minutes, but on three occasions she stayed longer to observe unique instances of social behavior, such as a class group whose teacher made multiple attempts to ask his students questions about station activities and help his students make personal connections. As mentioned under *Context of the Guided Program*, each station activity takes thirty minutes to complete.

Nine questions were developed by the researcher to guide and focus observations. Diamond, Luke, and Uttal (2009) state that during observations, observers must ensure that they are documenting behaviors that are identifiable and obvious. Therefore, guiding questions were developed to ensure that the researcher focused on observable social interactions of school group participants as opposed to non-observable social behavior such as inferences relating to the thoughts of participants.

Development of guiding questions were influenced by concepts and theories mentioned in the *Conceptual Framework* in addition to the experiences of the researcher who had been a school program facilitator for the History Colorado Center the previous semester before she conducted the study. Goals that educational staff at the History Colorado Center had developed for school group guided programs also influenced the development of guiding questions.

Observation Guiding Questions

Question 1: What types of social techniques do facilitators use to help students understand the content and context of stations and how do they do it? For example, do facilitators ask questions, do they encourage students make personal connections, do they use narrative techniques, etc.?

This question was developed with *the zone of proximal development* in mind. According to Vygotsky (1978) a child's potential for learning is increased when an adult works with the child to help further his or her understanding of new or complex material. This question was an attempt to focus observations on the social techniques that facilitators use to help students understand and gain meaning from the activities of each station.

Question 2: What types of questions do facilitators ask to students during the program? Can these questions be categorized according to type? For example, do chaperones ask fact based questions, clarifying questions, comparison questions, open ended questions, etc.?

This question was influenced by readings that highlight the importance of personal construction of meaning (Falk & Dierking, 2013; Hein, 1991) and readings about learning and development amongst children (Cole & Wertsch, 1996; Vygotsky, 1978). By identifying and categorizing the questions facilitators ask to students, the researcher hoped to determine if these questions foster personal interest and curiosity amongst students and if the questions help students to understand the context of the topic of each station.

Question 3: What types of questions do chaperones and teachers ask to students during the program? Are these questions different from the questions facilitators ask? Can these questions be categorized?

This question was influenced by the researcher's personal experience as a school program facilitator intern. During the internship, it appeared to the researcher that teachers and parents would rarely pose questions to students about the activities at each station. However, the researcher noted that this might be because her focus at the time was on the students and not the adults in the school

group. This prompted the researcher to inquire about questions that teachers and chaperones may or may not ask and compare them to the types of questions the facilitator asks.

Question 4: How do chaperones and teachers socially interact with students during the program? Are chaperones and teachers socially engaged during the program? What role, if any, do the teachers and chaperones take on? For instance do they take on the role of a facilitator or an experimenter, or do they take on more of a passive role?

Similar to question three, question four was sparked by the experience of the researcher in other museum environments. Teachers and chaperones play a role in school group guided programs, but are often overlooked in research regarding social interaction in museum education programs. Therefore, the researcher wanted to include these often overlooked social actors to determine whether, and how, they might aid in creating *the zone of proximal development*.

Question 5: What are the repeated social activities that occur between students at each station? What do the students say to each other? What questions do they ask?

This question was developed to focus on the social interaction occurring between students and their peers. Specifically, the researcher wanted to see if students help each other to understand station content, and observe different ways that students help one another.

Question 6: Do students make personal connections to station stories on their own without the help of adults? For example, as students participate in station activities do they talk to their peers about how the activities are relevant to themselves?

This question was developed for two reasons. First, it was developed in relation to a meeting held with educational staff at the History Colorado Center. Staff members stated that overall they would like students to be able to relate their personal stories to those told at each station or exhibit. Secondly, this question was developed with Falk and Dierking's *The Museum Experienced Revisited* in mind. Falk

and Dierking (2013) state that an individual's personal background, interests, and knowledge are influential in the museum experience of visitors.

Question 7: Do students verbalize that they had a good time and want to come back to the History Colorado Center? For example, do they state that they would like to come back or that they had a fun time?

Related to question six, this question was developed after educational staff stated that they would also like students to have a good time and state that they would like to come back to the museum with their family.

Question 8: What does the social interaction look like in each station?

This question was developed by the researcher to provide educational staff at the History Colorado Center with valuable information about the similarities and differences of social interaction occurring at each station.

Question 9: Are there social behaviors that can be identified and coded? If so what are these social behaviors and what do the codes mean?

This question was influenced by research conducted by Judy Diamond (1980; 1982; 1986) involving the observation of family groups in science museums. During her observations Diamond developed codes for the social behaviors family members had with one another which allowed her to document complete records of family members' social interactions in a museum setting (Diamond, Luke, & Uttal, 2009). The researcher will provide a list of coded social behaviors for the *Colorado Time Travelers Program* for use by educational staff during future observations of school groups at the History Colorado Center.

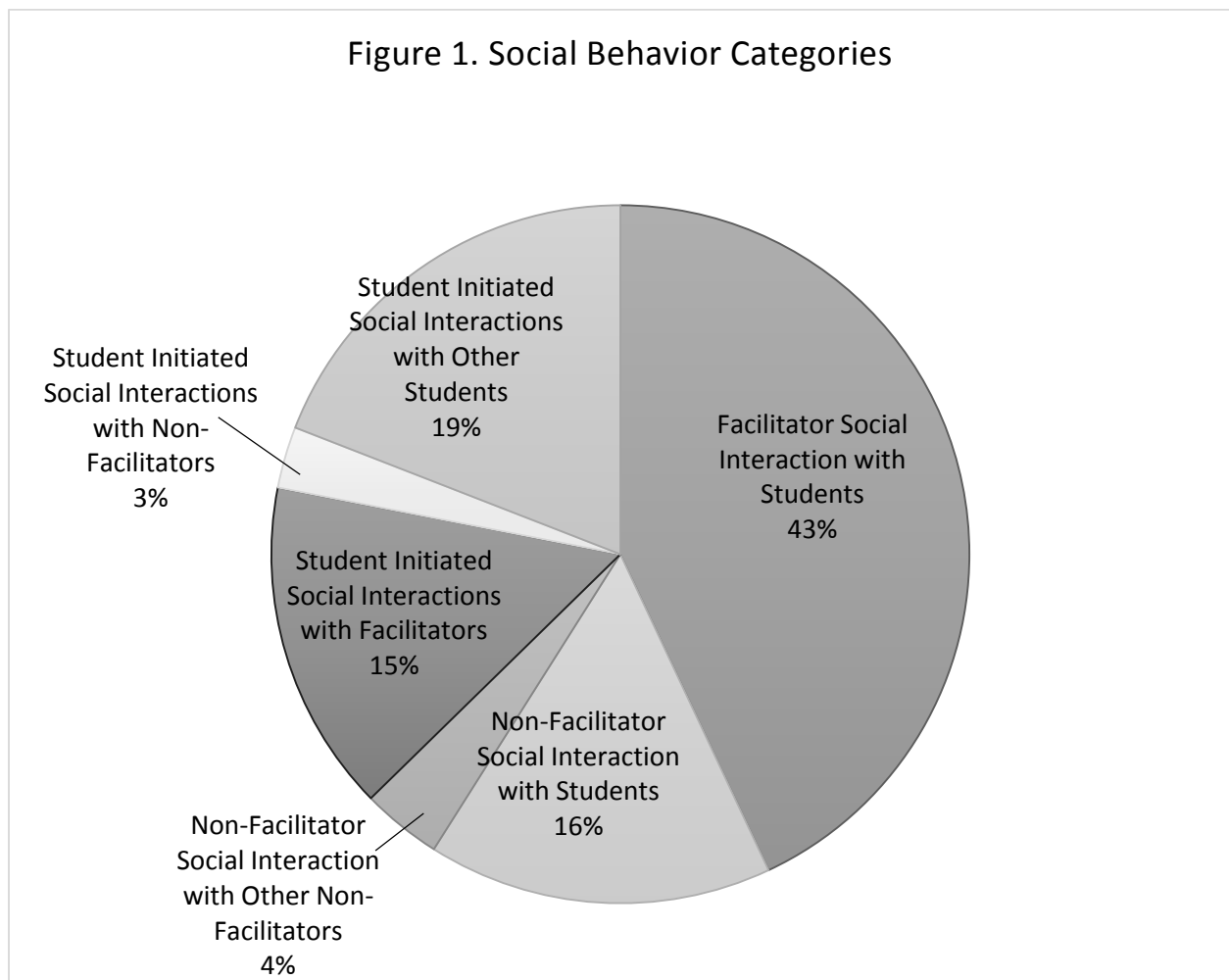
During observations the researcher recorded the social activity of each station as it naturally occurred. This allowed the researcher to record social interactions within the context of station activities. After the observations were completed notes were analyzed by searching through the

documentation and color coding information specific to each question. For example, after observations took place the researcher would go through each page of notes and identify social interactions that related to question one. The same was done for each guiding question. The findings were then listed in a word document and sorted according to similarity which provided the categorized answers for each guiding question. After findings were categorized, each category was named and given a corresponding code.

CHAPTER 6

FINDINGS

A total of 351 examples of school group social behaviors were observed. Each social behavior is grouped under one of the following five categories: facilitator social interactions with students, teacher and chaperone (non-facilitator adults) social interactions with students, non-facilitator social interactions with other non-facilitators, student initiated social interactions with facilitators, student initiated social interactions with non-facilitators, and student initiated social interactions with other students. Figure 1 shows the frequency of each social behavior category.



Within each category social behaviors are sub-categorized by type. The paragraphs that follow will provide assigned codes, descriptions, examples, and frequencies for each subcategory. The findings

will conclude with a description of the dominant behaviors for each station. Likewise, each station will be ranked in order of their success according to desired outcomes.

Facilitator Social Interactions with Students

Facilitator social interactions with students are divided into two groups: questions that facilitators ask students and non-question social techniques and tools that facilitators use. 101 examples of facilitator questions to students and 50 examples of facilitator social techniques and tools were observed. Together, facilitator questions, techniques, and tools accounted for 42% of the total social interactions observed.

Facilitator Questions to Students

Facilitators asked nine subcategories of questions. Question subcategories and their codes are listed in Table 1.

<i>Table 1. Subcategorized Questions & Codes Facilitators Ask to Students</i>								
Introductory Questions	Check-in Questions	Identification Questions	Comparison Questions	High-order Thinking Questions	Math Questions	Review Questions	Personal Experience Questions	Correlation Questions
IQ	CQ	IDQ	CQ	HOQ	MQ	RQ	PEQ	CORQ

Introductory questions allowed facilitators to initiate guided program and station activities. Examples of introductory questions include “What year did Colorado become a state?” “What do you all know about World War II?” Facilitators would pose check-in questions to assess students’ understanding of words or concepts like *drought* or *ghost town* especially if the vocabulary was relevant to the station’s learning objectives. Similar to check-in questions, facilitators would ask identification questions. Unlike check-in questions which assessed students’ understanding of vocabulary, identification questions assessed students’ knowledge about unfamiliar objects. These include questions such as, “What is this object? Does anyone know how it was used?”

Comparison questions were asked to students to help them identify the similarities and differences between two or more things. For example, “How are bodies of water on the map different?” “What things today are similar to things from the 1920s? What has changed since the 1920s?”

Facilitators also proposed “higher order thinking” questions. According to Benjamin Bloom certain learning objectives require more “complex” levels of thinking (Krathwohl, 2002). Questions related to complex learning objectives require students to apply, analyze, and evaluate which are mental processes that require a “higher” type of thinking (Krathwohl, 2002). During the guided program facilitators asked questions that required students to make an evaluation. These questions included, “Why should we learn about sad stories?” “Is it fair that this happened? Why not?”

Math questions were asked to students throughout the guided program. In Keota students were asked to calculate how much store credit they should receive for half a dozen eggs. Students were also asked to determine how many years passed from one decade to the next, and whether the events at each station took place before or after Colorado became a state.

Review questions were typically asked to students at the end of each station’s activities, though they were also asked during station activities. These questions could also be categorized as *who*, *what*, *when*, and *where* questions. These questions, once memorized, helped student to answer correlation questions. Correlation questions helped students to make connections between concepts. For example, after explaining the different groups that came to Bent’s Fort to trade, a facilitator might ask, “Which group would bring a beaver pelt to trade at Bent’s Fort?” Or after discussing the house on the map of San Luis that is labeled as “una casa,” the facilitator might pose the question, “What language do you think the people of San Luis spoke?”

The most prevalent subcategories of questions include review questions, which represent 32% of questions asked to students; personal experience questions, which represent 24% of questions asked to students; and check-in questions, which represent 15% of questions asked to students.

Facilitator Social Techniques and Tools

Facilitators used seventeen subcategories of social techniques and tools. Technique and tool subcategories and their codes are listed in Table 2.

<i>Table 2. Subcategorized Facilitator Social Techniques & Tools</i>			
Narrative Techniques	NT	Personal Experience Comments	PEC
Hand Gesture	HG	Clarifying Student Answers	CSA
Association	ASN	Answering Student Questions	ASQ
Connecting Themes	CT	Giving Hints	GH
Visuals	V	Students Repeat what Facilitator Says	SRFS
Modeling	MDL	Help Students Find Things	HSFT
Student Led Exploration	SLE	Use Humor	H
Instruct Student to Read Aloud	ISRA	Encouragement	E
Expound Student Answers	ESA		

Facilitators were documented using narration, or what the researcher labeled as a “story telling tone,” in two stations: Keota and Amache. This tone was marked by a change in the way facilitators interacted with students. When facilitators used narration, students were always seated at the feet of the facilitator who sat in a chair or bench in front of the students. Narration was used in situations where facilitators needed to provide students with the context of a station without presenting the information in a didactic or lecture style way. All facilitators took on a story telling tone in Amache because Amache station includes the activity of reading a picture book to students.

Facilitators were also observed using hand gestures to demonstrate concepts related to size to students. For example in Keota, a facilitator asked students to show the approximate distance of one foot with their hands to represent how much rain falls annually on the Eastern plains of Colorado. After students demonstrated one foot, she asked them to demonstrate two feet with their hands, which is the approximate amount of rain most crops need to grow in the region. Similarly, another facilitator was

observed using associations to illustrate how many acres homesteaders received if they farmed their land successfully for five years. When students were told that homesteaders could receive 160 acres of land, the facilitator associated one acre of land with a football field.

Facilitators took time usually at the beginning or end of a station to connect themes between stations. Themes include years, events, and place. For example, a facilitator connected the year and events that occurred in Keota to the year and events of the Dust Bowl.

Facilitators often used visuals like maps and pictures to demonstrate to students concepts related to place. Maps were provided to facilitators as part of the materials used to complete station activities. With the maps, facilitators could pinpoint places in Colorado where station stories took place. This played an important role in introducing and reviewing station activities with students, and it also provided facilitators with opportunities to prompt students to think about the each station's environment (plains, mountains, or Western-slope). Facilitators were also observed prompting students to visualize a map in their heads at the San Luis Station which had no map to reference.

Modeling was used by facilitators to demonstrate physical activities such as drilling and blasting in the Silverton Mine. Modeling was also observed in Keota to help students understand how tools and machines like a water pump and a flour sifter were used.

The researcher also observed one instance of student led exploration in Amache. Instead of beginning the station by reading the Amache story book, the facilitator initiated the station activities by asking students to determine who the people were and what type of building they were in by exploring the recreated internment barrack. As students explored the barrack they verbalized that the people were of Japanese ancestry, and through further prompting the students verbalized that a family lived in the barrack. After students shared their discoveries with the facilitator, the facilitator read the Amache story book and proceeded with the regular activities of the station.

Students were prompted by facilitators to read luggage identification labels aloud during Amache Station. As mentioned prior to this section, facilitators asked students a variety of questions. As students provided answers, facilitators would expound up student answers to provide students with more detail. Similarly, facilitators would also clarify student answers when student answers were incomplete or inaccurate. When students didn't know the answers to a facilitator's question he or she would give hints to help students answer. Of course students would ask facilitators questions, and facilitators would answer them.

A facilitator was observed asking a group of students to repeat the names of the three activities that would take place at Silverton Station. The facilitator asked students to repeat *mucking*, *drilling*, and *blasting*. Facilitators also helped students find things in stations such as Keota when students were completing their chores. Two examples of facilitators using humor were observed, and facilitators encouraged students when they shared an observation with the class or answered a question correctly.

The most prevalent techniques and tools include expounding on student answers, which represent 18% of the techniques and tools used by facilitators; using visuals, which represent 12% of the techniques and tools used by facilitators; and giving hints, which represent 10% of the techniques and tools used by facilitators.

Teacher and Chaperone (Non-Facilitator Adults) Social Interactions with Students

Non-facilitator social interactions with students are divided into two groups: the questions that non-facilitators ask students and the other ways that non-facilitators socially interact with students. 13 examples of non-facilitator questions to students and 43 examples of non-facilitators initiating social interaction with students were observed. Together, non-facilitator questions and social interactions accounted for 16 % of the total social interactions observed.

Non-Facilitator Questions to Students

Non-facilitators asked five subcategories of questions. Question subcategories and their codes are listed in Table 3.

<i>Table 3. Subcategorized Non-Facilitator Questions to Students</i>				
Non-Facilitator Instructional Questions	Non-Facilitator Personal Experience Questions	Non-Facilitator Math Questions	Non-Facilitator Highlighting Questions	Non-Facilitator Comparison Questions
NFIQ	NFPEQ	NFMQ	NFHQ	NFCQ

The questions that non-facilitators asked to students were similar and complementary to the questions asked by facilitators. Instructional questions were the most common question chaperones and teachers asked to students- they were asked 46% of the time. Instructional questions assisted students with station tasks. They included questions such as, “Do you have all of the things you need now? What else do you need?” “What’s it say on your card?” Personal experience questions were the second most common. They accounted for 31% of non-facilitator questions to students. They included questions like, “Can you imagine doing this [drilling and mucking] everyday?” “Can you imagine doing your homework on these slates?”

Furthermore, 8% of the questions asked to students by teachers and chaperones were math related questions. Another 8% of the questions included highlighting questions such as a chaperone pointing to an item on exhibit and asking the student if she noticed objects exhibited in a display case. Likewise, a final 8% of the questions were comparison questions. A teacher was observed asking his students which piece of Ancestral Puebloan pottery would be best for carrying water.

Non-Facilitators’ Other Social Interactions with Students

Non-facilitators were observed interacting with students in six ways. Non-facilitator social interaction subcategories and their codes are listed in Table 4.

<i>Table 4. Subcategorized Non-Facilitator Social Interactions with Students</i>					
Non-Facilitator Providing Instructional Directions	Non-Facilitator Correcting Behavior	Non-Facilitator Exploratory Conversation	Non-Facilitator Conversing with Student	Non-Facilitator Helping Students Make Personal Connections	Teacher Speaking to Whole Class
NFPID	NFCB	NFEC	NFCS	NFPMC	TSWC

Most commonly non-facilitator adults were observed providing instruction to students in relation to station activities. For example, non-facilitator adults often assisted students with directions on activity cards or explained how to use an object. Instruction was also provided in the form of monitoring or correcting student behavior and making sure students stayed on task. Behavior

Teachers and chaperones also initiated exploratory conversations with students wherein the non-facilitator adult posed a question to a student to create discussion about a station concept. In one instance, a chaperone and student discussed the amount of pain an animal would feel after being branded with a branding iron (a topic in San Luis Station). The conversation occurred as follows:

Chaperone: What did you think about the branding iron?

Student: It would hurt, but not that much. Sheep have a lot of layers

Chaperone: I don't know. It would still hurt.

Student: Maybe it would hurt a little-- as much as a paint ball. No more than that.

Similarly non-facilitator adults were observed conversing with students. These conversations were different from exploratory conversations in that a question was not posed to a student to initiate a conversation. Instead the adult often pointed something out or showed a student how to do a task, and then a conversation between the adult and student(s) occurred. For example a chaperone showed two students how to roll cordage twine in Mesa Verde Station. After students could roll the cordage on their own, the students discussed with the chaperone that the activity was fun.

Non-facilitator adults helped students make connections between station objects and concepts. In one instance a teacher asked her students if they could imagine doing their homework on slates, and

if they could imagine carrying their books in a 1920s style book carrier. Furthermore, the teacher in one school group repeatedly made an effort to speak to his students as a whole group. These particular social interactions occurred during reviews of station activities. In one occurrence the teacher asked his students to compare pottery to determine which type of pottery would be best for carrying water. In the second occurrence the teacher made a connection between the diverse groups that traded at Bent's Fort and their school's mission to celebrate diversity amongst students.

Non-facilitators providing instruction to students accounted for 60% of non-facilitator interactions with students. Non-facilitators helping students to make personal connections accounted for 12% of these social interactions, while non-facilitators conversing with students and initiating exploratory conversations accounted for 11% of social interactions between non-facilitators and students.

Non-Facilitator Social Interactions with Other Non-Facilitators

Non-facilitator social interactions with other non-facilitators accounted for 4% of the total social interactions observed. However, when considered as part of all of the teacher and chaperone social behaviors observed (both non-facilitator adults social interactions with students and non-facilitator social interactions with other non-facilitators), these social interactions accounted for 19% of all teacher and chaperone social interactions.

Teachers and chaperones were observed exploring stations on their own, and they were observed participating in conversations with other adults (Table 5).

<i>Table 5. Subcategorized Non-Facilitator Social Interactions with Other Non-Facilitators</i>	
Non-Facilitator Individual Exploration	Non-Facilitator Interactions with Other Non-Facilitators
NRIE	NRONF

During one occurrence of non-facilitator social interaction with another non-facilitator, a chaperone initiated a conversation about a trip her family took to Mesa Verde with another chaperone. This conversation took place as students completed Mesa Verde Station activities. She mentioned that Mesa Verde is near Durango, and that the trip was tortuous. Despite the long trip, she explained that her family enjoyed it, and that she was happy they got to see the Four Corners region. At that point the other adult expressed confusion about the Four Corners region, and the chaperone that initiated the conversation explained the four states' corners that make up the Four Corners area. Other conversations between non-facilitators include cases of non-facilitator adults explaining concepts and activities to other chaperones, asking questions, and stating that they would like to bring their children back to the museum. Of all of the non-facilitator social interactions with adults, non-facilitator conversations accounted for 54% of social interactions, whereas non-facilitators exploring stations by on their own accounted for 46% of social interactions.

Student Initiated Social Interactions with Facilitators and Non-Facilitators

Students were observed initiating social interactions with facilitators and non-facilitators in four different ways (Table 6).

<i>Table 6. Subcategorized Student Initiated Social Interactions with Facilitators and Non-Facilitators</i>				
Student Answers to Facilitator's Questions	Student Questions to Facilitators	Student Questions to Non-Facilitators	Student Comments to Non-Facilitators	Students Participating in Conversation with Non-Facilitators
SAFQ	SQF	SQNF	SCNF	SPCNF

Student initiated social interactions with facilitators and non-facilitators accounted for 18% of the observed social interactions. Student answers to facilitators' questions accounted for 67% of student initiated social interaction with facilitators and non-facilitators, while student questions to facilitators accounted for 17% of student initiated social interaction with facilitators and non-facilitators. Student questions to non-facilitators accounted for 2% of student initiated conversations with non-facilitators

and facilitators, and student comments to non-facilitators accounted for 14% of these social interactions.

Student Initiated Social Interactions with Other Students

Findings show that students socially interact with other students slightly more than they do with facilitators and non-facilitators (Figure 1). Students were observed interacting with other students in six different ways (Table 7).

<i>Table 7. Subcategorized Student Social Interactions with Other Students</i>					
Student Exclamations & Comments to Peers	Student Questions To Peers	Student Assistance	Student Role Playing	Student Reading Aloud	Student Making Personal Connections (on their own)
SECP	SQP	SA	SRP	SRA	SMPC

Student social interactions with other students accounted for 19% of all social interactions observed. Examples of student exclamation and comments include, “The Dust Bowl is my favorite!” and “Dude, there’s water! Emma, look it [the Model T Ford] spits water!” Student exclamation and comments to peers accounted for 37% of student social interaction. Students asked the following types of questions to their peers, “Can you lift the pot?” “We need to get horses. Does anyone have horses?” “What is this (*points to ice cream maker*)?” Student questions to peers accounted for 21% of student social interactions.

Students helped one another complete station tasks by showing their classmates where to put things and how things worked. In one example a student provided assistance when she said, “Follow this video. It shows you how to make rope.” Student assistance accounted for 18% of social interaction between students, while student role playing accounted for 4% of social interactions. Six examples of role playing were observed. They all occurred in Keota. For instance, as a student drove the Model T-Ford he commented aloud, “This is back in the old days, huh? Thank you, old sir. It’s very nice to meet you.” Another student on her way to the barn commented to no one in particular, “I wanna’ milk the cow.” She walked over to the cow, petted it, and said, “Hey, girl. It’s so much harder to milk you this

way.” Another student in the Model T Ford pressed the horn when he saw cows on the screen in front of the car and said, “Beep! Beep!” He then told his classmates sitting in the back of the car, “Hold on tight kids!”

Students were also observed reading aloud to themselves and their classmates. Reading aloud accounted for 5% of student social interactions. And students were observed making personal connections on their own without the help of an adult three times. Student personal connections accounted for 2% of student social behaviors.

Dominant Behaviors for Each Station

Behavior codes were averaged together to demonstrate dominant social behaviors for each station. Table 8 shows the two most common behaviors that were observed at each station.

<i>Table 8. Dominant Behaviors for Each Station</i>	
Keota	<ul style="list-style-type: none"> • Student Role Playing (SRP)- 7% • Student Answers Facilitators Questions (SAFQ)- 12%
Mesa Verde	<ul style="list-style-type: none"> • Review Questions (RQ)- 12% • Student Answers Facilitators Questions (SAFQ)- 21%
Dust Bowl	<ul style="list-style-type: none"> • Check in Questions (CIQ)- 15% • Student Answers Facilitators Questions (SAFQ)- 21%
San Luis	<ul style="list-style-type: none"> • Expounding on Student Answers (ESA)- 19% • Identification Questions (IDQ)- 22%
Amache	<ul style="list-style-type: none"> • Student Questions to Facilitators (SQF)- 11% • Student Answers Facilitators Questions (SAFQ)- 14%
Silverton	<ul style="list-style-type: none"> • Review Questions (RQ)- 9% • Student Answers Facilitators Questions (SAFQ)- 20%
Our Mountains	<ul style="list-style-type: none"> • Expounding on Student Answers (ESA)- 25% • Student Answers Facilitators Questions (SAFQ)- 29%
Bent's Fort	<ul style="list-style-type: none"> • Identification Question I(DQ)- 12% • Student Answers Facilitators Question (SAFQ)- 23%

Students answering facilitator questions (SAFQ) was a dominant behavior in each station, except for San Luis where SAFQ ranked third. Student role playing (SRP) was a frequent behavior in Keota, and

students asking question to adults (SQA) was a common behavior in Amache. In San Luis and Bent's Fort facilitators frequently asked identification questions (IDQ) about the station's objects, while facilitators regularly asked review questions (RQ) in Mesa Verde and Silverton. Facilitators often asked check-in questions (CIQ) to students in Dust Bowl, and facilitators expounded upon student answers (ESA) in Our Mountains.

Ranking Stations by Success

Beyond illustrating the dominant behaviors in each station, use of behavior codes allows researchers to establish Station Social Interaction Profiles, thereby allowing stations to be ranked by success depending on the desired social behavior outcome, such as non-facilitator participation in station activities-- a behavior that was selected by the researcher as being valuable according to Vygotsky's theories about learning and development in relation to the zone of proximal development. Success may also be defined by other outcomes selected by History Colorado Center educational staff such as students verbalizing personal connections to station activities, students making positive comments about station activities, or students correctly answering review questions at the end of a station. Examples of Station Social Interaction Profiles, which list the frequency of each social behavior for all eight stations, can be found in Appendix E, Appendix G, Appendix I, Appendix K, Appendix M, Appendix O, Appendix Q, and Appendix S.

The paragraphs below will explain which stations rank highest in regard to the following desired social behavior outcomes: non-facilitator participation, student verbalization of personal connections, and student social interaction with other students (each of these desired outcomes were selected by the researcher as being important to the success of each station according to constructivist learning theories).

Desired Social Behavior Outcome: Non-facilitator Participation

According to all of the combined Keota station social interactions data, Keota ranked the highest in terms of non-facilitator participation. 23% of the observed behaviors in Keota included non-facilitator

participation. Non-facilitator participation includes non-facilitator interactions with students and non-facilitator interaction with other chaperones and teachers. Silverton ranked second in terms of non-facilitator participation with non-facilitator behaviors observed 16% of the time. Mesa Verde ranked third with a 14% non-facilitator participation rate, and Bent's Fort ranked fourth with a 12% non-facilitator participation rate. All other stations had a non-facilitator participation rate below 2%.

Desired Social Behavior Outcome: Students Making Personal Connections on Their Own and Student

Social Interaction with Other Students

Correspondingly, Keota, Silverton, and Mesa Verde were the only stations where students were observed verbalizing personal connections (SMPC) on their own without assistance or prompting by an adult. Keota, Silverton, Mesa Verde, in addition to Our Mountains, ranked high in terms of student social interaction with other students. 27% of the social interactions observed in Keota were between students, 16% of student social interactions in Our Mountains were between students, and 14% of the social interactions in Mesa Verde and Silverton were between students. All other stations had a student social interaction rate below 3%.

CHAPTER 7

DISCUSSION

Findings indicate that school group members-- facilitators, teachers, chaperones, and students- participated in a wide array of social activities. When considered as individual groups, facilitator social interactions are characteristically distinct from non-facilitator social interactions and student social interactions. Correspondingly, non-facilitator social interactions are characteristically different from student social interactions. Beyond distinctions, each group's social interactions occurred at varying frequencies. The distinctions and frequency with which these behaviors occurred have implications for the *Colorado Time Travelers Program*. A discussion of the results and their implications will be included in the paragraphs below.

Facilitator Distinctions

Findings indicate that all facilitator social behavior was directed toward four tasks: assessing student knowledge of station content, introducing or providing context to students concerning station activities, clarifying station content for students, and engaging students in station activities. Facilitators used various approaches to accomplish the tasks listed above. These methods are listed in Tables 1 and 2. The techniques and tools listed in Table 2 assisted facilitators in completing the former three tasks. For instance, visuals (V) were used by facilitators when introducing station stories. Modeling (M) was used to clarify station activities, and making connections between each station's themes (CT) allowed facilitators to provide additional context to students concerning each station story. Similarly, narrative techniques (NT), utilizing humor (H), and helping students make personal connections (PEC) helped keep students engaged.

Questioning, however, was used by facilitators to assess students' existing knowledge and understanding of station content. Stated otherwise, questioning was used as an effective pre and post station assessment tool to evaluate student knowledge. Facilitators frequently asked introductory

questions (IQ), check-in questions (CIQ), and identification questions (IDQ) at the beginning of station activities to gauge students' familiarity with station topics. Check-in questions and review questions (RQ) were often posed at the end of station activities to evaluate learning outcomes. Student answers provided facilitators with an opportunity to clarify student misunderstandings, expound upon students' existing knowledge, and relate station stories to the personal experiences of students. This was evidenced by documentation of facilitators clarifying student answers (CSA); expounding upon students' existing content knowledge (ESA); and assisting students in making personal connections (PEC) after students provided answers to questions.

Ultimately, these methods allowed facilitators to differentiate program activities according to the unique characteristics of each school group which is vitally important under constructivism, which states that knowledge construction is contextual and must occur in ways that build upon the existing knowledge of the individual (Hein, 1991 & 2006). According to John Dewey, facilitators in their role as educators, must "survey the capacities and needs of the particular set of individuals with whom he is dealing and must at the same time arrange conditions which provide the subject-matter or content for experiences that satisfy these needs and develop these capacities" (1938, p. 58). As a group, facilitators did a phenomenal job of "surveying" student knowledge and providing necessary content within the context History Colorado Center exhibits. Their methods were efficient and effective, and led to student engagement evidenced by student behavior, a topic that will be discussed under Student Distinctions.

Non-Facilitator Distinctions

Non-facilitator social interactions were complementary to yet markedly different than the observed social interactions of facilitators. Teachers and chaperones reinforced the efforts of the facilitator as evidenced by the behaviors listed in Tables 3 and 4. Perhaps unexpectedly, non-facilitator social interactions accounted for 20% of the total social interactions observed. Out of this significant portion of social interactions, facilitators were most commonly documented acting as co-facilitators for

students. Like facilitators, teachers and chaperones were observed asking questions to students. However, non-facilitators more frequently interacted with students through non-questioning social activities. In particular, 60% of the time non-facilitators assisted students by explaining activity directions. Yet, it is important to highlight the fact that over 10% of non-facilitator social interactions with students were conversational in nature- meaning that teachers and chaperones engaged students in back and forth exchange of social information. An example of an exploratory conversation between a chaperone and student was provided under Non-Facilitators' Other Social Interactions with Students. Conversations of this type, occurring between adults and students, potentially provide the appropriate environments for learning to take place within students' zones of proximal development. With this in mind, teachers and chaperones should be encouraged to engage students in conversation about program activities during and after guided program activities. Adults could initiate these conversations by posing a thought-provoking question that was of interest to the student thereby giving an adult insight into the student's thought processes and helping him or her progress to the next level of development.

Of equal importance are the social interactions that adults have with one another. Though adults were observed engaging in conversation with their peers less often than they did with students, adult social interaction showed that adults learn from one another as a result of their conversations. An example of an observed conversation between two chaperones occurred as follows:

Chaperone 1: Have you ever been to Mesa?

Chaperone 2: No, I haven't. Where is it?

Chaperone 1: It's down by Durango. It's a tortuous trip, but the kids enjoyed it. It's down by the 4 corners.

Chaperone 2: So where is the 4 corners?

Chaperone 1: Down where the 4 states meet, CO, NM, you know, those states.

Chaperone 2: Oh, ok.

This conversation shows that non-facilitator adults have their own personal experiences to share, and are engaged members of the school group. Opportunities for chaperones to share their experiences with other adults in addition to students should be capitalized upon.

Student Distinctions

Student behaviors were focused on participating in station activities. Students were very engaged in program activities. Out of all of the social behaviors observed, only two instances of a non-facilitator adults telling students to pay attention and one instance of a student telling his classmate he didn't want to watch a video because it was "dumb" were observed. Student engagement was documented through the observed social behaviors of students. For example, evidence of students following activity directions was observed as students read aloud from station activity cards, answered facilitator questions, made comments to peers, and asked questions to adults. Student behavior overwhelmingly resulted in student engagement. These student social behaviors are listed in Tables 6 and 7. Students' ability to answer review questions at the end of each station and during the timeline activity also supports the occurrence of student engagement. 100% of student answers that were documented during the timeline review were answered correctly.

Student conversations focused on activities to be completed at each station. For instance, in Mesa Verde students would read their activity cards aloud to their partner, complete the task, and return the card to the facilitator for a new card. In Bent's Fort students would talk to one another about the items they needed in return for something they had to trade. Students would also ask one another questions or comment on exhibit objects or interactives, but the comments and questions very often related to the exact activity they were completing or the object they were looking at during that moment in time. In this way student conversation was different from conversations between non-

facilitator adults. However, in Keota a distinct form of social activity occurred between students as they completed their Keota chore cards- role playing.

While role playing students would talk aloud to themselves or their peers, sometimes changing their tone of voice or style of speech. Examples of student role playing are illustrated under Student Social Interactions with Other Students. Interestingly, students also verbalized personal connections to station tasks without the help of an adult the most in Keota. This presents an interesting question. What is the relationship between students' ability to make personal connections and their participation in imaginary play? Due to the low number of documented instances in this study findings cannot establish whether a relationship exists between the observed role playing and documented instances of students making personal connections on their own. Future studies would need to be conducted to establish the relationship that exists between the two phenomena.

During observations students were documented making personal connections to station tasks. However, findings from this study show that students verbalizing personal connections on their own is rare. Instead students are more likely to verbalize personal connections through personal experience questions posed by facilitators. Nevertheless, students did make comments to peers on their own accord about their time at the museum. Students often expressed that they enjoyed program activities. 24% of student comments and exclamations to peers were students making positive comments about program activities such as, "This is fun!" "I liked Keota best," or "I liked all of them [stations]!"

When looked at separately, school group members categorized according to type possesses their own unique social behavior characteristics. These unique social behaviors came together in dynamic ways. For example, each school member played a complementary role in the social interactions that occurred during the field trip, and each school group member contributed to the guided program experience in relevant ways. Facilitators introduced, clarified, and provided necessary context to students. They clarified station stories and prompted students to make personal connections when

relevant. Perhaps most importantly, facilitators used effective tools to assess student knowledge and use the information gathered from students as a starting point for station activities. Moreover, teachers and chaperones reinforced facilitators' efforts, and assisted students in exploring station content through conversation, a vitally important component for learning and development. Non-facilitator adults also expressed interest in program activities, and through their interactions with other adults and students they remained engaged participants of school group activities. Likewise, students remained engaged during stations as evidenced by their completion of station tasks, interactions with exhibit features, and their answers to review questions at the end of each station. History Colorado Center's *Colorado Time Travelers Guided Program* has all of the necessary components for learning and development to occur under a constructivist framework. These components, having been highlighted in this study, should be reinforced and capitalized upon to ensure that the guided program continues to provide environments that are conducive to learning for visiting school groups.

CHAPTER 8

LIMITATIONS

Due to the observational nature of this study, causes for social behaviors exhibited by school members cannot be established. For example, though students successfully answered review questions, a claim cannot be made that students were able to correctly answer questions due to learning that took place during station activities, or (as another example) that students' ability to correctly answer questions resulted because of station tasks or social interactions. Further studies will need to take place to establish which social interactions lead to correct student answers as an outcome.

However, this study does describe observed behaviors that occurred during the *Colorado Time Travelers Program*. By highlighting the guided program's most apparent social interactions and describing the frequency with which the social interactions occurred, the data from this study can be paired with data from future assessments and research in an effort to establish the exact relationship that exists between station tasks, social activity, and student learning. Recommendations for complementary studies are discussed in the conclusion.

CHAPTER 9

CONCLUSION

This study has identified, described, and categorized the numerous social interactions occurring amongst school group members participating in the *Colorado Time Travelers Program* at the History Colorado Center. A set of behavioral codes have been established (Appendix A-C) that can be used by educational personnel at the History Colorado Center to compare, contrast, and analyze social interactions via Station Social Interaction Profiles (Appendix D and E), which list the reoccurring and dominant social interactions for individual stations. Station Social Interaction Profiles also allow staff members to evaluate the success of the program based on desired outcomes (e.g. students verbalizing their enjoyment in relation to station activities, student recall of information, students making personal connections, etc.) for each station by illustrating when or how often desired outcomes occur during station activities.

The codes developed during this study are flexible and adaptive; codes can be added to or removed from the list as new observations are made, as programs change, or as new programs are developed. In this way the behavior code system is applicable to all educational staff at museums that aim to document the social behaviors or evaluate the success of their school programs. Codes are also a time efficient way to document guided program social activity. This makes the codes an effective and purposeful tool for documenting social behaviors and desired outcomes for the wide array of guided programs that are implemented in all types of museums.

Additionally, social interactions described in this study have drawn attention to the resourceful ways that facilitators introduce, clarify, and encourage students to build upon their existing knowledge. Social interactions also show the way that students interact with one another, and that they are fully engaged in and motivated to complete station tasks. At the same time this study brings to the forefront the important role that teachers and chaperones play in school group programming. Sometimes a

forgotten or ignored group, it should be emphasized that teacher and chaperone social interaction accounted for 20% of the observed social activity. Their behaviors illustrated that they are facilitator advocates who encouraged and assisted students in carrying out station tasks. Furthermore, teachers and facilitators initiated conversations with students- conversations that could potentially act as a learning situations which take advantage of zones of proximal development. For this reason non-facilitator participation in program activities should be encouraged and capitalized upon so that opportunities for learning and development are increased, especially as the structure of the *Colorado Time Travelers Program* changes to include more self-guiding tours for school groups as it has during the 2015 spring semester.

Some specific ways museums might increase non-facilitator participation include explaining to teachers and facilitators during the introduction that their participation is a valuable contributor to student learning and development. Teachers and chaperones could then be invited to participate throughout the duration of the program by asking them if they have personal experiences they'd like to share or questions they'd like to ask. Beyond an invitation to participate, museums might consider providing interested non-facilitator adults with an informational page about exhibit topics and station activities. The page might include tips or a list of questions that can be posed to students which would initiate exploratory conversations between non-facilitator adults and students, thereby increasing the chance for learning through zones of proximal development. This page could be used during station activities as school groups self-guide through stations. The page could also be provided during guided program activities, or if it suited the needs of the program better it could be provided to teachers and chaperones after the program as an extension or at home activity.

Likewise, future studies that aim to focus on non-facilitator and student conversations may request that teachers and chaperones complete a survey before and after the program. The initial survey might ask teachers or chaperones to document examples of what students say about their field

trip before it begins. The documentation might include questions students ask, comments students make, and conversations that students participate in about the museum while at home or in school during class. A follow up survey may ask teachers and chaperones to document the things that students say about their museum experience after they've left the museum facility. This information would provide insight into types of discussions teachers and chaperones have with their students before they visit the museum and after they leave the museum. The survey would also illustrate the frequency with which students, teachers, and chaperones discussed station topics after the program had ended. Studies might allow comparisons to be drawn between the conversations that happen between students, chaperones, teachers, and facilitators while they are in the museum versus the conversations students, chaperones, and teachers have with one another after the field trip is over. Future studies such as these would emphasize the relationship between learning in the museum and learning in the classroom. Furthermore, it would potentially illustrate how educators in informal and formal education can foster deeper understanding through social interactions.

The information provided in this study has explained the kinds of social interactions taking place during *The Colorado Time Travers Program* at the History Colorado Center. Social interaction is used in different yet complementary ways during school group programming. Occurring within the unique space of exhibits, the social interaction taking place during school programming is used to convey information, clarify understanding, express enjoyment, and communicate personal relevance. This study reinforces findings from other studies which emphasize the role social interaction plays in school field trips to museums (Griffin, 2003; Falk & Dierking, 2013; Leinhardt et al., 2002), and it contributes to the field of museum education concerning an area of study that is still being researched by individuals interested in the role social activity plays in the learning and developmental processes of children. For this reason, museum professionals must continue to take steps toward understanding school group social interaction. As this study demonstrates, this is an area of study that could help to further the

educational impact of museums. More work should be done to understand the social nature of field trips if the educational impact of museums is to continue.

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APPENDIX A

Facilitator Social Behavior Codes		
Code	Description	Category
IQ	<ul style="list-style-type: none"> • Introductory Question– a question that introduces a station topic. • Example: What year did Colorado become a state? 	Question
CIQ	<ul style="list-style-type: none"> • Check-in Question– a question that assesses knowledge of a word. • Example: What does drought mean? 	Question
IDQ	<ul style="list-style-type: none"> • Identification Question– a question that assesses identification of or knowledge about an object. • Example: What is this? What was it used for? 	Question
CQ	<ul style="list-style-type: none"> • Comparison Question– a question that asks a student to compare two or more things. • Example: How is a Model-T Ford different or similar to cars today? 	Question
HOQ	<ul style="list-style-type: none"> • Higher-order Thinking Question– a question that asks a student to apply, evaluate, or analyze • Example: Was what happened fair? 	Question
MQ	<ul style="list-style-type: none"> • Math Question 	Question
PEQ	<ul style="list-style-type: none"> • Personal Experience Question– a question that asks students to relate their personal experiences to station activities • Example: Who has chores to do at home? 	Question
RQ	<ul style="list-style-type: none"> • Review Question– a question that asks students who, what, when, or where something happened. • Example: What year did Colorado become a state? 	Question
CORQ	<ul style="list-style-type: none"> • Correlation Question– a question that asks students to make connections between concepts. • Example, after explaining the different groups that came to Bent's Fort to trade, a facilitator might ask, "Which group would bring a beaver pelt to trade at Bent's Fort?" 	Question

Facilitator Social Behavior Codes		
Code	Description	Category
NT	<ul style="list-style-type: none"> Narrative Techniques Example: Reading the Amache picture book. 	Social Technique
HG	<ul style="list-style-type: none"> Hand Gesture Example: Having students show how long two feet is with their hands. 	Social Technique
ASN	<ul style="list-style-type: none"> Association Example: Associating one acre with a football field. 	Social Technique
CT	<ul style="list-style-type: none"> Connecting Themes Example: What do Keota and Dust Bowl have in common? 	Social Technique
V	<ul style="list-style-type: none"> Visuals Example: maps, pictures, etc. 	Social Tool
MDL	<ul style="list-style-type: none"> Modeling Example: Showing students how to use a drill bit and hammer in Silverton. 	Social Technique
SLE	<ul style="list-style-type: none"> Student Led Exploration—giving students free time to explore. 	Social Technique
ISRA	<ul style="list-style-type: none"> Instruct Students to Read Aloud 	Social Technique
ESA	<ul style="list-style-type: none"> Expound on Student Answer Example: If a student says that Ancestral Puebloans ate squash, expounding on their answer would mean telling the student they also ate beans and corn. 	Social Technique

Facilitator Social Behavior Codes		
Code	Description	Category
PEC	<ul style="list-style-type: none"> Personal Experience Comments Example: Ball in a cup is like the Xboxes of the 1850s. 	Social Technique
CSA	<ul style="list-style-type: none"> Clarifying Student Answer Example: Correcting or clarifying a student's incorrect or incomplete answer. 	Social Technique
ASQ	<ul style="list-style-type: none"> Answering a Student Question 	Social Technique
GH	<ul style="list-style-type: none"> Giving a Hint 	Social Technique
SRFS	<ul style="list-style-type: none"> [Ask] Students to Repeat what Facilitator Says 	Social Technique
HSFT	<ul style="list-style-type: none"> Help Student Find Things 	Social Technique
H	<ul style="list-style-type: none"> Use Humor 	Social Technique
E	<ul style="list-style-type: none"> Provide Encourage to Student Example: Nice job! 	Social Technique

APPENDIX B

Teacher & Chaperone Social Behavior Codes		
Code	Description	Category
NFIQ	<ul style="list-style-type: none"> Non-Facilitator Instructional Question – a question that helps students follow activity instructions. Example: What else do you have to do on your card? 	Question
NFPEQ	<ul style="list-style-type: none"> Non-Facilitator Personal Experience Question– a question that asks students to relate their personal experiences to station activities. Example: Can you imagine doing your homework on these slates? 	Question
NFMQ	<ul style="list-style-type: none"> Non-Facilitator Math Question 	Question
NFHQ	<ul style="list-style-type: none"> Non-Facilitator Highlighting Question – a question that highlights or points an object out to a student. Example: Do you notice the items in the display case? 	Question
NFCQ	<ul style="list-style-type: none"> Non-Facilitator Question- a question that asks a student to compare two or more things. Which pot would be the best for carrying water? 	Question
NFPID	<ul style="list-style-type: none"> Non-Facilitator Providing Instructional Directions– assisting student with activity directions. Example: Look at your card. These are the items you need. 	Social Technique
NFCB	<ul style="list-style-type: none"> Non-Facilitator Correcting Behavior- making sure students are on task and behaving appropriately. Example: Pay attention. 	Social Technique

Teacher & Chaperone Social Behavior Codes		
Code	Description	Category
NFEC	<ul style="list-style-type: none"> Non-Facilitator Exploratory Conversation– using conversation to help students verbally explore concepts and ideas. Example: Chaperone: What did you think about the branding iron? Student: It would hurt, but not that much. Sheep have a lot of layers. Chaperone: I don't know. It would still hurt. Student: Maybe it would hurt a little - as much as a paint ball. No more than that. 	Social Technique
NFHMC	<ul style="list-style-type: none"> Non-Facilitator Helping [students] Make Connections– helping student to make connections between concepts and ideas. Example: A teacher making a connection between the diversity of his school and the diverse groups at Bent's Fort. 	Social Technique
TSWC	<ul style="list-style-type: none"> Teacher Speaking to Whole Class– a teacher speaking to his/her class as an entire group about station activities. 	Social Technique
NFSC	<ul style="list-style-type: none"> Non-Facilitator Conversing with Student- a facilitator initiating conversation with a student 	Social Technique
NFIE	<ul style="list-style-type: none"> Non-Facilitator Individual Exploration– a teacher or chaperone exploring an exhibit by himself/ herself. 	Role
NFIONF	<ul style="list-style-type: none"> Non-Facilitator Interactions with Other Non-Facilitators– conversations between adults about exhibits and station activities. 	Social Technique

APPENDIX C

Student Social Behavior Codes	
Code	Description
SEP	<ul style="list-style-type: none"> • Student Exclamation to Peers • Example: The Dust Bowl was my favorite!
SCP	<ul style="list-style-type: none"> • Student Comment to Peers • Example: Look at how heavy this [pot] is.
SQP	<ul style="list-style-type: none"> • Student Question to Another Peer • Example: Where did you find the shovel for the coal stove?
SA	<ul style="list-style-type: none"> • Student Assistance— providing assistance to a peer. • Example: Follow this video. It shows you how to make rope.
SRP	<ul style="list-style-type: none"> • Student Role Playing • Example- I wanna' milk the cow. (Walks over to cow) Hey, girl. (Pets the cow). It's so much harder to milk you this way.
SRA	<ul style="list-style-type: none"> • Student Reading Aloud
SMPC	<ul style="list-style-type: none"> • Student Making Personal Connection • Example- Student to his class: "Who has a dog? Who feeds their dog? Milking a cow is not that different. It's very similar to feeding a dog."

Student Social Behavior Codes	
Code	Description
SAFQ	<ul style="list-style-type: none"> • Student Answers Facilitator's Question
SQF	<ul style="list-style-type: none"> • Student [asks] a Question to Facilitator
SQNF	<ul style="list-style-type: none"> • Student [asks] a Question to Non-Facilitator
SCNF	<ul style="list-style-type: none"> • Student [makes a] Comment to Non-Facilitator
SPCNF	<ul style="list-style-type: none"> • Student Participating in Conversation with Non-Facilitator

APPENDIX D

SILVERTON VIGNETTE

Below is a vignette for the Silverton Station. Behavior codes have been listed after social behaviors. They are underlined and are in parentheses. A Silverton Station Social Interaction Profile can be found in Appendix E.

Facilitator: We're in Sunnyside Mine. We're in the 1880s. There's three things you all are going to learn to do here today. Everyone repeat after me: mucking, drilling, and blasting. *Students repeat each word.* Who can say all three? (SRFS) (IQ)

Student: Mucking, drilling, and blasting. (SAFQ)

Facilitator: Whose teacher took attendance this morning? (PEQ) *Some students raise their hand.* Well, just like your teachers, the miners had a way to take attendance when they got to the mine. Each miner was assigned a brass tag and a number. When miners got to the mine they put their brass tag up on the board underneath their assigned number. When they went home they took their tag down. So is miner 46 in the mine or at home. (CIQ)

Student: The mine. (SAFQ)

Facilitator: What about miner 34? (CIQ)

Student: Home. (SAFQ)

Facilitator: Hard rock mining was a very dangerous job. So it was very important for miners to remember to put their brass tag up on the board when they got to work and remove it once they left. This way if something bad happened down in the mine, the people up at the top would know you were in the mine and that you needed to be rescued. Before we go in to the mine let's talk about this (*points at lunchbox*). Miners were from England and Wales, and they brought their lunch to work every day. Let's go through the lunch box to see what a miner packed. *The facilitator goes through each level of*

lunch box and explains the food inside of it. So you all are miners and it's very dangerous so you have to be sure to listen. Who remembers the first thing we're going to do? (RQ)

Student: Mucking. (SAFQ)

The facilitator explains how miners entered the mine through the cage and that it took 30 minutes to reach the bottom of some mines. After students exit cage they watch the video about mining.

Facilitator: So this is how you muck (*models lifting shovel*). (M) After you muck you need to feed Daisy the mine mule. Remember the pasty miners brought in the lunch? They would feed the crust to the mule. *Students take turn mucking and feeding Daisy. One student makes a comment to their teacher.*

Student: Mrs. M, I would rather do this then go to school. (SCA)

Facilitator: Who remembers what we are going to do next? (RQ)

Student: Drilling. (SAFQ) *Students enter the drilling section of the exhibit, and watch a short video about using a manual drill.*

Facilitator: Everyone find a partner. We're going to do double jacking. *Facilitator models the activity of double jacking, and she shows students how to signal to stop.* (M) Miners had to use hand signals to communicate because it was loud in the mine. You had to pay attention to the signals otherwise you could hurt your drilling partner. *Students work with a partner to practice double jacking.*

Teacher: Signal your partner to stop. Remember you have to turn the drill. (NFPID)

Chaperone: No, you don't turn the hammer. The drill gets turned. (NFPID)

Student: *To peer,* This mine is scary because of the sounds and the ghosts. (SCEP) *After students finish drilling they enter the blasting room. The facilitator plays the mining video.*

Facilitator: We're going to do the hard level of blasting because you all are so well behaved. (E) Find a partner and make a line. *Students find a partner and line up.* I'm going to give each pair of you a number. You and your partner must remember your number, and push the dynamite sticks in the wall together. The dynamite has to be set of in order so remember your place in line. *The facilitator gives each pair of*

students a number then has the students circle through to see their number and practice. While in line a student read a line of a label aloud, and other students discuss their numbers and matching dynamite sticks.

Student: *To another pair of students, Those twos are ours. (SECP)*

Facilitator: *To the same pair of students, You have to remember your number and which dynamite are yours. (CSA)*

After the practice round, students circle through the line and set off their dynamite. After everyone pushed in their dynamite sticks the students count 3,2,1 before setting off dynamite. The students cheer when the video explains that they set the dynamite off in a controlled and successful pattern. The facilitator then gathers students at the mine's exit.

Teacher: Pay attention fourth grade! (NFCB) *Students quiet down.*

Facilitator: What did you learn? (RQ)

Student: Mucking is heaving. (SAFQ)

Student: It's scary. (SAFQ)

Student: You have to do it correctly. (SAFQ)

Student: You have to have good partnership. (SAFQ)

Facilitator: When are we? (RQ)

Student: 1880s. (SAFQ)

Facilitator: Before that where were we? (RQ)

Student: 1920s. (SAFQ)

Facilitator: Now we're going to the 1830s. Follow me.

APPENDIX E

SILVERTON STATION SOCIAL INTERACTION PROFILE

Below is a list of the 31 social behaviors and the frequency of each behavior that occurred in the Silverton Vignette (Appendix D).

1. SRFS
2. IQ
3. SAFQ
4. PEQ
5. CIQ
6. SAFQ
7. CIQ
8. SAFQ
9. RQ
10. SAFQ
11. M
12. SCA
13. RQ
14. SAFQ
15. M
16. NFPID
17. NFPID
18. SCEP
19. E
20. SECP
21. CSA
22. NFCB
23. RQ
24. SAFQ
25. SAFQ
26. SAFQ
27. SAFQ
28. RQ
29. SAFQ
30. RQ
31. SAFQ

Occurrence of Each Behavior
Code

- 11 SAFQ = 35%
- 5 RQ = 16%
- 2 CIQ = 6%
- 2 M = 6%
- 2 NFPID = 6 %
- 1 SRFS = 3%
- 1 IQ = 3%
- 1 PEQ = 3%
- 1 SCA = 3%
- 1 SCEP = 3%
- 1 E = 3%
- 1 CSA = 3%
- 1 NFCB = 3%

Silverton Station Social
Interaction Profile Summary

The dominant behavior for this vignette was students answering the facilitator's questions (SAFQ). Students answered all review questions correctly.

APPENDIX F

AMACHE VIGNETTE

Below is a vignette for the Amache Station. Behavior codes have been listed after social behaviors. They are underlined and are in parentheses. An Amache Station Social Interaction Profile can be found in Appendix G.

Facilitator: What do you all know about WWII? What happened during WWII? (IQ)

Student: It's about a war with Germany. (SAFQ)

Student: During WWII there were concentration camps. (SAFQ)

Facilitator: Very good both of those things are correct. This station is about WWII, and it's about a specific group of people. It's about Japanese Americans and people of Japanese ancestry. I'm going to read you all a story about Japanese Americans and WWII. *Chaperone begins to read book.* (E) (ESA) (NT)

Student: *When chaperone gets to the section of the book about the president ordering Japanese people to move to internment camps (Outline 1: Amache Station) a student asks:* Are internment camps the same as concentrations camps? (SQF)

Facilitator: *The facilitator explains the difference, and then continues to read from the book.* (PEQ) *When the facilitator gets to the book section about leaving things behind (Outline 1: Amache Station), the facilitator asks,* What would you bring in your suitcase? (ASQ)

Student: My pet. (SAFQ)

Facilitator: I'd want to bring my pet too, but they weren't allowed to bring any pets. (CSA)

Student: Pictures. (SAFQ)

Student: iPad (SAFQ)

Facilitator: iPads weren't around in the 1940s. What do you think kids from the 40s would bring? (CSA)

Student: Toys. (SAFQ)

Student: Why didn't they bring bigger suitcases? (SQF)

Facilitator: *Pointing to the suitcases by the exhibit door, This was the standard size for suitcases at the time. They didn't make them any bigger. (ASQ) Next, the facilitator explains the rules for the next activity: unpacking the suitcase. Pairs of students are given one luggage identification card each. The teacher is observed reading the description on one of the cards to a pair of students. (NFPID) After students match their identification card to an object in the suitcase, each set of partners shares their item and reads their identification card aloud to the group. (13 SRA) The facilitator elaborates on suitcase objects when the item is unfamiliar to students. (ESA)*

Facilitator: Does anyone know what a latrine is? A latrine is like an outhouse. The little boy didn't like to go to the bathroom or outhouse alone at night. So at night he would use the restroom in the coffee can. (ESA) Now that we've finished identifying each object we are going to explore the internment barrack. In the barrack the facilitator points out different items around the room.

Student: *to another student, Look a pair of chopsticks. (SECP)*

Facilitator: Do you know how to use chopsticks? (PEQ) *Students shake their head no. After students explore the barrack, the facilitator ends the station by asking students what makes the barrack feel like a home and what makes it feel like a prison. (RQ)*

APPENDIX G

AMACHE STATION SOCIAL INTERACTION PROFILE

Below is a list of the 34 social behaviors and the frequency of each behavior that occurred in the Amache Vignette (Appendix F).

1. IQ
2. SAFQ
3. SAFQ,
4. SAFQ
5. SAFQ
6. SAFQ
7. E
8. NT
9. SQF
10. SQF
11. ASQ
12. ASQ
13. CSA
14. CSA
15. NFPID
16. SRA
17. SRA
18. SRA
19. SRA
20. SRA
21. SRA
22. SRA
23. SRA
24. SRA
25. SRA
26. SRA
27. SRA
28. SRA
29. ESA
30. ESA
31. ESA
32. SECP
33. PEQ
34. RQ

Occurrence of Each Behavior
Code

- 13 SRA = 38%
- 5 SAFQ= 15%
- 3 ESA= 9%
- 2 SQF= 6%
- 2 ASQ= 6%
- 2 CSA= 6%
- 1 IQ= 3%
- 1 E= 3%
- 1 ESA= 3%
- 1 NT= 3%
- 1 NFPID= 3%
- 1 SECP= 3%
- 1 PEQ= 3%
- 1 RQ= 3%

Amache Station Social
Interaction Profile Summary

The dominant behavior for this vignette was students reading luggage identification cards aloud (SRA). The second most common behavior was students answering facilitator questions (SAFQ). At this particular station the facilitator also expounded upon student answers (ESA), clarified student answers (CSA), and answered questions (ASQ) that were asked by students (SQF).

APPENDIX H

BENT'S FORT VIGNETTE

Below is a vignette for the Bent's Fort Station. Behavior codes have been listed after social behaviors. They are underlined and are in parentheses. A Bent's Fort Station Social Interaction Profile can be found in Appendix I.

Facilitator: Who's been to Bent's Fort? What was it? (PEQ) (IQ)

Student: Bent's Fort was a trading post. (SAFQ)

Facilitator: That's right. Bent's Fort was for trading. There were six groups that came to trade here: Trappers, Ute Indians, the Cheyenne and Arapahoe, New Mexico Traders, St. Louis Traders, and the Military. What did they trade? (ESA) *Pulls out beaver pelt.* Who would bring these to trade? (CORQ)

Students: Mountain men. (SAFQ)

Facilitator: Yes, the trappers. *Pulls out moccasins.* What about these? (CORQ)

Students: The Indians. (SAFQ)

Facilitators: Yes, the Ute Indians are very well known for their beadwork. (ESA) *Facilitator continues to pull out objects and discuss what groups would bring the items to trade until all of the objects have been identified.* (3 CORQ)

Student: *After identifying the tea brick,* Can you make tea from it? Do they still make tea like this? (SQF)

Chaperone: Yes, they still make tea like this. (ASQ) Two things were traded at Bent's Fort: goods and services. What are goods? (CIQ)

Student: Something that's delicious. (SAFQ)

Facilitator: Sometimes. Goods can be delicious. Goods are things or objects that people want or like.

(CSA) And services are jobs. *Facilitator explains that students will play a trading game and explains the rules for the game (Outline 2: Bent's Fort Station). Students get divided into groups.*

Teacher: *To student,* Come get in this group. (NFPID)

Then the trading game begins. Students show signs of confusion on their face. One group turns to the teacher and asks what do they do?

Teacher: Look at your cards. These are the items you need. *Teacher reads each item.* So go to another group and see what they have to trade. (NFPID)

Chaperone: *To another group,* You need these things. (NFPID)

Teacher: *To another group,* This is what you guys need (*pointing*). Make sure you get those. (NFPID)

Students: Now we get it. (SCNF)

Student: We need corn meal. (SECP)

Student: Do you have wool blankets? (SQP)

Chaperone: *To a group of students,* Don't trade something unless you get something in return. (NFPID)

Teacher: *To a group of students,* You all have furs. (NFPID) What do they have that you can trade furs for? (NFIQ)

Student: *To group,* Let's come over here. So we need an ax. (SECP)

Student: We need ammm-i-nit-. (SECP)

Student: Ammunition. (SA) *Students continue to trade for the rest of the time. Adults continue to assist students.*

Facilitator: *After students finish trading,* Did anyone get all of their items? (RQ)

Student: We traded moccasins for the knife and furs for the flint and steel. (SAFQ)

Facilitator: Did you all learn anything? (RQ)

Students: You have to have a reason for people to trade with you. (SAFQ)

Facilitator: Where is Bent's Fort located? (RQ)

Student: The plains. (SAFQ)

Facilitator: When did people trade at Bent's Fort? (RQ)

Student: 1830s and 40s. (SAFQ)

APPENDIX I

BENT'S FORT STATION SOCIAL INTERACTION PROFILE

Below is a list of the 37 social behaviors and the frequency of each behavior that occurred in the Bent's Fort Vignette (Appendix H).

1. PEQ
2. IQ
3. SAFQ
4. SAFQ
5. SAFQ
6. SAFQ
7. SAFQ
8. SAFQ
9. SAFQ
10. SAFQ
11. ESA
12. ESA
13. CORQ
14. CORQ
15. CORQ
16. CORQ
17. SQF
18. ASQ
19. CIQ
20. CSA
21. NFPID
22. NFPID
23. NFPID
24. NFPID
25. NFPID
26. NFPID
27. SCNF
28. SECP
29. SECP
30. SECP
31. SQP
32. NFIQ
33. SA
34. RQ
35. RQ
36. RQ
37. RQ

Occurrence of Each Behavior Code

- 8 SAFQ = 22%
- 6 NFPID= 16%
- 4 RQ= 11%
- 3 SECP= 8%
- 2 ESA= 5%
- 1 PEQ= 3%
- 1 IQ= 3%
- 1 SQF= 3%
- 1 ASQ= 3%
- 1 CIQ= 3%
- 1 CSA= 3%
- 1 SQP= 3%
- 1 NFIQ= 3%
- 1 SA= 3%

Bent's Fort Station Social Interaction Profile Summary

The dominant behavior for this vignette was students answering facilitator questions (SAFQ). At this particular station non-facilitators provided instructional directions to students (NFPID). 5 out of 6 instructional directions provided by non-facilitators helped students to participate successfully in the trading game.

APPENDIX J

KEOTA VIGNETTE

Below is a vignette for the Keota Station. Behavior codes have been listed after social behaviors. They are underlined and are in parentheses. A Keota Station Social Interaction Profile can be found in Appendix K.

Facilitator asks students to sit on floor in front of a map of Colorado

Facilitator: What city is your school in? (PEQ)

Students: Thornton. (SAFQ)

Facilitator: Well then, your school is up here (*points to Thornton on the map*). (V) And we're here in Denver (*points to Denver on map*). (ESA) The first station we're going to time travel to is Keota (*points to Keota*). What's it like out there? (CIQ)

Student: Flat. It's the plains. (SAFQ)

Facilitator: That's right. People moved to Keota in the 1920s because of the Homestead Act. *As students sit at the feet of the facilitator, the facilitator explains the significance of the Homestead Act.* (NT) So people came to Keota to farm. Crops need about two feet of water per year to grow. This is about two feet. Everyone show about 2 feet with your hands. (HG) *Students model the distance of two feet with their hands.* But Keota gets about one foot of water in a year. Let's show one foot with our hands. (HG) *Students model one foot.* So, the people of Keota farmed for a little while, but life was hard, and eventually people in Keota left because it was so hard to farm. Today Keota is a ghost town. What is ghost town? (CIQ)

Student: A town that is empty. (SAFQ)

Facilitator: That's right it's an abandoned town. *Facilitator then explains the station's main activity (Outline 3: Keota Station). Once students are in the exhibit a group of students are observed in the school house. They are taking pictures at two 1920s style desks that have been altered with a camera*

and computer screen. Students take pictures at the desk and their faces appear on a projector screen in front of the desks. The interface on the screen is designed to look like the page of a yearbook. Students' faces appear inside of 1920s style face frames that are categorized by superlatives such as most athletic.

Student: Reads directions for taking picture aloud, then she takes a picture. (SRA) I'm the best dancer!

Look! (SECP) Turns to friend, What do you want to look like? (SQP)

Student: Should I choose this one? (SQP) (points to a face frame)

Student: Yeah, you should choose this one. (SECP)

At the back of the school house a chaperone and student walk through the school house.

Chaperone: Do you notice the items in the display case? (NFHQ) The student doesn't respond, but walks toward the desks instead.

In the general store a group of three students get store credit for the eggs they collected from the barn.

Student 1: Where do you put the eggs? (SQP)

Student 2: You put them here (points to egg carton). (SECP)

Student 3: How many eggs do you have? (SQP)

Student 1: Twelve eggs. (SECP)

Student 2: You get twelve cents. What would you like? (SQP)

Student 1: I'll buy some gum. (SECP)

Two students drive in the Model-T-Ford.

Student 4: Dude there's water! Emma look it spits water at you! (SECP)

Students then meet outside of the Keota exhibit to review activities.

Facilitator: Did you have fun in Keota? (PEQ)

Students: Yes! (SAFQ)

Facilitator: What things have changed since the 1920s? (CQ)

Student: Stores today are bigger. (SAFQ)

Student: Things cost less. (SAFQ)

Student: The stove. (SAFQ)

Facilitator: How was the stove different? (CSA)

Student: The coals. (SAFQ)

Facilitator: Yes, the coals were used to heat the stove. (ESA) What things were similar? (RQ)

Student: The car. (SAFQ)

Students continue to list things that exist today that are similar to the 1920s. Then the facilitator ends the station.

Facilitator: Next we're going to the Dust Bowl station which has a lot of similarities to Keota. Everyone line up behind me.

APPENDIX K

KEOTA STATION SOCIAL INTERACTION PROFILE

Below is a list of the 30 social behaviors and the frequency of each behavior that occurred in the Keota Vignette (Appendix J).

1. PEQ
2. PEQ
3. SAFQ
4. SAFQ
5. SAFQ
6. SAFQ
7. SAFQ
8. SAFQ
9. SAFQ
10. SAFQ
11. SAFQ
12. V
13. ESA
14. ESA
15. CIQ
16. CIQ
17. SRA
18. SQP
19. SQP
20. SQP
21. SQP
22. SECP
23. SECP
24. SECP
25. SECP
26. SECP
27. NFHQ
28. CQ
29. CSA
30. HG

Occurrence of Each Behavior
Code

- 9 SAFQ = 30%
- 5 SECP= 17%
- 4 SQP= 13%
- 2 PEQ= 7%
- 2 ESA= 7%
- 1 PEQ= 3%
- 1 CIQ= 3%
- 1 V= 3%
- 1 SRA= 3%
- 1 NFHQ= 3%
- 1 CQ= 3%
- 1 CSA= 3%
- 1 HG= 3%

Keota Station Social Interaction
Profile Summary

The dominant behavior for this vignette was students answering facilitator questions (SAFQ). At this particular station students conversed often. Students making exclamations and comments to their peers (SECP) was the second most dominant behavior, while student asking questions to their peers (SQP) was the third most dominant behavior.

APPENDIX L

OUR MOUNTAINS VIGNETTE

Below is a vignette for the Our Mountains Station. Behavior codes have been listed after social behaviors. They are underlined and are in parentheses. An Our Mountains Station Social Interaction Profile can be found in Appendix M.

Facilitator: We're in the mountains station. While we're here we want to think about how things have changed. People living in the mountains have always relied up natural resources. The Native Americans relied on them, and we rely on them too. What are natural resources? (CIQ) (IQ)

Student: They're things we can't live without. (SAFQ)

Facilitator: Good. (E) How else can we describe natural resources? (CIQ)

Student: Natural resources are air, water, soil, the sun. (SAFQ)

Facilitator: Very good. (E) Those are all natural resources, and we're going to focus on four natural resources in particular in this station: water, plants, animals, and rocks and minerals. But before we do we're going to watch this video (*points to Denver to Breckenridge video screen behind her*).

Students watch video and point to the mountain illustration on the wall that follows the story of the video. After video ends, the facilitator reminds students about natural resources.

Facilitator: Each of these towns uses natural resources. The people in the town rely upon natural resources. Now we're going to participate in our activity. *Facilitator explains activity instructions (Outline 4: Our Mountains). Students find a partner and complete directions on resource card. Two students work together to complete directions at an exhibit of a taxadermied elk.*

Student 1: *Reads first page of elk book in front of the display aloud to her partner.* (SRA)

Student 2: *Reads second page of book aloud to her partner. The partners take turns reading the individual pages of the book.* (SRA)

Another pair of students take turns reading aloud from the book in front of the taxidermied pika display. (SRA) A separate pair of students read the directions on their card, but they get distracted by the exhibit that shows the relationship between snow pack and snow melt. They walk over to the exhibit, and one student turns the handle on the exhibit that increases the amount of snow in the first tube. As the student continues to rotate the handle, the second tube gradually fills up with water. The boys then let go of the handle and return their attention to their resource card. The facilitator then called the group together to review the station.

Facilitator: What did we learn about our mountain environment today? (SRA)

Student: Wildfires can burn down trees. (SAFQ)

Facilitator: That's right.

Student: There are a lot of bugs. (SAFQ)

Facilitator: Yes, and those pine beetles lay their eggs in the tree which destroys the trees, and leaves a lot of dead trees laying around. Hot weather can lead to fires, and these dead trees can make the fires spread. (ESA) *The facilitator continues to accept four more answers from students (4 SAFQ) and expounds upon each student answer as she did with the first two answers. (4 ESA) The facilitator then ends the station.*

Facilitator: I need a volunteer who can remember the year 2014 and *Our Mountains Station*. *Student raises hand and facilitator selects him to remember the name of the station and the year.*

APPENDIX M

OUR MOUNTAINS STATION SOCIAL INTERACTION PROFILE

Below is a list of the 22 social behaviors and the frequency of each behavior that occurred in the Our Mountains Vignette (Appendix L).

1. CIQ
2. CIQ
3. IQ
4. SAFQ
5. SAFQ
6. SAFQ
7. SAFQ
8. SAFQ
9. SAFQ
10. SAFQ
11. SAFQ
12. E
13. E
14. SRA
15. SRA
16. SRA
17. SRA
18. ESA
19. ESA
20. ESA
21. ESA
22. ESA

Occurrence of Each Behavior
Code

- 8 SAFQ = 36%
- 23 ESA= 23%
- 4 SRA= 18%
- 2 CIQ= 9%
- 2 E= 9%
- 1 IQ= 5%

Our Mountains Station Social
Interaction Profile Summary

The dominant behavior for this vignette was students answering facilitator questions (SAFQ). The second dominant behavior was facilitators expounding on student answers (ESA).

APPENDIX N

MESA VERDE VIGNETTE

Below is a vignette for the Mesa Verde Station. Behavior codes have been listed after social behaviors. They are underlined and are in parentheses. A Mesa Verde Station Social Interaction Profile can be found in Appendix O.

Facilitator: The next station we're going to time travel to is Mesa Verde. Has anyone been to Mesa Verde before, or has anyone learned anything about the Ancestral Puebloans that lived here? (IQ) (PEQ)

Student: The Ancestral Puebloans grew crops and lived in cliff dwellings. (SAFQ)

Facilitator: Correct. Some of the crops they grew included corn, beans, and squash. (ESA) *Facilitator then pulls out a map of Colorado. The Ancestral Puebloans lived here (points to Southwestern corner of Colorado). (V)* Sometimes people refer to the Ancestral Puebloans as the Anasazi, but the word Anasazi means ancient enemy in Navajo, so out of respect to Pueblo people living today we call them the Ancestral Puebloans. The Ancestral Puebloans lived about 800 years ago in the 1200s. In this station we're going to think about the ways the Ancestral Puebloans used natural resources. We're going to focus on four natural resources: plants, animals, water, and rocks and minerals. *The facilitator then explains the directions for the station (Outline 5: Mesa Verde Station). Students begin the station activity. One student is observed reading his natural resources card that directs him and his partner to find the door to the Ancestral Pueblo house. His partner is interested in the water pump display.*

Student: Come over here. We're supposed to find the door. (SECP) (SA) *The student leaves the water pump and helps his partner find the door to the house. At the cordage table a chaperone reads the label directions to two students.*

Chaperone: It looks like fun! (NFSC)

Student 1: It is fun! (SCNF)

Chaperone: You see you just roll it back and forth. If you let go of the end it will twist. See. There you go.

(NFSC) (NFPID)

Student 1: Art is fun. (SCNF) (SECP)

Chaperone: *To second student, You did nice! Good job!*

A pair of students are observed reading their resource card aloud in front of a display case of Ancestral Pueblo Crops.

Student 1: What types of food did Ancestral Puebloans grow? (SQP)

Student 2: Corn, beans, and squash. (SECP)

Student 1: Ok, let's go get another card. (SECP)

Another group of students complete their card's directions in front of a weighted water pot that simulates the weight of a pot filled with water.

Student 1: Can you lift the pot? (SQP)

Student 2: *Lifts pot.* Look at how heavy it is. (SECP)

Student 1: *Lifts pot, then reads label behind pot aloud.* (SRA)

The facilitator then calls the group back together to discuss findings.

Facilitator: What was the main animal that the Ancestral Puebloans used? (RQ)

Student: Turkey. (SAFQ)

Facilitator: That's right. Sometimes they ate the turkeys, but they also used the feathers to make things like blankets and clothes. (ESA) How much water did the average Ancestral Puebloans use in a day? (RQ)

No students raise their hands to answer. They used about 2.5 gallons every day. Do you know how much water you use in a shower? (PEQ) *Students shake their heads no. About 25 gallons.*

A chaperone observes two students talking while the facilitator talks.

Chaperone: Pay attention. She's talking. (NFCB)

Facilitator: Does anyone have questions or things they wanted to share? (RQ)

Student: I made a rope. SAFQ)

Facilitator: Nice job. *Facilitator ends station by telling students the next station they will go to.*

APPENDIX O

MESA VERDE STATION SOCIAL INTERACTION PROFILE

Below is a list of the 27 social behaviors and the frequency of each behavior that occurred in the Mesa Verde Vignette (Appendix N).

1. IQ
2. PEQ
3. PEQ
4. SAFQ
5. SAFQ
6. SAFQ
7. ESA
8. V
9. SECP
10. SA
11. NFSC
12. NFSC
13. SCNF
14. SCNF
15. NFPID
16. SECP
17. SECP
18. SECP
19. SECP
20. SQP
21. SQP
22. ESA
23. SRA
24. RQ
25. RQ
26. RQ
27. NFCB

Occurrence of Each Behavior
Code

- 4 SECP = 15%
- 3 SAFQ= 11%
- 3 RQ= 11%
- 2 PEQ= 7%
- 2 NFSC= 7%
- 2 SCNF= 7%
- 2 SQP= 7%
- 1 IQ= 4%
- 1 SECP= 4%
- 1 V= 4%
- 1 SA= 4%
- 1 ESA= 4%
- 1 SRA= 4%
- 1 SNFCB= 4%

Mesa Verde Station Social
Interaction Profile Summary

The dominant behavior for this vignette was students making exclamations and comments to their peers (SECP). The second dominant behavior was students answering facilitator questions (SAFQ).

APPENDIX P

DUST BOWL VIGNETTE

Below is a vignette for the Dust Bowl Station. Behavior codes have been listed after social behaviors. They are underlined and are in parentheses. A Dust Bowl Station Social Interaction Profile can be found in Appendix Q.

Facilitator: We're in 1930s in Baca County. Does anyone know what happened? (IQ) *No students raise their hand.* In the 1930s the Dust Bowl happened. There was almost no rain. There was a drought. Do you all know what that is? (CIQ)

Student: When there's no rain for a long time. (SAFQ)

Facilitator: That's right. It got really windy, and these wind storms happened over and over again. This building behind me is a homestead house-- a house that farmers would have lived in Baca County in the 1930s. There was one Sunday in particular where the dust storm got really bad. This Sunday has become known as Black Sunday. This dust storm along with the others that happened ruined the farmers' crops and livestock. *The children listened intently. They kept their attention on the facilitator.* The Dust Bowl ruined natural resources. What are natural resources? (CIQ)

Student: Something real. (SAFQ)

Facilitator: Yes, they are real. Natural resources are things that come from nature. (ESA) Water is one. Can you all think of others? (CIQ)

Student: Crops. (SAFQ)

Facilitator: Yes, plants. What else?

Student: Dirt. (SAFQ)

Facilitator: Yes, rocks and minerals. *Facilitator waits for another student to raise their hand.* There's one more. *Facilitator gives hint.* Moooooo. (GH)

Student: Cow. (SAFQ)

Student: Animals. (SAFQ)

Facilitator: Great! We're going to go into this house, and I want you all to look for natural resources.

Look for things that are made out of natural resources. *Students enter house and watch the Black Sunday Theater Show. After show is over, a student exclaims to one of her friends.*

Student: That was fun! (SECP) *The facilitator gathers students on the floor to review the Black Sunday Theater Show.*

Facilitator: Who can tell me what natural resources they saw? (RQ)

Student: I saw a tree outside of the window. (SAFQ)

Student: The animals-- they were dying. (SAFQ)

Student: The rocks and the dust. (SAFQ)

Facilitator: Yes, dust was a big part of the Dust Bowl. Does anyone know who that guy was on the wall?

The guy in the picture? (CIQ)

Student: President Roosevelt. (SAFQ)

Facilitator: Which one? (CIQ)

Student: Franklin. (SAFQ)

Facilitator: That's right. He worked really hard to help people get through the Dust Bowl. At this time there was also the Great Depression. One thing Franklin did was help people be better farmers. Farmer's practices changed a lot after the Dust Bowl. (ESA)

Student: How did they make the Dust Bowl stop? (SQF)

Facilitator: They had to wait until things got better-- about six to seven years. (ASQ) Alright that's our last station. Let's do our timeline activity to wrap things up.

APPENDIX Q

DUST BOWL STATION SOCIAL INTERACTION PROFILE

Below is a list of the 23 social behaviors and the frequency of each behavior that occurred in the Dust Bowl Vignette (Appendix P).

1. IQ
2. CIQ
3. CIQ
4. CIQ
5. CIQ
6. CIQ
7. SAFQ
8. SAFQ
9. SAFQ
10. SAFQ
11. SAFQ
12. SAFQ
13. SAFQ
14. SAFQ
15. SAFQ
16. SAFQ
17. SAFQ
18. GH
19. SECP
20. RQ
21. ESA
22. SQF
23. ASQ

Occurrence of Each Behavior
Code

- 11 SAFQ = 48%
- 5 CIQ= 22%
- 1 IQ= 4%
- 1 GH= 4%
- 1 SECP= 4%
- 1 RQ= 4%
- 1 ESA= 4%
- 1 SQF= 4%
- 1 ASQ= 4%

Dust Bowl Station Social
Interaction Profile Summary

The dominant behavior for this vignette was students answering facilitator questions (SAFQ). At this particular station used questioning to engage students. Check-in questions (CIQ) were the dominant questions the facilitator used.

APPENDIX R

SAN LUIS VIGNETTE

Below is a vignette for the San Luis Station. Behavior codes have been listed after social behaviors. They are underlined and are in parentheses. A San Luis Station Social Interaction Profile can be found in Appendix S.

Facilitator: We have landed in the 1850s in San Luis. I wish we had a map, but we don't have one at this station. Imagine the state of Colorado in your head. San Luis is in the central southern part of Colorado. People in San Luis came from New Mexico. They were Hispanic which means they spoke Spanish. San Luis became a town before Colorado became a state. This is map of San Luis that you all are sitting around. Have any of you ever made a map? (PEQ) *Students shake their heads yes. The facilitator then tells students the cardinal directions of the map.* What differences do you notice about the two different water sources? (CQ)

Student: One is curvy and one is straight. (SAFQ)

Facilitator: Good. The curvy one is called Culebra Creek. The straight one is called the San Luis People's Ditch. Do you think the ditch was made by nature? (CORQ)

Student: No. (SAFQ)

Facilitator: That's right. The Culebra Creek is made by nature because it's curvy. (ESA) *The facilitator then points to each building on the map and explains what each building was used for (Outline 7: San Luis Station).* What does una casa mean? (CIQ)

Student: A house. (SAFQ)

Facilitator: Does anyone know what a hornos is? (CIQ) *No students raise their hand. A hornos is an adobe brick oven. Facilitator explains the directions for the main activity (Outline 7: San Luis Station). Then the facilitator reads the clues on the card and has students raise their hand if the students thought*

they knew the object that matched the card clue. The facilitator gave more information about the object after students guessed the name of the object. An example is provide below.

Facilitator: I'm a holy object made of wood. You might see me on top of a church in San Luis. What object am I? (GH) (IDQ)

Student: Wooden Cross. (SAFQ)

Facilitator: Yes. This cross is a religious symbol. Religion was, and still is, very important to the community of San Luis. Many people there are Catholic. (ESA) *The facilitator reviewed the station after identifying each of the 18 objects. (17 GH, IDQ, SAFQ)*

Facilitator: Who can remind me what time we're in? (RQ)

Student: 1850s. (SAFQ)

Facilitator: And when and where did we travel to before this station? (RQ)

Student: Bent's Fort in the 1830s. (SAFQ)

Facilitator: We're going to travel to Keota next.

APPENDIX S

SAN LUIS STATION SOCIAL INTERACTION PROFILE

Below is a list of the 65 social behaviors and the frequency of each behavior that occurred in the Our

San Luis Vignette (Appendix R).

- | | |
|----------|---------|
| 1. PEQ | 41. GH |
| 2. CQ | 42. GH |
| 3. SAFQ | 43. GH |
| 4. SAFQ | 44. GH |
| 5. SAFQ | 45. GH |
| 6. SAFQ | 46. GH |
| 7. SAFQ | 47. IDQ |
| 8. SAFQ | 48. IDQ |
| 9. SAFQ | 49. IDQ |
| 10. SAFQ | 50. IDQ |
| 11. SAFQ | 51. IDQ |
| 12. SAFQ | 52. IDQ |
| 13. SAFQ | 53. IDQ |
| 14. SAFQ | 54. IDQ |
| 15. SAFQ | 55. IDQ |
| 16. SAFQ | 56. IDQ |
| 17. SAFQ | 57. IDQ |
| 18. SAFQ | 58. IDQ |
| 19. SAFQ | 59. IDQ |
| 20. SAFQ | 60. IDQ |
| 21. SAFQ | 61. IDQ |
| 22. SAFQ | 62. IDQ |
| 23. SAFQ | 63. IDQ |
| 24. SAFQ | 64. IDQ |
| 25. CORQ | 65. ESA |
| 26. CIQ | |
| 27. CIQ | |
| 28. GH | |
| 29. GH | |
| 30. GH | |
| 31. GH | |
| 32. GH | |
| 33. GH | |
| 34. GH | |
| 35. GH | |
| 36. GH | |
| 37. GH | |
| 38. GH | |
| 39. GH | |
| 40. GH | |

Occurrence of Each Behavior
Code

- 22 SAFQ = 34%
- 19 GH= 29%
- 18 IDQ= 28%
- 2 CIQ= 3%
- 1 PEQ= 1%
- 1 CQ= 1%
- 1 CORQ= 1%
- 1 ESA= 1%

San Luis Station Social
Interaction Profile Summary

The dominant behavior for this vignette was students answering facilitator questions (SAFQ).

APPENDIX T
GUIDED PROGRAM STATION SCRIPTS

Outline 1: Amache Station

Essential Questions:

Why did people come to Amache?

What was life like for a family in Amache?

Skills & Concepts:

Historical Eras; Japanese Internment; Using Objects as Primary Sources

Vocabulary:

Internment; ancestry ; prejudice; citizen; Nisei; barrack; World War II; Pearl Harbor

Objectives:

Students will discover why people were imprisoned at Amache.

Students will work with objects to discover an interned family's experience.

Learning Outcome:

Amache was a community of imprisoned Japanese-Americans in Colorado during World War II.

Introduction (5mins):

When: 1940s

Where: Extreme South-Eastern Colorado (dry, remote, dusty, windy)

"Did you know that not all history is happy? Some history is sad but it is just as important to learn about these stories. Sad stories can help us to make better choices in the future."

Show the students the intro photos and read the information on the back.

1. Before World War II

Issei (ees-sey), or first generation, Japanese immigrants came to the US between 1861 and 1940. They made homes here and had families. Their children, the second generation, are called Nisei (nee-sey). While they kept many of the traditions of their homeland, they also took on many American customs as well.

Photo: Issei picnic (1918) Seattle, Washington Dencho, the Okawa Family Collection

2. Japan Attacks the United States

In the 1940's the U.S. was attacked by Japan at Pearl Harbor (in Hawaii). It was a surprise attack and many people died. The U.S. entered World War II. WWII was a very big war where many countries were fighting each other. This was 60-70 yrs ago... around the time your grandma and grandpa were born. People were very scared and the government wanted to protect the country from more attacks on the mainland.

Photo: Front Page of the Denver Post December 8, 1941, Night Extra Edition

3. President Orders People to Move

Afraid that they were spies, the president ordered all people of Japanese ancestry (that means that their family came from Japan) to be removed from their homes on the west coast and put in prisons during the war. They were not told where they were going or how long they would be there. Many of the people imprisoned were American citizens and none were found guilty of being spies.

Photo: Map of US showing exclusion zone and internment camps

4. Leaving Things Behind

Entire families were forced to leave their homes, not just adults but kids and babies too. They could only take two suitcases per person with them so they had to leave a lot of things behind: belongings, pets, friends, schools, businesses, jobs, cars and houses.

What would you take in your suitcases?

Photo: Salinas, California. Tagged for evacuation. May 1942

Farm Security Administration - Office of War Information Photograph Collection, Library of Congress, Reproduction Number: C-USF34-T01-072499-D

5. Life at Amache

One of the prisons that people were sent to was in Colorado. It was called Amache. We are going to learn about what life was like at Amache. This suitcase is full of things that tell us about a family that would have lived in one of the barracks (military houses): a mother, a father, a little brother, a big sister and a kid about your age.

Photo: Arial view of Amache Relocation Center, Auraria Archives

6. Life after Amache

Just before the war ended, the government closed Amache. They told all of the internees to leave but many of them didn't have anywhere to go. Governor Ralph Carr invited the Japanese to remain in Colorado. As a result, our state has a vibrant Japanese-American community today. Gov. Ralph Carr is remembered as a hero that stood up for what was right even though it was very unpopular at the time.

Photo: Photographer: McClelland, Joe Source: Archives and Special Collections, Auraria Library

Activity (10-15mins): unpacking the suitcase

Tell the students that they will be learning about the people that were forced to live at Amache. Explain that this suitcase is full of objects that could have belonged to a family (mother, brother, sister, father, and a child their age). Remind them to be gentle with the objects.

Give each student a luggage tag (object ID card) and ask them to find the matching object in the suitcase. If the student's reading level is low, flip the activity (i.e. give them each an object and then read out the clues for them). After all of the students have found their matching object, have the students share out about each family member.

Object Key:

Marigold Seeds	My father was a farmer in Sacramento before we relocated. We grew strawberries, walnuts, grapes, and oranges on our farm. We also had many beautiful flowers. My father brought these seeds to Amache because they were one of my mother's favorite flowers.
Vest	My father packed his vest, so he could look nice. In Sacramento, he always wore his vest to church.

Hammer	My father packed a hammer. I didn't understand why that was so important. But when we got to Amache he used it to build a shelf for all my treasures near my bed.
Brownie Camera	My father wanted to pack his camera, but that was also against the rules.
Rice Bowls	My mother brought these bowls for our meals. She is such a good cook. My favorite thing she made were <i>onigiri</i> , or rice balls. Her cooking was much better than what we ate at the Mess Hall.
Apron	My mother packed her apron. She knew that wherever we were going, she would work very hard to make it feel like a home for us.
Clothing Pins	These clothing pins were for our laundry. Since we couldn't pack all our clothes, we washed the ones we brought almost every other day. I always helped my mother hang our clothes on the line to dry.
Photo of Boyfriend	This is my sister's boyfriend. I used to tease her for having a boyfriend, but he left Amache to join the army. She hasn't seen him for a long time, so I don't tease her anymore because it makes her sad.
1930's Swimsuit	My older sister packed a swimsuit. She didn't know where we were going, or whether it would be cold or hot. But she loved swimming with her friends and hoped she would be able to use her swimsuit.
Nightgown	My sister brought her nightgown, and she wore it every night to bed. Even in the summer, when it was so hot, she wore her nightgown. We didn't have much privacy in our room, so I think it made her feel more adult.
Coffee Can	My mother found this coffee can in the garbage and kept it beneath my little brother's bed. He was scared of our new home, and didn't like to go to the bathroom alone at night.
Baseball	My little brother carried this baseball everywhere. He was excited when we started playing baseball at Amache. He wants to be just like Joe DiMaggio, his favorite player, when he grows up.
Carp Kite	My little brother loves this carp kite. Every year on Boy's Day, May 5th, we hang it outside to show that a happy and strong boy is living inside.
ME	
<i>Geta</i> (Sandals)	These <i>geta</i> (sandals) were made by my father out of scrap wood. They helped keep my feet clean when using the latrine.
Photo of Dog	It was hard leaving my dog. He really wanted to come with us, but it was against the rules. I really miss him! This picture helps me remember him.

Wrap-Up (5mins): explore the barracks

Have the students quietly explore the Amache barracks looking for objects similar to the ones they found in the suitcase. Explain that a family would all live in this space together (no separate rooms!).

Remind the students to show respect to the people that lived this sad story by being well behaved in the exhibit. Facilitate a discussion about the following:

- What things make this feel like a prison?
- What things make this feel like a home?

*To end on a happy note, remind the students that these people did an amazing job at making the best of a terrible situation. They continued to live their lives and endure. They even help other cultural groups when their rights and freedoms are in trouble!

Outline 2: Bent's Fort Station

Essential Questions:

Why did people come to Bent's Fort?
What are goods and services?

Skills & Concepts:

Trade; Historical Eras; Goods and Services; Natural Resources; Manufactured Goods; Global Trade

Vocabulary:

Global, goods and services, trade, bison, exchange

Objectives:

Students will learn the difference between goods and services.
Students will play a trade game to learn what goods and services were traded at the Fort.
Students will discover some of the groups of people that traded at the Fort.

Learning Outcome:

Bent's Fort was a trading post on the American frontier where many different groups of people traded goods from all over the world.

Introduction (10mins): A Place for Trade

When: 1830s - 1840s (before the Gold Rush, Denver and Colorado statehood)

Where: Eastern Plains (dry, remote, grasslands, on Arkansas River and Santa Fe Trail)

Bent's Fort was like a big 'truck stop' on the Santa Fe Trail. It was a place of trade! People came from all over to exchange goods and services peacefully. Talk about goods vs. services and ask the students for examples. Also have them give examples of trades they've made in their own lives.

Activity 1 (5mins): goods traded at the fort

Show the students some of the items that would have been traded at the Fort. Facilitate a discussion about where they would have come from. This is a great time to point out the difference between goods that are manufactured (i.e. made in factories) and natural resources (i.e. furs and hides). Share between 3-6 objects depending on time and interest. Be sure to remind the students to be gentle!

Object	Description
Beaver Pelt	Used to make men's top hats. The inner pelt looks like bad split ends under a microscope = water proof when wet. The beaver trade was declining by the time Bent's Fort was around.
Axe Head	Iron and steel tools of all sorts were in demand both by the Mountain Men and the Indians. Steel and iron knives, axes, tomahawks and awls lasted longer and were more durable than stone tools.
Moccasins w/ Glass Beads	Before the arrival of Europeans, Native Americans used beads made out of natural objects like bones, shells or quills. Glass beads were easier to work with and were available in many colors some of which could not be duplicated from natural materials. Most beads were valuable, but blue beads were especially popular.

Powder Horn	Used for pouring black powder into the barrel of a rifle, this powder horn would keep gun powder dry. The powder horn also let a controlled amount of powder out at one time, so the trader would have consistent amounts. The ability to carry the powder horn on the body helped the trader to load and shoot quickly.
Looking Glass	This magnifies the sun's rays to start a fire.
Flint & Steel	Also known as "fire steels", these objects were of prime importance in the American Indian trade. Although they were very inexpensive, they represented an important technological innovation over traditional fire-making techniques. Trappers working in the wilderness also found this tool to be extremely valuable. What is the science word for two things rubbing together to create heat? Answer = FRICTION
Tea Brick	This tea brick came all the way from China! It was a luxury good.

Activity 2 (5mins): trade game play

Give each group of 2-3 students a set of trade partner cards (there are six trade partners). Explain that these cards are the goods and services that they brought to trade today (meaning they are extra or easily obtained). Walk them briefly through the point value system and explain that the goal of the game is to obtain the highest number of points. Have them trade for about ten minutes or until they start getting distracted. If time permits, have them trade more than once switching trade partners.

Wrap-Up (5mins): Are you an expert trader?

Once they have completed trading have them add their points. You can show them how to count up the points with one of the groups.

SCORE KEY

0-8: Novice Trader	You are a novice trader! Trading at Bent's Fort was slow today, and you left with most of your trade goods. Don't be discouraged though, you will be back to trade at Bent's Fort soon! The more you trade, the better you will get!
9-15: Skilled Trader	You are a skilled trader! Even though you may still have some of your original trade goods, you also got many of the things you need and want for the winter. You are on your way to becoming an expert trader!
16 or higher: Expert Trader	You are an expert trader! You have skillfully traded away your goods for items you will need and want for the winter! Congratulations, and keep up the good work!

Students might enjoy hearing about the best trade (i.e. highest score) of the day!

BONUS QUESTION: Ask the students if they traded anything that wasn't a natural resource or made in a factory. The idea is to get them to identify the services that were traded in the game. There are two services traded PROTECTION and KNOWLEDGE OF THE TRAILS.

Trade Partner Profiles**Trappers**

The fur trappers that visited Bent's Fort were of a variety of different backgrounds. Also called "mountain men" because they spent a lot of time in the mountains, some trappers were employed by companies or were self-employed. The fur trappers that frequented Bent's Fort had a lot of experience exploring, tracking, and sometimes surveying the Rocky Mountains. They brought furs, hides, and sometimes meat to trade at the Fort. They would also offer their services as guides for the military scouting expeditions. The trappers sought to trade for the supplies they needed to trap and hunt as well as manufactured goods made on the east coast, Mexico and Europe. Kit Carson, the famous trapper and guide, was employed at Bent's Fort.

Ute Indians

The Ute Indians are Colorado's longest continuous residence. The tribe was partially nomadic and traveled to hunt and trade. They had extensive knowledge of the terrain, hunting grounds, and seasonal weather patterns. Their information was as vital as their hides and meat they brought to Bent's Fort to trade. Ute men hunted deer and other small mountain animals with a bow and arrow. Ute women would clean the hides of the deer and make clothing and moccasins which were decorated with beads, shells, and animal teeth. The Utes traded with neighboring tribes, such as the Navajo, Comanche, and Pueblo tribes, and came to Bent's Fort occasionally for trade. They traded deerskins, buckskin clothing, and horses for hunting and manufactured materials as well as food and items that would help them survive harsh winters.

Cheyenne and Arapaho Indians

The Cheyenne and Arapaho tribes lived on the plains of eastern Colorado. They were both major trader partners at Bent's Fort and even helped negotiate where the Fort was built. Although both groups had a distinct cultural identity, they were close allies with common life ways and traditions. They were nomadic hunters that followed the bison herds, living in tipis and riding horses. Horses and buffalo hides were the most common and most popular trade commodities for their usefulness to the tribes and the Fort itself. The Cheyenne and Arapaho also traded axes, blankets, knives, embroidery and beadwork for items they needed. The two tribes would trade for manufactured goods and hunting tools as well as food and items for survival.

Military

The United States military came to Bent's Fort to prepare for war with Mexico. As a US outpost on the US/Mexico border (the Arkansas River), the Fort was a symbol of US influence and power in the region as well as a strategic launch pad for invasion. But, evidence suggests that the military was in some ways a burden to the Fort as they did not always pay for the supplies they used or for the rooms they occupied while at the Fort. The Fort was also sometimes used as a hospital for sick and injured soldiers. The soldiers would bring in plenty of horses, guns, and ammunition to trade along with the protection of an army cavalry. They traded mainly for food and survival supplies and frequently for knowledge of the area.

New Mexican Traders

Because of the location of Bent's Fort (600 miles from St. Louis) there was very little currency in circulation. Travelling up from Traders from New Mexico could pay with highly desirable Spanish gold and silver. Since gold and silver were hard currency, their value did not fluctuate as much as bartered goods could. New Mexico traders brought coffee, sugar and expertly made goods from Mexico. They would trade for supplies for the journey home, buffalo hides to make clothing and luxury goods.

St. Louis Traders

The Bent brothers and Ceran St. Vrain had trade contracts with companies back in St. Louis, Missouri that outlined exchange of goods for traded items. The Fort would receive shipments of American items or independent European traders would bring wagon trains of their manufactured goods to be traded. These goods were to be traded for American Indian products so they could be traded in St. Louis, to other tribes or to the Anglo-Americans. The Fort itself was eager for New Mexican traders to come to trade their Spanish currency for luxury Euro-American goods. European goods such as cloth and clothing, sugar, coffee, rice, tea, cutlery, domestic items, barrels of rum and stills, and horses were very popular.

Outline 3: Keota Station

Essential Questions:

Why did people come to Keota?

How was life in Keota different from life today? How is it similar?

Skills & Concepts:

Compare and Contrast; Historical Eras; Regions of Colorado; Homesteading; Technology Change

Vocabulary:

Homesteading, dry land farming, mail order catalogue, livestock, crops, outhouse, typewriter, Ford Model T, postmaster, quilting, rural, ghost town

Objectives:

Students will discover why people migrated to Colorado and Keota.

Students will compare and contrast life in the 1920's to life today.

Students will understand the physical characteristics and human features of the Eastern Plains.

Learning Outcome:

Keota was a dry land farming community on the Eastern plains where people worked hard and tried to build a good life for themselves. They came for free land and opportunity.

Activity Description:

Students are given a scavenger hunt card with information about a real person that lived in Keota. The card also has a list of tasks or chores for them to do in the exhibit. They are asked to then compare and contrast life in the 1920's to now.

Introduction (5mins):

When: 1920's (after Colorado became a state, after Gold Rush and Denver)

Where: Eastern Plains (dry, grasslands)

Keota was a dry land farming community on the Eastern plains where people worked hard and tried to build a good life for themselves. The railroad was very important to the town. It took crops out and brought household and farm good in. Locate Keota on the Colorado map. Point out the Eastern Plains. Ask the students to identify physical features of the region (ex: few trees, flat, open, rural, dry). Describe the amount of water Keota gets in a year (12 inches). Compare this to the amount of water crops need to grow well in the region (24-27 inches). Tell the students that this exhibit is a recreated town called Keota during its height in the 1920's. Ask them how many years ago that was (90 or so!). Tell students that they are going to learn about life in Keota by doing the work of a real person that lived there.

Activity (15mins): Scavenger Hunt

Distribute the scavenger hunt cards to the students. They can work individually or in groups to complete their chores. Instructions:

1. Read the card to find out who you are
2. (Chores) Do everything on your 'To Do' list
3. (Free Choice) When you are done, you can explore the exhibit until time is called
4. (Compare/Contrast) Be thinking about how life was different or the same in Keota from how it is today.

Wrap Up (5mins): Comparing and contrasting life in Keota to today

When time is called, students regroup with a facilitator to compare and contrast life in the 1920's with life today.

Sample Discussion Questions:

ELIZABETH-You milked Glossy and used an old fashioned ice cream maker. How was making ice cream different in the 1920's than it is today? What technology or invention makes it easier now? How did they keep it from melting in the past?

Answer: Most people buy their milk and ice cream from a store now. Ice cream making machines today use electricity and refrigeration. They are also often made of plastic and just for fun.

FAE-You were the school teacher and graded your students' homework on chalkboard slates. How was the homework different? How was it the same?

Answer: Students use computers and notebooks to do homework today. Many of the subjects and things we learn are still the same (i.e. spelling, math, history, science).

ROSE-You played old fashioned games. What were they made of? Did they use electricity?

Answer: The toys in the 1920's were made of metal and wood, not plastic (it hadn't been invented yet). They also didn't use electricity. Imagine...no video games or computers!

HENRY-You bought a new Union Suit from the Montgomery Ward catalogue. How much did that cost in the 1920's? What other items did you see that people could buy from the catalogue? Do people still order from catalogues? Where would you go to buy things today?

Answer: Prices were much lower in the 1920's than they are today. Not because things were worth less, but because of the value of money is lower (called inflation). People still order from catalogues, but most are online. Also, people can go to specialized stores to buy what they need in the city. Discount stores like Wal-Mart carry a little bit of everything.

OLE-You used the water pump and visited the outhouse. How is this different from where we get our water today? Did you see any toilet paper in the outhouse? That's because people used recycled magazines and catalogues instead.

Answer: We have indoor plumbing today. People recycled magazines and catalogue pages to use in the outhouse.

CLYDE-You took a ride on the model T. How is that car different from the cars we have today? How is it the same? Did you need a license to drive?

Answer: the basics of the automobile haven't changed but engines are computerized now. Also, many kids could drive out on their homesteads on the eastern plains. Cars were very important on the homestead. They did farm work but also made people more connected.

Outline 4: Our Mountains Station

Essential Questions:

How did people use resources in Colorado's mountains today?
What resources are important to people in Colorado?

Skills & Concepts:

Change over time; Compare and contrast; Regions of Colorado; natural resources

Vocabulary:

recreation, landscape, resource, shelter,

Objectives:

Students will explore the Our Mountains exhibit to understand how people who live in and visit the Mountains use natural resources.

Students will compare and contrast use of resources in different regions and times.

Learning Outcome:

People who visit and live in the Mountains rely on natural resources, including water, plants, animals and minerals. In the past and today, people in Colorado pay special attention to the scarce resource of water.

Introduction (5 mins):

Who has been to the mountains? What do they look like? There are tall pine trees, and steep hills. There is a lot of snow in the winter. What kinds of things do you do there? Who has seen snow on top of the mountains? Lots of people love to spend time in the mountains, but the mountains are changing. There are more people, and it's getting hotter and drier.

Has anyone heard of **natural resource** before? What are some examples of natural resources that we use today? We are going to be looking at FOUR natural resources: **WATER / PLANTS / ANIMALS / ROCKS & MINERALS**. We are going to explore this area to learn about how people today use natural resources. What do you think are going to be some ways that people in the mountains use resources?

Activity: Resource Search in Drive Through the Mountains video (5 minutes)

How many people have seen the mountains? How many people have visited the mountains? We are going to take a drive up to the mountains, from Denver to the town of Breckenridge. Everyone should pick one of our resources (water/snow, plants, animals, rocks/metals) and see if you can find an example of that resource during the movie.

Activity: Resource Search in the exhibit (5-10 min)

We are going to break into smaller pairs/smaller groups. I'm going to give each group a card. On one side of the card, it says what resource you are looking for, and on the other side it tells you where to look for it, and has a question to answer. When your group has answered the question, come back to me (or to one of the chaperones) and you will tell us the answer to your question, and we will give you a new card. (Do this until all each group has completed 3-4 resource cards, and had an opportunity to look at some of the different areas of the exhibit.)

- **Picnic basket by car** there is one added prop that you will set out in this area, a picnic cooler where two groups look for plant and metal examples.
- **Quiz Game and activities in Summit Cafe:** Students will be attracted to this area, even though the quiz isn't part of the resource search cards. You can allow students to do the questions, and challenge them to identify which resources are part of the question.
- **Water Through the Mountains:** you can also include this as part of the Mountains station, just be sure to plan with the groups using the Dust Bowl station.

Wrap Up (5 min) Let's talk about examples we found of how people in the Mountains use resources:

- **Water & snow-** snowpack interactive, skiing, sailing on the lake
- **Plants and trees-** pine trees killed by beetles, wood in the café, plant based foods in the picnic cooler.
- **Animals-** elk, bear, pika, pine beetle, what are some challenges with animals?
- **Rocks and metals** -cars, road, tunnel, skis in the café (How do people get the rocks and minerals?— Answer: mines)
- **Oil-**Oil is used to make gas (for cars, buses, etc) and plastics (like the skis, water bottles, etc)

How is this similar to/different from how you use resources at your house or school?

Did you see examples of how people are impacting resources/the environment? (animals, trees, water, and minerals?)

Outline 5: Mesa Verde Station

Essential Questions:

How did people use resources in Mesa Verde?

What resources are important to people in Colorado?

Skills & Concepts:

Change over time; Compare and contrast; Regions of Colorado; natural resources

Vocabulary:

Ancestral Pueblo people, landscape, resource, shelter, survival, migration

Objectives:

Students will explore the Mesa Verde exhibit to explore how Ancestral Pueblo people used natural resources to meet basic needs.

Students will compare and contrast use of resources in different regions and times.

Learning Outcome:

Ancestral Pueblo people relied on natural resources, including water, plants, animals and minerals. In the past and today, people in Colorado pay special attention to the scarce resource of water.

Introduction (5 mins):

We are traveling to the southwestern Colorado, in a place called the Mesa Verde region. This area is very rugged. There are canyons and mesas covered with short trees and a few plants. It doesn't rain or snow much. The ancestors of the Pueblo people—Native Americans—lived here in the year 1200 (800 years ago) and had farms and villages. Has anyone learned about Mesa Verde in school? (visited Mesa Verde?)

Has anyone heard of **natural resource** before? What are some examples of natural resources that we use today?

We are going to be looking at FOUR natural resources: **WATER / PLANTS / ANIMALS / ROCKS & MINERALS**. We are going to explore this area to learn about how people in Mesa Verde used natural resources. What do you think are going to be some ways that people in Mesa Verde used resources?

Activity: Resource Search (10-15 min)

We are going to break into smaller pairs/smaller groups. I'm going to give each group a card. On the one side of the card, it says what resource you are looking for, and on the other side it tells you where to look for it, and has a question to answer. When your group has answered the question, come back to me (or to one of the chaperones) and you will tell us the answer to your question, and we will give you a new card.

Do this until all each group has completed 3-4 resource cards, and had an opportunity to look at some of the different areas (inside the house, at the diorama, at the water activity.)

You can also do the water activities together as a group.

Wrap Up (5 min)

Let's talk about examples we found of how Ancestral Pueblo people used:

- **Water**-watering turkeys, drinking, making pottery
- **Plants or trees** -yucca for baskets, corn, wood for houses, ladders
- **Animals** -turkeys, dogs in diorama, snake patterns in pottery
- **Rocks and metals**- houses of rock, pottery of clay, stone tools (no metals)

How is this similar to/different from how you use resources today?

What resources did Ancestral Pueblo people use that we still use today?

What are resources that we use that you did not see here?

Outline 6: Dust Bowl Station

Essential Questions:

How did homestead farmers use resources in the Dust Bowl in southeastern Colorado?
What resources are important to people in Colorado?

Skills & Concepts:

Change over time; Compare and contrast; Regions of Colorado; natural resources

Vocabulary:

homestead, landscape, resource, shelter, survival, drought, dust storm

Objectives:

Students will explore the Dust Bowl exhibit to explore how homesteaders used natural resources to meet basic needs, and what happened when they impacted the environment.
Students will compare and contrast use of resources in different regions and times.

Learning Outcome:

Homesteaders relied on natural resources, including water, plants, animals and minerals. In the past and today, people in Colorado pay special attention to the scarce resource of water.

Introduction (5 mins):

We are traveling to the southeastern plains of Colorado. This area is very flat and covered with grasses and very few trees (prairie.) It doesn't rain or snow much here, either. People came here to start farms and raise families, and lived here in the 1930s. But for many years there wasn't much rain or water, and times were tough, there were terrible storms.

Has anyone heard of **natural resource** before? What are some examples of natural resources that we use today?

We are going to be looking at FOUR natural resources: **WATER / PLANTS / ANIMALS / ROCKS & MINERALS**. We are going to explore this area to learn about how homesteaders used natural resources. What do you think are going to be some ways that they used resources?

Activity: Resource Search in the Dust Bowl theater (10 minutes)

Before the film: (there is a 1 minute countdown once the door to the theater opens.)

There were many years when there wasn't much rain, and the ground became very dry. People still tried to dig in the dirt to plant wheat and corn. So when there were stormy days, the air was full of dust. Big storms didn't happen just once, they happened almost every month, sometimes a couple of times a week, over many years. We are going to go inside this house and experience what a storm was like. Everyone should pick one of our resources (water, plants, animals, rocks/metals) and see if you can find an example of that resource in the kitchen and during the movie.

After the film: (If you need to shorten the time in the theater, you can exit early through the door on the right side. The "dust storm" ends after 4 minutes, and the lights start to come up at 6 ½ minutes when President Roosevelt begins speaking.)

-What examples of **water/plants/animals/rocks & metals** did you find in the kitchen and the story?
Were the farmers using resources in the same way we do today? Were there things that were different?

-How did you feel during the storm? (It was fun, and scary.) How do you think that the farmers and their families felt? What if this was the 10th storm like this?

Activity: Resource Search in the exhibit (5-10 min)

We are going to break into smaller pairs/smaller groups. I'm going to give each group a card. On one side of the card, it says what resource you are looking for, and on the other side it tells you where to look for it, and has a question to answer. When your group has answered the question, come back to me (or to one of the chaperones) and you will tell us the answer to your question, and we will give you a new card. (Do this until all each group has completed 3-4 resource cards, and had an opportunity to look at some of the different areas of the exhibit.)

Wrap Up (5 min) Let's talk about examples we found of how Dust Bowl farmers used:

- **Water**- watering crops, pumping water through the dam
- **Plants or trees**- growing wheat, wood for house, (where did they get the wood?)
- **Animals**- grasshoppers, rabbits, cows, horses, dogs
- **Rocks and minerals**- plows, tractors, farms (they had metal)

How is this similar to/different from how you use resources today?

What resources did the Dust Bowl farmers use that we still use today? What's different?

Outline 7: San Luis Station

Essential Questions:

Why did people come to the San Luis Valley?

What ways did the people in the San Luis Valley use the land?

Skills & Concepts:

Make a Case; Community; Compare and Contrast; Early Hispanic Settlement

Vocabulary:

Adobe, *horno*, *La Vega*, irrigation, mesa

Objectives:

Students will play a version of the Spanish Bingo game *La Loteria*.

Students will explore objects that early Hispanic settlers used in daily life.

Students will find connections to the early settlers in their own experience.

Learning Outcome:

The town of San Luis is Colorado's oldest town and was settled by Spanish speaking families whose culture and traditions still shape our state.

Introduction (5mins): Colorado's oldest town

When: 1850s

Where: San Luis Valley

Have students sit along the edges of the map and talk briefly about the town of San Luis.

"San Luis was founded in 1851 by Hispanic settlers from New Mexico. They spoke Spanish and moved into the San Luis Valley to farm and raise animals like sheep. They built this community together and it is Colorado's oldest town."

Tell the students they are going to learn about these early Colorado settlers by playing a traditional game of La Loteria (it is still played today!) But first we are going to explore the town itself by looking at the map.

Using the giant floor map, identify the different features of the San Luis map including:

The San Luis People's Ditch

This is an old irrigation ditch built in 1852. The people of San Luis worked together to build and still maintain it together. It keeps La Vega (communal grazing land) green and plentiful and is the oldest one of its kind in Colorado.

When you are reading the features on the map, ask the students to identify two water features (The San Luis People's Ditch and Culebra Creek). Tell them that one is manmade and the other is natural. Which is which? You can tell the ditch is man made because it is in a straight line (verses the curvy creek). Tell the students that people had to dig the ditch by hand using shovels. Wouldn't you want to save time and energy by digging in a straight line too? You can remind them that the shortest distance between two points is a straight line. By the way, did you all know that *culebra* means snake?

La Vega (Place for Raising Sheep)

La Vega is big piece of communal grazing land outside of town (originally about 633 acres). This is where ranchers and farmers can let their animals graze. *Vega* means “field.”

Stations of the Cross Shrine (Religious Place)

The Stations of the Cross Shrine is an important religious place to many people in and outside of Colorado. It is a series of bronze sculptures on the mesa across from town. Each station represents a moment during the crucifixion of Christ. Many Christians travel here during Easter.

Costilla County Courthouse (Place of Government)

The Costilla County Courthouse is a place of government. Costilla County has many towns in it including San Luis and was named for the Costilla River.

Sangre de Cristo Parish Church (Religious Place)

The Sangre De Cristo Parish Church is a religious place for Catholics. The people that settled San Luis were Catholics and many of the people that live there today are still. This church is very old!

R & R Market (Place of Business)

The R&R Market is Colorado’s oldest business. It has been around since 1857 (155 years!) and is family owned.

Adobe Home and Horno

Many homes in San Luis were made of adobe bricks. Adobe is made of mud and straw mixed together just right and dried in the sun until hard. This made a great building material because there weren’t a lot of trees around but there was a lot of mud! Hornos are outdoor ovens made of adobe.

Activity (15mins): La Loteria game

Students play a game of traditional Loteria, matching objects that represent things that were important to the San Luis settlers. Each student needs a Loteria card and bag with beans.

How to play:

The rules to *La Loteria* are just like Bingo. But instead of getting a row, they are trying to get ‘blackout’ (i.e. all of the spots covered). Pull an object out and read the riddle/clue until someone wins. To win, students must cover all of the images on the card with beans and call out “Loteria!” As you pull out the objects, ask the students where they think it belongs on the map (i.e. where was it used?). Place the objects on the map until a winner is called.

Wrap-Up (5mins):

Once someone wins, have the students return their cards and beans. The winner can go first. Ask the students if they recognize any of the objects and if they use them today.

List of Objects and Riddles:

Home/Daily Life	Sheep Industry	Religion
MOLCAJETE [Mole-kah-HEE-tay] <i>I grind, grind, grind all the time!</i> *This is used to grind peppers, chilies and tomatoes for making salsa. It looks like a mano and	BRANDING IRON <i>I’m a friend of the rancher but not the sheep!</i> *Ranchers used this to mark their sheep so that they didn’t	WOODEN CROSS <i>I’m a holy object made of wood. You might see me on top of a church in San Luis.</i>

<p>metate but it is not for grinding corn.</p> <p>CANDLE HOLDER <i>I hold the light so you don't burn your hand!</i> *Before electricity, people lit their homes with candles. It was designed to help catch melting wax.</p> <p>LAND GRANT MAP <i>Before Google Maps I could tell you who owned the land.</i> *This map shows lands that were given to people by the government when southern Colorado was part of Mexico.</p> <p>CHILIES <i>I come in mild, medium, and hot!</i> * This is one of the most famous and popular foods grown in the San Luis Valley.</p> <p>BALL AND CUP GAME <i>Before Xboxes and iPods I was the coolest game around!</i> *Before computers and electricity, kids made games themselves out of the materials they had around them.</p> <p>TIN PHOTO FRAME <i>I am cold tin on the outside but warm fuzzies on the inside.</i> *Tin art was an important art form in San Luis. The picture also shows the importance of family to the community.</p> <p>ADOBE BRICK MOLD <i>I can turn mud into a house!</i> *Adobe bricks are made of dried mud and straw. They make a great building material in the San Luis Valley because there are few trees.</p>	<p>get lost in the communal grazing lands. Brands are read left to right.</p> <p>SHEEP SHEARS <i>Sharp shears shave sheep!</i> *Ranchers use these to cut the hair off the sheep in the springtime.</p> <p>FINISHING COMB <i>I look like a comb but I'm not for your hair!</i> *This tool tightens the weave of yarn on a loom.</p> <p>HAND LOOM <i>Wool yarn weaves in and out of me to make a blanket!</i> *People would spend months using this tool to weave blankets by hand from the treated wool of sheep.</p> <p>SPURS <i>I live on a boot and tell a horse to go!</i> *Spurs were used by ranchers to make their horses go. Ranchers used horses to help keep their sheep and cattle.</p> <p>WOOL CARDS <i>Two brushes are better than one!</i> *Ranchers use these to clean dirt, leaves and sticks from wool after it was cut from the sheep.</p> <p>WOOL BLANKET <i>I am made of wool and will keep you warm.</i> *The people of San Luis wove high quality wool blankets.</p> <p>WOOL <i>This is how a sheep feels after a baaaath!</i> *This is what clean wool looks and feels like. Wool</p>	<p>*Religion was (and still is) very important to the community of San Luis. Many of the people there are Catholic.</p> <p>WOOD CARVING/Bulto [bool'-to] <i>I started as a cottonwood tree and now I'm a saint.</i> *The people of San Luis carved statues out of wood in their free time. Some of the statues were religious.</p> <p>WOODEN TREE CARVING [Tree of Life] <i>I am a tree but I don't lose my leaves.</i> *The tree of life is a synonym for the sacred tree or the connection between heaven, earth and the underworld.</p> <p>BLACK LACE SHAWL / Mantilla [man-til-uh, -tee-uh] <i>I cover a mother at church.</i> *To show respect, ladies in San Luis wore lace shawls over their heads in church.</p>
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	was used to make yarn for weaving.	
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Outline 8: Silverton Station

Essential Questions:

Why did people come to Silverton?
What was work like as a miner?

Skills & Concepts:

Collaboration; Teamwork; Natural Resources

Vocabulary:

Prospecting, hard rock mining, mucking, high grading, double-jacking, ore cars, tram, dynamite, wage, pay dirt, natural resource, drift

Objectives:

Students will discover skills required to mine.
Students will work together to complete mining tasks.
Students will understand the role communication in cooperation played in mining.

Learning Outcome:

Mining was challenging work. Miners had to work together to get the job done.

Introduction (5mins): mining vs. prospecting

When: 1880s (after the gold rush, after Colorado became a state and after Denver founded)

Where: Mountains

To the students: "This is the Sunnyside Mine near Silverton, Colorado. This is your first day as a miner and you're going to learn how to work together with your crew and do your job right. New miners are called "nippers" or "greenhorns". I'm your shift boss and I'm going to show you the ropes. First you have to know the difference between hard rock mining and prospecting.

What is hard rock mining? Miners dig deep into the earth to get valuable ore (silver and gold) out. How is it different from prospecting? Prospectors looked for signs of gold and silver on the surface. They work for themselves and thought they could get rich by hitting paydirt. Miners didn't get to keep what they found. They worked for a mine company and earned the same daily wage.

Brass Tags: Mining was, and still is, dangerous work! This was one of the ways that miners stayed safe. Each miner had their own tag. They put the tag up on the board at the beginning of their shift and took it with them when they left. How did this help them stay safe? Answer: You could tell if someone was left in the mine and needed help.

Daily Wage: \$2.50-\$4.50 Is that a good wage? Yes, for back then. Point out that things cost less in the past. They weren't going to get rich, but they could feed a family.

Candles: Miners brought enough candles into the mine to light their way for an entire shift (approx. 10 hours). No electricity down there!

Lunch: Miners didn't have a food court or a lunch room. They had to bring their lunches with them down into the mine. They were smart in what they brought and how they packed it! Show the students

how the lunch box was packed and talk about this as a Welsh tradition. Many of the miners that came to Silverton were immigrants from England.

Grab your hats, candles and lunch-It's time to head in!" Take the students in the Cage. Explain that this was the elevator that took the miners down into the mine. Close the inner door last to trigger the movement. Tell the students that it could take up to 30 minutes to reach the bottom of some mines, they were that deep! We've only been open for a year so our mine is not that deep.

Activity (15mins): All in a day's work!

Walk the students through all of the skills explaining the context and demonstrating the activity. This can be done in a relay format or just have them take turns doing the activity at each skill station.

Skill	Context	Activity
Bell & Hoist	miners used bell signals to communicate (no radios or cell phones)	Ring the bell two times to send the cage back up!
Mucking	The first job of the day was to shovel or muck up the rock from the previous shift. This was back-breaking work. Watch out for the unexploded dynamite charges hidden in the rubble!	Lift the shovel full of ore 20 times (take turns!) Say 'ALL MUCKED'
Mule	Animals were used for many jobs in the mine. Mules were used to haul the ore buckets. Some spent their entire lives in the mine even going blind.	Give your mule a treat! Say 'MULE SET'
Drilling	Now it's time to drill holes for a new round of explosives. Before mechanized drills, miners did this by hand. One person would hold a steel drill and hit it with a 5lb hammer, turning it between strikes. If you had a partner, this was called double-jacking. (the media piece will demonstrate this)	Double-Jacking activity One person holds the drill while the other hits it with a hammer. The person holding the drill turns it after every hit. Hit the drill 10 times to make a good hole. Say 'DRILLING DONE'
DO TOGETHER AS A 'REWARD'		
Blasting	Hard rock miners used explosives like dynamite to blast off sections of rock called 'drifts'. They set the charges off in a pattern that made a controlled explosion. It was very important that they all went off and in order.	Blasting Pattern interactive *the group can do this together They will have 'graduated' to explosives by doing the other task correctly.

Wrap Up (5mins):

Was mining hard work? Lead a brief discussion about the daily life of a miner and how it has changed over time (i.e. more safety regulation, better technology, electricity etc...).

Outline 9: Timeline Activity

Essential Questions:

What is a timeline?

What is the chronological order of the stories we learned about today?

Skills & Concepts:

Chronology; sequencing, historical eras, cause and effect

Vocabulary:

Timeline, chronological order, decade, century

Objectives:

Students will sequence the four stations that they visited.

Students will understand the order of key historical eras in Colorado history.

Students will summarize the main learning outcome of the four stations.

Learning Outcome:

Events can be placed in chronological order which can help to understand cause and effect.

Activity (5 minutes):

This brief activity happens at the end of the last station.

Briefly summarize all the 'places' in time that the students visited. All of these places were from a different point in time. Some started hundreds of years earlier than others. In fact, the communities they explored happened over a 1400 year period of time.

Select four students. Give each a photo representing one of the stations they just explored. Each photo includes the starting date and ending date. Have the four students stand and position themselves in order by date, earliest to latest (i.e. put the stations in chronological order). Once they are in order, have them put the photos on the time machine board in the proper place.

Use the timeline rope for the following:

What is a timeline? A timeline shows time in order from oldest date to present day. What is present day mean? What year is it? Show the timeline, divided into 100 increments from 600 to 2012. What is a 100 years called (century)? Show them a decade. What is a decade (10 years)?

Select four students. Give each a photo representing one of the stations they just explored. Each photo includes the starting date and ending date. Have the four students stand and position themselves in order by date, earliest to latest (i.e. put the stations in chronological order). Once they are in order, have them put the photos on the time machine board in the proper place.

Tell the students you are going to give four clues about each station. Read each clue. The student with the correct match will pin, hang or stick it to the time machine board.

Questions/Clues: (Clues will be written on the back of the zoomed photo)

- This group made food, clothing and shelter using parts of the bison. (Plains Indians or Cheyenne and Arapaho)

- This was a trading post where people from many cultures traded goods and services peacefully. (Bent's Fort)
- People moved here for free land and an opportunity for a better life. They worked hard! (Keota)
- Japanese Americans were imprisoned here during World War II even though they had not committed a crime. (Amache)
- These people explored Colorado and made maps to help others find their way around Colorado. (Explorers)
- Skilled miners worked hard here to take silver out of the ground. Dangerous work but they knew what they were doing to stay safe! (Silverton)
- TBD (Hispanos)
- Ancestral Puebloans built homes here in the sides of cliffs for protection and grew corn each year for food. (Mesa Verde)
- This was a place where Cheyenne and Arapaho Indians were attacked by the U.S. military resulting in the death of many villagers. (Sand Creek)
- African Americans vacationed here, a safe haven from segregation in the city. (Lincoln Hills)