

TEACHING SCIENCE THROUGH NATIVE CROW CULTURE: A PLACED-BASED
EXPERIENCE

by

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July 2013

DEDICATION

This paper is dedicated to my family: my husband Gregory Half who has been supporting me since day one; for my children, Sabrena and Abram Half, this is for you; to my parents, Larry and Gwen Plain Bull for their encouragements and prayers; and to the Big Sky Science Project and their faculty for all the help they have given me, especially Elizabeth Swanson and Gail Whiteman. I would also like to thank Dr. John Graves who is such a dedicated teacher who will help you in an instant; and my editors, Laurie Rugemer, Sara Young and Heather Dietz for helping me obtain by Masters Degree at Montana State University.

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ABSTRACT

This project was conducted to determine the affects of a culturally responsible placed-based experience for Native American elementary students. The students were exposed to two place-based experiences with the central theme of the traditional Crow uses of buffalo. The place-based experiences included a Tribal Elder guest speaker and a field trip to a battlefield museum and buffalo jump. The results indicated that both student and parents gained a greater appreciation for native Crow culture as a result of the place-based experiences.

INTRODUCTION AND BACKGROUND

Pretty Eagle Catholic Academy, a private church school serving primarily Crow Indian children in grades K-8, is the location of where this study was conducted. The school is in St. Xavier, MT. St. Xavier is a small community where students are bused from Fort Smith, Lodge Grass, Crow Agency and Hardin, Montana. At Pretty Eagle all students have free and reduced lunch. As a second grade teacher at Pretty Eagle for the past 14 years and having lived on the Crow Indian Reservation my entire life, I have a high level of interest in identifying successful strategies for increasing Native American students' success in school.

There were 14 second graders in my classroom. Pretty Eagle has 99% Native American students (<http://www.prettyeaglecatholicschool.org>). Teaching second grade has been a rewarding experience, especially with this group of young people whom I have found to be very inquisitive students. I love the challenge of allowing their social and cultural background to be their main resource of learning through story telling. This past year I was very fortunate to have a group of very responsible parents who had a high level of involvement with our classroom.

During the past 14 years of my teaching experience at Pretty Eagle, I spent 6 years as a Crow language teacher and 8 as a second grade teacher. When I was the Crow language teacher, I developed my own curriculum because there were not any published materials available. I taught Crow language to preK-8th graders, approximately 160 students twice a week. During class the students recited the Crow Flag song, the Lord's Prayer in Crow and learned the names of colors, shapes and animals. We participated in conversational Crow and stories were told in both Crow and English according to the seasons of the year. When I moved to second grade, my passion for teaching the Crow

language and culture continued and led to my focus question: What are the effects of teaching in a culturally responsible manner through a place-based learning experience in a second grade classroom with Crow students?

CONCEPTUAL FRAMEWORK

The term culture refers to people's values, daily rituals and beliefs in a general sense. It includes the integrated relationship of human knowledge, beliefs, and behavior that results in learning and transferring knowledge from one generation to another. Included in the concept of culture are the historical customary beliefs as well as the common feature of daily existence that are shared by people in a time or place. When used in conjunction with a people, such as a Native American tribe, the term used to describe the way of life of that people group (Flewelling, 1994; Merriam-Webster, 2011).

Cultural literacy refers to the way that a learner's culture is used as a bridge to success in school. The practice is known as culturally responsive teaching (Pewenwardy & Caphape, 2003). Learning about another culture helps students develop an understanding and tolerance of the viewpoints of others. It also helps them better understand their own culture and others as well (Arikan, 2010).

There are numerous advantages for schools that promote cultural diversity and are racially integrated. These advantages include cross-cultural friendships, higher rates of high school graduation and college attendance, and the development of fewer racial stereotypes or prejudice. It has been reported that critical thinking skills of students increases in classrooms that are racially diverse (Orfield & Frankenberg, 2011).

One of the cultural problems students encounter is a disconnect between the culture at home and the culture at school. For example a native tongue such as Crow may

be spoken at home and a different language, English, spoken at school. When students are asked a question in the school language, they may answer in his/her native tongue. Students may be confused as to what the teacher is talking about because at home he is taught a different way, where listening and not interrupting an adult are expected behaviors. When listening to the teacher at school and not saying a word, the teacher may think there is a problem and may end up putting a label on the student, thinking the child has a learning disability. Another example would be eye contact where the child is taught not to look in the eyes of a male, but it is expected at school when the teacher asks a child to look at them (Minner, 1995).

Storytelling is another way to teach students in a culturally responsible manner. In a society itself, storytelling is an artistic expression or entertainment and an educational device. The reason that stories are powerful is that they reach our most primitive explanation of a culture's understanding. Stories help convey life lessons such as right and wrong, good and evil, how things came to be, and simple everyday tasks. Culture is kept alive through story telling. Storytellers are often important members in a society and well respected (Smith, 2004; Krog, 1998).

It has been stated that language and culture cannot be separated. When students learn a second language, they acquire culture at the same time. Teaching culture in the context of a second language broadens students' perspectives and helps them understand the culture of the language. This helps them better understand their own culture and the culture of the new language. One reason that culture is not taught when teaching a second language is lack of consistency among different teachers. There is disagreement

about what is culturally relevant. The lack of resources that are authentic is another reason that culture is not taught (Lobo, 2005).

Teachers that come to the reservation are unaware of the tradition and cultural values. New teachers expressing themselves as they understand the native students better and are well prepared about the culture and experiencing it living in the rural areas. The goal is to promote cultural awareness within these teachers and the sensitivity of understanding it (Minner, 1995).

Placed-based learning refers to learning that occurs in close proximity to one's location. It includes experiential learning, project-based learning, using the environment as the context for learning and investigating the historical and cultural significance of location (Gruenewald, 2003; Powers, 2004; Smith, 2007; Smith & Sobel, 2010; Woodhouse & Knapp, 2000). Sobel (2005) provides the following definition of place-based education:

Place-based education is the process of using the local community and environment as a starting point to teach concepts in language arts, math, social studies, science and other subjects across the curriculum. Emphasizing hands-on, real-world learning experiences, this approach to education increases academic achievement, helps students develop stronger ties to their community, enhances students' appreciation for the natural world, and creates heightened commitment to serving as active, contributing citizens. Community vitality and environmental quality are improved through the active engagement of local citizens, community organizations, and environmental resources in the life of the school (p.7).

METHODOLOGY

The treatment for my action research based classroom project was to implement Crow Culture in my second grade science classroom, which included six girls and eight boys for fourteen students in all. My students all understand the Crow language, but do not speak it. I had one student who was non-Crow. The treatment included teaching about the buffalo and its uses according to Crow history and culture. The project incorporated stories, activities, Crow language about the buffalo, and a field trip to a battlefield museum and buffalo jump. Each student completed a post-experience survey about the Crow cultural significance of the buffalo. I invited an elder, Leonard Bends, to my classroom to talk about buffalo. He also told the children many facts about the buffalo through Crow stories, including the historical importance to the Crow people. In the spring we took a field trip to Little Big Horn Battlefield National Monument where there is a museum and artifacts related to the buffalo. In addition, we visited the Grape Vine Buffalo Jump where the students had a place-based experience as they learned about how buffalo jumps were used.

Several data collection tools were selected to gather information about the influence of culture in our class. The data collection tools included student drawing activities, parent and student surveys, and a teacher journal.

The Parent Survey was administered both pre and post-treatment (Appendix A). The seven-question survey asked about parents' knowledge of buffalo, its historical importance and if they valued the teaching of culture to their children. The results were analyzed for common themes.

The Student Confidence Survey asked students about their confidence telling the parts of the buffalo, how the buffalo was used and the historical importance of the buffalo (Appendix B). The survey was administered as a post-treatment instrument. The data was averaged and reported in levels of confidence: *very, somewhat, not very* and *not at all*.

After both place-based experiences, Leonard Bends's talk and the Museum/Buffalo Jump Field Trip, students completed the Draw A Buffalo activity (Appendix C). The results were analyzed for detail, accuracy and relative information. Observed differences in the drawings were analyzed and are reported in Table 1.

Table 1
Data Triangulation Matrix

Focus Question	Data Source 1	Data Source 2	Data Source 4
What is the impact of teaching culture in the 2 nd grade science classroom?	Parent Survey	Student Confidence Survey	Draw a buffalo

DATA ANALYSIS

The result of the place based drawings show that the students' first drawings were very general (Figure 1). Seventy-one percent of the students drew about things they learned from just the story telling. Three percent were confused about the story of the buffalo and it uses. They included drawings of a buffalo, an Indian with very little detail. The drawings changed to more specific detailed drawings after the place-based experience (Figure 2). Ninety-two percent remembered greater detail and labeled parts of

the buffalo. These drawings included the parts of the buffalo and the uses, and included more detail. The students learned that the buffalo tail was used as a fly swatter, the horn as a cup and the intestine used for water pouch.

Before the place-based experience	After the place-based experience
	<p>Harik May 6 2013</p> 
<p>3-19-13</p> <ol style="list-style-type: none"> 1. The buffalo eat of the muller of buffalo one of them will have a white buffalo 2. The Indian's used to chase the buffalo over the cliff 3. buffalo can live up to 25 year's old 	<p>The blood the used it's a pudding</p> 
<p>3-19-3</p> <p>we Indian like to eat meat. want we go to a sundance we don't eat for 3 days. we push a bottle off a cliff. someone's eating meat. we can't eat for 3 days. push a bottle</p> 	<p>Solanun/may-6-13</p> 

Figure 1. Examples of student drawings as the guest speaker place-based experience.

On their drawings after the second placed-based experience, students wrote more detail about their drawings. One student said, “In the old days people yoosd [sic] buffalo parts. They yoosd [sic] a horn as a spoon. They yoosd [sic] the skin for tepes [sic].” Another student said, “they chast [sic] the buffalo off a clift [sic] into the water.” A third student said, “they yous [sic] the buffalo as a blinkit [sic].”

The results of the Student Confidence Survey indicated that indicated the 57% of the students were *very confident* telling the parts of the buffalo ($N = 14$). When asked if they could tell how ancestors used the buffalo, 35% were *very confident*, 28% were *somewhat confident* and 35% were *not very confident*. Students showed mixed confidence in telling how buffalo are used today, with 49% either *very* or *somewhat confident* and the rest *not very* or *not all confident*. The survey also indicated that only 28% of the students speak Crow fluently (Figure 3).

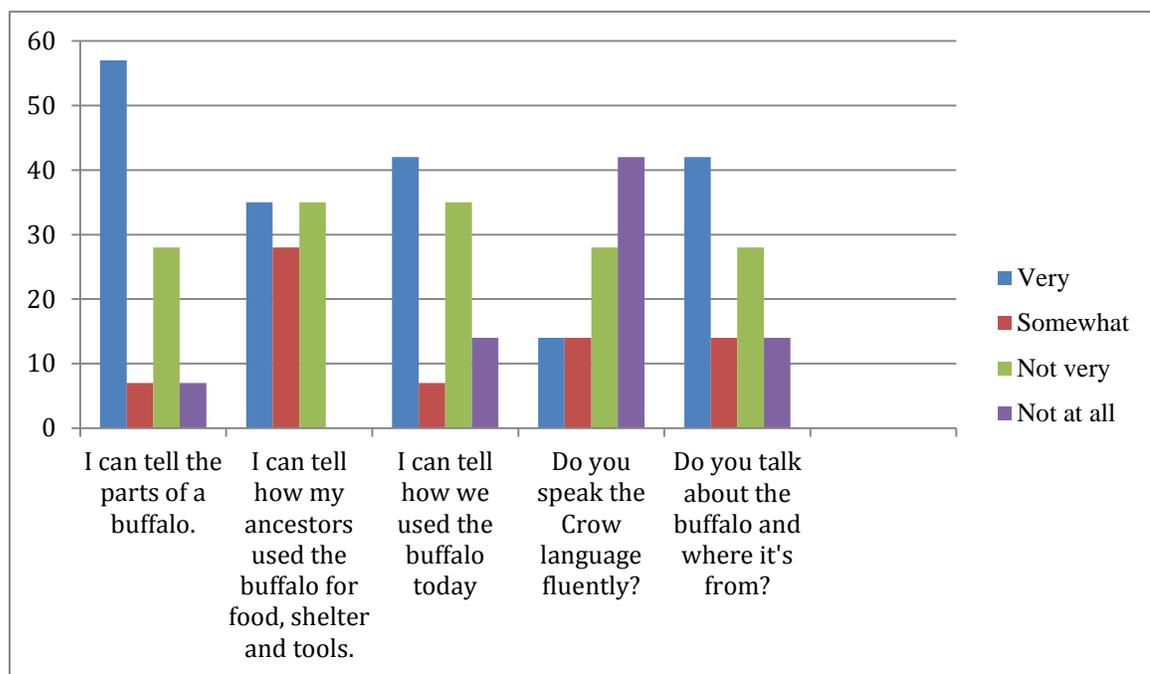


Figure 2. Student confidence survey, ($N = 14$).

The results of the Parent Survey indicated that all parents knew the historical importance of buffalo in Crow culture. They also knew the importance of buffalo in today's Crow culture. Everyone agreed to the value of their children learning about the buffalo. One parent said, "The buffalo is a symbol of our existence in the world today." Another one said, "It's our own science." Yet another parent said that learning about our history, "Keeps the language and tradition alive for our children." My parents were mostly all Crow, some of the parents were single mothers and two of them were raised by Grandparents. One parent was non Crow. They all lived in within the boundaries of the reservation, Hardin, Crow, Lodge Grass and St. Xavier and all but one are fluent Crow speakers.

INTERPRETATIONS AND CONCLUSIONS

The results of the study revealed that participating in a culturally responsive place-based experience helped the students understand their culture better. Students gave similar results on their surveys and drawings. The students were amazed to see the connections of a real world experience between home and school. They have a better understanding of their cultural history. This was a very meaningful experience for them, resulting in measurable impact on the students' interest in their culture this is based on my observation of my students.

The results of the parent survey indicated that all parents want their child to learn about the culture, values and the importance of the culture at home and school. The project was an eye opening experience as the parents had to really think about what they thought about it historically and why it is important to us. Their first thought was they didn't know, but thinking about it as the way of our ancestors lived a long time ago

caused their thinking to change. The evidence show that one of my parents wrote a very thoughtful story as a result of the project. From the survey helped parents reflect about what they talked to their kids about. This project demonstrated that learning about the buffalo in a culturally responsible manner changed the thinking of both parents and students.

VALUE

This project had great value for me because I learned more about the historical significance of buffalo and how it could be used to teach both science and Crow culture. Along with the parents, my thinking changed as well. I learned techniques and strategies that helped me be a more effective teacher. I am happy about the results. Students learned from the storytelling and the place-based experiences and the students now know how valuable our culture is. After the project was over, one of my parents shared the following story:

The crisp air is cold, fine, thin. The crackling of the fire and the glowing of embers underneath the fire, made the spot on the Big Horn Mountains around our fireplace so warm. The spark of my Grandfather's lighter ignites and he puffs on his rolled tobacco. His eyes squinted and his face is firm, like a man of steel. His hands are big as boulders of the Garvin Basin. The running water from the mountain naturally flowing from the Long Ridge sprinkles nonstop. The self made creek ripples down. Grandpa grabs his thermos and refills his cup. The aroma of mountain water coffee smells so good. He takes a sip and with his gravel voice, he says, "Ahhh, there ain't nothing like mountain coffee brewed right son?" I laugh and say, "Yeah."

My grandpa is a well known mountain man, handy with a lariat kind of guy and could rope the moon, in my eyes. He kicks his boots off and leans back against a log. He looks up at the stars and tells me, “The stars give you sense of direction. The north star is your guidance to a right path. The seven brothers of the big dipper watch over you. Next to it there is a bright shiny star we Crows call Baashe Chiilupike’ (Buffalo Bull Star).” He continues to share his story. “My grandfather, your great great grandfather, has always prayed to the creator, asking Baashe Chillupike for a great meal and a home. The Buffalo is our resource in life, the bones used for tools and weapons, the hide is used to make ropes and homes, homes such as tipis and clothing. The meat is perfect, such great protein you can imagine. The meat will keep you healthy. Basshe Chiilupike will never let you eat sour food.”

My grandpa Paul Jay said, “There was a time when the animals ruled the lands, the animals were bigger than the home you live in. The buffalo and the magpie raced across this land. The buffalo put white clay around his eyes and bit into sage brush. The magpie painted his wing feathers white. The race began, but the fact was the buffalo was faster on foot than the magpie, and magpie said, ‘No, I am faster than you. Let’s do a race to see who is faster.’ The race began and they both were running, the sage in the buffalo’s mouth began to seep through his throat. He began to cough. He coughed so hard that he started to bleed. There was blood everywhere and the magpie saw his chance and began to run faster and faster. At the end of the race, the magpie won and the buffalo said, ‘I have beaten you.’ Magpie said, ‘how could you beat me when I finished the race before you?’

Buffalo said, 'The reason I coughed was because I ran around this land twice before you did.' The magpie couldn't understand as he tried to wash off the paint. But the paint could not wash off. So son, every since way back then, the magpie and to this day all magpies, have white paint on their wings, and the land is covered in red because the buffalo ran around the world once and then challenged the magpie and ran again."

This story and the great aspects of what my grandfather has taught me, I share by taking my boys up to the exact spot where set up our camp back then, and retell the stories just like how they were told to me. Those are special moments and I share those and other culture moments to my sons, and I hope they continue to share with their sons. It is a great Crow culture we have.

This narrative reflects the power of storytelling in culture and why it is important that we continue to share our culture. I am fortunate that I can do this in my classroom through science.

Doing this MSSE Capstone project help me in my writing and my assessments. As I learned more, it helped me meet the needs of my students and adapt my teaching style. I want to continue to implement this project in the future to keep Crow culture alive and well in my classroom.

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APPENDICES

APPENDIX A

PARENT SURVEY

Parent Survey

1. Name three items for the use of the buffalo?
2. What can we use the buffalo for today?
3. Where can you find a buffalo today?
4. How do you spell the Crow word for buffalo?
5. What, historically, was the importance of the buffalo to the Crow? Please give examples.
6. How is the buffalo important today in Crow culture? Why?
7. Do you talk about the buffalo and its historical impact on our people with your child?

APPENDIX B

STUDENT CONFIDENCE SURVEY

Student Confidence survey

How confident do you feel (Circle one)

1. I can tell the parts of a buffalo.
Very Somewhat Not very Not at all
2. I can tell how my ancestors used the buffalo for food, shelter and tools.
Very Somewhat Not very Not at all
3. I can tell how we use the buffalo today.
Very Somewhat Not very Not at all
4. Do you speak the Crow language fluently?
Very Somewhat Not very Not at all
5. Do talk about the buffalo and where it is from?
Very Somewhat Not very Not at all

Look over your responses. For each item, write a sentence WHY you felt confidence level you chose.

APPENDIX C

DRAW A BUFFALO

DRAW A BUFFALO ACTIVITY/ LABEL PARTS

Draw a buffalo and label (head, tail, body, hooves, etc.) and what it's used for.