Honoring Our Children

Culturally Appropriate Approaches for Teaching Indigenous Students

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Northern Arizona University's College of Education has published a series of monographs on Indigenous issues. These include *Stabilizing Indigenous Languages* edited by Gina Cantoni (1996), *Teaching Indigenous Languages* edited by Jon Reyhner (1997), *Revitalizing Indigenous Languages* edited by Jon Reyhner, Gina Cantoni, Robert St. Clair and Evangeline Parsons Yazzie (1999), *Learn in Beauty: Indigenous Education for a New Century* edited by Jon Reyhner, Joseph Martin, Louise Lockard and W. Sakiestewa Gilbert (2000), *Indigenous Languages Across the Community* edited by Barbara Burnaby and Jon Reyhner (2002), *Nurturing Native Languages* edited by Jon Reyhner, Octaviana Trujillo, Roberto Carasco and Louise Lockard (2003), *Indigenous Language Revitalization: Encouragement, Guidance & Lessons Learned* edited by Jon Reyhner and Louise Lockard (2009), and *Honoring Our Heritage*. This new monograph includes papers from the American Indian Teacher Education conference held at Northern Arizona University 2012 as well as other papers.

Copies of the above publications that are still in print can be obtained from the College of Education, Northern Arizona University, Box 5774, Flagstaff, Arizona, 86011-5774. These publications are also available on the world wide web at http://nau.edu/AIE. For more information contact Jon Reyhner at 928 523 0580 or Jon.Reyhner@nau.edu.

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Donna Deyhle, University of Utah

> Almost 30 years ago I put on a pair of black nylon break-dancing pants with ten sets of zippers and joined a group of young Navajo and Ute students in solidarity at San Juan High School, as my friend Diane said, "To show those Whites." I was nervous then—a new Assistant Professor from the University of Utah (untenured) showing up at the high school she was studying in breaker pants—but I felt compelled to support my new friends. No one seemed to notice me, or the Navajo and Ute break-dancers I was with. Years later, I showed pictures of these break-dancers to the principal who exclaimed, "In my school? I don't even recognize this as my school." I would come to learn that most American Indian students were invisible or "unseen" by teachers and school personnel. Academic courses opening a path to college were also invisible in most schools. Many teachers were indifferent to the lives of their students. Teachers' knowledge of the Navajo community was framed by negative and limited expectations constrained by racism (Deyhle, 1995). Over the years I watched and listened to the educational encounters Navajo youth were experiencing and talking about. In this chapter I would like to share some visions and desires—framed as lessons—I learned from the remarkable Navajos who graciously shared their knowledge and lives.[2]

Beyond damage-centered research

Before I move into talking about these lessons, I'd like to say a little about the research path of many researcher' studying Native communities, with suggestions for future research studies. My earlier work, starting in 1984, focused on high school dropouts and racial warfare (Deyhle, 1986, 1991, 1992). The picture I painted was not a pretty one. This is what Aleut scholar Dr. Eve Tuck called "damage-centered research," which

> looks to historical exploitation, domination, and colonization to explain contemporary brokenness, such as poverty, poor health, and low literacy.

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[1] Adapted from Dr. Deyhle's keynote speech at the Third American Indian Teacher Education Conference given on July 13, 2012 in Flagstaff, Arizona.

[2] In this article I move between using Native, Native American, Indian, American Indian, Indigenous and tribal or Nation terms, such as Navajo or Ute, to reflect the terms each scholar, parent, student, or teacher used in the research I present. I make no claims about which "label" is more appropriate, but suggest that scholars not impose, but rather respect and use the names Native peoples choose for themselves.

> Common sense tells us this is a good thing, but the danger in damage-centered research is that it is a pathologizing approach in which the oppression singularly defines a community. (Tuck, 2009, p. 413)

As Tuck also points out within "damage-centered research" oppressed people, as bell hooks said, are only allowed to "only speak from that space in the margin that is a sign of deprivation, a wound, an unfulfilled longing. Only speak your pain" (hooks, 1990, p. 152). Although it is important to expose racism and oppressive, which many researcher have done, this can work against the understanding of the beauty, power, wisdom, and humanity of Indigenous communities.

Dr. Tuck (2009) urges us rethink our research to capture a desire-centered research—reflecting wisdom, humor, and hope—instead of damage, "desiredbased frameworks are concerned with understanding complexity, contradiction, and the self-determination of lived lives" (p. 416) and "desire is about longing, about a presence that is enriched by both the past and the future. It is integral to our humanness" (p. 417). A desire-center framework turns the lens toward wisdom and hope, as Dr. Tuck says, "so that people are seen as more than broken and conquered. This is to say that even when communities are broken and conquered, they are so much more than that—so much more that this incomplete story is an act of aggression" (p. 416).

It is in this spirit that I want to affirm what I have come to know as the strength of the young Navajos I have meet who have endured racial and cultural struggles to remain connected to the Navajo landscape and place. They are what scholars are describing as "new warriors" (Alfred, 2009; Tuck & Yang, 2011; Lee, 2009, 2007; Hare & Pidgeon, 2011). As I now look back to the words a librarian used to described Navajo and Ute break-dancers in the mid-1980s, who resisted racism and schooling, "It's like being a kind of warrior," I see a hint of critical insight on her part. Mohawk scholar Alfred described new young warriors as taking from their "heritages and translating them into ideas and practices to form frameworks for their own lives which will eventually become the intellectual, social and political landscapes of [their] nations as they become the leaders of [their] peoples" (Alfred, 2005, p. 257).

Clearly, cultures don't represent a seamless whole. And identities are situational, contradictory, and divergently shaped by social, political, and economic forces. Identity is "always mobile and processual, partly self-construction, partly categorization by others, partly a condition, a status, a label, a weapon, a shield, a fund of memories, et cetera" (Malkki, 1992). Cultural studies scholar Stuart Hall argues, "Cultural identity is not something that already exists, transcending place, time, history, and culture…. Far from being eternally fixed in some essentialized past, they are subject to continuous 'play' of history, culture and power" (cited in Verna St. Denis, 2007, p. 1070). Nagel also suggests, "cultures are not created at some prehistoric point in time to 'survive' or be 'handed down' unchanged through the generations" (Nagel, 1996, p. 63).

As I write about these young Navajos I have found the concept of survivance, influenced by Gerald Vizenor and inscribed by Native voices at the National

Museum of the American Indian in Washington D.C., helpful to deepen my understandings. "Survivance…is more than survival. Survivance means redefining ourselves. It means raising our social and political consciousness. It means holding on to ancient principles while eagerly embracing change. It means doing what is necessary to keep our cultures alive." Survivance is a positive, resistant standpoint embedded with actions meant to assert and claim one's Native identity and place in the world by rejecting the images of Indians created by whites. Although not the same as their grandparents or parents, youth are consistently able to show me events that differed in beliefs and practices from their white peers. To speak of only "survival " is to ignore this Native presence. The good energy of the survivance of "new warriors" can be seen in the break-dancers I saw performing competitively before their Navajo and white peers; in young Navajo writers and poets claiming space for their voices; in Native college students graduating with every career and profession the university has to offer, and in elementary schoolchildren dancing the Yeibicheii, in and out of school, while listening to hip-hop music with their older siblings (Deyhle, 1995, 2009)

The young Navajo men and women I write about are using their Indigenous knowledge, emerging from family and community, to address the inequalities of colonization and their schooling. They spoke clearly about what helped, and didn't help them, to excel in school. In this article I will talk about what mattered in their experiences—cultural and linguistic reaffirmation, the desire for an appreciation of who they are, high teacher skills and performance, and highly engaging curriculum. What are youth saying, and what does this means for us as educators? What lessons framed by "desired-centered research" have we learned that will enhance the educational experiences of Indigenous, Native, and American Indian youth?

Lesson #1: "Know who I am!"

In order to know, one must first "see." As I started out this article, Navajo youth were often "unseen" by their teachers and school administrators because the mirror they looked through reflected an uninformed and distorted image of these young men and women's lives. Part of this distortion is framed by a view that these youth move through life with one foot in the "white world" and the other in the "Navajo world." This blurs the contemporary landscape in which youth live.

The metaphor, walking between two worlds—based on a modern/premodern dichotomy—is frequently used to describe the struggles faced by Native students. I've used it in my research, and many of the Navajo educator I've worked with also used this term. In insightful critiques, scholars have begun to argue this metaphor masks the complexity of lived situations and multiple loyalties, and may work to limit the options of these youth (Henze & Vanett , 1993, Lee, 2009). The white world is often only marginally available as a choice for Indigenous youth because of poverty, racism, discrimination, and lowered teacher expectations of their potential for success. And the idealized or stereotypical traditional world of their elders is a thing of the past. This metaphor is also problematic because it centers the "problem" with Native peoples themselves. What is needed

is a third space that reflects Indigenous youths' contemporary lives. As Dr. Lee (2009) argued, "All people negotiate multiple realities, but the two-world notion makes problematic Native peoples' abilities to adapt to (or resist) the dominant society, when in fact Native peoples have been adapting to (and resisting) other peoples' cultures, values, and worldviews for hundreds of years" (p. 310). She urges us to "focus on how Native youth negotiate the one world in which they live, a negotiation that encompasses varied, and often oppositional expectations from sources in their homes, schools, and communities" (p. 310).

One of my Navajo graduate students last week exclaimed it was refreshing to see scholarship that finally acknowledge what he knew as his lived experience, "I thought, as an 8th grader, it is way messier than that. It is not just two worlds. It's multiple layered situations and experiences." This is what youth are asking us to see. When youth are asking us to "know who they are" this also, I think, means to not judge them for what they don't know yet, for they are daily learning what it means to be Navajo. I failed to understand this message.

Early in my fieldwork I systematically asked youth what they knew about Navajo ceremonies, and deities, such as Changing Woman, First Woman, Spider Woman, and Salt Woman. I remembered being disappointed when youth responded vaguely about the importance of Navajo culture, but with little detailed knowledge. In my notes from 1984 I wrote, "Oh, no! They know so little. It is true that much of Navajo culture is being lost. They say they don't talk much with their grandparents because they don't speak Navajo. They seem to have lost so much." My (mis)perspective represents a consistent stereotype and misunderstanding of what being Navajo is all about when I had frozen their images in an unchanged frame of history, to then be judged authentic or real. I also had ignored what I knew intuitively had been my own experiences growing up. As one travels complex and messy life paths, one is always learning and becoming—one never completely "arrives."

Lesson #2: "I am not the same as my grandparents, and don't use this against me."

By constructing representations of Indian people that are frozen in an historic past we do not "see" the extraordinarily rich cultural practices of Native people today. An example of this ignorance appeared in the Wednesday, March 9, 2005 Salt Lake Tribune in an article titled, "Bennett: Oil rigs won't hurt wildlife." After visiting the Arctic National Wildlife Refuge to examine what impact oil drilling would have in this refuge, Utah Senator Bob Bennett met with Alaskan Natives, saying most were in favor of oil development. In a critique of Alaskan Natives opposed to oil drilling he said, "But when you ask how they live off the caribou, you find out they get on snowmobiles and go out and shoot them with rifles. Somehow, I don't think that's the culture of their great-grandparents that they talk of preserving." To have an authentic Native Alaskan voice, leave the snowmobiles and rifles at home, and pull out great-grandfather's harpoons and spears. Now, how silly is this! "The more traditional Navajos wake up to the sunrise with prayers every morning," a counselor told me the first year of my

research. He had sighed and leaned back in his chair. "Maybe our Anglo way is wrong, we should not be pushing them towards it. We have too much strain in our Anglo world. Look how calm the Indians are. They have such a simple and pure life. I sometimes think that Navajos in this traditional environment might have been better off." In this discourse, Indian people are not Indian unless they look like the popular white constructions of Native peoples living serenely, without technology, close to animals and the land. Indians become a cultural category that must remain true to that historic portrait to be "real." And, with a twist, this "authentic" Indian is best served by limited contact with "corrupting" Western values in economic, educational, and social institutions, increasing the likelihood of economic struggles during their lives.

The attempt to capture and frame "real Indians" as relics of the past continues at universities. Here at the University of Utah, a story circulated around the Anthropology Department in the 1990s. A professor had sent several white students to visit another professor who taught courses on American Indians. "We are looking for examples of pure Indians," said one. Another interjected, "We want to visit real Indians. We were told that the Utes are an example of a hunting and gathering Indian tribe." My colleague sighed and explained, "Yes, the Utes are hunters and gatherers. The Utes hunt at Safeway and gather at the 7-11." Frozen in time, "real" Indians cannot possibly be shopping alongside everyone else at the local store. Inequality is the outcome of this refusal to accept Indians as equal partners on the same landscape.

Youth told me how unfair this was! On the one hand they are criticized for not knowing their language and traditions, at the same time the "authentic Navajo" cannot be connected to technology, wealth, and be professionally employed. What a bind! They wanted it all—a good job, exciting opportunities, strong families and an identity that is still grounded within the landscape of the Navajo Nation.

Lesson #3: "Believe in me and appreciate me."

There is a large body of research that speaks to the importance of teachers "caring" and "respecting" students (Valenzuela, 1999; Valdez, 2001; Noddings, 1984; Nieto, 1999). Teachers are taught to show respect for students' heritage cultures and languages. Multicultural education courses are often required in teacher education programs. But as I have reflected on how Navajo youth have described what they need in school, "caring" and "respect" do not go far enough. You can care and respect someone, without having any idea who they are. To appreciate someone, however, you must be open to learning from, and affirming what you learn. This means that teachers are the ones who need to reach out to Navajo students' homes, family, and communities. And students know when teachers fail at "appreciation." As a Navajo women explained, "When I think back on it and think about schools, I wish those teachers had helped us Native American kids with our work. Not to ignore us. Not to be ignorant. And what I hear now, from relatives, is that it is still going on! It is so sad." The work "ignorant" is key here. Teachers ignorant of their students' lives in a Navajo

community rich with family and relations, are weak teachers; teacher that do not care, respect, or appreciate Native students. Appreciation paints an entirely different picture.

Lesson #4: "We want a rich and exciting schooling experience."

The Navajo and Pueblo students in Lee and Quijada Cerecer's 2010 article, "(Re) Claiming Native Youth Knowledge: Engaging in Socio-culturally Responsive Teaching and Relationships," could not have been clearer about what they expected from schools. These "new warriors" provided a powerful critique of the false history their teachers taught, demanding, for example, equal treatment of the Long Walk, side by side with the Civil War—after all, they did occur at the same time. They, like the Navajo students I have known, desired high quality teachers who are knowledgeable about their history, current political, educational, social issues, and who support a path to excellence in areas of their students own choosing. As one young Navajo student asserted, "I'm more of like a Native pride person a little. I think my whole family and I are like that. I like the idea of coming into the school and seeing a lot of things that have to do with who I am" (Lee & Quijada Cerecer, 2010, p. 201).

And, most importantly, they wanted a close transformative learning relationship with their teachers. I think this is critical. They are claiming, not rejecting, educators in their lives. As one Navajo student said, "I don't know, it just seems like there are all these boundaries between students and teachers and administration…. I think if we all worked together it would be better because we would know more about each other and learn more." Youth are challenging educators to create a school environment that "appreciates, respects, and honors their Native heritage and language" (Lee & Quijada Cerecer, 2010, p. 204).

In my own research and observations in classrooms I have seen white teachers endure the profound silence of a group of Navajo youth who felt disrespected in the classroom. The practices of playing against teachers with the use of silence or shout-downs, blocking teachers' interactions and effectiveness as instructors in classrooms, and dismissing criticisms of themselves by employers in low-paying jobs, all work to assert a Native gaze on a racially contested landscape. By a Native gaze I am describing the practices that Native peoples use to "push back" against injustices and assert their rights. A Native gaze of survivance judges the practices of whites—unlike themselves—as undeserving, uncompassionate, uniformed, and wrong. And, sometimes, the practices of a Native gaze are done with humor and irony. A vivid example of this occurred one day in a high school biology class. Facing a poorly qualified teacher who repeatedly mocked Navajo students with, "Navajos don't know how to learn difficult ideas," students walked out, returned with padlocks from their lockers, bolted the door hinges, securely imprisoning their teacher, and left school.

There is a body of research developed over the past several decades that urges teachers to use culturally appropriate, culturally responsive, and culturally relevant practices in their teaching (Ladson-Billings, 1997; Nieto, 1999). While it is an important and admirable goal to be relevant and responsive to cultural

differences, this alone does not assure the appreciation and continuity of students heritage language and home community. This is a different educational project. In his essay, "Culturally Sustaining Pedagogy: A Needed Change in Stance, Terminology, and Practice," Django Paris (2012) offers us an alternative concept for educators. At the center of "culturally sustaining pedagogy" are students' experiences and practices, with the explicit goal of sustaining and supporting these. As Paris described this pedagogy, "it requires that they [teachers] support young people in sustaining the cultural and linguistic competence of their communities while simultaneously offering access to dominant cultural competence…. That is, culturally sustaining pedagogy seeks to perpetuate and foster—to sustain—linguistic, literate, and cultural pluralism as part of the democratic project of schooling" (p. 95). This could result in a "rich and exciting" schooling experience for Native youth.

Lesson #5: I want to learn my language and culture

"Our language is real important to us," Elizabeth said during a visit with her family in Salt Lake City. "That is why we fought for that to be in the schools, in that lawsuit [Sinajini v. Board of Education litigations in the 1990s]. Navajo language and culture is what we want in school. They say you do better in school with both languages. They said they would teach it, but they never did." She shook her head and frowned. "I had to learn English in boarding school and so I never got to learn Navajo in school. But Ernie speaks it real good. And my kids, too. It was hard bringing them back because they didn't know Navajo very well." Her daughter Jan joined in, "Gosh, I didn't know what was going on, I had lived in Moab since I could remember. I had to learn Navajo by the people in the community. I speak it real good now. But my kids don't speak Navajo. They were brought up in the city. And they don't teach it in the schools." Our conversation turned to the recent English Only bill passed by the Utah State Legislature. Jan was angry. "Look at those whites. They don't want anyone else to have their own language. Like, maybe they will outlaw us speaking Navajo!" Her sister added, "And it takes smarter people to speak more than just English." The family smiled and nodded in agreement. I was painfully reminded of my mono-English limitations.

Navajo students have spoken to me about their concerns of their lack of fluency in their heritage language, and of embarrassment when they had difficulty speaking to their grandparents and elders, expressing what McCarty, Romero, and Zepeda (2006) have called "feelings of linguistic shame." One of the first conversations I had with the young break-dancers I met in 1984 was about a visit to their grandparents home:

> We went to hunt for porcupines. They were eating her watermelons. We found one, a real big fat one and killed it. We saved it for the quills. Our grandma is going to teach us how to make things with it. Like they used to do. But it's kinda hard, because she doesn't speak English. And I don't know much Navajo. But I do know a couple of words.

Several of the others nodded. Mary, with a shy smile, added: "We want to learn. But Navajo is real hard. And our grandma makes fun of us when we don't talk right." Heads throughout the group nodded, as the children grew silent.

Educators too often misunderstood and mislabeled youths' struggles and silences as evidence of an "apathy" to learn Navajo. Previous research has found this understanding to be superficial (Lee, 2007, 2009; McCarty, Romero-Little, Warhol, & Zepeda, 2009). Lee's article (2009), "Language, Identity, and Power: Navajo and Pueblo Young Adults' Perspectives and Experiences with Competing Language Ideologies," paints this very different picture. The students she spoke to expressed deep concern over their language vanishing, at the same time they worked to develop of sense of their Native selves with or without their language. Arguing for Navajo language classes in school, a Navajo teenager said to Lee, "Why? Because that's who we are, so they can talk with elderly; they were here before us and they know more than us. Some of them have passed on and that's why we're losing our language" (p. 313). Some youth expressed shame over not speaking their heritage language, "I wish I knew Navajo so I could talk to older people. I feel bad when I can't talk to an older person. It's not my fault. I wish someone had taught me" (p. 313). At the same time, students in her study spoke assertively about being Navajo, with or without heritage language skills. As one woman argued, "Sure, language is like the back bone of a culture but just because I cannot speak my language does not entirely mean that I am not a good Navajo" (p. 317).

Lee (2009) shows that Native youth clearly see the dilemma they face: on one hand they see the critical necessity of Native languages for cultural continuity, on the other hand they hear a discourse of the superiority of English surrounding academic and economic success. Nevertheless, "when students were confronted with challenges or opposition to their expressions of the Native sense of self through their language, they expressed resistance to those confrontations and reaffirmed their identity, heritage, and language, regardless of their level of Native-language fluency" (p. 317). One woman expressed this powerfully to Lee, "Our miseducation, and even the loss of many of our Indigenous languages, painful and unjust as these things are inform who we are now as Indian people, and provide the energy necessary to regroup, revitalise and even, in some respects, reinvent who we are" (p. 318).

Perhaps the most important finding from Lee's research, unidentified in previous research, was the picture that emerged of "new warriors"—youth who expressed desires to reclaim their language and identity for themselves and their community. As Lee (2009) concluded,

> Throughout the college students' narratives, the youth described experiences of awakening to these issues of language shift and change in their communities. They became conscious of the denial they and their families have felt regarding language loss. With the awareness of the threat of language loss now more present, they demonstrated a sense of agency and proactive motivation to transform their families

and communities toward language maintenance and language revitalization. (p. 316)

Lesson #6: "I'll never give up who I am."

Throughout my conversations with youth, there has been an insistence and desirability of being Indian (what every this might look like), rather than wanting to become white. In l987 when Mary Sam spoke of her children's future, her words echoed the desires of many of the Navajo youth I had come to know. "I want to have a nice home, furniture. Nice vehicle. Have the best for my kids. Let them come up with nice things, go to a good school, live in a good area. I want my kids to know about Navajo stories and ceremonies. That is who they are. I would like that. Not only for my kids, but for all Native American kids to know who they are" (Deyhle, 2009, p. 198). Fifteen years later, in 2004, Mary's 18 year-old son spoke with strength about being Navajo. Mary beamed with pride when he told me, "In the past, some Navajo were ignoring who they were. They were pretending to be like other minorities. They were like into gangs like some minorities are into. We are more into like 'Native Pride,' 'Be Native.' They sell those kind of tee shirts in that magazine, Native Peoples. We are into being proud of who we are like other Indian people around the country."

The young people I met 25 years ago have grown strongly into their lives as mothers and fathers, enriched with sons, daughters and lots and lots of grandchildren. And this growth insists on the right to remain Indian, and this determination rest firmly on the foundations of tribal sovereignty, on and off the Navajo Nation. In my book Vangie Tsosie as "Changing Woman at Taco Bell" challenged me to understand and accept what this means. In 1999, at 28 she told me, "I never really did give up my traditional ways, even thought I was baptized in the LDS church. I went to high school and I had a bad ear infection and my mom and dad took me to a medicine man, and I had a ceremony done for my ears. They [whites] think it is just hocus pocus, but it is what I believe. I didn't feel like I was breaking the law or anything because I always think we are praying to the same god, anyway. This god knows how to speak Navajo and all different kinds of languages. If it wasn't for him we wouldn't have our own language and stuff. I'm sure he understands. It is just one person. It's not like there is an LDS God and a Navajo God. Just think how bad they'd be fighting up there! [laughs] I'm sure he understands what I'm going through. So I never really felt obligated to give up being Navajo." And in her concluding reflections ten years later she said simply, "The one thing we know is that we are Navajo. That will never change."

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Indigenous Education Renewal in Rural Alaska[1]

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Indigenous education in rural Alaska has gone through a major transformation over the past 15 years focused on reconciling the conflicting world views, knowledge systems and ways of knowing that have coexisted in Native communities throughout the past century. Using a systemic approach to address long-standing problems, this chapter describes how Native people have taken the initiative in redefining the goals and methods of formal education as it has evolved in rural Alaska.

The Alaska Native/Rural Education Consortium, representing over 50 organizations impacting education in rural Alaska, established the Alaska Rural Systemic Initiative (AKRSI) in 1994. The Alaska Federation of Natives in cooperation with the University of Alaska, with funding from the National Science Foundation (NSF) and the Annenberg Rural Challenge (ARC), provided the institutional home base and support structure for the AKRSI. Its purpose was to systematically document indigenous knowledge systems of Alaska Native people and develop instructional practices that appropriately integrated indigenous knowledge and ways of knowing into all aspects of education. In practical terms, the most important intended outcome was an increased recognition of the complementary nature of Native and western knowledge, so both can be more effectively utilized as a foundation for the school curriculum and integrated into the way we think about learning and teaching.

For any significant initiative aimed at improving education in rural Alaska, it was essential to develop from the outset a working partnership of mutual respect and understanding between the Native and educational communities. The history of contradictions, confusion and conflict resulting from the coming together of two often incompatible cultural traditions and belief systems can best be overcome by drawing together the available expertise from each and exploring ways to arrive at an equitable synthesis. The first step in this endeavor was a series of colloquia on "Alaska Native Science Education" held in April 1992 and May 1993, sponsored by the Alaska Federation of Natives and the University of Alaska Fairbanks with funding provided by the NSF. Topical areas that were addressed by the 60 broadly representative participants in the colloquia included Native scientific traditions, western scientific traditions, science practices in various community and institutional settings, science curricula in schools and universities, science teaching

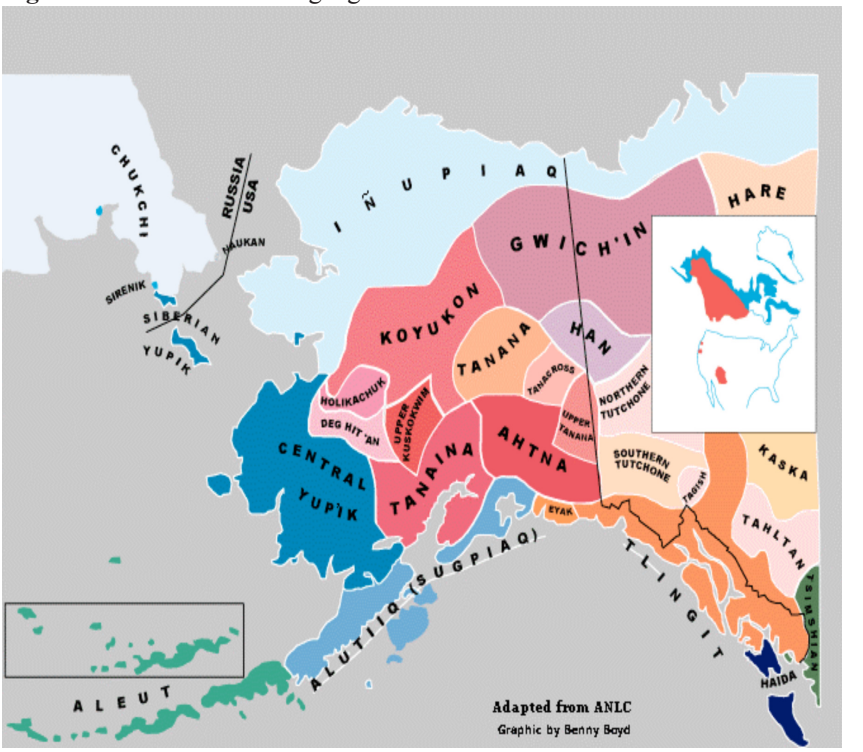
[1]Adapted from Dr. Barnhardt's keynote speech at the Third Annual American Indian Teacher Education Conference given on July 14, 2012 in Flagstaff, Arizona.

practices, and science teacher training opportunities. Out of these discussions, an extensive set of recommendations came forward regarding steps to be taken to improve the quality of science education, and education generally, for Alaska Native people. These recommendations served as the impetus for the formation of the AKRSI educational reform strategy. To help put these interrelated issues into perspective, I provide a brief overview of the cultural, geographical and political context in which its initiatives were formed and implemented.

Rural Alaska

By most any standard, nearly all of the 586,000 square miles that make up the state of Alaska would be classified as "rural" with 40% of the 650,000+ people spread out in 240 small, isolated communities ranging in size from 25 to 5000. The remaining 60% are concentrated in a handful of urban centers, with the city of Anchorage and neighboring communities home to approximately 50% of Alaska's total population. Of the rural communities, over 200 are remote, predominantly Native villages in which 70% of the 90,000+ Alaska Natives live and practice their traditional cultures (see Figure 1 below). The vast majority of the Native people in rural Alaska continue to rely on subsistence hunting and fishing for a significant portion of their livelihood, coupled with a slowly evolving cash-based economy, though few permanent job exist in most communities.

Figure 1. Alaska Native Languages



Rural schools

Prior to 1975, the federal Bureau of Indian Affairs and the Alaska State-Operated School System operated schools in rural Alaska Both were centrally administered systems oriented toward assimilating Alaska Natives into mainstream society as their primary goal. The history of inadequate performance by these two centralized school systems, coupled with the ascendant economic and political power of Alaska Natives that derived from the passage of the Alaska Native Claims Settlement Act by the U.S. Congress in 1971, led to the dissolution of the centralized systems in the mid-1970s and the establishment of 21 locally controlled regional school districts to take over the responsibility of providing education in rural communities. At the same time, a class-action lawsuit brought against the State of Alaska on behalf of rural Alaska Native secondary students led to the creation of 126 village high schools to serve those rural communities where high school students had to leave home previously to attend boarding schools.

Although the creation of the regional school districts (along with several single-site and borough districts) and the village high schools has provided rural communities with an opportunity to exercise a greater degree of political control over the educational systems operating in rural Alaska, it did not lead to any appreciable change in what was taught and how it was taught in those systems (Hopson, 1977). The continuing inability of schools to be effectively integrated into the fabric of many rural communities after over 20 years of local control points out the critical need for a broad-based systemic approach to addressing the deficiencies in educational conditions in rural Alaska.

Forging an emergent system of education for rural Alaska

In 1994 the Alaska Natives Commission, a federal/state task force established in 1992 to conduct a comprehensive review of programs and policies impacting Native people, released a report articulating the critical importance of any effort aimed at addressing Alaska Native issues needing to be initiated and implemented from within the Native community. The long history of failure of external efforts to manage the lives and needs of Native people made it clear that outside interventions were not the solution to the problems, and that Native communities themselves would have to shoulder a major share of the responsibility for carving out a new future. At the same time, existing government policies and programs would need to relinquish control and provide latitude for Native people to address the issues in their own way, including the opportunity to learn from their mistakes. It was this two-pronged approach that was at the heart of the AKRSI educational reform strategy—Native community initiative coupled with a supportive, adaptive, collaborative education system.

This strategy required a focus on both the formal education system and the indigenous knowledge systems in rural Alaska. The culture of the formal education system as reflected in rural schools was poised to undergo significant change, with the main catalyst being culturally-based and place-based curriculum grounded in the local culture (Barnhard, 2006, 2007). In addition, the indigenous

knowledge systems needed to be documented, articulated and validated, again with a major catalyst being place-based curriculum grounded in the local culture. With these catalysts in mind, we sought to implement a series of initiatives that stimulated the emergent properties of self-organization that were needed to produce the kind of systemic integration indicated above. To do so, it was essential that we work through and within the existing systems.

Our challenge identifying and targeting the elements of the existing educational system that could be harnessed to improve the education of Alaskan Natives. Once critical agents of change were identified, a "gentle nudge" in the right places could produce powerful changes throughout the system. With these considerations in mind, the overall structure of the AKRSI was organized around a comprehensive set of initiatives (five funded by the NSF focusing on math and science and five funded by the ARC focusing on social studies and language arts). Each of these initiatives was implemented in one of the five major Alaska Native cultural regions each year on an annual rotational scale-up schedule over a five-year cycle (which was renewed for a second five years). In this way, the initiatives could be adapted to the cultural and geographic variability of each of the regions, while at the same time engaging the state-level support structures throughout the cycle (see Table 2).

Table 1. NSF/ARC Phase I Yearly Cycle of Activities by Cultural Region

NSF						Annenberg
Rural Systemic Initiative/Year (1995-2000)	**1995-96**	**1996-97**	**1997-98**	**1998-99**	**1999-2000**	**Rural Challenge Initiative/Year** (1996-2000)
Native Ways of Knowing/Teaching	Yup'ik Region	Inupiaq Region	Athabascan Region	Aleut/Alut. Region	Southeast Region	**ANCSA & the Subsistence Econ.**
Culturally Aligned Curriculum	Southeast Region	Yup'ik Region	Inupiaq Region	Athabascan Region	Aleut/Alut. Region	**Language/Cultural Immersion Camps**
Indigenous Science Knowledge Base	Aleut/Alut. Region	Southeast Region	Yup'ik Region	Inupiaq Region	Athabascan Region	**Oral Tradition as Education**
Elders and Cultural Camps	Athabascan Region	Aleut/Alut. Region	Southeast Region	Yup'ik Region	Inupiaq Region	**Reclaiming Tribal Histories**
Village Science Applications	Inupiaq Region	Athabascan Region	Aleut/Alut. Region	Southeast Region	Yup'ik Region	**Living in Place**

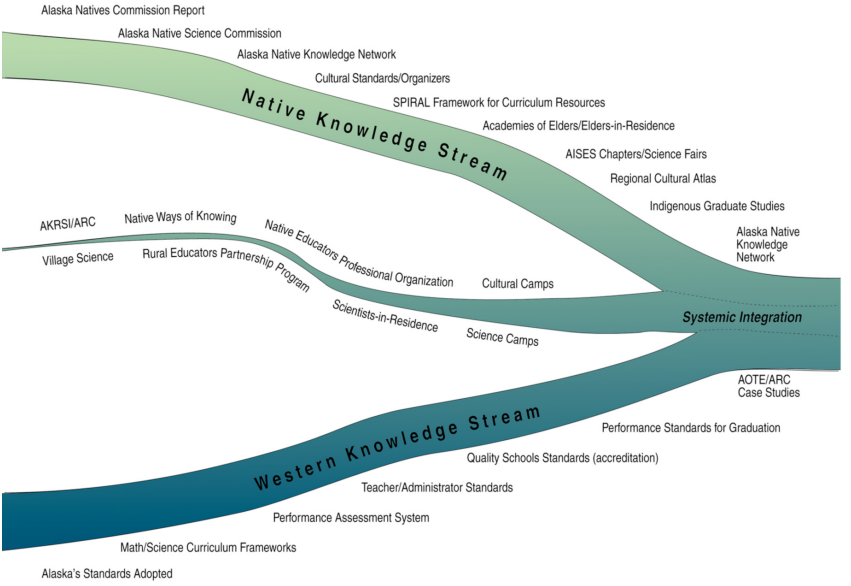
Along with the rotational schedule of regional initiatives, which were expanded in Phase II of the AKRSI, there were also a series of cross-cutting themes that integrated the initiatives within and across regions each year. While the regional initiatives focused on particular domains of activity through which specialized resources were brought to bear in each region each year (culturally aligned curriculum, indigenous science knowledge base, etc.), the following themes cut across all initiatives and regions each year:

1. Documenting cultural/scientific knowledge
2. Indigenous teaching practices
3. Culturally-based curriculum
4. Teacher support systems
5. Appropriate assessment practices

In this way, schools across the state were engaged in common endeavors that united them, at the same time that they were concentrating on particular initiatives in ways that were especially adapted to their respective cultural region. Each set of initiatives and themes built on each other from year to year and region to region through a series of statewide events that brought participants together from across the regions. These included working groups around various themes, Academies of Elders, Native educator associations, statewide conferences, the Alaska Native Science Education Coalition and the Alaska Native Knowledge Network.

Key agents of change around which the AKRSI educational reform strategy was constructed were the Alaska Native educators working in the formal education system, coupled with the Native Elders who served as the culture-bearers for the indigenous knowledge system, along with the Quality Schools Initiative adopted by the Alaska Department of Education. Together, these agents of change constituted a considerable catalytic force that has served to reconstitute the way people think about and do education in rural schools throughout Alaska. The AKRSI's role was to guide and support these agents through an on-going array of locally-generated, self-organizing activities that produced the organizational learning needed to move toward a new form of emergent and convergent system of education for rural Alaska (Barnhardt, 2009). The overall configuration of this emergent system can be characterized as two interdependent though previously separate systems being nudged together through a series of initiatives maintained by a larger system of which they are constituent parts, as illustrated in Figure 2 below.

Figure 2: Native and Western knowledge systems are integrated in the AKRSI



The components of the emergent system, incorporating the indigenous knowledge sub-systems and the formal education sub-systems, were brought in contact with one another with an increasing level of two-way interaction, which slowly built the interconnectivity and complementarity of functions that were the goal of the reform strategy. Each of the initiatives associated with the two sub-systems, as represented below (see Figure 2) by the converging reform streams, served as a catalyst to energize the sub-systems in ways that reinforced the overall AKRSI efforts. For example, the Alaska Native Knowledge Network assembled and provided easy access to curriculum resources that supported the work underway on behalf of both the indigenous knowledge systems and the formal education systems. In addition, the ANKN newsletter, *Sharing Our Pathways* (for sample articles see Barnhardt & Kawagley, 2011), provided an avenue for on-going communication between all elements of the constituent systems. Concurrently, the AKRSI collaborated with the Alaska Department of Education in bringing Native/science teachers together to develop performance standards based on the state science standards that took into consideration the cultural context in which students acquired and demonstrated their knowledge. These performance standards then became part of the states performance assessment system to be implemented in all schools.

Together, these initiatives (along with other related activities) constituted the AKRSI and were intended to generate a strengthened complex adaptive system of education for rural Alaska that could effectively integrate the strengths of the two constituent emergent systems. Accepting the open-endedness and unpredictability associated with such an endeavor, and relying on the emergent properties associated with the adage, "think globally, act locally," we were confident that we would know where we were going when we get there. It was the actions associated with each of the initiatives that guided us along the way, so that we could continue to move in the direction established by the AKRSI educational reform strategy.

Intervention activities: An overview

Following are brief descriptions of key AKRSI-sponsored initiatives to illustrate the kind of activities that were implemented, as they relate to the overall educational reform strategy outlined above:

Alaska Native Knowledge Network: A bi-monthly newsletter, world wide web site (http://www.uaf.alaska.edu/ankn), publication center, and a culturally-based curriculum resources clearinghouse were established to disseminate the information and materials that were developed and accumulated as the AKRSI initiatives were implemented throughout rural Alaska.

S.P.I.R.A.L. Curriculum Framework: The ANKN curriculum clearinghouse identified and cataloged curriculum resources applicable to teaching activities revolving around 12 broad cultural themes organized on a chart that provides a "Spiral Pathway for Integrating Rural Alaska Learning." The themes that make up the S.P.I.R.A.L. framework are family, language/communication, cultural expression, tribe/community, health/wellness, living in place, outdoor survival, subsistence, ANCSA, applied technology, energy/ecology,

and exploring horizons. The curriculum resources associated with each of these themes can be accessed through the ANKN website.

Cultural Documentation/Atlases: Students in rural schools interviewed Elders in their communities and researched available documents related to the indigenous knowledge systems, and then assembled the information they gathered into a multimedia format for publication as a "Cultural Atlas" available on CD-ROM and the Internet. Documentation focused on themes such as weather prediction, edible and medicinal plants, geographic place names, flora and fauna, moon and tides, fisheries, subsistence practices, food preservation, outdoor survival and the aurora.

Native Educator Associations: Associations of Native educators were formed in each cultural region to provide an avenue for sustaining the initiatives being implemented in the schools by the AKRSI. The regional associations sponsored curriculum development work, organized Academies of Elders and hosted regional and statewide conferences as vehicles for disseminating the information that was accumulated.

Native Ways of Knowing: Each cultural region engaged in an effort to distill core teaching/learning processes from the traditional forms of cultural transmission and to develop pedagogical practices in the schools that incorporated these processes (e.g., learning by doing/experiential learning, guided practice, detailed observation, intuitive analysis, cooperative/group learning, listening skills).

Academies of Elders: Native educators convened with Native Elders around local themes and a deliberative process through which the Elders shared their traditional knowledge and the Native educators sought ways to apply that knowledge to teaching various components of a culturally-based curriculum. The teachers then field-tested the curriculum ideas they had developed, brought that experience back to the Elders for verification, and then prepared a final set of curriculum units that were pulled together and shared with other educators.

Cultural Standards: A set of "Alaska Standards for Culturally Responsive Schools" were developed for students, teachers, curriculum, schools and communities that provided explicit guidelines for ways to integrate the local culture and environment into the formal education process so that students are able to achieve cultural well-being as a result of their schooling experience.

Village Science and Village Math Curriculum Applications: Three volumes of village oriented science and math curriculum resources were developed in collaboration with rural teachers for use in schools throughout Alaska (see Dick, 1997, 2012; Stevens, 2000). These resources serve as a supplement to existing curriculum materials to provide teachers with ideas on how to relate the teaching of basic science and math concepts to the surrounding environment.

AISES Chapters/Native Science Fairs: K-12 chapters of the American Indian Science and Engineering Society were formed in rural districts serving each

cultural region. These chapters participated in AISES Science Camps and sponsored Native Science Fairs in which the projects are judged for their science content by experienced science teachers and for their cultural content by Native Elders. The winners of the regional fairs attend the Alaska State Science Fair in the spring.

Alaska Native Science Education Coalition: The ANSEC was made up of representatives from over 20 agencies, professional organizations and other programs that have an interest and role in science and math education in rural Alaska schools. The Coalition brought its vast array of curriculum and professional development resources into focus around the implementation of place-based and culturally-based science curriculum, including the incorporation of rural/cultural considerations in the Coalition members own materials and practices (e.g., Alaska Science Consortium workshops, Alaska Energy curriculum resources, Alaska Environmental Literacy Plan, Project Wild curriculum materials, National Park Service interpretive programs).

M**ath/Science Performance Standards:** Performance standards in the areas of math and science were developed to serve as benchmarks for the state assessment system in those content areas. Through AKRSI support, representation from rural/Native communities helped to incorporate the various cultural and geographic perspectives needed to provide equity in the assessment process.

Has the AKRSI made a difference?

After ten years, data gathered from the 20 rural school districts involved with the AKRSI (compared to 24 other rural Alaskan districts) indicated that its educational reform strategy fostering interconnectivity and complementarity between the formal education system and the indigenous communities being served in rural Alaska had produced an increase in student achievement scores, a decrease in the dropout rate, an increase in the number of rural students attending college, and an increase in the number of Native students choosing to pursue studies in STEM (science, technology, engineering and math) fields.

The initiatives listed above demonstrated the viability of introducing strategically placed innovations that can serve as catalysts around which a new, self-organizing, functionally-integrated educational system can emerge which shows signs of producing the quality of learning opportunity that has eluded schools in Native communities for over a century. The substantial realignments are evident in the increased interest and involvement of Native people in education in rural communities throughout Alaska point to the efficacy of a systemic approach in shaping reform in educational systems.

While the original NSF funding of the AKRSI served as the catalyst for the core reform strategy, we were fortunate to acquire substantial supplementary funding to address areas for which its funds were not suitable, such as indigenous curriculum materials development (from the NSF Division of Instructional Materials Development), and implementing comparable initiatives to those of the AKRSI in the areas of social studies, fine arts and language arts (from the

ARC). All of these funds were combined to provide an opportunity to address the issues facing schools in Native communities throughout rural Alaska in a truly comprehensive and systemic fashion.

As a means to help document the process of systemic reform in rural schools, we joined in two projects that produced comprehensive case studies of educational practices and reform efforts in nine rural communities/schools in Alaska. Seven of the case studies were funded through the Northwest Regional Educational Laboratory by a field-initiated grant from the National Institute for At-Risk Youth under USDOE, and the other two were administered by Harvard University through a grant from the Annenberg Foundation. Since all of the communities were in school districts associated with the Alaska Rural Systemic Initiative, we were able to obtain a good cross-section of in-depth data on the impact of the AKRSI reform effort over the ten years of its existence.

Throughout these initiatives we were mindful of the responsibilities associated with taking on long-standing, intractable problems that have plagued schools in indigenous settings throughout the world for most of the past century, and we made an effort to be cautious about raising community expectations beyond what we could realistically expect to accomplish. We were also mindful of the larger context in which the AKRSI was situated and the expectations of the funding agencies with mandates to support initiatives that can contribute to a larger national agenda. Our experience was such that we were confident in the route we chose to initiate substantive reforms in rural schools serving Alaska's Native communities, and while we expected to encounter plenty of problems and challenges along the way, we capitalized on a broadly supportive climate to introduce changes that have benefited not only rural schools serving Native students, but have been instructive for all schools and all students. We continue to explore these ideas and find ways to strengthen and renew the educational systems serving people and communities throughout our society.

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Indigenous Knowledge and Pedagogy for Indigenous Children

Navin Kumar Singh and Jon Reyhner

Globally educational systems have failed Indigenous students in regards to both respecting their human rights, including providing academic success, and as a result, Indigenous students around the world have demonstrated a lack of academic achievement and enthusiasm for schooling in its conventional colonial form. The United Nations General Assembly's adoption in 2007 of the Declaration on the Rights of Indigenous Peoples brought new attention to this failure. This chapter provides a review of literature indicating how validating and utilizing Indigenous knowledge and pedagogey in schools can improve the education of Indigenous children and illustrative examples of how the United States and India have provided some support for the Indigenous educational rights now recognized by the United Nations.

Indigenous Knowledge (IK) can be described as wisdom needed to survive in a particular environment—be it successfully hunting seals in the frigid Canadian arctic or growing maize in the desert southwestern United States—and knowledge of how to live and interact in an extended family and Indigenous community. IK is based on centuries of experience and close observation of one's surroundings, including plants, animals, and weather. Indigenous Pedagogy (IP) is based on centuries of experience raising children to function productively in close-knit communities. Family members, Elders, and others community members pass on this knowledge to each new generation. Central to the transmission of this wisdom is language, which through oratory, storytelling, advice and conversations shows youth the way to live well. In this chapter we do a general discussion of IK and IP and its relation to Culturally Responsive Education (CRE) and give examples of support for CRE in India and the United States.

As former National Indian Education Association president Williard Sakiestewa Gilbert (Hopi) writes, western colonial powers saw no value in the "rich cultural heritage" of Indigenous peoples that "has been transmitted orally to each successive generation in song, stories, legends, and history via their native language and traditions" and which "provides an understanding of the natural order of existence both personally and communally" (2011, p. 43). The schooling colonial governments and Christian missionaries provided interrupted the intergenerational transmission of IK, especially when children attended boarding schools in Australia, Canada and the United States, and many of the challenges faced by Indigenous communities today are caused by a breakdown of traditional values that can be traced to this interruption. Sheilah Nicholas notes that her Hopi Elders link Hopi language loss to "un-Hopi" behavior by youth that includes "substance abuse, gang membership, and domestic violence" and how

the "fundamental principles of the Hopi way of life are those of reciprocity and humility," which need to be handed down to each successive generation to live a good life (2011, pp. 58-60). Likewise, Barnhardt and Kawagley in their collection of Alaskan native perspectives on education include in their appendices complementary sets of Alaskan Native values collected from various regions in Alaska that focus especially on "respect for self, Elders, and others" (2011, p. 365).

Assimilationist colonial approaches to schooling devalued IK and IP and broke the pattern of intergenerational transmission of culture, and this interruption is still going on. However, increasingly the damage done by schooling that devalues or ignores IK and IP is being recognized. This recognition is especially apparent in the United Nations General Assembly's adoption in 2007 of the Declaration on the Rights of Indigenous Peoples. Article 13-1 of this declaration states, "Indigenous peoples have the right to revitalize, use, develop and transmit to future generations their histories, languages, oral traditions, philosophies, writing systems and literatures, and to designate and retain their own names for communities, places and persons" and Article 14-1 states, "Indigenous peoples have the right to establish and control their educational systems and institutions providing education in their own languages, in a manner appropriate to their cultural methods of teaching and learning."

Globally educational systems have failed Indigenous students in regards to both respecting their human rights and providing academic success, and as a result, Indigenous students around the world have demonstrated a lack of academic achievement and enthusiasm for schooling in its conventional colonial form (Battiste, 2002; Cooper, Batura, Warren & Grant, 2006; Cushner, McClelland & Safford, 2012; Ezeife, 2002; Yamauchi, 2005). The widespread failure of Indigenous students is seen in high dropout rates. Educators who do not recognize and value the cultural background of Indigenous students can instill self-doubt that leads their students to discount their experiences, capacities and gifts (Battiste, 2002; RRCAP, 1996). In Canada dropout rates for Indigenous students are almost three times that of non-Indigenous students (Gilmore, 2010). In the United States the National Center for Education Statistics found Indigenous students with more than twice the white dropout rate, the highest death rate of 15-19 year olds, the highest percentage of special education students, and the highest absenteeism (Freeman & Fox, 2005). They were also the most likely to have failed to complete core academic programs in their schools and the most affected by school violence. This is despite the fact that the U.S. government's past assimilationist English-only policy in schools has been successful to the extent that 51% of American Indian and Alaska Native eighth graders reported in 2003 never speaking any language other than English at home and only 22% reported speaking a non-English language half the time or more (Freeman & Fox, 2005).

Culturally responsive education

As the UN's Declaration on the Rights of Indigenous Peoples asserts, it is time to recognize, value, and include IK and IP in schools serving Indigenous

students. This move to valorize IK and IP can be implemented as culturally responsive education (CRE) and is put forward as an antidote in this chapter to the myriad social and educational challenges faced by many Indigenous youth. Its foundation includes constructivist learning theory that situates all learning in a cultural milieu and is built around how human beings learn by connecting and integrating new knowledge into what students have previously learned outside of school. When the culture, and often even the language, of the school—usually white middle class and English-speaking in Australia, Canada, New Zealand, and the USA—is too different from the home cultures of Indigenous students, they face severe identity issues and learning difficulties. CRE is designed to decrease that gap and to increase the chance for educational success for Indigenous students. If too much of the actual world children live in—their place, community and culture—is left out of the school's one-size-fits-all curriculum designed around state, provincial, or national standards then children have real difficulty connecting to it and finding their place in it. According to Harvard psychologist Jerome Bruner they can ask, "What am I doing here anyway? What's this to do with me?" (1996, p. 98). Virginia Richardson notes:

> The traditional approach to teaching—the transmission [lecture and textbook] model—promotes neither the interaction between prior and new knowledge nor the conversations that are necessary for internalization and deep understanding. The information acquired from traditional teaching, if acquired at all, is usually not well integrated with other knowledge held by the students. Thus, new knowledge is often only brought forth for school-like activities such as exams, and ignored at all other times. (1997, p. 3)

In their review of educational research on CRE for Indigenous youth, emphasizing Tribal Critical Race Theory, sovereignty and human rights, Castagno and Brayboy (2008) argue in the United States, "The increased emphasis on standardization and high-stakes accountability under the No Child Left Behind Act of 2001 seems to have resulted in less, rather than more, CRE efforts and more, rather than no, Indigenous children left behind in our school systems" (p. 942). They note, "the assimilative model and the culturally responsive model" and conclude that "the research is quite clear: there is no evidence that the assimilative model improves academic success; there is growing evidence that CRE does, in fact, improve academic success for American Indian/Alaska Native children," however they also found "no evidence that in Indian country that parents and communities do not want their children to be able to read and write or do mathematics, science, etc." (Brayboy & Castagno, 2009, p. 31). A both/and approach is generally advocated that supports a bicultural and often bilingual approach to teaching that valorizes IK and IP as students also learn about the wider world beyond their community and nation.

CRE is an approach to teaching and learning that facilitates critical consciousness, engenders respect for diversity, and acknowledges the importance

of relationships, while honoring, building on, and drawing from the culture, knowledge, and language of students, teachers, and community. It is both a means of attending to prominent educational issues and a pledge to respond to the specific needs of students, their families, and their communities (Demmert, 2011; Demmert & Towner, 2003; Garcia, Skutnabb-Kangas, & Torres-Guzman, 2005; Lindsey, Roberts, & Campbelljones, 2005; McCarty, 2003). This conceptualization of CRE complements calls by Indigenous educators and scholars (see e.g., Battiste, 2002, 2008; Castango & Brayboy, 2008; Marker, 2006; Urion, 1999) for the integration of IKs as a foundational aspect of education with Indigenous learners.

Historical antecedents to culturally responsive education

Castagno and Brayboy (2008) note, "the centrality of culture in formal education with Indigenous people is not a new phenomenon…. it has been central to tribal nations' calls for improved schooling since at least the early part of the 20th century" (p. 944). Luther Standing Bear (1933) recalled being the first student through the doors of Carlisle Indian Industrial School in 1879 and taught in an American Indian day school; he concluded in his autobiography that young Indians needed to be "doubly educated" so that they learned "to appreciate both their traditional life and modern life" (p. 252).

In the mid nineteenth century examples of culture responsive pedagogy were being used with Indigenous students include the work of Sylvia Ashton-Warner with Māori students in New Zealand (Ashton-Warner, 1963; Jones & Middleton, 2008) and Polingaysi Qöyawayma (1964) with Hopi students in the United States. One of the earlier calls for CRE with Indigenous students was made with the release of an extensive investigation of the U.S. Indian Office, commonly called the Meriam Report (Institute, 1928), which highlighted the poor results of the assimilationist education provided by the U.S. government. The report emphasized the need for incorporation of Indigenous languages and cultures in educational material and programming, as it was stated, "Everything in the Indian life and surroundings will have to tie in the educational program in a manner now seldom observed" (Institute, 1928, p. 351). Furthermore, the report emphasized moving beyond the mainstream education system and curricular framework to educate American Indian children. Referring to the mismatch of the then U.S. education practices for Indians, the report stated:

> A standard course of study, routine classroom methods, traditional types of schools, even if they were adequately supplied—and they are not—would not solve the problem. The methods of the average public school in the United States cannot safely be taken over bodily and applied to Indian education, no matter how carefully they might be prepared, would be worse than futile. (Institute, 1928, p. 347)

In line with the 1928 Meriam Report, the 1972 Canadian policy paper, *Indian Control of Indian Education*, focused on CRE in their recommendations as they

emphasized parental responsibility and local control as crucial for improving academic success among Indigenous learners. The importance of local control was reiterated in the 1996 *Report of the Royal Commission on Aboriginal Peoples* that found, "The ability to implement culture-based curriculum goes hand in hand with the authority to control what happens in the school system" (RRCAP, 1996, p. 478). The call for IP is further strengthened by the culturally responsive standards published in 1998 by the Assembly of Alaska Native Educators that focus on how learning about the local environment, language and culture can foster culturally-healthy students, educators, schools, and communities. The Alaska Native Knowledge Network (ANKN) asks "schools and communities to examine the extent to which they are attending to the educational and cultural well being of the students in their care" (1998, p. 2). IP involves strategies that include an in-depth study of the surrounding physical and cultural environment in which the school is situated, while recognizing the unique contribution that Indigenous people can make to such study as original inhabitants who have accumulated extensive specialized knowledge related to that environment (ANKN, 1998).

A major U.S. educational reform effort, the Alaska Rural Systemic Initiative (ARSI), included developing CRE that makes cultural knowledge, language, and values an indispensable part of the formal curriculum in rural Alaskan communities. Barnhardt (this volume) observes that the initiatives of the ARSI enhanced educational experiences of students in participating rural Alaskan schools by challenging the dominance Western education system while utilizing and honoring Native Alaskan knowledge systems and pedagogical practices. The ARSI approach has both affective, cognitive, and environmental advantages. Walter Soboleff (2010) highlights how traditional Tlingit teaching is a pleasant experience for the family and the whole clan,

> It was important for parents to be role models as well as devoted to the family. It is pleasing to know how the clan thought of their greatest resource: their children. The matriarchal society was the school of learning, all joining willingly as volunteer teachers. (p. 140)

The ARSI focus on learning from the land complements Chet Bowers (1993) call for the need for "land literacy" (p. 64) where students learn about the ecology of their home areas and sustainable practices that conserve that land for future generations. An example of culturally- and land-based curriculum material is the book *Between Sacred Mountains: Navajo Stories and Lessons from the Land* first published in 1982 by Rock Point Community School, one of the first Indigenous controlled schools in the United States in modern times. Studies by Erickson and Mohatt (1982), Philips (1983), and Chisholm, Laquer, Hale, Sheorey and McConville (1991) underscore the need for culturally responsive pedagogy to counteract the continued marginalization of Indigenous people, even within minority educational discourse and practice that tends in the U.S. to focus on Black and Hispanic children. Despite the early recognition of the centrality of culture to education as in the previously mentioned Meriam Report, the ethnocentrism

of dominant groups has continued assimilationist education to the present time, which can be seen in the United States in various anti-bilingual education measures passed in California, Arizona and Massachusetts in the past two decades (Cushner et al., 2012; Gandara & Hopkins, 2010; Garcia et al., 2005; Lindsey et al., 2005; Reyhner, 2001, 2010; Reyhner & Singh, 2010).

Barnhardt and Kawagley (2005; see also Barnhardt, this volume) reiterate the concern over the mismatch between mainstream schooling and education of Indigenous children, stating that the teaching methods of mainstream schools have not recognized or appreciated IK systems that focus on inter-relationships and interconnectivity. They point out, "Indigenous knowledge is not static; an unchanging artifact of a former life way. It has been adapting to the contemporary world since contact with "others" began, and it will continue to change" (p. 12). Pewewardy and Hammer (2003) saw interest in CRE grow "during the late 1980s and early 1990s as a result of rapidly rising diversity and concern over the lack of success of many ethnic/racial minority students despite years of educational reform" (p. 2). The International Council for Science reports:

> Universal education programs provide important tools for human development, but they may also compromise the transmission of Indigenous language and knowledge. Inadvertently, they may contribute to the erosion of cultural diversity, a loss of social cohesion and the alienation and disorientation of youth.... Actions are urgently needed to enhance the intergenerational transmission of local and Indigenous knowledge. (2002, pp. 16-17)

Many recent publications discussing CRE address an increasing concern over the the increasingly apparent cultural disconnection between Indigenous students and mainstream curriculum and teachers (Cushner et al., 2012; Gay, 2010; Garcia, et al., 2005; Lindsey et al., 2005; Villegas & Lucas, 2002). CRE can have a healing impact on Indigenous communities through addressing issues particular to students and their families and communities (Reyhner, 2010). In Indigenous contexts, this includes working toward cultural revitalization, honoring a rich heritage, and attending to a host of other social and economic issues that arose primarily from more hegemonic, colonial approaches to education (Castagno & Brayboy, 2008).

Thus, Indigenous epistemologies imply a way of knowing that is adaptive, complex, and growing in nonlinear dynamic ways. The challenge is to move IK systems and worldviews from the margin of formal schooling to the center and to consider how IK systems can inform and be informed by alternative ways of seeing the world (Barnhardt & Kawagley, 2005). This means that a focus on IK systems places value and importance on knowledge developed and distributed within and by local cultures and communities.

Demmert and Towner (2003) argue that the challenge is how to include and honor local cultures, places, and traditions in a system of schooling that has over time, with colonization, done so much damage to culture, places, and the

value of other worldviews (see also Demmert, 2011). In line with Kuokkanen (2007), it can be argued that how Indigenous epistemologies might be sources of inspiration and intellectual or theoretical tools for challenging mainstream curriculum and pedagogy.

IP involves transmitting IK intergenerationally, learning in local cultural contexts, and using this context as a way to connect students with IK systems and the local community and its practices. Castagno and Brayboy (2008) and Demmert and Towner (2003) in their research reviews of CRE emphasize the need for community involvement in sustainable CRE practices. For them, tribal members, elders, parents, and other adults need to be given active roles in the development of culture-based education initiatives, programs, and school policies, and be invited often in culturally appropriate ways to school events; and generally be viewed as equal partners and collaborators in the schooling of their children.

However, despite the diversity of student population in today's schools, students from non-mainstream communities are still expected to adapt to the monolithic culture that schools disseminate. Gilbert (2011) expresses this concern,

> When the current educational system ignores American Indian students' own traditional teachings nurtured in the home and within the local community, the educational system has lost a valuable educational tool to augment the existing curriculum as critical opportunities to build upon or draw from Indian students' existing knowledge are disregarded and overlooked. (p. 43)

Most formal education systems ignore and underutilize the IK that Indigenous children bring to school and fail to utilize IP practices that are used in Indigenous homes. They ignore the fact that being taught in a different way in school from the way students are taught at home and learning in a different language or dialect than the one spoken at home exerts extra pressure on children; not only is there the challenge of learning a new language or dialect, but also with learning new knowledge and skills in new ways. As a result, children find it difficult to cope with the challenges that emerge from the so-called standard language of instruction, which ultimately make them feel alienated (Gay, 2010; Garcia, et al., 2005; Lindsey et al., 2005; Nieto, 2010; Skutnabb-Kangas & Dunbar, 2010).

James and Cherry Banks (2010) describe the resuls of culturally inappropriate schooling:

> Students, whose lives are not affirmed by the establishment, seem intuitively not to accept hegemonic content and methods of instruction. They often resist, consciously or unconsciously, covertly as well as overtly…. Marginalization is alienating, one response to alienation is resistance—the very thing that makes teaching and learning more difficult for students and their teachers. (p. 46)

In this respect, the Alaska Native Knowledge Network underscored specific standards to ensure IP, stating it,

> should be based on a firm grounding in the heritage language and culture Indigenous to a particular tribe is a fundamental prerequisite for the development of culturally healthy students and communities associated with that place, and thus is an essential ingredient for identifying the appropriate qualities and practices associated with culturally-responsive educators, curriculum, and schools. (ANKN, 1998, p. 2)

As an example, Kawagley, Norris-Tull, and Norris-Tull (2010) maintain that the worldview of Native Alaskans is unique:

> Yupiaq people have extensive knowledge of navigation on open seas and rivers, and over snow-covered tundra. They have their own terminology for constellations and have an understanding of the seasonal positioning of the constellations and have developed a large body of knowledge about climatic and seasonal changes—knowledge about temperature changes, the behavior of ice and snow, the meaning of different cloud formations, the significance of changes in wind direction and speed, and knowledge of air pressure. This knowledge has been crucial to survival and was essential for the development of the technological devices used in the past (many of which are still used today) for hunting and fishing. (pp. 224-225)

Referring to the gap between the worldview of Native Alaskans and Western science, they further note:

> Yupiaq people view the world as being composed of five elements: earth, air, fire, water, and spirit. Aristotle spoke of four elements: earth, air, fire, and water. However, spirit has been missing from Western science. The incorporation of spirit in the Yupiaq worldview resulted in an awareness of the interdependence of humanity with environment, a reverence for and a sense of responsibility for protecting the environment. (p. 227)

Thus, to increase student success, it is imperative for teachers to help students bridge the gap between home and school cultures and contexts (Allen & Boykin, 1992). For example, Kaiwi and Kahumoku (2006) found that the introduction of a Native Hawaiian approach to analyze literature, by acknowledging and validating students' perspectives, empowers them by demonstrating a sustained connection to ancestors, greater appreciation for parents and grandparents, and an increased desire to learn. Gilbert (2011) found in his research on Apache, Hopi, Navajo, and Zuni students that cultural knowledge fosters order and understanding to the

individual within the community and also sustains order and survival within the larger context of the natural environment. He surmised that IK and IP are usually not included in schooling because it is assumed that if they are to be incorporated then they must be delivered separately from other content areas which would require additional time and money. However, as Barnhardt (this volume) shows, IK and IP can be successfully integrated with Western Knowledge to improve the quality of Indigenous education.

Initiatives promoting IK and IP in India

In the last two decades, many programs have been launched by nation-states to honor the rich heritage of Indigenous people and preserve it for the future generation. In the changed national, regional and global contexts, IK and heritage got priority in the national education practices of the India. The forum of South Asian Nations, South Asian Association for Regional Cooperation (SAARC) recognized the need for preserving the IK and Indigenous heritage in the region by adopting the *SAARC Agenda for Culture* in 2005. The *People's SAARC Declaration 2007* includes demand number 27 that countries "Respect and recognize the identity of South Asian Indigenous Peoples and ensure their social, political, economic and cultural rights in the constitution." Since then, major program initiatives for culturally appropriate education for the children of Indigenous communities are in top priorities of education and curricular reforms of the member states in the region.

In India, the concept of culturally appropriate education practices came into vogue along with its independence movement in the early 1920s and 30s when Mahatma Gandhi wanted to replace the British education system, also known as Macaulay education system with one that incorporated local knowledge and skills (Khubchandani, 2008, Singh, 2011). Addressing a group of audience at Chatham House, London, on October 20, 1931, Mahatma Gandhi said:

> I say without fear of my figures being successfully challenged that India today is more illiterate than it was before a fifty or hundred years ago, and so is Burma, because the British administrators when they came to India, instead of taking hold of things as they were, began to root them out. They scratched the soil and began to look at the root and left the root like that and the beautiful tree perished…. I defy anybody to fulfill a programme of compulsory primary education of these masses inside of a century. This very poor country of mine is ill able to sustain such an expensive method of education. Our state would revive the old village schoolmaster and dot every village with a school both for boys and girls. (cited in Dharampal, 1983/2000)

The 1986 National Policy of Education privileged CRE, recognizing the need of education to be culture-based. In 1979 the Centre for Cultural Resources and Training (CCRT) was established and today functions as an autonomous organization under the aegis of India's Ministry of Culture. Its goal is to make

students aware of the importance of culture in all development programs by conducting a variety of training programs for in-services teachers, teacher educators, educational administrators, and students throughout the country that links education and culture to develop the child's personality—particularly in terms of helping children to discover their latent talents—and to express it creatively. It also conducts various academic programs on Indian art and culture for foreign teachers and students. The Center adopted the motto to develop consciousness of the "Indian Cultural Heritage" through the utilization of local resources and community interaction, stating,

> [India's] National Policy of Education (1986) recognised the need of education to be culture-based. The role of education in developing democratic citizenship was recognised. Knowledge of culture plays a prominent role in democratic thinking : a democratic citizen is known for his ability to sift truth from false and he/she is more receptive to new ideas. True education also brings clarity of thought, compassion and concern for mankind and is a basis for human rights. (CCRT, 2012)

Local tribal culture-based education project, Janshala was launched in nine Indian states as a joint program of the Government of India and five UN agencies—United Nations Development Programme (UNDP), United Nations Children's Fund (UNICEF), United Nations Population Fund (UNFPA), United Nations Educational, Scientific and Cultural Organization (UNESCO) and International Labour Organization (ILO)—for the universalization of primary education among educationally underserved communities. It covered nearly thirty million children and 58,000 teachers in 18,000 schools. Tribal children make up a third of the target group children in the project area. However, in a survey study, records collected in schools in the Janshala program areas indicated continuing high dropout rates among tribal children. A major reason for that was that in most states the medium of instruction was the regional language. Most tribal children did not understand the textbooks, which were generally in the regional language. The appointment of non-tribal teachers in tribal children's schools was another problem: the teachers did not know the language the children speak and children did not understand the teacher's language (Gautam, 2003).

Likewise, in a 2007 project started in the Indian state of Orissa in 200 schools, Indigenous ("tribal") children from ten language groups are being taught through their mother tongues in the first grades, with materials collected from children, parents and teachers. Sixteen more languages were added in 2008 (Muthukumaraswamy, 2009, p. 5). Similarly, the *Curriculum Framework for Teacher Education* in India (Council, 2006) emphsized cultural appropriateness. The framework is comprised of four clusters of competencies encircled by four supportive themes and suggests that each teacher is allowed to interpret the framework within his or her context and personal approach to pedagogy. One of the four themes of the framework is Context and Culture that identifies the culture and other contextual factors that must be considered in infusing technology into

the teacher education curriculum. It includes the use of technology in culturally appropriate ways and the development of respect for multiple cultures and contexts, which need to be taught and modeled by teachers (Council, 2006).

Language immersion schools as exemplars of IK and IP in the United States

In the United States efforts started with the establishment of Rough Rock Demonstration School in 1966 to promote IK and IP (McCarty, 2002), however these efforts have often fell short (Reyhner & Eder, 2004). More success is being shown in recent years with the establishment of language immersion schools patterned after efforts by the Māori in New Zealand. This radical departure from the use of English as the medium of instruction and commercial textbooks for teaching various school subjects changed the whole climate of these schools in the direction of developing healthier children as students are immersed in traditional cultural values (Reyhner, 2010).

In Window Rock Public School District's Navajo immersion program started in 1986 in the Navajo Nation immersion students exhibited more adult-like behavior than students being taught all or mostly in English (Holm & Holm, 1995). The school's curriculum is based Navajo Nation's Diné cultural content standards (Johnson & Wilson, 2005; Office of Diné Culture, 2000). Observing classrooms at the Window Rock immersion school, Navajo researchers Kathryn Manuelito (see Reyhner, 2006) found, "Navajo values are embedded in the classroom." Central to Navajo's values is the concept of "Ké," being a balanced person, which involves examining beauty before me, beauty behind me, beauty underneath, beauty above, and beauty around; with beauty I speak with the goal of becoming a balanced person who walks in beauty. She quotes a parent who,

> noticed a lot of differences compared to the other [Navajo] students who aren't in the immersion program. [The Navajo language immersion students] seem more disciplined and have a lot more respect for older [people], well anyone, like teachers. They communicate better with their grandparents, their uncles…. [It] makes them more mature and more respectful. I see other kids and they just run around crazy. (as quoted in Reyhner, 2006, pp. 79-80)

The preface of the Navajo Nation's Education Division's cultural content standards for schools, *T'áá Shá Bik'ehgo Diné Bí Ná nitin dóó Íhoo'aah*, states, "The Diné [aka Navajo] Cultural Content Standards is predicated on the belief that firm grounding of native students in their indigenous cultural heritage and language, is a fundamentally sound prerequisite to well developed and culturally healthy students" (Office of Diné Culture, 2000, p. v). According to the Standards, Navajo students need to learn the empowering values of the Diné people that include being "generous and kind," "respecting kinship," "being a careful listener," and "having a balanced perspective and mind" as well as not being lazy, impatient, hesitant, easily hurt, shy, or mad. Diné citizens are to respect the sacred, have self-discipline, and prepare for challenges (Office of Diné Culture, 2000, p. 80).

Native Hawaiians are also actively seeking to restore their traditional values. The Pūnana Leo movement begun in 1983 in Hawaii according to its mission statement is built around re-establishing the Hawaiian philosophy of life. In a case study of a new immersion teacher, researchers Keiki Kawai'ae'a (Hawaiian) and Angayuqaq Oscar Kawagley (Yup'ik) noted, "people have realized that they have to revitalize their language and culture for healing to begin" (cited in Reyhner, 2006, p. 69). They observed that the Hawaiian language immersion school was "Family-based, enrolling the families rather than the individual student." In it the Hawaiian language,

> best expresses the thought world of the ancestors and thrusts them into the Hawaiian worldview. This is the language of connectedness, relatedness and respect. The language provides the cultural sustenance and the lens from which the dynamics of the school community has evolved. The language is formed by the landscape with its soundscape and therefore, conducive to living in concert with Nature. The families working together as part of the total learning community become an integral part of the learning environment.… The language shapes and nurtures the school learning community as a complete and whole entity. (unpublished case study by Keiki Kawai'ae'a & Angayuqaq Oscar Kawagley, 2006, quoted in Reyhner, 2006)

Conclusion

Over the years, the push for Indigenous self-determination and sovereignty has intensified, culminating in the passage of the 2007 UN Declaration on the Rights of Indigenous Peoples, which recognizes that one-size-fits-all educational systems have failed Indigenous children in regards to both respecting their human rights and providing academic success. Indigenous people are also in danger of losing their cultural heritage and distinct identity. The problems, issues and challenges of the Indigenous peoples are common all over the world. A 2003 UNESCO position paper, *Education in a multilingual world,* states, "Education should raise 'awareness of the positive value of cultural [and linguistic] diversity', and to this end: curriculum [should be reformed] to promote a realistic and positive inclusion of the minority [or indigenous] history, culture, language and identity" (UNESCO, 2003, p. 33).

While some aspects of modern life require new pedagogical approaches, such as the use of computers, one only has to look at modern youth and society to understand modern society has moved too far from traditional child rearing practices that taught Indigenous values, including respect and humility, and to be close observers both of their Elders and their surroundings in order to learn what they needed to survive and live fruitful lives.

In recent years, there has been a wakening for the rights of Indigenous people all over the world. Indigenous peoples are now demanding their national governments launch programs to incorporate their rich Indigenous cultures and heritages into the schools serving their children. As a result, many programs have

launched by nation states to incorporate rich Indigenous cultures and heritages into mainstream education. IP is based on thousands of years of experience bringing up children by Indigenous extended families and communities. Thus, it can be inferred that IP can be healing tools for instilling rich IK systems and cultural heritage for the coming generations.

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Principles of Indigenous Education for Mainstream Teaching

George Ann Gregory

This paper examines workable principles of indigenous education that can be applied to mainstream classrooms: finding each student's gift, professionalism, using real objects and tools, practicums, apprenticeships, elders and older students as teachers, and observation. These principles are illustrated with personal teaching experiences and historical examples. While examining these principles, it became apparent that they operate best within the context of community and that there may be different types of communities.

As noted by Māori educator Charles Royal (personal communication, February 12, 2005) and Tewa educator Gregory Cajete (1994), indigenous people in modern times have yet to design an indigenous approach to schooling although Cajete (1994) "*advocates* developing a contemporary, culturally based, educational process founded upon traditional Tribal values, orientations, and principles, while *simultaneously* using the most appropriate concepts, technologies, and content of modern education" (p. 17, emphasis in original). In New Zealand, Māori children often attend school in uniforms, following the British system. The day is divided among regular school topics and often math and science is conducted in English. Even in Māori language immersion schools, the schools follow schedules similar to the English-speaking schools.

The education situation in the US is more complex than the one in New Zealand owing to the multi-layers of governments and the number of types of schools, such as public schools operated under State Boards of Education, Bureau of Indian Education (BIE) Schools, or BIE grant schools. Despite the governing agencies, most of these schools operate generally in the same manner and having to meet federal guidelines leaves little time in a school day for indigenous knowledge or approaches. The one exception to this patterning might be charter schools. The question that needs to be explored might be what are some principles of an indigenous or Native American educational system.

This chapter begins with several premises. The first premise is that American education should be based upon American principles. Native Americans were the first Americans, being here before the continents were called the Americas, and there is ample evidence that current US culture is built on the foundation of Native America, giving "American" culture a distinctive uniqueness from European cultures (Cohen, 1952). For this very reason, education in the US needs to be based on an American philosophy and not an imported one. A second premise is that workable methods work for all people. Consequently, methods that work for Native American children are good methods and can and should be used with all children. This assumption is illustrated by the fact that Vygotsky (1978, 1986; Vygotsky & Luria, n.d.) rediscovered these principles with Rus-

sian children. As Daniel Wildcat so aptly observed, "the problem with Indian Education in America is really the problem of education in America" (1994a, p. 9). Medcraft, a Tasmanian educator, endorsed the importance of indigenous education in her statement that "indigenous education should be taught around the world" (2008, p. 156).

While most North American Native Americans had no formal schools, some of the principles used for educating—the passing down of culturally relevant and survival knowledge—children were actually employed to a degree by European Americans in their one-room, common schools. These community controlled schools taught children to read, write, and do math while preparing them to become adult contributing members of their own communities and fulfilled the definition of education to provide "intellectual, moral, and social instruction." Something current schools do very little of. Some of the principles discussed here include finding each student's gift, professionalism, using real objects and practicums, reinstating apprenticeships, utilizing elders and older children/youth as teachers, and observation.

A strong partnership between community and a school is the basis for real education for children. Vine Deloria, Jr. noted, "the old ways of educating affirmed the basic principle that human personality was derived from accepting the responsibility to be a contributing member of society" (1994a, p. 44). Cajete affirms the importance of community to education, writing "traditional American Indian education historically occurred in a holistic social context that developed the importance of each individual as a contributing member of the social group" (1994, p. 26). Lack of membership in a community is not just a problem for Native American children, but it is also a problem for many children in the US. Isakova (2012) describes American children as the most pampered children in the history of humankind. Ochs and Izquierdo (quoted in Isakova, 2012, n.p.) noted that while "American children had to be nagged mercilessly to do even the smallest chore, …in the Peruvian Andes… six-year olds routinely make themselves useful by sweeping sand off of sleeping mats and catching and cooking crustaceans for the adult's dinner." Isakova notes that Peruvian children do this because they are taught to do this, implying that this level of contribution is exactly what is missing in education for American children.

Although Isakova primarily addressed the lack of parental involvement in children's learning, today's children spend six to eight hours a day, five days a week, for approximately 180 days a year, or about half a year in school. These hours during the day are the hours that traditionally children would have been interacting with family and community and becoming contributing members of their communities so that once they become adults they know their place. Because children spend so much of their lives in school, schools also need to take some of this responsibility. In her own endeavors in Indian education, Napier, a Cherokee educator, observed this lack of partnership : "One of the most significant barriers we face in education is that we are not communicating—we are not working together" (2008, p. 124). As a consequence, schools must be reconnected to families and communities in order for children to become truly

educated and "whole" people. To be completely effective, the principles described here are interrelated and additionally need to be contextualized within families and communities.

Finding each child's gift and professionalism

I have put two principles together because I believe there is an intrinsic link between the two. The first is finding each child's gift, and this idea is borrowed from a wonderful work done with defining "giftedness" among Pueblo people (Romero 1994). As Cochiti Pueblo educator Joseph Suina notes:

> Our people believe that people have different gifts. Some are really good teachers and can communicate certain things well. Others are excellent composers of songs, and that is their gift. Others may be artists, and so forth…. If you want to learn and do things right, then you have to do things in the way that the little ones will want to be there with you. (2008, p. 97)

Suina implies that teachers themselves should be gifted. The basic idea from Romero's study is that each person has something at which s/he can excel. This idea is at odds with many current practices in modern education, including the "assembly line" educational model (Cornelius, 2011; Rosenberg, 2011) in which each student marches through the same identical activities at the same identical time, and at the end of the year each child is an identical model—at least test-wise. In fact, teachers in the Albuquerque Public Schools have been required to follow a script and expected to be doing exactly what the script dictates for that day if the principal decides to drop in (Louis García, personal communication, May 22, 2010). Finally, Romero's study indicated a gifted person shares that gift with others.

A good example of the idea of giftedness is represented by Laguna Pueblo educator Susie Reyes Marmon, who helped to establish and taught at the school at Laguna Pueblo. Additionally, as an elder, she shared her storytelling gift with her grandchildren and grandnieces and nephews, including Leslie Marmon Silko (H. Marmon, personal communication, January 17, 2009), whose first publication, Storyteller (1989), reflected these very same stories. Marmon's educational efforts also inspired her granddaughter Harriet to become a teacher. Helping a child find his/her gift is basically recognizing that individuality is important for educational success: "During my encounters with the Oglala/Lakota and Mohawk oral traditions, I noticed that teaching and learning was nurtured not by methods that were assumed valid and appropriate for everyone but through spending time with the individual so as to come to know that individual" (Lambe, 2003, p. 309).

Not only does a "standardized" approach assault common sense, but it also violates the theories of the Swiss developmental psychologist, Jean Piaget, so often used to justify actions in the US done to children. Obviously, "standardized" curriculums and scripted teaching do not allow any child an opportunity to discover what s/he might be really good at. In discussing this idea with one

mother, she said that finding her child's gift was really her job, and parents do play an important role in this discovery. However, considering that children spend a substantial sum of time in school with added time spent on traveling to and from school and parents often working, there is little time left over for parents to enjoy this kind of interaction with children. Schools and schooling have become an almost full-time occupation for children: Therefore, schools need to provide opportunities for children to discover his/her giftedness, for children to become another Steve Jobs or Sherman Alexie or even the best baker in the family.

Giftedness in the Pueblo sense is what a person does well and also gives back to the community (Romero, 1994). Schools do a particularly poor job of connecting children and youth to their families and communities or in teaching students to give back. In European American, middle-class values—and those values are the ones taught in schools, a person excels to make money, be acclaimed as the best, or to get personal satisfaction. Little emphasis is placed on giftedness being the sharing of a person's gift, or that gift might be learning traditional songs, stories, and activities so that those can be preserved and shared with future generations, another notion not emphasized in European American cultural values. Current methodologies are at odds with traditional Native American values and actively diminish Native American and other indigenous cultures in which the child would have been and should be "integrated in the community for the purpose of being a contributing, participating adult member—as opposed to being separated from the community as is the case in many urban schools (Deloria quoted in Ah Nee Benham & Cooper, 2008, p. 12)

Related to a student finding his/her own gift is the notion of professionalism. Professionalism is attaining a level of proficiency or becoming a master. The idea of professionalism contrasts with a current notion of "competency," which is actually the minimum level expected of a child's learning. Boloz (2012) noted that all children need a gifted program, the idea being that children need to be allowed to learn beyond just meeting a minimum level. Deloria described the role of schools in creating professionalism:

> Traditional knowledge enables us to see our place and our responsibility within the movement of history as it is experienced by the community. Formal American education, on the other hand, helps us to understand how things work, and knowing how things work and being able to make them work are the marks of a professional person in this society. (1994a, p. 46)

While not a lot has been recorded about traditional educational practices, one aspect that has been mentioned is that children generally practiced an activity, such as beading or bow making, and only when s/he felt that what was produced would be worthy of praise was the final product shown (Scollon & Scollon, 1984). To put this simply, even children know when something is really good because they measure their products against what they see produced by adults because they have as their goal to become an adult, to become a "professional"

in whatever they do. And this is achieved in some schools today when students are given real equipment and challenged to do real scientific experiments or given real problems to solve. In these exercises, children and youth are challenged to achieve a degree of professionalism in their own lives. Finding a person's gift and achieving professionalism are related to other important aspects of indigenous education—tools, real objects, and using what is learned.

In a traditional way, knowledge of how to do things, how to make things was passed down from generation to generation (Ah Nee Benham & Cooper, 2008), yet this was done without squelching individual innovations. A good example of wanting to achieve a "professional" model or ability is the story of Sequoyah and his invention of a writing system to represent the Cherokee language. Evidence now indicates that he began working on this system in his youth with bits and pieces of the syllabary written even on cave walls. It was not until he could demonstrate that Cherokee could be easily and successfully written in his syllabary that he began to share it with others (Cushman, 2011).

Schools and teachers with low expectations for Native American students afford them few opportunities to strive for any professionalism. And this attitude has changed little since the early schools for Choctaw and Cherokee, in which the curriculum consisted of what can be classified as vocational education (Morrison, 1978). In those early days, Indian children were trained to be domestics or farm hands without much thought to their place in their own communities or their ability to achieve anything beyond manual labor. This curriculum reflected a societal function of schools to provide workers for a specific economy (Dewey, 1916). In the late 1800's, the US needed manual laborers. Ask where today's economy needs workers and what skills those workers need and predict what a child will actually learn in school. As it turns out, many jobs will be in the service industry and construction (Bureau, 2012), jobs often requiring very low competencies in literacy, math, and science. In examining needed changes in education for Native Americans, Wildcat (1994d) stressed the need for indigenous people who are professional.

The idea of professionalism has been successful in teaching children to be good writers. In many classrooms, as children begin to express themselves in writing, they are given school tasks often unrelated to any real world uses and judged, not upon the author's ability to communicate an idea effectively, but solely upon the author's ability to transcribe the mechanics of writing—spelling, punctuation, and standard English sentence structure. Granted these latter skills do come in handy in the real world, and most students can easily see their merits once they have been assured of the real purpose of writing, to communicate. The real world needs good communicators and good communicators who can write effectively. There are ways to show students how to achieve a level of professionalism in writing, and these methods need to be used in schools.

In the 1980's, I accepted a teaching position working with middle-school students from the Middle Rio Grande Pueblos. These students had been placed in a special program to help them increase their literacy skills. Using the ideas of Graves (1983), all students wrote several times a week in a variety of genres.

Students then edited and polished their favorite pieces for a publication entitled 1000 Words. Publication makes children authors and gives them a real purpose for writing—it makes them professional writers as publication is part of that professionalism. What the students learned in my classroom actually put them ahead of other students in regular classroom in terms of writing compositions.

Tools, real objects and using what is learned

Any real standard of proficiency can only be achieved by students being allowed to use real objects in learning and using what they have learned by contributing to others. Real objects and using them are part of Cajete's (1994) metaphor of "ecology of indigenous education" or relating education to the real world, the physical universe. Traditionally, children's toys were often miniatures of the tools they would use as adults. For example, a girl might have her own child-sized lodge that she learned how to erect, and boys had small bows with which they hunted.

> A young boy might be given a bow and arrow, or a blow pipe, with which to practice hunting skills that he'd need as an adult. Darts and arrows were used to bring down game, and since men were expected to provide meat for the family, a young boy would need to develop keen hunting skills. (Strain, 2012, n.p.)

"Their toys were designed to teach something useful, and to learn the skills they would need as adults" (Historical, 1996). And children soon learned how to handle tools, such as knives, necessary for skinning animals or gutting fish (Scollon & Scollon, 1984). Additionally, toys were used to teach children values.

> Little girls were often given dolls made of corn husks or corn cobs. Such dolls might be assembled using pine straw, fur, beads, or human hair. According to custom, no face would be drawn on the doll. Mothers would tell their children the story of the beautiful doll who was so vain [that] the creator took her face and reflection to punish her. Children were taught that no one person should think themselves better than any other. (Strain, 2012, n.p.)

Toys as tools were part of passing skills down from generation to generation to keep children connected to families and communities in opposition to children who are housed separately from communities and learn data not connected to any real life experiences or for any useful purpose and only for the purpose of passing tests.

Modern children rarely get tools as toys unless they attend a more affluent school. In these schools, even young children might have computers, iPads, or other electronic gadgets, but these tools are rarely related to the child's community or that community's values. Like the data presented, the technology is de-contextualized and disconnected from the physical universe in Cajete's

(1984) metaphor. Wildcat (1994b) described the problem with disconnection in schools this way.

> Today what counts as knowledge in mainstream education is too often short-term memorization of "facts." What counts as understanding is specialization in a narrow topic within a field or discipline. Understanding is so narrowly framed that it is often difficult for the specialists, let alone students, to effectively connect or relate their knowledge and understanding to the everyday lives of nonscientists. Because people desire just the "facts" without any understanding of the relations and connection between the "facts" and the rest of the world, we have the search-engine model of education. (p. 29)

This emphasis on discrete points of a topic plays a role in literacy failures as well. Heath's (1982) study of three communities in the Piedmont area of the Carolinas, highlighted the need to teach children how to connect meaning in text to meaning in real life in order for them to be successful in school. More importantly, students of all ages need to be able to connect what they read to their lives. Yet children are rarely asked to apply what they have read. Instead they are asked to provide discrete answers on exams, thereby rewarding "glib" students—those who are good with words but cannot really do anything.

Real objects are also an integral part of two effective immersion language teaching methods: The Silent Way (Gattegno, 1963) and Total Physical Response (Asher, 1977). Since words represent real objects, actions, and ideas, language learners need real objects and real activities they are leaning to name (Vygotsky, 1986). The idea that anyone can or should learn something without the tools or the real objects involved is ludicrous. No one wants to go to a surgeon who has never held a scalpel or send an astronaut into space who has never worn a space suit. No professional works without his/her tools, without the real objects necessary for the trade. This is true for traditional activities as well. No one learns to weave by just reading a book. A weaver needs a loom and some yarn. This idea is also true for reading. One thing that helps students become readers is books and things to read. In the field of literacy, books, paper, pencils, word processors are the tools—the real objects—necessary to achieve professionalism in literacy.

To prepare a child to become a contributing member of any community, s/he needs tools—the real objects of what is being learned—and a chance to actually use what s/he is learning. This is just as true for making piki bread as it is for creating chemical formulas in a lab. In an educational context, students of all ages need to relate the skills learned in school, whether they are academic or non-academic, to each of the circles outlined by Armstrong (2008): how to develop self, to build better families, to contribute to community, to become better stewards of the land, and to develop the world. "If we were to construct our educational plan around how to answer these questions, schools would look very different" (Armstrong, 2008, p. 40). And in today's world, children need many tools to survive.

Internships also provide a meaningful way for students to use what they have learned and can be used to bring students back into community. Wildcat (1994d) refered to the same idea when he suggested that "our young scientists, engineers, and entrepreneurs would serve required year long internships in communities, working on problems people are facing" (p. 118). Consequently, effective classrooms do not have children sitting quietly in rows of desk—effective classrooms are busy places full of tools that children are using to create.

Apprenticeship/Working with a Master

In addition to having real objects and having a goal of professionalism in an activity, children/students should be allowed to apprentice with a master. This method is used for learning traditional medicine ways and also among certain professions, such as lawyers and medical doctors. And more recently, some school districts have implemented such an apprenticeship program, having people with non-education degrees and professional backgrounds work with a "master" teacher for a few years, and one such program has an 80% retention rate (Boston Public Schools, n.d.). These programs have been very successful in preparing already well-qualified individuals to teach by having them learn pedagogical methods within the context of real classrooms.

De Munck and Soly (2007) have pointed out that apprenticeship or "'learning by doing' is not a practice of bygone days." Indeed, may modern industries, such as brewing, wine-making, and glass blowing, still rely on this tried and true method. Additionally, many popular practices incorporated from Asia, such as Tai Chi, Qigong, and the martial arts, require working with a master. And while schools are turning out graduates of culinary arts schools, master chefs still take on apprentices, who in turn then become their own masters. And the Bureau of Labor predicts that jobs requiring apprenticeships will be among the fastest growing areas. This system also comes full circle to giftedness inasmuch as one way to give back one's gift is to share it through teaching. In fact, one failure of elementary education is that teachers are not masters of most of what they teach, and this sometimes includes reading, writing, math, and science: "the instructor should know more than the student" (Bourque, 2010).

Traditionally, the one activity that still demands an apprenticeship is medicine making. These traditions vary from nation to nation, but the constant is that they must be learned with an actual medicine person, generally in a one-to-one relationship although more recently some medicine people have adopted a more European American approach of offering workshops. Other traditional activities learned through doing are pottery making, silver smithing, weaving, bread making, lodge making, and building hornos (Pueblo ovens). In past times among the Cherokee, once a boy was of a certain age, he could enter the men's house (see Perdue, 1998, for Cherokee gender roles) where he could "apprentice" with a gifted hunter or warrior. Similar systems may have existed in other nations. Apprenticeships utilized real tools and require the application of skills (Grill, 2008).

Hence, children, and later young people, are deprived of the opportunity to work with a master, preventing them from discovering their gifts and achieving a

level of professionalism to be successful contributing adults. In the Apprenticeship Perspective (Pratt & Collins, n.d.), teachers "believe, rather passionately, that learning and teaching are most effective when people are working on authentic tasks in real settings of application and practice" (p. 3). While they are referring to adult education, this approach ties in nicely with the work of Graves (1983) and Calkins (1994) in the area of writing, but could just as easily be applied to any field, including reading. Teachers could demonstrate how they read and then apply reading to real settings. As Bourque (2010) noted, any subject is sufficiently complex that it requires an apprenticeship to master it. Whether applied to traditional activities, literacy, or European American technologies, the principle and workability remains the same.

Treasures

Charles Royal (2005) referred to elders as treasures, and, in many Native American cultures, elders were the first "masters" with whom children served their "apprenticeships." Since able-bodied adults were generally involved in everyday living activities, children learned from older children or elders. This was particularly true in communities of agrarian groups where there were "cousins" of various ages with whom to interact and the women were working in the fields (Perdue, 1998) or gathered together to prepare food for family or community ceremonies: Older children, more often girls than boys, were put in charge of younger children. Leslie Marmon Silko (1989) is a product of this particular type of apprenticeship. She was one of the many children who gathered at Susie Reyos Marmon's house during storytelling time (Harriet Marmon, personal communication, 16 July 1994). Later Silko incorporated the Marmon stories into her own writing.

Deloria (1994a) saw elders as "the best living examples of what the end product of education and life experiences should be" (p. 45). Additionally, elders have a strong sense of history because they have lived it, having seen many changes in the world. I recall that as a young person my great-grandfather predicted today's economic "depression," pointing out that people no longer grew their own food. Royal (2005) also points out that "it is good for us to be inspired by the wisdom of out ancestors, but at the same time it is almost important to recognize that we live in a world that is vastly different to that experiences by our ancestors (p. 3). Today's children need the mastery represented by elders and use the principles involved in that education while being prepared for tomorrow's technology.

In a decile one school—decile one schools serve the poorest children-- in Hamilton, New Zealand, I saw an example of older children teaching younger children. Older children, mid-schoolers, were teaching mau rakau, Maori martial arts, to younger children. An extension of this traditional practice was carried out with reading as well. Older children came in and had younger children read to them. A similar program existed in Gordon, NE, in my son's first grade class in 1990 for Lakota children, whose older siblings came in after school so that their younger siblings could read to them to earn their Pizza Hut Bookit personal pan pizza.

In an after-school, summer literacy program in an Albuquerque neighborhood generally known as the "War Zone" for its high level of violence and gang activities, older elementary, mid-school, and high school students were trained in a reading tutoring method, simply called "Read Aloud." In this method, both the learner and the tutor have a copy of the same material. The learner reads, and, whenever s/he stumbles, hesitates, or requests help, the tutor says the word and what the word means. This method reduces the stress of reading for poor readers while ensuring that the reader is actually getting the meaning of the text. Most of the teens in the program were there doing community service for truancy and two teens were convicted felons. In this manner, younger children learned to read while the tutors learned to contribute to their community.

The participants in this program were Native American, Hispanic—mostly Mexican, and African American. The two convicted felons did not re-offend, and one went on to complete an AA degree at the local community college. Three of the Mexican students ran their own tutoring program for one summer. And most of the tutors went on to graduate high school. The program was called Learning Circles to indicate how the learning circled around to include all the participants. Elders were also a source of learning for younger children. As opposed to the current model of segregating people by age, traditional education included "multiple generations" (Cherrington, 2008, p. 31). Elders were a key part of Māori language revitalization efforts during the 1980's in the kohanga reo movement and language camps for adults. Most importantly, Elders are important to real learning because they hold the knowledge of the past. And having interaction with elders provides continuity to a culture and ensures that children do not have to invent themselves in a vacuum.

Observation

While much has been stated about the need for students to listen, little has been written about the importance of learning to observe, and observation is the basis for traditional knowledge.

> The Indian method of observation produces a more realistic knowledge in that sense that, given the anticipated customary course of events, the Indian knowledge can predict what will probably occur…Indian accumulation of information is directly opposed to the Western scientific method of investigation, because it is primarily observation. (Deloria, 1994b, p. 27)

Observation, the first step in learning, was used to gain the information necessary for when to plant, when to gather medicinal herbs, and when and where to hunt or trap. Cajete describes its importance this way: "The cultivation of all one's senses through learning how to listen, observe, and experience holistically by creative exploration was highly valued" (1994, p. 33). While Cajete appears to limit observe to its meaning of "watch," observing in its most

common usage is "perceive," which can involve many senses including hearing, smell, and kinesthesia.

When I taught at Oglala Lakota College, one of the Lakota instructors shared this story with me. He had invited an elder to come to his class to show the class how to make a traditional bow. The elder instructed him in what materials to have, and the instructor had the materials all laid out on the desk in front of the class. The elder walked in, and the instructor walked to the front of the class to get the class started and introduce the speaker. When the instructor turned around, the elder had the bow strung, stated "that's how to make a bow," and walked out. The Lakota instructor, a man in his thirties, reflects that is when he learned the importance of observation.

Schools do not train children to observe, but to obey authority. Indeed, teachers are not trained to observe. Observing means to use all senses and to see the world as it actually is. Royal (2005) described this process as removing the lenses of his/her thoughts of what the world is to "see the world as it actually is" (p. 12). And one of the first lessons any traditional Native American children learned was to observe: It was necessary for survival. Observation is just as necessary for survival today as it was for our ancestors. The inability to observe places modern children in constant danger.

Additionally, no scientific or technological advances can take place without observation. Being a good scientist or inventor has nothing to do with memorizing dates of important discoveries. It is really only necessary to know that certain things have been discovered—planets, chemical elements, gravity, for example—and to observe that these things are true. Indigenous people were able to accumulate environmental knowledge—"40,000 years of continuous relationship with special environments" (Cajete, 1994, p. 78)—through observation. Modern children and youth, as much as their traditional counterparts, need to learn how to just be some place comfortably and observe sounds, smells, temperatures, textures and all the myriad of phenomenon available to observation.

Community schools

Before education became the big business it is today (Deloria, 1994a), communities had control of schools and their curriculums. In fact, the Choctaw were among the first to create community schools that educated both boys and girls and taught adult Choctaws to read and write Choctaw (Morrison, 1978). And Cherokee literacy in Sequoyah's syllabary was completely achieved through community efforts (Cushman, 2011). European Americans had the common school, schools during the nineteenth century intended to serve all social classes and religions. One primary purpose of the common school was literacy and teaching cultural values. As more and more immigrants poured into the expanding United States, many educators saw a great need to instruct the new immigrants in the proper, mostly Protestant and English-based, cultural values. "The common school itself was seen as the guarantor of a particular cultural system—that is, as the institution which could guarantee that a particular cultural outlook would be perpetuated through literate future generations" (Soltow & Stevens, 1981,

p. 21). And local school boards using teachers from the community determined the cultural outlook.

A conversation with Hispanic teachers in the Española School District in Northern New Mexico revealed an interesting change. Española is located just outside of Oye Owingah Pueblo just a little south of the first Spanish settlement in New Mexico. It is one of the oldest Spanish speaking villages in New Mexico. In the 1990's, Española was under a court indictment to improve the test scores of its Hispanic students. Many of the teachers in the class had been born and raised in Española. They asked me "why bilingual education?" Their reasoning was that they had grown up speaking Spanish and had learned how to read and write in English. The change that was revealed is that now "outsiders" were dictating the curriculum and many of the new teachers were not from that community, and, as a result, did not have the same cultural values as those from that community. There was the additional problem that the Spanish being taught in the classrooms did not match the Spanish spoken locally, thereby further alienating the native New Mexican youth from their own community.

Conclusion

Reinstatement of community must play a role in reinstating the wholeness of an educational system that not only prepares children with skills but also prepares them for an adulthood that includes contributing to family and community. Wildcat describes the current state of disconnectedness of schools to homelessness.

> A modest estimate would place three-fourths of U.S. citizens in a condition of homelessness: a technology-induced condition of homelessness.… No, the problem of homelessness demanding attention concerns the vast majority of Americans today living in houses, condos, and apartments, residences with addresses, who have taken advantage of our society's modern education systems and technologies and still feel lost, disconnected, ungrounded, or what we call homeless. (1994b, p. 67)

King and Gregory (2011) found that, at least in terms of language revitalization, that people perceived three different types of communities: the tribe, the school, and like-minded people. Examples of these three types of communities exist for educational purposes as well. For example, Deloria and Wildcat (1994) often use community in this sense. School as community is exemplified by the Native American Community Academy in Albuquerque. La Plazita Institute in the South Valle of Albuquerque represents a community of like-minded people: It is a place where people from different tribes, including Mexican tribes, come together to engage in a variety of activities, including sweats, cunanderas, computer training, and language classes. Once communities regain control of elementary schools, then they need to also influence the methodologies of middle and high schools. Finally, academia needs to be indigenized.

> What is "Indigenizing the academy?" To me, it means that we are working to change universities so that they become places where the values, principles, and modes of organization and behavior of our people respected in, and hopefully even integrated into, the larger system of structures and processes that make up the university itself. In pursuing this objective,…, we as Indigenous people immediately come into confrontation with the fact that universities are intolerant and resistant to any meaningful "Indigenizing." (Alfred, 2004, p. 88)

In this area, the Māori may be a little ahead of us in Native America. They have established several Māori universities, including Te Wānanga Aotearoa, Te Wānanaga o Raukawa (a tribal university of three confederated iwi), Te Whare Wananga o Awanuiārangi (to provide positive Māori pathway), and Te Wānanga Takiura (a Māori tertiary training institution). Communities need to reinstate the basics of workable education that include the principles previously outlined.

The basics of indigenous education need to be implemented for all children. As Cajete pointed out that "education is in crisis as America finds itself faced with unprecedented challenges in a global community of nations" (1994, p. 25) and this crisis has been brought about through the disconnection of people from the "natural world" (p. 26), causing alienation, loss of community, and a sense of incompleteness. Implementing indigenous principles can remedy these losses. Moreover, Royal sees a role for traditional knowledge in contributing to the survival of indigenous people and their nations: "It [the revitalisaton and rejuvenation of the traditional knowledge bases of indigenous communities] is also concerned with understanding ourselves as a destructive people and what we can distinctively contribute to a wide range of activities within the nations in which we live" (2005, p. 4). Again there is an emphasis on contributing.

Now is the time for indigenous people to share the principles of successful practices with others. Some basic principles should include observation, finding each person's gift, professionalism, using tools and real objects in appropriate contexts—"education about life" (Cajete, 1994), apprenticeship. Implementing these principles should be done within the context of community. Wildcat believes that community is key to indigenous success and admonished that "community service ought to be expected, and I can think of no better services than holistic learning experiences" (1994c, p. 118).

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Diné Youth and Identity in Education

Vincent Werito

This chapter presents some of the findings from my doctoral dissertation, *The Racialization of Diné (Navajo) Youth in Education*, which was designed to give a voice to nine Diné youth who described the ways that they were able to negotiate their place in school. My main research questions were about identity, how schools have historically addressed the cultural and linguistic differences that Diné students bring to school, how culture, language, and race intersect in their lives, and what factors determined success and/or failure for Diné youth subsequent to their schooling experiences.

Past studies of the schooling of Diné (Navajo)[1] youth emphasize the impact of racism on Navajo youth and highlight the myriad reasons why some students succeed academically while others fail in school in secondary and post-secondary school settings (see e.g., Deyhle, 1995; Vadas, 1995). For example, in her longitudinal study of Navajo and Ute students, Donna Deyhle (1992, 1995) implicates "racial warfare" as a significant cause as to how and why some students fail. While Deyhle's research refers to some general claims from John Ogbu's explanations about voluntary and involuntary minorities, Deyhle (1995) states "Navajos, in contrast, have never been an essential part of the White dominated economy" (p. 407). She writes:

> Whereas Ogbu views the cultures of caste like minorities as a reaction to the dominant white group, I believe that Navajo practices and culture represent a distinct and independent tradition. Navajo do occupy a caste-like, subordinate position in the larger social context. However, only a small part of Navajo cultural characteristics can appropriately be called "secondary" or "oppositional." Navajos face and resist the domination of their Anglo neighbors from an intact cultural base that was not developed in reaction to Anglo domination. An oppositional description of Navajo culture ignores the integrity of Navajo culture and neglects the substantive value disagreements between Navajos and Anglos. (pp. 407-408)

As an Indigenous educator, I have become more concerned about the impact of this "racial warfare" in regard to the schooling of Indigenous youth and other youth of color because I believe they are not starting

[1]I use the terms Navajo and Diné interchangeably. In historical texts, Navajo was used a lot by anthropologists and others. Diné is a term that is being used more and more today. In the Navajo language, Diné means "the People."

on an equal playing field with white students. Over the last five years, I have become more aware of the politics of schooling, identity formation, and knowledge production as a result of my graduate education in critical educational studies. I have learned about social reproduction theory in education and about ideas like cultural capital along with notions about social and political processes of inclusion and exclusion that continue to influence educational policies today that have detrimental effects for youth of color (Apple, 2000, 2001a; Lareau, 2000; Bourdieu & Passeron, 1977). In "Moments of Social Inclusion and Exclusion," Annette Laureau and Erin Horvat (1999) define moments of inclusion as "the coming together of various forces to provide an advantage to the child in his or her life trajectory" and moments of exclusion as including "placement in a low reading group, retention, placement in remedial groups, and the failure to complete college preparation requirements" (p. 48). That is, many students of color and students from low socio-economic backgrounds are excluded because they do not have access to the cultural, economic, and social capital that are needed to do well in schools and many are losing out. In the case of Indigenous youth, often times their family and community's language, cultural wealth, and knowledge are also seen as a deficit to the existing mandated school curriculum. More so, these youth's identification to and with their unique cultural and linguistic heritage are hardly, if ever, recognized and supported in their educational careers.

As an educator, I have personally heard of administrators and teachers who express their opposition for the need and importance of having Navajo language and culture classes for Navajo students. For example, on one occasion, a Navajo language teacher with whom I worked relayed to me a story about a white teacher who unabashedly asked her Navajo students, "What is so important about your culture that you are late to class?" The students were several minutes late getting back to their homeroom class because they had been participating in a Navajo cultural activity in their Navajo class. On a more subtle level, I have also observed colorblind racism when teachers say, "I don't see race" or "I don't see color". This new type of racism is one way that whites try to minimize or naturalize racism as the way things are, thereby placing the blame of always complaining or bringing up issues about race and racism on people of color. Eduardo Bonilla-Silva (2003) in *Racism Without Racists* describes this new racial ideology as "a loose organized set of ideas, phrases, and stories that help whites justify contemporary white supremacy"(p. 178). Bonilla-Silva along with other critical race theorists maintain that these ideas work in tandem with racializing practices that continue to maintain and sustain white supremacy within our "racialized society."

Research background and methodology

The purpose of my dissertation study was to give a voice to Diné youth in education as they described the ways that they were able to negotiate their place in school. My main research questions were about identity, how schools have historically addressed the cultural and linguistic differences that Diné students bring to school, how culture, language, and race intersect in their lives, and what factors determined success and/or failure for Diné youth beyond their school-

ing experiences. I used a qualitative research design that employed a case study approach because case studies provide a systematic way of looking at events, experiences and perceptions while collecting data, analyzing the data, and reporting the results.

I selected my nine participants, all Diné, from a large university setting. While many of the students were from rural reservation communities, there were several who consider themselves to be 'urban' Navajos particularly in that they have been born or lived in a city for a significant amount of time. Also, there were students who moved back and forth from urban to reservation settings with their families on a regular basis. The method of data collection for this study relied primarily on in-depth interviews. I also reviewed educational documents from national, state, and tribal departments such as the No Child Left Behind Act of 2005 and the New Mexico Indian Education Act of 2005, state and private educational reports, and tribal legislative documents related to American Indian and Diné language and educational policies.

Summary of findings

An important aspect of this research on Diné youth highlights findings about students' understanding of their racial, ethnic, cultural, and gender identities in relation to their educational experiences. Using data from the interviews, I discovered that their responses reveal clear indications that identity formation and development are linked not only to individual self definitions but to racial ascriptions based on the social constructions of racialized bodies. For example, all of the participants elicited varied responses that reveal the complexities and incongruence of the meaning of identity. For some, their sense of identity encompassed a more traditional understanding of Diné identity in comparison to others whose sense of identity revealed strong notions of citizenship and nationalism. Furthermore, for the students in my study, their perceptions about these different types of identities were largely premised on their past experiences, or lack of experiences, discussing or addressing issues surrounding race, identity, culture, and representation. In some cases, participants were unsure about differences between their racial and cultural identities. It appeared that their ideas were largely based on government notions of citizenship or derived on biologically imposed notions of race and blood quantum in their references to census numbers and certificates of Indian blood.

Racial identity development models offer a socio-psychological perspective for understanding the stages of identity development for African Americans, whites, and other people of color. Furthermore, these models help to address and raise some important questions and issues related to racial identification. In looking at racial identity, Beverly Daniels Tatum (1997) describes how an individual and a racial group's shared cultural, social, political, and economic experiences require an examination of their racial identity development. For example, African American racial identity development can be described as the attitudes and beliefs that an African American has about his or her sense of belonging to the African American race or ethnic group, about the African American race (and

community) collectively, and about other racial groups. In a similar way, I believe that by addressing racial identity development of Native American, First Nations, or other Indigenous peoples, Indigenous youth will become better equipped to articulate and bring out into the open their ideas and experiences with internalized racism, structural racism, and global white supremacy.

In "Indigenous Identity: What Is it, Who Really Has It?" Hilary Weaver (2001) writes "Native identity has often been defined from a nonnative perspective. This raises critical questions about authenticity: Who decides who is an indigenous person, Natives or non natives?" (p. 246). This idea or phenomena of claiming or re-affirming an Indigenous identity is best captured by Sandy Grande (2008) who refers it as a 'paradox.' In her article "American Indian geographies of identity and power: At the crossroads of Indigena and Mestizaje*,"* Sandy Grande (2008) states this idea very well:

> While contemporary life requires most Indians to negotiate or "transgress" between a multitude of subject positions…such movement remains historically embedded and geographically placed. Moreover, the various and competing subjectivities remain tied through memory, ceremony, ritual, and obligation to a traditional identity type that operates not as a measure of authenticity, but rather of cultural continuity and survival…. the struggle for American Indian subjectivity is, in part, a struggle to protect this essence and the right of Indigenous peoples to live in accordance with their traditional ways. (pp. 232-233)

Thus, as American Indians try to re-claim, re-define, and re-articulate a fluid but strategic "essentialist" construction of Indian-ness, there are still many challenges that face American Indian communities that require the construction of open, fluid, and transgressive definitions (Grande, 2008; 2004). Therefore, defining Indian, Native, Native American, or Indigenous identity becomes a very salient issue for educators when looking at educational outcomes for Indigenous communities because processes of identity formation and affirmation include looking at complex issues that underscore many aspects of identity development, such as personal, social, and cultural beliefs about identity, the impact of racism and racialized discourse on Indigenous people, the imposition of legal and biological definitions of identity, and the strategic ways that Indigenous people are reclaiming their own beliefs about identity development (Lee, 2006; Garroutte, 2003; Martinez, 2010; Weaver, 2001).

A thorough analysis of student responses in my study revealed that Indigenous youth are critically aware of the relationship between identity, ancestral language, place, and cultural knowledge. Also, Indigenous youth are critical of the subordination of the "fundamental markers" of their identities. Māori scholar, Margaret Maaka (2003) writes, "the oppression of indigenous peoples... involved the stripping away of the fundamental markers of our identities – sovereignty, ancestral lands, language, and cultural knowledge" (p. 3). In the following comment about "forced citizenship" by Mark, there is the recognition by him

that his identity is related to Maaka's statement about the "stripping away of fundamental markers of identities" as part of ongoing processes of colonization and racialization:

VW: How do you identify yourself to others?
Mark: I guess… Diné. Diné nishli. Say that first, and then say…say in English… you know… I'm Diné ….
VW: What's that?
Mark: Indigenous People of America…that is Indigenous… we used to be called American Indians. (pause) I don't like the term Native Americans, we're not really American. (pause) Forced citizenship.

There is here an acknowledgement of the oppressive "politicized" nature of identity formation and its connection to cultural, historical and social processes of assimilation, colonization, and racialization. More so, Mark's affirmation of being Diné is significant in how it raises questions about the concepts of relationships and connectedness with others within and outside of Indigenous communities.

In his article titled, "Navajo Cultural Identity," Lloyd Lee (2006) writes, "the Navajo nation brings to the American Indian identity discussion table its own distinct view of identity based on cultural identity features such as worldview, language, kinship, land, pride and respect" (p.100). Furthermore, based on the findings from his dissertation, *21st Century Diné Identity* (2004), Lee posits young Diné students today are "developing their own Diné culture, but, they do make a connection to the past" and that their cultural identity is "rich in the traditional concepts of Diné identity" (p. 161).

VW: How do they know that you're Diné or Navajo?
Sharon: First of all I come from an area surrounded by other Diné' people, my family, my mother, my ancestors have the world view of being Diné. It's a world view that's been passed down. I see as something that connects us to the people, I guess. The worldview that people with the same language, people with similar ancestral background share.

Bergstrom, Cleary, and Peacock (2003) state, "identity development from an Indigenous perspective has less to do with striving for individualism and more to do with establishing connections and understanding ourselves in relationship to all things around us" (p. 26). They go on to add, "listening to stories from this perspective allows the student's voices…to be heard clearly. Their stories tell about their growing understanding of who they are as Native persons – in other words, their identity development" (Cleary & Peacock, 2003, p. 27).

VW: Who are you, how do you identify yourself?
Sarah: I would just plain out say Diné. What's Diné?… Navajo. What's

> Navajo? And this is the part where I kind of get lost. People say Indian, yet I don't claim…or some people say American Indian. And it's like No. Native American, I am like…ah…I…it is still like…sometimes I will let it go… but it seems like… deep down I'd rather say Indigenous. That is what I would claim… So like… Navajo , Indigenous… Diné, Navajo, and then Indigenous. I don't know if it is just the way I am starting to think now.
>
> **VW:** Where did you hear that term, Indigenous?
>
> **Sarah:** Indigenous…first? Oh gosh, it has to been from way back. I don't even remember…I just know…
>
> **VW:** Is that a word you learned in school, from your family or… ?
>
> **Sarah:** I think it was more family And then I started reading more, when I started getting older, and I started seeing that there were Native American magazines and there's like all these different programs… and that's where I started seeing it more and more…even though a lot of them still say Native American…I saw the whole like Columbus thing, the Indians and then the Native American thing. I think my ancestors were here long before it became America. So I don't understand the whole 'Native' American.

In Sarah's remarks, which are similar to Mark in claiming an Indigenous identity, she states "it is just the way I am starting to think now." Later on, she makes a reference to the "Columbus" thing which suggests her growing understanding of the historical contexts and political constructions of being "Indian" or "Native American" *vis a vis* asserting an Indigenous identity.

For many Indigenous youth, asserting or constructing an identity begins with and continues by negotiating the multiple and contested terrain of identity. As Diné youth, they are astutely aware that their connection to their family and community heritage and their investment in Diné language and cultural knowledge are reasons for how they are mistreated in particular instances by particular people. The importance of talking about identity from an Indigenous perspective is significant especially in regards to the goals of Indigenous education because of the unique status of Indigenous and Native people to nation-states. Also, it is important in regards to the education of Indigenous youth in that students bring with them their individual and collective memories, histories, songs, and the stories of their people. Furthermore, their cultural background or collective cultural and linguistic wealth are wound up with their identities.

In addition to the analysis on identity, I also examined students' negative experiences with schooling using social and cultural reproduction theory that highlighted how institutionalized racialization occurs within educational contexts. Specifically, I analyzed the ways in which these Diné youth talked about their place in school, how their cultural and linguistic backgrounds were minimally supported in the schools, and what they identified or perceived as barriers to their schooling as result of their racial, ethnic, and cultural identity that underscore the processes of racialization and internalized racism. The following is an excerpt

from my dissertation study from the interview with Sharon.

> **VW:** In what ways then do you think that the Navajo language and culture were supported in the school curriculum?
> **Sharon:** It's not.
> **VW:** It's not?
> **Sharon:** It's not at all. I'm not going to say not all, but, except for the Navajo classes that were specifically labeled Navajo language or Navajo government, anything else that had to do with supporting the culture, really, I can't think of any.

Sharon raises an important concern about how Navajo language and cultural knowledge are not supported in schools, even ones that are in close proximity to Navajo communities and with large numbers of Navajo students. In order to understand clearly the ways that Navajo students' construct and negotiate identities and how those processes can impact their success in school, I believe that it was important also to examine the ways that they developed an understanding of their place in the schools and then how schools operated to marginalize their cultural heritage and thus their cultural identity.

In a follow up interview, we returned to talking about the difference between a racial and ethnic identity again to further clarify her ideas. Sharon said:

> Gosh, I think race looks at the person's skin color and ethnicity looks at the cultural heritage. I think, I do not know. I didn't study race theory or anything. I think it's relevant because in the general discourse amongst people they will tell you that race is about black, etc…. They say I do not see color. It's not necessarily a color but their cultural background. A person may look Native American and you can't just dispel it and say, "Oh you're just a person, a human being." In an ideal world we should think like that. Unfortunately I think when we have things that are already categorized for certain purposes, people start to see color.

Sharon is demonstrating here an acute awareness of race as social construction used to classify people by their features. It is important to note that, unlike Sharon, many students of color become aware of race and racism based solely on their personal experiences. That is, although some students may not have "studied" race theory as Sharon states, their understanding is based on their own individual experiences and how they observe the world around them. Thus, for many people of color their understanding of race and racism comes from everyday interactions from an early age, their observations and experiences with racial discrimination. Van Ausdale and Feagin (2001) state, children

> as relatively new members of social institutions, are engaged in a highly interactive, socially regulating process as they monitor and shape their own behavior and that of other children and adults in regards to racial

> matters. They not only learn and use ideas about race and ethnicity but also embed in their everyday language and practice the understood identities of who is white, Black, Latino or Asian. These and (other) identities and associated privileges and disadvantages are made concrete and are thus normalized. They are normalized, moreover, not only in performances of "roles" and "scripts," but also in the deeper psyches and subconscious understandings of children and adults. The children perpetuate and re-create the structures of race and ethnicity not only in society, but also in their social minds and psyches. (p. 33)

Sharon's recognition of certain aspects of colorblind racism and the black-white dichotomy in race relations underscores how Indigenous youth are aware of and thinking about issues of race and racism. It also demonstrates the different ways that Diné youth are constructing and negotiating their identities with the process of schooling. For example, for Sharon, her identity is clearly defined by traditional Diné ways of knowing. Furthermore, although she is aware that her identity is not defined by a racial category, she is also aware that there is also the possibility that others will assign or ascribe one for her. More importantly, she is gaining an understanding that while a racial identity is not real, its consequences and outcomes can be dangerous. This is an important lesson not only for students but educators who need to be able to address these issues in their teaching and in how they interact with students.

Racially 'ascribed' definitions and/or racializing practices that assign racial meaning to how one looks or what race one is perceived to be from have strong political, economic, and cultural consequences for youth of color (Delgado & Stefancic, 2001; Gomez, 2008; Lewis, 2005; Garroutte, 2003). In looking at the following responses from Selena and Sharon related to their experiences with schooling based on Amanda Lewis' description of racialization as racial ascription processes, it is important to emphasize how acts of inclusion and exclusion affect students of color in addition to the categorization and assignment of racial meanings to student bodies along very dichotomous lines.

> **VW:** The white teacher made you move?
> **Selena:** From a seat with all white students to a seat with colored students.
> **VW:** To allow another white student to sit with them?
> **Selena:** Yeah to my seat…. I didn't know if that was intentional
> **VW:** Were you …bothered that you had to move away or that you had to sit with the others?
> **Selena:** Ahmm... it wasn't that it was I had to sit with the other students... it just bothered me that of all the other people she picked me to move, I guess just to like… I felt like she was separating the class on what she felt like…. who she felt it would work best with.
> **VW:** To accommodate the other whites and the new white student?
> **Selena:** Yeah and I think that she probably you know intentionally

> felt that....that would help me to be at a place where I was more comfortable. I mean maybe she.... I really don't understand like… but I just remember... just being picked out that day and then being like "Ok you can move there and take that seat" and I was like "What?? When there was an empty seat there". Out of all the points I think I felt like, I never really felt like any you know. I guess like racism or being separated until that point. I just …I really didn't like art class.

While Diné students may not be able to articulate ideas about racializing practices, it becomes apparent to them that they are racialized based on what they look like and what others feel is in their best interests. In these instances, students of color like these Diné students may begin to see how their identities are racialized within the gaze of dominant white supremacist discourse in education. That is, they begin to understand that white people's perceptions of them are in many instances based on how they are perceived or categorized as Native American or members of an "other" racial, ethnic, and cultural group. Also, it becomes evident to students of color that they are marginalized because of their connections to specific cultural and linguistic identities or a cultural heritage that is different from the dominant or mainstream American culture.

From her studies on Navajo youth, Donna Deyhle (1995, 1992, this volume) discusses the notion of cultural integrity to underscore the ways in which Navajo students resist and reaffirm their Diné cultural identity and staying connected to the cultural and spiritual values and beliefs of their parents, communities, and ancestors. In doing so, she maintains that Navajo youth assert and maintain important aspects of Navajo culture and language that are integral to their place and connection to the home and community settings while negotiating the school terrain. She attributes the notion of cultural integrity as a prime determinant to how and why some Navajo students did well in school regardless of obstacles or challenges they faced while navigating the racial hierarchal system of the school and community.

Similarly, in my research, the Diné participants' narratives highlight the significance of cultural integrity especially in the ways that they believe that they were invested with and supported in maintaining Diné cultural beliefs and language in their lives. Other key factors identified by students from their early childhood experiences with schooling include parent support and involvement in school, teacher and student interactions, peer support, and traditional Dine teachings like k'e or the Navajo clan system. For some participants, the investments made by them and their parents in their cultural heritage was often attributed primarily to the efforts of their parents' resilience to help them maintain their connections to language and culture regardless of the obstacles they face that result from changes in life style or language shift. In their study of *Indigenous Youth in the Seventh Generation,* Bergstrom, Cleary, and Peacock (2003) identified several key traits that fostered resilience which include: "being well grounded and connected to one's tribal culture, trying to live up to the high expectations of

influential adults, particularly family, and tapping into one's inner strength and maturity to stay motivated when things aren't going well" (2003, p. 84.)

In the cases of the Diné youth I interviewed and their families, cultural resilience was evident in both parents and students. Although the factor of the student resiliency is significant to this study, the unwavering support of some parents to overcome obstacles and to take chances for the sake of their children was very well noted and warrants further research:

> **VW:** What could you say to a young Navajo student that's in school right now? What kind of things do you think you could try to share with them to help them get where you're at? Based on all we've talked about.
>
> **Selena:** Well, gosh, well, I would say that like, whether they're close to their culture or not, I think that like that, if you know all your stories or dances that's really great and I think that benefits a lot of students. At least I think that helps get students through cause it gives them those values that they need to succeed. And, so, that's really important but then even if their family, like mine isn't very traditional to begin with. They kind of moved more towards Christianity, I guess assimilating. Then to just, I think, gosh it's hard to say what got me to this point and what I would say to a student. I know a lot of it is just helping and being close with your family. Really, like, it's hard to… cause all families vary….but, just to care for your family more than your friends, more than whatever. I think my success comes from seeing the successes of my family and the failures and understanding what got them through the situations.

From this particular response and other similar ones, it is evident that many students and their parents persevere regardless of the many challenges and obstacles related to socio-economic ills or racial discrimination because of their strong connection to their cultural heritage's values and beliefs. That is, as evidenced by the students' responses to how their parents were supportive and instrumental to their success and well being, they shared how some of their parents (and in some cases, grandparents and other relatives) continually strive to empower them by maintaining a connection to their heritage language and culture through participation in ceremonials and daily encouragement. Also, parents' resiliency showed in how they were not only helping to keep their children in school but in the ways that they worked to help themselves despite the many challenges and obstacles they faced every day. While there have been a great deal of studies in American Indian education that point to the resilience of students in education, not much has been reported on the resiliency and effort of parents to give their children the support, motivation, and to attend to their basic needs. Also, more research is needed, especially in regards to race relations and the relations of competition, exploitation, domination, and cultural selection in the education of Indigenous youth (Martinez, 2010; McCarthy, 1990).

Conclusion

In sum, Diné cultural integrity is expressed and learned by Diné youth despite the fact of whether they speak the language or not – or if they have only partially internalized Diné beliefs and values. Along with family and community support, their resilience as Indigenous youth, as well as the influence of key people like teachers and relatives, all of these factors were critical to students' perceptions of their success and continue to be the prime factors for their overall success. The reaffirmation, re-articulation, and recovery of Indigenous cultural knowledge and languages regardless of the many challenges from outside and within their communities is key to maintaining face and heart – which is our identity (Alfred, 1999; Cajete, 1994; Grande, 2004; G. Smith, 2002, L. Smith, 1999; Warrior, 1995). Indigenous (Osage) scholar Robert Warrior (1995) writes "if our struggle is anything, it is a way of life…a decision we make in our minds, in our hearts, and in our bodies – to be sovereign and to find out what that means in the process" (p. 123).

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Exploring the Development of Curriculum Materials for Teaching Mathematics in Lakota

David W. Sanders

In Sanders (2011) I explored the impact of American Indian self determination policy on the teaching and learning of mathematics in an Oglala Lakota K-8 community school (denoted Lakota Owayawa). I studied the incorporation of what I call self-determination principles in both the makeup and operation of a school along with the impact of these principles in the teaching and learning of mathematics to Lakota K-8 students. Though my study showed a rich incorporation of Oglala Lakota language and culture in the school's operation, with both formal and informal Lakota culture/language curricula, there was a complete absence of both in the mathematics classroom. Consequently, my focus changed from describing what was present to what was absent in the Lakota K-8 mathematics classrooms in regards to Lakota culture/language and why. In addition I analyzed aspects of Lakota culture and language using an ethnomathematical framework developed by Bishop (1991). I focused on developing a Lakota mathematical framework to approach K-8 mathematics classrooms at Lakota Owayawa. With Bishop's framework I was able to describe cultural contexts that show potential towards the possibility of creating mathematics curriculum materials centered on Lakota culture. In this chapter I focus on some of the major findings as they relate to Bishop's ethnomathematical framework. I also discuss the potential of integrating mathematics and the Lakota language for the creation of mathematics curriculum materials written solely in Lakota.

The need for Culturally Relevant Education (CRE)

The National Assessment of Educational Progress's 2011 National Indian Education Study (NIES) shows the current condition of education in American Indian and Alaskan Native (AI/AN) communities. Among the many findings in academic achievement among 4th and 8th grade AI/AN students seen in NIES (2011) are two trends that are disconcerting for AI/AN educators. The first trend shows stagnant test scores in reading when compared to the 2005 and 2009 NAEP reading scores. The second trend is a widening gap between non-AI/AN and AI/AN students in mathematics achievement (NIES, 2011, pp. 2-3). In response to these trends the National Indian Education Association (NIEA) put out a call for "Stronger, more comprehensive efforts to provide all Native children quality teaching and excellent, culturally-based curricula" (NIEA, 2011). This call is justified in part because of the growing body of evidence that culturally responsive teaching and culturally based education have "proven to be effective in improving student success" (NIEA, 2011).

The growing research in regards to mathematics teaching and curriculum in AI/AN education has shown positive impact in some AI/AN communities. The most documented and best example of the implementation of a culturally responsive pedagogy (CRP) and culturally responsive curriculum (CRC) development along with rigorous testing of both can be seen in the copious amount of research centered in the Yup'ik Eskimo communities in Alaska under the direction of Jerry Lipka and the Ciulistet teaching group. Most of the initial investigations into CRP and CRC can be seen in Lipka (1989, 1991, 1994a, 1994b), Lipka & McCarty (1994) and Lipka & Mohatt (1998). This early work led to the development of ideas regarding the type of pedagogy most at home in Yup'ik Eskimo classrooms. In addition it provided the basis for the development of CRC centered on traditional subsistence practices eventually leading to the creation of Math in a Cultural Context (MCC) curriculum materials.

Research on the effectiveness of the pedagogical practices used in teaching MCC have arisen since the mid-2000s (Sternberg et al., 2006; Lipka et al., 2005; Lipka et al., 2005c; Lipka et al., 2007; Webster et al., 2005; Kagl, 2007) and also on the impact of MCC on student achievement (Lipka & Adams, 2004; Sternberg et al., 2006, Lipka et al, 2005); Lipka et al. 2005b; Kisker et al., 2012; Lipka et al, 2007; Rickard, 2005, Kagle, 2007). This research confirms that mathematics taught in a culturally appropriate way using culturally based contexts as curriculum improves mathematics achievement among AN students.

Despite the growing body of research regarding the positive impact of the inclusion of CRP and CRC both seem to be minimally included in the methods and materials in the education of AI/AN students. The 2011 National Indian Education Study states the levels of incorporation in both teachers of mathematics and for AI/AN students learning mathematics:

- 76% of AI/AN fourth-graders had teachers who reported never having them study traditional AI/AN mathematics.
- 7% of AI/AN eighth graders reported knowing a lot about AI/AN systems of counting.
- 2% of AI/AN fourth-graders had teachers who reported relying a lot on AI/AN content or cultural standards when planning mathematics lessons.
- 60% of AI/AN eighth-graders had teachers who reported never having them solve mathematics problems that reflect situations in the AI/AN community. (NIES, 2011, pp. 30-33)

The development of CRE in self-determination principles

Culturally responsive education (CRE) dates back in AI/AN education at least to the 1928 Meriam Report (Castango & Brayboy, 2009). The Meriam Report (1928) focused on the inadequate assimilation efforts put forth by the federal government in regards to its dealings with AI peoples. It advocated for the use of Indian cultures and languages in the formal education of Indian students. Though the language was present for the inclusion of AI languages and cultures

in the schooling of AI children in the Meriam Report, it wasn't until the 1960s when it actually occurred. Favorable legislation coupled with efforts in Indian communities to gain local control of schooling brought concentrated, lasting efforts in the push for the incorporation of Indian cultures and languages in the education of Indian students.

Much of the initial work in this area occurred in the Rough Rock Demonstration School (RRDS) in Rough Rock, Arizona in the Navajo Nation under the direction of Robert A. Roessel. The type of schooling advocated at RRDS included aspects of what would later become pillars in CRE. Included in these early explorations into local control was a focus on curriculum centered on the culture of the local people, the inclusion of the Navajo language and their "etiquette, belief and lore" (Reno, 1967, p. 3). The efforts at RRDS were noticed nationally by AI educators. Other AI communities soon pushed for an inclusion of local traditions, languages and customs in the education of AI youth. Among these communities were the Ramah Navajo who opened the first locally controlled secondary school in 1970 (Manuelito, 2008) and the Oglala community on the Pine Ridge Reservation who sought a demonstration school of their own in 1970 as well. The spread of local control of the education system also occurred at the post-secondary level. Navajo Community College (now Diné College) opened in 1968 followed by the Lakota Higher Education Center (now Oglala Lakota College) in 1970 and Sinte Gleska College in 1971.

With the push for local control and the subsequent development of CRC a categorization of important aspects involved in shaping the infusion of culture and education can occur. These characteristics stem from the early literature as the push for local control took shape (Lose, 1962, Nash, 1964, Forbes, 1966; Reno, 1967; Roessel, 1968, Roessel, 1968; Pfieffer, 1968; Witherspoon, 1968). I call the categorization of these characteristics the "seven principles of self-determination." They are important to classify because they offer a baseline to compare efforts in melding AI/AN cultures and languages at the local level in the formal education of AI students. They include: 1). Schools are Indian run; 2). Schools are Indian-centered; 3). Schools employ a bi-cultural educational philosophy which includes bi-lingual programs, an infusion of local culture in school structure and curriculum and attention given to developing skills necessary for success in dominant culture; 4). Elders and community provide direction and purpose of school; 5). Elders and community members are involved in the creation of curriculum materials; 6). Students are knowledgeable and appreciative of local Indian culture (evidence of language geared to self-esteem/self-perception of students) and 7). Local control of schooling meant to strengthen tribal governments by developing "qualified people for leadership roles" (PL-93-638).

My categorization is not unique among AI educational researchers. Many of these principles are reflected in Demmert and Towner's (2003) review of the literature of culturally based education. The important point is that CRE is dependent on local knowledge, it pays attention to local customs, it incorporates the local native language and it also is dependent on elders and community members for guidance and acceptance.

The early mathematical language in American Indian education

Mathematics was not part of the early push to integrate local AI/AN cultures and languages into curriculum in AI/AN communities in the 1960s and 1970s. The earliest language came in the1980s. It was primarily concerned with mathematics achievement (Cheek, 1984a; Cheek, 1984b; Scott, 1983; Trent & Gilman, 1985; Bradley; 1984; Schindler & Davison, 1985). Culturally based programs in mathematics and pedagogical practices are among the suggestions to counter the lack of mathematics achievement of AI students. Cheek (1984b, p. **???)** also suggested that researchers examine the process of developing a culturally based mathematics curriculum. Approaches should be identified that have proved successful when tribe and school have worked together on similar projects in other disciples. Questions that should be explored included: "How much formal mathematics education do community members need to work successfully with the school? Must teachers also be tribal members?" What attributes of the school and the community are most important in developing a successful program?

Enter ethnomathematics

The push to consider the teaching of mathematics in a cultural manner with cultural contexts in AI/AN communities provided the impetus for research in Indian education but it wasn't until the formulation of developing ideas within the field of ethnomathematics that what this might entail crystallized. Ubiratan D'Ambrosio, a Brazilian mathematician, began the discussion around non-Western mathematics in the late 1970s. He classified ethnomathematics as a field of study that lay in the intersection between anthropology and mathematics: "Making a bridge between anthropologists and historians of culture and mathematicians is an important step towards recognizing that different modes of thought may lead to different forms of mathematics; this is the field which we may call 'ethnomathematics'" (D'Ambrosio, 1985, p. 44). With the development of ethnomathematics as a field of study, and with the intent of "collecting examples and data on the practices of culturally differentiated groups" (D'Ambrosio, 1985, p. 47) a foray of research into indigenous cultures across the globe occurred. The purpose for this effort was to seek various forms of mathematics embedded in cultural activities and contexts.

Ethnomathematics helped change the perception of mathematics from one that was centered on certain processes (algorithm, proof, and structure) to one that is embedded in all cultures and as such is present in cultural activities the world over. This is important to note since mathematics has had the perception of being "above culture" and therefore accessible only in certain ways. In a discussion about ethnomathematics, Ascher and D'Ambrosio (1994) spoke about the impact of this field on the perception of mathematics. "Through the work with the quipas and your further work in other cultures you were able to generate a new conception of mathematics" (D'Ambrosio, 1985, p. 37). This came on the heels of the understanding that mathematics itself is not definitively defined even by mathematicians. Asher writes,

> I concern myself with mathematical ideas. That focus on, and talks to, what people have in common. Those ideas have to do with number, loci, and spatial configuration and, very important, the combination or organization of those into systems and structures (p. 37).

In essence, this view of mathematics, broadly defined, allowed for an inclusion of mathematical activity and thought found in other cultures and also showed that mathematics "is more than technique" (D'Ambrosio, 1985, p. 37). What this did was to allow the bridge between activity and what most people consider mathematics - abstract, rigid and done a certain way and in certain places. "The carpenter is definitely dealing with mathematical idea; the mathematician who set those strictures on the problem was dealing with an idea. They are both important, but they are different. And, they are linked" (Ascher, p. 38, emphasis in original)

Ethnomathematics not only shows mathematics in activity but also the impact of culture in the development of mathematics. Mathematics did not develop in a vacuum. It was created, revised, redone, reshaped and added onto for more than three millennia by many cultures including the Greeks, the Babylonians, the Egyptians, the Arabs and Western Europeans. So when we think about mathematics, how it is taught and perceived, especially in relation to culture we realize it permeates everything; it is everywhere and as such everyone engages in mathematical activity. "Ethnomathematics relates to life in all its aspects. Indeed, it is a description of the evolution of mankind through diverse ramifications - that is, the civilizations, communities, families and individual. This calls for deeper recognition than is found in most anthropologies" (**D'Ambrosio, 1994, p**. 39). Barton (1996), in highlighting the development and changes within the field of ethnomathematics speaks to the importance of giving mathematics cultural connections/contexts, "Acknowledging the cultural component of mathematics will enhance our appreciation of its scope and of its potential to provide an interesting, artistic and useful view of the world" (p. 229).

With the field of ethnomathematics now defined many mathematicians and educational researchers began the study of mathematical cultural practices the world over (Knight, 1984; Gerdes, 1988a; Gerdes, 1988b; Graham, 1988; Turnbull, 1991; Selin, 2000). This literature provides, if nothing else, more proof to the notion that we all engage in mathematical activity on a daily basis.

The usefulness of ethnomathematics

With ethnomathematics resituating mathematics in culture it became important to decide what activities constituted mathematical behavior. The categorization of cultural mathematical activities from which to analyze non-Western mathematical contexts was described in D'Ambrosio (1985). There he classified the following activities as ethnomathematical in nature: "counting, measuring, classifying, ordering, inferring, modeling" (p. 46). Bishop (1991) proffered a slightly different categorization of mathematical activities used to help develop mathematical thinking. These were termed the six universal mathematical activi-

ties (SUMA). These activities included counting, locating, measuring, designing, playing and explaining. Bishop (1991) spoke of the importance of these activities in developing various aspects involved in mathematical thinking:

> counting develops number language, number imagery and number systems, locating develops spatial language, images and coordinate systems, measuring develops the language of quantifiers, units and measurement systems, designing develops images, shapes and geometrical ideas. Playing seems to develop the idea of 'game.' (p.44)

Ethnomathematics and AI/AN cultures.

These classification systems have provided researchers studying AI/AN cultures a bridge by which the discussion of tribal-specific mathematics can begin. Bishop's (1991) categorization was used in Barta et al. (2001) and Barta and Shockey (2006) to analyze mathematics in the Shoshoni and Northern Ute cultures, respectively. Evidence of these ethnomathematical categorizations are also found in the work of Lipka (1994a) where descriptions of the Yup'ik Eskimo counting system, the geometry in the designing of Parkas and the importance of abstract symbols in 'story knifing' are provided.

The mid-1980s marks the formal marriage of mathematics and Indian cultures as defined by ethnomathematics. Closs (1986) provides the first work describing this intersection. In his seminal work he analyzes counting systems, calendars and geometry used by indigenous peoples of the Americas. In other research concerning mathematics and AI/AN cultures many other cultural practices from various tribes emerged over the years (Pixten et al., 1987; Moore, 1988a; Moore, 1988b; Lipka, 1989; Hankes, 1998; Souhrada, 2001; Orey, 2000; Barkley & Cruz, 2001; Nueman, 2003; Engblom-Bradley, 2006; Eglash, 2009; Rauff, 2009). The analysis of AI/AN cultural practices and activities are a trend that has gathered much steam relatively late in the development of culturally responsive curriculum materials. It is evident that Indian cultures, their educational practices and cultural activities have gained the attention of mathematics educators since the mid-1980s and they continue to be contexts for inclusion in the field of ethnomathematics.

Native languages and ethnomathematics

Since one of the important facets of self-determination and local control is the maintenance of culture and language what purpose or role might Native languages play in looking at mathematics in AI/AN cultures (since we have already seen how aspects of culture have been included)? For the most part the research is quiet on this topic. Hankes (1998) described the ways in which the Oneida and Lakota expressed numbers in the language, and its inclusion in the teaching of Yup'ik students is discussed in depth in Lipka (1994b) and among his constituents (Lipka & Mohatt, 1998). Lipka (1994b) also described the power struggle and politics involved in using the Yup'ik language to teach in the formal classroom. The teaching of mathematics in the language came with some logistical issues,

for instance, not all teachers who taught in the mostly rural AN communities were from the tribe and therefore not typically able to speak the language, let alone teach mathematics in the language. Also there was a struggle within the Yup'ik community as to whether or not the Native language should be used in the formal classroom in the first place. Barta et al. (2001) and Barta & Shockey (2006) each looked at the use of the language to classify objects, numbers, etc. but did not mention the importance of using the language to teach mathematical concepts. As the push for self-determination aspects of local control into the mathematics classroom, of which the inclusion of native languages are deemed very important, continues one cannot help but note the absence of mathematics curriculum material written and made available in local native languages.

Findings in relation to SUMA #1 (counting) and SUMA #2 (measuring)

Bishop (1991) describes six universal mathematical activities (SUMA) which he argues are common to all cultures and necessary to construct mathematical ideas. These SUMA include counting, measuring, locating, designing, playing and explaining.

> All of these activities are motivated by, and in their turn, help to motivate, some environmental need. All of them stimulate, and are stimulated by, various cognitive processes, and I shall argue that all of them are significant, both separately and in interaction, for the development of mathematical ideas in any culture. Moreover all of them involve special kinds of language and representation. They all help to develop the symbolic technology which we call mathematics. (p. 23)

I (Sanders, 2011) used this classification framework to look at the mathematics that is inherently a part of Lakota culture. The initial purpose of this was to develop a "Lakota mathematics" to inform myself of the possible areas that might be presented in the K-8 mathematics classrooms I would be observing at Lakota Owayawa. I interviewed elders, Lakota educators and Lakota language teachers to help develop this framework. As I progressed through my study I began to see that nothing in the mathematics classroom was presented with a Lakota cultural context and there was no use of the Lakota language in the mathematics classroom. However, I was able to see the use of mathematical concepts as contexts in the Lakota language classrooms. I identified four main reasons for the absence of Lakota language and culture in the mathematics classroom: (1) The heavy influence of NCLB and a reliance on standardized test scores as a marker for mathematics achievement which lead to a fidelity to the curriculum mandate whereby strict adherence to a certain textbook series and assessments was prescribed. (2) The middle school mathematics teacher was white and a first year teacher with no knowledge of Lakota culture and language. (3) There was no communication between the Lakota studies department and the mathematics teachers to aid in the process of integrating Lakota culture and language into

the mathematics classroom. (4) A view that mathematics was an in-class only activity and not a part of our daily lives.

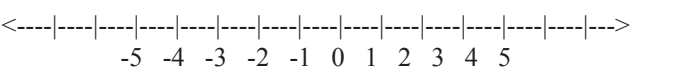
Below are some my findings regarding two of the SUMA, counting and measuring. It is beyond the scope of this paper to include a description of all six universal mathematical activities because of the sheer volume of the material (see Sanders (2011) for a description of the other four SUMA). Instead, I will focus in depth on the Lakota counting system and the language used in measuring in the hopes that my description captures the essence of the findings for all SUMA along with implications towards integrating the Lakota language with mathematical content. In the realm of counting I will describe the base ten Lakota counting system, very large numbers, very small numbers and numbers between numbers (rational numbers). We will also look at the origin of Lakota numbers and at the language used in expressing arithmetic operations. For the activity of measuring I will describe units, especially in standardized units in relation to time, distances, and rates.

SUMA #1: Counting:

> In summary then, counting, which we may perhaps have thought to be an important but relatively simple activity, is shown by this cultural perspective to involve many aspects, with subtle variations in the type of language and representational forms used to communicate products of counting. It is an activity relating firmly to environmental needs, and is subject to various social pressure. It is stimulated by, and in turn affects, the cognitive processes of classifying and pattern-seeking, and in our search for cultural 'universals' of mathematics it clearly offers many ideas. (Bishop, 1991, pp. 27-28)

The number line and xets of numbers: I approached the look at Lakota counting from a mathematical perspective, organizing it around the concept of a number line while keeping in mind some sets of numbers expressed in Western mathematics. From this perspective we have a starting point and the notion that there exist numbers whose values increase as they lie further in one direction, (in the positive direction - numbers bigger than zero) and whose values decrease as they are counted in the opposite direction (in the negative direction - numbers less than zero). The number line in Western mathematics is home to all sorts of numbers, though typically we see in mathematics curricula, especially at the elementary level, only integer values and a limited number of rational numbers. Figure 1 is a representation of a number line with which most people are familiar.

Figure 1. Number Line Representation



There are four sets of numbers recognized in mathematics pertinent to this discussion of Lakota numbers. I mention these sets of numbers because they will offer, like the number line, a way to approach Lakota numbers and help us make judgments as to what is present and what is lacking, from a mathematical perspective. The four sets of numbers include the counting or natural numbers, whole numbers, integers and rational numbers. Counting numbers include the following numbers {1,2,3,4,5,...}, whole numbers include the counting numbers and zero {0,1,2,3,4,5,...}, integers are the set of whole numbers and their opposites {...-5,-4,-3-,2-,1,0,1,2,3,4,5,...} rational numbers are the set of numbers represented as the quotient a/b where a and b are integers and $b \neq 0$. Each of these sets of numbers are integral in the development of mathematics over time and necessary to study mathematics further. Sets of numbers come into being because either mathematical development demands their creation or they are derived into existence because of observations made in developing human endeavors.

The number line can be used to show where counting numbers, whole numbers, integers and rational numbers (and irrational numbers) lie in approximate relation to each other; it thus provides a good framework to explore the types of numbers available in the Lakota language. In addition to looking at the types of numbers present and how to count in the Lakota language I also discuss some interesting cultural and linguistic issues regarding Lakota culture and counting.

Zero and infinity: As a starting point for my look at Lakota numbers I began with zero and mention the concept of infinity while giving the names of most of the counting numbers within this range. In Lakota, zero (0) is expressed as tákunišni, which means "nothing." This is not a numeral per se. The concept of infinity is expressed as oihaŋke šni waniče, meaning, "without end." Some elders and educators expressed this differently, "Oihaŋke šni waniče … Oihaŋke šni wanilya – it means without end. There is no end to it." Below I give the Lakota numbers 1-20 (see Sanders, 2011 for larger numbers).

1 Through 10: One (1) is spoken in Lakota in two ways, as waŋči when actually counting objects, e.g. 1,2,3,etc. otherwise it is wanži. White Hat (1999) spoke a little about the difference between wanci and wanji (wanji and wanži are equivalent here, just spelled differently because of differing orthographies): "Wanci is used when counting items or when reciting the numbers. It is usually used by itself rather than in a sentence that identifies the item being counted. Wanji in Lakota thought means "one of them." There are at least two items but wanji specifies which one" (p. 20). The other numbers are stated in Lakota as follows: (2) nuŋp or nuŋpa, (3) yamni, (4) tópa or tób, (5) záptaŋ, (6) šákpe, (7) šakówiŋ, (8) šágloǧaŋ, (9) napčiyuŋka or napčiyuŋk, and (10) wikčémna. As we see the numbers two, four and nine can be expressed in two ways in the Lakota language. An explanation for the multiple ways of expressing certain numbers can be found in the way the Lakota speak. There is a very formal way of speaking the Lakota language and then there is another way called "fast speech" or "rapid speech" where oftentimes certain words are combined and endings of some words are cut and then added to the next word. White Hat (1999) explains, "Sometimes in rapid speech, nupa will become shortened to nup or num because it makes an

easier connection with the next word. This difference depends on the speakers preference or tiospaye (family group)" (p. 21).

11 Through 19. The numbers 11 through 19 can be expressed in two ways also – by either keeping the tens value, signified by wikčémna, in front of the number and using the term "aké" as a way to add the ones value to the tens value. The other way is to disregard the tens value altogether but keeping the aké to let the hearer know that a tens value is assumed in the number. "Most of the time Lakhotas drop the wikčémna, and use only the aké portion of the number (Rood & Taylor, 1976b, p. 5-4)." Table I below shows the next nine digits.

Table I. Lakota numbers 11- 19

(11) wikčémna aké wanži or aké wanži
(12) wikčémna aké nuŋpa or wikčémna aké num, or aké nuŋpa or aké num
(13) wikčemna aké yamni or aké yamni
(14) wikčémna aké tópa or wikčémna aké tób or aké tópa or aké tób,
(15) wikčémna aké záptaŋ or aké záptaŋ,
(16) wikčémna aké šákpe or aké šákpe,
(17) wikčémna aké šakówiŋ or aké šakówiŋ,
(18) wikčémna aké šágloğaŋ or aké šágloğaŋ,
(19) wikčémna aké napčiyuŋka or wikčémna aké napčiyuŋk or aké napčiyuŋka or aké napčiyuŋk

Numbers between numbers – rational numbers: Some fractions can be expressed in the Lakota language. One-half is okhise. Okhise also means fifty-cents or a half-dollar in the Lakota language. All elders easily spoke this fraction. One-fourth was a fraction that came with a little more difficulty. One elder stated one-fourth to be šokéla, which is the Lakota word for twenty-five cents, a quarter. And still a speaker stated: "I wouldn't know how. It's something I would have to think about." Speaking with a parent I asked, "In your own experience, speaking the Lakota language, would you know how to say "one-fourth" or "two-thirds"?

> I would know "half," but I wouldn't know "one-fourth" or "two-thirds." It would be čonala (a few). There are words that are descriptive. The way we say things is descriptive. If I were to translate fractions, I would say okhise and then that's money, too. "Fifty cents" is okhise. And "fourth," I'm not sure, "two-thirds," I'm not sure.

All other fractions either did not come or they came with great difficulty for most Lakota speakers I interviewed. When I asked a Lakota speaker to express fractions like one-eighth or two-thirds he responded: "This is...one-eighth, I don't know. These two are kind of like – I've never used them or heard them, so I wouldn't know. Or even two-thirds, I wouldn't be able to do that." . Riggs

(1893) affirms this notion that expressing fractions outside of one-half was not a natural part of the Dakota language:

> The Dakotas use the term hanke, one-half; but when a thing is divided into more than two aliquot parts they have no names for them; that is, they have no expressions corresponding to one-third, one-fourth, one-fifth, etc. By those who have made some progress in arithmetic, this want is supplied by the use of 'onspa' and the ordinal numbers; as onspa iyamni (piece third) one-third; onspa itopa (piece fourth), one-fourth. (p. 73)

A note is provided below this explanation in Riggs (1893) stating, "The language more recently adopted is kiyuspapi, divided. So that one-fourth is topa kiyuspapi wanzi" (p.73). So, using this notation of placing the number one (wanci), the dividend, and the divisor, four (topa), in the example given allows speakers a possible way to express all fractions as well. Thus it would seem that two-thirds could be expressed as yamni khiyušpapi nuŋpa. That is, two divided into three parts. Again, from a mathematics perspective could this way of expressing fractions be of use in the mathematics classroom since it is a very descriptive way of explaining exactly what a fraction is? So, 1/4 can be explained, and has to be explained in the Lakota language, as "one divided into four parts."

A Lakota educator had a different explanation for the expression of fractions other than one-half in the Lakota language stating:

> Okay, fractions, like 1/4...(writes on board), this 1/2 is okise, tópa khiksa is 1/4, šágloğaŋ khiksa (1/8) that's eight , aké šakówiŋ khiksa – sixteenths, and they keep going on...by halves...okay.... wikčémna yamni saŋm nuŋpa kihiksa – 1/32. Keep going into fractions like that...or if you are going to do thirds. yamni ksa...one-third.
>
> (So its just the name of the number and cutting?) "Yeah, the cutting."

The origin of Lakota numbers

In my examination of Lakota counting I also included some discussion of the origin of Lakota numbers and the use of fingers to count. It will become apparent that these areas are by no means settled and that further study is necessary to get a better grasp of the origins of Lakota numbers and how they might have developed over time.

Rigg's (1893) description of the use of fingers during counting implies a base-ten number system intact in Dakota culture prior to Western contact. In this description is also an illustration of how the fingers were used to keep track of place value:

> In counting, the Dakotas use their fingers, bending them down as they pass on until they reach ten. They then turn down a little finger, to remind

> them that one ten is laid away, and commence again. When the second ten is counted, another finger goes down, and so on. (p. 47)

No one that I interviewed in my study was able to tell me from whence the names for Lakota numbers originated. There were no attempts made, for instance, to show that waŋži had an association with anything other than its meaning as a number. Riggs (1893), however, gave a reasonable account of the origins of some of the names of numbers in Dakota:

> It is an interesting study to analyze these numerals. It has been stated above, that the Dakota, in common with all Indians, it is believed, are in the habit of using the hands in counting. It might be supposed then that the names indicating numbers would be drawn largely from the hand....
>
> 1. Wanca, etc. from wan! interjection – calling attention – perhaps, at the same time, holding up the little finger.
> 2. Nonpa, from en aonpa, to bend down on, or place on, as the second finger is laid down over the small one; or perhaps of nape onpa, nape being used for finger as well as hand.... (pp. 48-49)

Riggs (1893) was making an educated guesses as to the origin of the names of numbers in Dakota. It would seem a near impossible task to try to find the origin of the names of numbers in Lakota since the language is so old and its roots of it are clouded in the mist of time.

Arithmetic operations in Lakota

Addition: I showed an elder the following mathematical expression and asked him to say it in Lakota: 5 + 3 = 8. He responded, "Zaptaŋ na yamni he šágloǧaŋ." The language used by this elder was also used in a middle-school Lakota language class in problems which were demonstrated on a worksheet:

wanži na wanži = _____ šákpe na šákpe = _____

Another elder offered this as another way of stating the mathematical expression 8 + 3 = 11. "Šágloǧaŋ akta saŋm yamni kin aké wanži." Saŋm and na in Lakota are used in the same way, but saŋm seems more likely to be traditional.

A parent and former Lakota language teacher mentioned that she teaches her child at home in the Lakota language all the operations – addition and subtraction as well as multiplication and division. She stated, "Me and my little grandkid were doing pluses. And before Christmas, the other granddaughter, she was doing that, too, pluses...nuŋpa na wanži tona he?

Clearly addition is something that is easily expressible in the Lakota language and is being used in the Lakota language classroom. Using the word na for the term addition and also in place of the symbol for addition, seems to be customary.

Two other words that came into my conversations with elders when speaking of addition was akağapi – which means "something made in addition to; falsehood; exaggeration (BLED, p. 67) and akhe' ȟokte which, an elder explained, meant "add some more."

Subtraction. A worksheet in the middle-school Lakota language class where subtraction was being taught used the following examples:

wanži yuȟeyab iču wanži _____
šakówiŋ, yuȟeyab iču záptaŋ_____

Yuȟeyab iču means to remove something. So wanži yuȟeyab iču wanži means to remove one from one and šakówiŋ, yuȟeyab iču záptaŋ means to remove five from seven. Thus yuȟeyab iču is used to signify subtraction in the mathematical sense. The mathematical expression for subtraction was stated by a Lakota educator as follows: 9 - 5 = 4. Napčiyuŋka etaŋ záptaŋ yuȟeyab iyaču kin tópa. Literally this means, nine - from five - you remove - and have four. That is, five removed from nine leaves four.

A key question here is the need to extend this notion to include negative numbers or at least a way to express negative numbers. If we asked the question in Lakota: Zaptaŋ etaŋ šakowiŋ yuȟeyab iču. Tóna luha he? What would a Lakota person say in response? Slolye šni (I don't know.)?

Multiplication. The two operations, multiplication and division are expressible in the Lakota language. Let me reiterate here the notion that these concepts weren't always easy to express for most of the speakers even though they do exist. One elder stated: "Multiplying....let's see...(long pause)... I really don't understand that word. When I was growing up we hadn't spoke English...we spoke Lakota." Another elder stated, "I couldn't think of it right away." More work needs to be done in looking for ways in which Lakota speakers can find contexts for multiplication and division.

A Lakota educator had written the multiplication problem 5 x 2 on a chalk board for me during our interview when I asked him about multiplication and the Lakota language and stated, "Two times five.... Zaptaŋ nuŋpa akhiyagle." He then said "Loyuota -means you multiply. Zaptaŋ nuŋpa akhiyagle loyuota." Then he asked me, Tóna luha he? (How much do you have?). The mathematical expression 3 x 4 = 12 was stated by another Lakota educator as follows: 3 x 4 = 12. "Yamni tópa kigle ilawa kin aké nuŋpa."

SUMA #1 Summary

The Lakota have a base ten number system by which they count. The counting system may be base ten because of the cultural way of using their fingers to count in a systematic fashion. The set of counting numbers [1, 2,3,4...] and the set of whole numbers [0, 1,2,3,4,5,6…] can be expressed in the Lakota language. Negative integers [...-1, -2, -3, -4, -5] are completely omitted, that is, they do not exist in the language and neither do most rational numbers, i.e. numbers that can be expressed as an integer divided by an integer [1/2, 5/8, 3/4, 2/3, etc.],

though as seen in Riggs (1893) a system for expressing these had been devised by the Dakota in the 19th century. The Lakota can express certain fractions in the language, namely 1/2 and 1/4, both of which are references to a half-dollar and a quarter-dollar coin, respectively. Zero and infinity are also expressible in the language, though they don't necessarily have a mathematical connotation. Lakota people also can state very big numbers, though with some difficulty in doing so. The term for a "million" is not an agreed upon term.

It is important to keep in mind as we try to see how we might come to integrate the Lakota language in the mathematics classroom that many mathematical terms regarding the expression of numbers will need to be invented in the Lakota language. If negative numbers and fractions continue to be by passed, then an inclusion of arithmetic operations (which are expressible in the language) will continue to be incomplete, i.e. even though there are ways to describe arithmetic operations in the language (addition, subtraction, multiplication and division) there do not exist ways to describe such things as the sum of 5 and - 8 or the quotient 3 divided by 32. These two mathematical expressions can be stated in the language, but their answers cannot. So as the push to include local Lakota culture and language in the schools continue, we must also consider what this means for the mathematics classroom. If it is deemed reasonable and important to create a mathematics in Lakota, a closer look at the Lakota language and worldview in regards to mathematics needs to be taken up by the local community and instituted mathematically in the school and in the classroom.

SUMA #2: Measuring

The next universal mathematical activity is measuring. Measuring, because it necessarily deals with comparing and ordering, both of which are tied to the notion of scales, is a very rich context for the learning of mathematics. Measuring in this study included taking a look at how the Lakota kept track of time historically and in present times; this meant looking at how the years, seasons and months were noted. With the coming of Western culture and Christianity the Lakota began to conceptualize time not only in winters and moons but also in the in-between (weeks) and also began to number days. Because of the influence of the clock time took on new forms of expression – the Lakota adapted words for hours and minutes and found a new way of telling time. Distances provided another context for measurement. In Lakota culture distances were expressed in terms of time and thus offered a way of looking at space and time as interrelated phenomena rich in description. Since distance is not separated from time (or effort) the concept of rates was explored.

Bishop (1991) states measuring is "concerned with comparing, with ordering, and with quantifying qualities which are of value and importance" (p. 34). He calls the words used in comparing within a culture "comparative quantifiers" (p. 35), words like, "heaviest, longer, faster, slowest, etc." (p. 35). In Lakota culture measuring is done with minimal precision in many cases. There are words in the Lakota language for tall and short, big and small, hot and cold, etc. All of these are relative terms, that is, there is not a universal scale of measurement for

these things. This "personal scale" is reflected in the language the participants in this study used when describing the measuring of something. For example, An elder talked about her method of measuring when I prompted her about her use of measuring utensils in her cooking, "I know how much flour I'd use. (Is there a name for how much you put in?) Probably a pinch of that...(laughs) a handful of this... (laughs). I remember my grandma making bread, she used her hands. I never saw her using a cup or a spoon to measure." The scale used in these two instances of cooking by the woman I interviewed, and her grandmother speak of the use of the body, the hands and fingers (a handful of this, a pinch of that), to measure the ingredients used in making bread. This personal scale is not unique to Lakota people.

Often, because of the lack of a "universal scale" within the Lakota language Lakota speakers will rely on the use of English for exactness. For example, in discussing miles per hour an elder stated: "When I was a boy, we would emphasize going fast as 50 miles an hour. "Aata 50 miles an hour ki glikiya." "Geez, that was fast!" Or when asking an educator about how he would express temperature he stated, "You'd probably have to use the English understanding of it. For 75 degrees, okȟate, means it's hot, not that hot, lila okȟate is really hot. Oluluta means kind of beyond hot. You have to use those terms and then (the) degree, with the number." Exactness takes a back seat to practicality in many instances and practicality oftentimes came out in the form of efficiency in the use of the English language. It was easier for many to express some types of measurements using the English language.

Measuring Time

Years: The passing of years is stated by the number of winters that have passed. Waniyetu is the Lakota word for winter. "The Dakota have names for the natural divisions of time. Their years they ordinarily count by winters. A man is so many winters old, or so many winters have passed since such an event" (Riggs, 1893, p.165). (His emphasis) The Lakota kept track of the passing of years with a tool called the "winter count." Each band (thiyošpaye) had a person designated as their Keeper who took care of the winter count. The winter count was a collection of symbols drawn on animal hides. Each symbol represented one major event that occurred during a year:

> Winter counts are histories or calendars in which events are recorded by pictures, with one picture for each year...The Lakota call them waniyetu wowapi. Waniyetu is the word for year, which is measured from first snowfall to first snowfall. It is often translated as "a winter." Wowapi means anything that is marked on a flat surface and can be read or counted, such as a book, a letter, or a drawing. (Smithsonian National Museum of Natural History, n.d.)

The winter count, then, was essentially a way for the Lakota to record their history through the passing of time – one event per year. (The winter count did

not surface in my conversation with elders and Lakota educators and so I do not know the extent of their knowledge about the topic.)

Seasons: There are four seasons in the Lakota year. One educator told me that in spite of having names for the four seasons there is no Lakota name for season per se, "'Seasons,' there really isn't any word for seasons. What was that word I was using? I think we were saying 'makpašpe' , which is the four – right there again, the four. I think that's what we were using. And 'years' is omakȟa, 'months' is 'wi.'" The seasons are expressed in the Lakota language as follows: waniyetu (winter), wetu (spring), bloketu (summer) and ptaŋyetu (autumn).

Months: Months are measured in "moons" as in the number of moons that have passed. As seen above, wi, is the Lakota name for moon and thus month. According to some of the Lakota participants in this study there were thirteen months in the Lakota year. This was somehow adjusted so that the months did not get too far off track.

Weeks: The Lakota did not divide the month into weeks as is the custom in modern times. "They have no division of time into weeks (Riggs, 1893, p. 165)." The current Lakota word for week is oko. Oko means the "space between; crack, hole, gap, opening, aperture" (NLD, p.165). If week in Lakota refers to "between" or to "a gap or opening the questions remain, between what? or a gap in what? A Lakota educator stated, "Oko really means there is an opening. I think that this word was selected for one week, the Lakota month is from one moon to the next and the settlers chose to divide a month into four weeks, so in essence oko' became each of the four weeks in between two moons."

Days: The Lakota did not name days prior to the coming of the white man. Monday translates to the first day, Tuesday is the second day, etc. Saturday refers to cleaning, washing up. One educator stated,

> I understand that originally there was no word for Saturday, but when days of the week were established with the coming of the settlers, then the days were numbered and repeated every 7th time. (Saturday) became known to the Lakota it was called OWANKA YUJAJAPI. The Christian religions that came into Indian country, the Episcopal, Catholics and Presbyterian...is probably what led to the naming Saturday as Owankayujajapi Anpetu, it was a day to clean after working for 5 days, Monday to Friday, to clean up in preparation for Sunday. Sunday was viewed as the day of rest and prayer.

In my interviews with a Lakota educator Saturday translated meant "the day you wash the floor." The days that this elder/educator gave me matched with the names of days given in NLD:

Monday – Aŋpetu Tȟokahe, Anpetu Tȟokaheya (the first day)
Tuesday – Aŋpetu nuŋpa (day two)
Wednesday – Aŋpetu Yamni (day three)
Thursday – Aŋpetu Topa (day four)

Friday – Aŋpetu Zaptaŋ (day five)
Saturday - Owaŋkayužažapi (day to wash the floor/clothes)
Sunday – Aŋpetu Wakȟaŋ (holy day)

Telling Time: The time of day was approximate in Lakota culture. However, with the coming of the clock the language goes from the telling of time via actions in nature (i.e. the position of the sun and stars) to the telling of time via mechanical apparatuses. One elder told me that her grandmother used to tell time by planting a stick in the ground and then looking at the shadow to get an approximate time, "They used the sun. My mother's mother used a circle they never had a clock, what they do is draw a circle and put a stick in the middle... it kinda....if it was noon there was no shadow, if it was one o'clock there is a shadow...by shadows (they told time)." Hours, minutes, and seconds were foreign to Lakota culture.

The Lakota use the clock to tell time nowadays. Mazaškaŋškaŋ is the word for clock in the Lakota language. It literally means "moving-iron" which is a reference to the moving hands on a clock or the moving of the pendulum back and forth.. In stating a specific hour one would state mazaškaŋškaŋ followed by the number indicating the time of day. So, for instance, one o'clock would be mazaškaŋškaŋ waŋži, two o'clock would be mazaškaŋškaŋ nuŋpa, etc. An educator had this to say about telling time: "Today we use the clock (looks at clock) 'Waŋna šakpe, šakpiyape samiya,' then 'Mazaškaŋškaŋ, škaŋškaŋ wikčemna nuŋpa.' Twenty minutes after. It's close to twenty minutes after...six... šakpiya means 'right on the dot' – six o'clock."

I asked a Lakota educator to translate a couple examples where minutes and seconds might be used. In the first example I asked him if he would you be able to say in Lakota that it is 3:27. He responded, "3:27 would be mazaškaŋškaŋ (wičhokaŋ/haŋčhokaŋ - am/pm) hiyaye saŋm yamni saŋm nuŋpa saŋm šağaloğaŋ kiyela." The second example was to translate the following statement into the Lakota language, "The runner ran 100 yards in 11 seconds? "Kiiŋyaŋke kin lila okahuŋya (11 seconds) čaiyutȟapi opawiŋğe inyaŋke."

Distances: A long time ago the Lakota measured distances at least in a couple ways. For the Dakota large distances were measured in the number of nights it would take to complete a journey. "When one is going on a journey, he does not usually say that he will be back in so many days, as we do, but in so many nights or sleeps (Riggs,1893. p. 165)." Most people I spoke to suggested that the Lakota measured distances in the number of days it would take to get from one place to the next. In either case distance was not viewed as we might view it today, in the physical distance from one place to the next, but more as a rate. That is, it was inherently tied to the amount of days it would take to get from one place to the next. Measuring in days is measuring in time.

Even though a "day" (or night) was an approximate fixed measurement of time the distance one was able to travel in one day depended obviously on the mode of transportation as time progressed– first on foot, next on horseback,

later by wagon perhaps, then by car. One elder followed this procession in his description of the explanation of Lakota distances with the language:

We pretty much measured things on how you'd get there in a wagon or on horse. I found (that when we) were on horseback, of course, you'd get there a little quicker (than by foot). If we came to the Sundance powwow in Pine Ridge from Manderson in a wagon, we'd say, "Aŋpetu opta." "It took a whole day to get there." We measure distances by days. An educator mentioned this as well,

> Oh, the distance. A long time ago, the only distance that they calculated by was a day's walk or a day's ride. "Makȟa manipi aŋpetu waŋžiča." How long it takes one person to walk in one day. If they are going from here to Ethete, Wyoming, my grandpa was telling me in Lakota one time, "Aŋpetu aké nuŋpa ekta waŋžiyapi ekta waŋpipi." That says, "It took them twelve days to get from here to Ethete, Wyoming crossing Wyoming...that's by wagon.

In another instance an elder discussed that distances were determined by the number of moccasins a person went through (wore out) for the duration of a trip if he was walking. In this case time is not referenced for the distance but in the effect the distance had on the footwear of a person:

> And then from the stories I heard, before the horse, they would tell 'em how many moccasins you need to take with you because when you ran or walked, you wore out moccasins, so you had to have moccasins to wear. There's a song, "Tȟahaŋpa kidi din mani," that they hung the moccasins around their neck to show the distance that they were gonna travel. That's how - before the horse, that's how they would measure how many pairs of moccasins they would take.

This second way of measuring distances has interesting connections to modern times and technology. Do we not measure the wear on a car based on the number of miles our cars have been driven? In such a case we could measure the distance a car travelled based on the number of oil changes the car has had.

The Lakota have adopted ways of expressing distances from the English language. iyutȟapi means to measure in the Lakota language. The Lakota equivalent for miles is makhiyutȟapi. This is a combination between the words makȟa, meaning earth, and of course, iyutȟapi. Thus the literal translation for miles is "measuring earth." Čae'glepi in Lakota is a step and čaiyutȟapi is the Lakota word for measuring a step. Literally čaiyutȟapi means measuring the length of a step. By quantifying a step with the word for one, waŋži, we get "one step measure" – that is, a yard. A foot (twelve inches) is stated in Lakota as siiyutȟapi. Si is the Lakota word for foot. I do not know the Lakota word for an inch. I asked an elder and he stated, "No, I don't – there is, but I can't say it. I think there is." A kilometer can be defined as makhiyutȟapi lečhala. Lečhala means "lately, a little while ago, soon." I interpreted it in this context as, a new

way, thus makhiyutȟapi lečhala means a new way of measuring which I believe refers to the coming to the later arrival of the metric system. Meter is defined as čaiyutȟapi lečhala, which is essentially measuring the earth by means of a new step. I did not find any words for centimeter or millimeter. A Lakota educator/elder commented on some of these Lakota words and their veracity in the language:

> I remembered some of the words in Lakota numbers like a yard was – cagle (like the steps we take when we walk) 1 mile, (maka iyutapi), makoce okise (half a section of land), makoce sokela a quarter section of land), one feet was si iyutapi (from the heel to the toes of your feet), inch was mapso tanka (the thumb)."

Rate: Rates are a difficult concept to express in the Lakota language if the speaker is constrained to rate as expressed as a certain distance travelled over a certain amount of time. Most speakers I interviewed relied on the English language to express this idea.

> Yes. That's different (saying 32 miles per hour) when you have to describe it that way. 32 miles per hour. [laughs] "How fast are you going?" You'd say in Lakota, Tona wakȟalahe nish ka hi. Long time ago, I don't know if you remember _____, but he used to drive so slow. I'd call him kheya (turtle) and all kinds of stuff, descriptive.

A current Lakota teacher struggled a little as well with this concept. Her thought process is interesting to follow as she tries to wrap her head around expressing it in Lakota:

> "OK, oȟaŋko means "fast," and lila means "faster than oȟaŋko." So lila oȟaŋko is "really fast." He lila oȟaŋko ksto onahe 65 miles an hour is the speed limit, and you go on describing it. So I think it's going 80, so then you'd say probably Ko.. ila oȟaŋko wikčemna šakowiŋ ičeyahaŋ makhiyutȟapi. How do you say "miles" ? ___.iyutȟapi probably means "to measure...Yeah. makhiyutȟapi. But that doesn't sound right. makhiyutȟapi means "miles." I don't know. I never really thought about it. If you were gonna describe it like that, it'd be just oȟaŋko and then lila oȟaŋko makhiyutȟapi owapiki 15 miles. Or we always say He iyečhiŋkiŋyeka ki lila oȟaŋka ye. That means "really fast." Lila oȟaŋkaye or you say le oȟaŋka ye, it means kind of fast but not that fast. "Lila oȟaŋka he tuktel kaptaŋyin kte ye ksto." You might turn over some place, you know? It's not really – that's kind of hard.

Another educator stated that English provides the simplest, and probably a more efficient way, of stating rates at least in terms of how to describe a change in distance over a unit of time. "Over here we go by, let's say you're going 65 miles an hour, you'd use the English term because it's...ah...easier, so a lot of

people say "Waŋna okiyape nahaŋ waŋna aata 65 okiyaŋka. We're running at 65 miles an hour."

Some standard units expressed in the Lakota language

There are terms in Lakota for solid, liquid, and distance measurement units. Table II shows those terms for solid measurements. Most of these words came from the New Lakota Dictionary (NLD). I included this to reinforce the fact that the Lakota have ways of expressing common English measurement units. Once again if these concepts are readily available and used in the Lakota language then one could assume that they are available for use in the Lakota mathematics classroom. This wasn't the case at Lakota Owayawa. I stress that their inclusion could help Lakota K-8 students come to understand standardized units as described in the Lakota Language since the translation is very descriptive.

Table II. Solid measurements (Weight)

English Word	Lakota Word	English Translation
Ton	Tke iyutapi thanka (NLD, p. 1065)	Tke – weight, iyutapi – to measure, thanka = big
Pound	Tke iyutapi (NLD, 984)	Tke – weight, iyutapi – to measure
Ounce	Tke iyutapi cikala?	Tke – weight, iyutapi = to measure, cikala - small

Some of the Lakota words for solid measurements are used below in a recipe found in Rood (1974). This recipe provides an example of how the Lakota language has adapted and used standard units. In addition the example below shows the wide range of possibilities when using these terms in both the mathematics and Lakota language classrooms:

Wigli?ukagapi - (Frybread)

Aguyapiblu wiyatke topa	4 cups of flour
Asanpiblu chinska thanka num	2 tablespoons of Powdered Milk
Winakapo chinska thanka num	2 tablespoons of Baking Powder
Mniskuya chinska cistila wazi	1 teaspoon of salt
Wigli chiska thaka wazi	1 tablespoon of shortening
Mni wiyatke num	2 cups of water

Aguyapipaskapi ki phasphaszoa hehanya pat?iza pi kte hecha.
Wathokhelkehltuya chi pi ke wahehanyan kaga pi na wigli el giya pi. (Rood, 1974, p. 12-24)

Summary of SUMA #2

Measuring is inherent in all cultures. It involves comparing, quantifying and ordering. A characteristic of the Lakota language is that it is rich in description. This characteristic is seen in the many ways it is used to describe things like time, rates and distances. All three of these concepts take root in nature. Distance as measured in Lakota culture cannot be separated from time therefore it more resembles a rate. This rate has the units of distance per time and also distance per work (wear). The Lakota way of measuring time has changed as a result of interaction with the Western world. Though the Lakota language is rich in description in terms of how it measures it is reliant, to a large extent on the English language to meet the Western need for greater and greater precision. This takes nothing away from the Lakota. As one educator said to me, "it is easier," to use the English as a way of stating some of these things.

An aspect of the Lakota language is that it is very descriptive and relies on the physical senses in order to relate phenomena. This is a very positive thing about the language and can be used in the explaining of mathematical concepts. However, in regards to mathematics, if we were to rely exclusively on the Lakota language to explain it, we would find it to be incoherent. The use of the Lakota language to explain mathematical phenomena, not just pieces of it, is the next step, I believe, in the relationship between and integration of the culture and the understanding of mathematics.

Conclusion

An aspect of the Lakota language is that it is very descriptive and relies on the physical senses in order to relate phenomena. This is a very positive thing about the language and can be used in the explaining of mathematical concepts. However, in regards to mathematics, if we were to rely exclusively on the Lakota language to explain it, we would find it to be incoherent. The use of the Lakota language to explain mathematical phenomena, not just pieces of it, is the next step, I believe, in the relationship between and integration of the culture and the understanding of mathematics.

When I mention these types of ideas to community members the initial reaction is that there is really no connection between Lakota culture and the mathematics classroom. Their perception begins to change when I start describing mathematics in ethnomathematical terms. I mention to them that they probably do mathematics on a daily basis. Do they not estimate time and distances when they decide that they want to go to town? Do they check to see if they have enough gasoline to make it to town? Don't they measure when they cook or cut fabric for powwow outfits and don't they decide on shapes when making designs? Math is involved in all of these activities. I mention also games and how games are rule-bound and show the interplay between games with the similar way mathematics is rule-bound. Aren't there probabilities and guessing strategies involved in Hand Games? Once these ideas are contemplated many community members come to see that indeed Lakota culture can be a context for the teaching an learning of mathematics both in and out of the formal classroom. One teacher commented

during our discussions about directions, geometrical shapes and distances about the usefulness of these ideas and the fact that she had never considered the things she was doing as mathematical:

> I'd like to know more about hat from whatever you can-because we never did implement_____. We do the numbers...Symbols and designs and patterns, they all have math in it, but it was never – We do it, but we don't think of it as math. Like a star quilt design, that's math right there. The shapes', that's geometry... This is interesting. You really opened my eyes to a lot of ways to teach...You don't know it, but I'm receiving quite a bit. I'm also gonna take some lesson on that math you was talking about...we can use that!

The Lakota language has been included in the formal education of Lakota children since the early 1970's. It has been used to help students learn conversational Lakota. It has yet to be the main vehicle by which traditional classroom content is taught. By exploring the use of Lakota culture and language in the formal math classroom connections to daily life, real world contexts and the development of mathematical thought is be made explicit. Using the Lakota language to teach mathematics not only may prove beneficial in terms of the impact it could have on the teaching and learning of mathematics but may also provide another avenue to teach the Lakota language.

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Nourishing the Learning Spirit: Coming to Know and Validating Knowledge: Foundational Insights on *Indian Control of Indian Education* in Canada

Jonathan Anuik[1]

In 1972 the National Indian Brotherhood (NIB) issued a policy statement titled *Indian Control of Indian Education* to the Canadian government, proposing a change in the relationship of Status First Nation children and families with educational systems. The government accepted the policy in principle in 1973, and it may be understood as a tool to address the shortcomings of existing school systems. However, the practices of teachers in schools continue to focus on curriculum that reflects Canadian educational laws and norms. The focus on instruction in English and French literacy, numeracy, and citizenship contained in ideals of western economic and social development persists even though research shows that First Nation, Métis, and Inuit learners come to know and validate knowledge through nourishing the learning spirit. In this essay, I share foundational knowledge gleaned from one of the knowledge exchange, monitoring and reporting, and applied research activities of the Aboriginal Learning Knowledge Centre: the Banff Dialogue, shedding light on the pedagogical and curricular goals outlined in the NIB's policy statement.

[1]I thank Dr. Marie Battiste, Mi'kmaw professor of education at the University of Saskatchewan, Saskatoon, Saskatchewan, Canada, for her supervision and guidance on the knowledge exchange, applied research, and monitoring and reporting work for the Aboriginal Learning Knowledge Centre's (AbLKC) exploration of spirituality in lifelong learning. I am also grateful to the AbLKC that, in partnership with the Canadian Council on Learning, supported financially the knowledge exchange, applied research, and monitoring and reporting activities from 2006 to 2009. Most important to this essay's success is the outstanding contributions from the participants in the May 2007 Banff Dialogue on spirituality and Aboriginal lifelong learning. I am eternally grateful for their willingness to share their insights at the Dialogue. Similarly, I thank them for comments following the Dialogue, particularly those from Richard Atleo, Rita Bouvier, and Cynthia Chambers. Drafts of this essay were presented at the 16th biennial conference of the Canadian History of Education Association (*Education in Tough Times: Tough Times in Education*) in Toronto, Ontario in October 2010, the International Standing Conference for the History of Education (*State, Education and Society: New Perspectives on an Old Debate*) in San Luis Potosi, San Luis Potosi, Mexico, in July 2011, and the 3rd American Indian Teacher Education Conference (*Honoring our Heritage*) in Flagstaff, Arizona, United States, in July 2012. I am grateful for the comments from participants in the above conferences who attended my sessions.

In 1972, the National Indian Brotherhood (NIB), now the Assembly of First Nations (AFN), issued a policy statement titled Indian control of Indian education (hereafter ICIE), touted as "a blueprint for local control of education" (Grant, 1995, p. 209), partially in response to the Canadian government's 1969 White Paper on Indian policy issued by federal Minister of Indian Affairs and Northern Development Canada, Jean Chrétien. The White Paper proposed disestablishment of the Department of Indian Affairs and abolishment of all federal responsibilities, including education, and was in response to the agenda of integration in the education of First Nation children since the 1951 revisions to the Indian Act (Government of Canada, 1969; Miller, 2000; Haig-Brown, 2006). Chrétien accepted ICIE on behalf of the federal government in principle in 1973, which became "a major turning point in Native education in Canada" since "both governments and Native people themselves" gained control "on some issues of fundamental importance to Native students," enabling the development of learning spaces in "a self-defined Native context" (Haig-Brown, 2006, pp. 131-132 & 160). This new policy enabled Status First Nation and Inuit to consider "alternatives to residential schools, federally administered day schools, and the public school system" (Haig-Brown, 2006, p. 136).

Since 1973, First Nation, Métis, and Inuit scholars and their allies have critiqued the existing systems of K-12 education while at the same time attempting to achieve the goals enumerated by the policy statement (Beaudin, 1994; Carr-Stewart, 2006; Charters-Voght, 1999; Haig-Brown, 1995; Ireland, 2009; Kirkness, 1999; Taylor, Crago, & McAlpine, 2001). Even though "since the early 1970s ... policy, practice, and funding changes to support the principles of Indian Control of Indian Education ... [have] been ... [discussed] in multiple forums, conferences, books, research, and dialogues ... [among] policy makers, stakeholders, professionals, and educators," bands and provincially run schools that educate First Nation students continue to use provincially prescribed curricula (Anuik, Battiste, & George, 2008, p. 2). Consequently, schools often "fail to empower the Native peoples in the education field" (Burns, 2000, p. 163). This shortcoming occurs even though for band schools, their "actual administration … including … curricular choices" is "the responsibility of the band concerned" (Haig-Brown, 2006, p. 133).

In this essay, I isolate the themes from the *ICIE* policy that deal with the foundational principles and practices of First Nation education and highlight the absence of discussion of foundations in literature on the policy. My focus then shifts to an investigation of spirituality within western and Indigenous contexts, privileging the paradigms of teaching and learning from Indigenous scholars. I then discuss the data generated at the 2007 Banff Dialogue: one of the knowledge exchange, applied research, and monitoring and reporting activities of the three year Aboriginal Learning Knowledge Centre (AbLKC) project. I find that nourishing the learning spirit is the outcome of coming to know and validating knowledge and is foundational for First Nation education.

Although my paper is focused on the *ICIE* policy as it affects the learning of Status First Nation children, the foundations and practices shared at the Dialogue

are from First Nation, Métis, and Inuit scholars. Therefore, to be inclusive of all perspectives shared I refer to First Nations only when speaking directly on band-controlled and reserve schools, and schools attended off reserve by Status First Nation children and youth. However, when speaking on the learning processes of coming to know and validating knowledge as they affect nourishing the learning spirit, I refer to First Nation, Métis, and Inuit, the three peoples recognized in the 1982 Canadian Constitution as the Aboriginal peoples of Canada.

Indian Control of Indian Education

Although a substantial body of literature on First Nation education policy has emerged since the achievement of *ICIE* (AFN, 1988, 2010; Beaudin, 1994; Binda, 1995; Binda & Nicol, 1999; Cannon, 1994; Carr-Stewart, 2006; Charters-Voght, 1999; Haig-Brown, 1995, 2006; Kirkness, 1985, 1999; Longboat, 1999; Paquette & Fallon, 2010), less is known of foundations of First Nation education, even though the *ICIE* policy mandates "a suitable philosophy of education based on Indian values" (NIB, 1972, p. 3). The Indian values are the means to enable "a child [to] ... learn ... the forces which shape him: the history of his people, their values and customs, their language" (NIB, 1972, p. 9). The result is a child who "know[s] himself or his potential as a human being" (NIB, 1972, p. 9).

ICIE was reaffirmed as a policy directive by the NIB's successor organization, the AFN, in 1988 and 2010. In 2011, Deborah Jeffrey, head of British Columbia's First Nations Education Steering Committee, "believes band-run schools are key to revitalizing aboriginal language and culture, and with them aboriginal aspirations" (as quoted in Moore, 2011, para. 29), and the policy "is [now] accepted as the norm" (Grant, 1995, p. 209) of Indigenous education. Since 1973, "locally controlled schools evolved … rapidly and … successfully" (Grant, 1995, p. 209). By 1984, "there were 187 [band] schools enrolling twenty-three percent of Native students" (Haig-Brown, 2006, p. 134) and in 2011, there were 520 schools under the jurisdiction of First Nation education authorities, with 5,000 students attending 130 schools in British Columbia (Moore, 2011). In 2010, the AFN reminded the Canadian government that it must "provid[e] ... education in a manner that affirms First Nations cultural identities, languages and values" (p. 9). However, despite almost 40 years of band-controlled schools in Canada, "the substance of Indian education remains in its formative stages" (Cannon, 1994, p. i) and therefore, there is a need "for a critical analysis of the ideas the phrase holds," recognizing that "Indian … education … encompass[es] … a realm of meanings and intents" (Haig-Brown, 2006, p. 136).

Kathleen Absolon (2011, p. 84) guides my understanding of *ICIE*, "A determination … to stay congruent with culture, traditions, historicity, world-views, family and community … that reflect an expression of self." This essay departs from Absolon's conceptualization of Indigenous research to examine foundational and practical knowledge of learning from mid-career and senior Aboriginal scholars in conversation who see practice through the theoretical lenses of nourishing the learning spirit. Nourishing the learning spirit is done through coming to know and validating knowledge processes.

Nourishing the learning spirit

Within Indigenous conceptions of spirituality reside learners and teachers who are integrated people in "heart, mind, soul and body" (Kramer-Hamstra & Mitchell, 2012, p. 26). Spirit is also taken up in western education. In the United Kingdom (UK) context, reference is made to spiritual development within primary and secondary schools' curricula (Adams, 2009). From curricular focus on spiritual development comes attention to relationships and belief, which are seen as cross-curricular (Barker & Floersch, 2010).

Cognate topics infused across the UK curriculum connected to spirituality and mentioned by the Office for Standards in Education and the Education (Schools) Act of 1992 include "identity, self-worth, personal insight, meaning, and purpose" (Adams, 2009, pp. 810-811). In the global north, there is mention of "wonderment" (Trousdaie, as quoted in Baumgartner & Buchanan, 2010, p. 90) along with "appreciation of the unknown … [and] inquiry" (Baumgartner & Buchanan, 2010, p. 92). In Canada, scholars refer to "caring" (Rostant, 2012, p. 44) and "how one ought to live" (Keeney, 2012, p. 22). Christou (2012), speaking from "classical philosophy and early Christianity" conceives of spirituality as a bridge "to liv[ing] … well" (p. 55). The spiral through the above inventory of phenomena attached to spirituality is pupils' ability to express such feelings.

Yet explicit discussion of spirituality as a foundation of teaching and learning is absent within western literature on spirit. Similarly, conversations on spirit neglect consideration of individuals' inherent capacity to learn (Anuik & Gillies, 2012; Harri-Augstein, 1985). Barker and Floersch (2010) come close, identifying "spirituality as a way of knowing" (p. 357). Barlex (2007) suggests that knowing is powered by emotional commitment. Spontaneity ignites spirit in class. Rostant (2012, p. 44) believes that "whenever a lesson in any subject area drifts beyond content to questions about the meaning and purpose of life, that lesson has become spiritual" (see Aktamis & Ergin, 2008, esp. para. 47). Learners then participate "in the life of the subject" (Jonker, 2012, p. 16). For Adams (2009, p. 817), a spiritual moment occurs when children break into "a spontaneous silence" while learning. Anishinaabe Literacy Teacher Ningwakwe George (2010) identifies this occurrence as learning in the moment, as a being with one's whole body, using the senses (see also Anuik & Battiste, 2008; Anuik & Gillies, 2012). For Baumgartner and Buchanan (2010), "Practices that address spirituality should be grounded in learning opportunities that arise naturally during the children's day" (p. 91) and be done through exploration. Working definitions of spirituality require explicit attention to learning guided by spirit, which is the space that this investigation opens.

Indigenous and Western concepts of spirituality deal with the role of teachers in nourishing the learning spirit. According to Peterson (2012, p. 37), citing Montessori Schools' practices, teachers nourish learners in what is called the "'second womb' … the immediate natural environment," and children awake from there "contented, more social, more loving." Rostant (2012, p. 43) advises that "the implementation of spirituality in the classroom is still being explored."

How spirituality may be a conduit for practice is dealt with in this essay through the reflections of senior and mid-career Indigenous scholars in dialogue. The challenge now involves connecting *ICIE* to practice by infusing theory of spirit within literature and through dialogue.

The May 2007 Banff dialogue

The Dialogue occurred on May 14-16, 2007 in Banff, Alberta, Canada, on Blackfoot Territory. Marie Battiste, Mi'kmaw educational scholar, then academic director of the Aboriginal Education Research Centre, co-director of the AbLKC, and bundle lead of the AbLKC's Animation Theme Bundle 2 (ATB 2), Comprehending and Nourishing the Learning Spirit, invited 15 First Nation, Métis, and Inuit scholars and practitioners involved in teaching and learning guided by spirit to this Dialogue on Aboriginal learning in Canada. The participants were mainly senior and mid-career scholars and practitioners who were invited by Battiste. Leroy Little Bear, Blackfoot professor of Native American Studies at the University of Lethbridge, moderated the discussion, which was as a large group and over three days. Little Bear encouraged the participants to let the dialogue be generative (see Ball & Pence, 2006), meaning that the themes emerged from the participants, and he synthesized the discussions at the end of each session. This way, there was no set agenda; participants were free to share their thoughts without being restricted by a preconceived agenda. The conversations were tape recorded, and I transcribed them. I wrote a report on the Dialogue (Anuik & Battiste, 2008), which is unpublished, and some quotations from the transcripts are cited as part of it. This chapter draws on passages from the unpublished report and from the original transcripts. It also builds on my prior scholarly work that investigates infusion of spirituality in university and college classes (Anuik & Gillies, 2012).

Spirituality emerged as a dominant theme and an ongoing and "all ways" process of coming to know and validating knowledge (Ball & Pence, 2006, p. 83). Collectively, the participants recognized that the most important theme in First Nation, Métis, and Inuit education was spirituality. The knowledge shared at Banff promised to push First Nation, Métis, and Inuit education in schools past the formative stages of *ICIE* by affirming spirit in students and teachers in K-12 schools. The contributions of the participants inform the policy's implementation in the domains of teaching and learning within First Nation, Métis, and Inuit schools in Canada.

The Dialogue unpacked the knowing and validating of spirit as it takes shape within First Nation, Métis, and Inuit communities and tested how Indigenous scholars recognize spirit in learners (Adams, 2009) and animate it in schools' practices. Tuhiwai Smith (2006) and Kramer-Hamstra and Mitchell (2012) ask "where knowledge originates" (p. 27), and the scholars at the Dialogue addressed this question. They articulated "the spaces where voices and knowing reside but were never allowed to be heard" and by doing so, they are "creating space on how [to] come to know" and "searching for ways of knowing that wholistically include the spirit, heart, mind and body" (Absolon, 2011, p. 10). The participants

share the "many pathways to knowledge" and draw on "Indigenous ways of searching for knowledge" (Absolon, 2011, p. 32).

The following is my attempt as a non-Aboriginal historian and former ATB 2 research assistant who worked under Battiste to shed light on how knowledge of the learning spirit may be gleaned to support the substance of *ICIE*. I seek to establish meaning from the practices shared by the participants. Following are promising practices to demonstrate how coming to know and validating knowledge happens and why it is crucial to nourishing the learning spirit.

Coming to know

For learners, coming to know is lifelong and ongoing. The question, then, is, according to George, "How do we, as beings, come to know?" George suggested that knowing is always in "the present," and Laara Fitznor, of the Nisichawayasihk Cree Nation, adds that coming to know is "the gift of the moment" and is accomplished by assessing oneself "in a holistic fashion," according to Rita Bouvier, Métis. Coming to know for Battiste involves "habitual thinking and being." It is often an indication of "something that is already in us" (S'ak'ej Henderson, Bear Clan of the Chickasaw Nation and Cheyenne Tribe).

Little Bear referred to the tacit infrastructure, a term coined by physicist David Bohm (1987)—it is like an ozone layer surrounding humans and governing humans' conduct. Little Bear went on to suggest that children are born into a tacit infrastructure, and schools reinforce it. Since the tacit infrastructure is carried through language, it can restrain learners because it takes the form of a set of ideas and traditions that hold people in a society together, usually cognitively (see also Battiste, 1986). And the provincially prescribed curricula ensure its stability. For Little Bear, "In many ways those tacit infrastructures that we carry around many times end up limiting and in some ways prohibiting us from exploring ideas." Thus participants in the Dialogue agreed that there are few spaces in modern educational systems where First Nation, Métis, and Inuit learners come "thinking of themselves as beings." The challenge in modern education is that teachers are less interested in helping students come to know and more interested in "teaching them that the only things worth knowing are inherited from somewhere else" (George, as quoted in Anuik & Gillies, 2012, p. 65) because knowledge is only information that can "be separated from the norm" (unidentified participant). Therefore, what "you know" is not worth understanding (unidentified participant), and learners do not often have the chance "to take ideas ... and play around with them ... turn them around and see how they look from different perspectives, from different angles" (Little Bear).

The consensus reached among participants was that to connect successfully with learners, teachers have to form relationships with community members and must come to know and respect the First Nation, Métis, and Inuit tacit infrastructures that learners access prior to and during their participation in school. For Janet Smylie, Métis, "[T]he tacit" infrastructures exist but must be identified by "local understandings ... essential to Indigenous peoples ... language carries tacit infrastructure." There is a system where learners come to know prior to coming

into their physical bodies. There was agreement among Dialogue participants who identified the systems in First Nation, Métis, and Inuit communities and how they operate to guide learners.

Battiste, referring to Saulteaux Elder Dr. Danny Musqua's teachings (see Knight, 2007), proposed that "we come into this world ... through six stages and then on the seventh stage we enter this body. Those spirits that travelled with us through those other six stages continue on with us into this world." At birth, the families in the community "start attaching meaning" (Smylie, as quoted in Anuik & Battiste, 2008, p. 12) to connect babies "to other people around" (Little Bear, as quoted in Anuik & Battiste, 2008, p. 13). Therefore, how do community members facilitate the process of learners coming to know?

Following the birth of a child, it is the responsibility of community members who train learners "in the phenomenology to see the gifts.... [T]he capacity to recognize ... gift[s]" (Little Bear) that enable children and youth in coming to know. Gifts are seen through stories, songs, and ceremonies (Keith Goulet, Cree Métis), infused with a consciousness that enables "knowing" to drop "into us at different times of our lives" (Vicki Kelly, as quoted in Anuik & Gillies, 2012, p. 74). Thus community members and learners are in relationships, sharing stories that enable learners to come to know lessons, and Bouvier demonstrated how the senses are put into operation to facilitate the process of coming to know,

> Being taught patience (i.e., not to speak when the Elders were visiting), listening, learning; learning from listening, learning to observe very carefully, and new experiences. I was a helper, building nets and making soap, doing as a means to learn skills (i.e., checking on snares in the winter and watching for wolves) and so there were all of these disciplines that one was taught.

Therefore, learners, upon birth, are drawn into relationships that enable them to come to know the tacit infrastructures or societal structures that contribute to their stability as individuals.

Learners address questions and problems through consultation in talking circles:

> [E]veryone speaks to the concern, and the talk goes round and round until everybody has had their say, and there is no more. At the end of those rounds, however many rounds there may be, the spokesperson eventually comes out and says, 'Okay,' and basically tells the person with the concern, 'Okay, you have heard the people speak, here is what they said, now take what they have said to resolve your problem, your concern.'... [T]he person with the concern will just sit there and listen, he never talks. (Little Bear, as quoted in Anuik & Gillies, 2012, p. 70)

In Cree, it is "teach[ing] interactively ... to help and support somebody" (Little-Bear).

In their early lives, learners become part of a rich tacit infrastructure that has been designed to facilitate their coming to know as beings. The challenge for teachers in modern schools is to connect the wisdom of communities with the modern curriculum that is designed currently to train learners to become citizens of 21st-century Canada. How do they join "relationship and community ... with the vowel and the fraction" (Nancy Cooper, as quoted in Anuik & Battiste, 2008, p. 14) and continue to facilitate learners' coming to know themselves as First Nation, Métis, and Inuit and Canadian? George believes that teachers "are trying to draw out or ... honour that which is already there." Teachers must be mindful that the process to drawing out learners' gifts is already happening in the community, and Fitznor sees the gifts as "bundles inside of us." Ideally, for Fitznor, teachers are "unfolding the layers ... to get to the learning bundles."

Vicki Kelly believes that space must be opened in K-12 schools to explore coming to know which is, for her, "attempting to know beyond the forms to that which sounds in the knowing." However, she notes, "It is hard to give the attention ... to things that are invisible in ourselves and know them as they take shape." The form is the actual curriculum and the schoolwork that is expected of students. First Nation, Métis, and Inuit learners' languages represent worldviews and epistemologies, a process of coming to know through moving "between forms of [knowledge]," trying "to hear that which is beyond the form." Therefore, in the classroom, teachers come to know by appreciating "the knowing before it takes shape.... We know the sense of thought before we can actually articulate what we know" in a classroom assignment and on a test (Kelly). The shape is the product, the sharing of knowledge, and its packaging in the curriculum. Consequently, before knowledge may be shared, teachers need to examine critically the process of coming to know because "knowledge is an experience ... [and is] very, very different" from knowledge as a product (Kelly). There is a need to move emphasis away from the product, the words on the page, for example. Coming to know "is behind the form or within the form" (Kelly), and the form is the knowledge as it is constructed in the curriculum and the assignments that students produce to meet the standards of the school system. This space preceding the shape is a "whirlwind," and there is a need to "connect with that whirlwind ... connect with that energy" (Henderson). And then, "People [must] learn to trust themselves as the carriers of knowledge and the producers of knowledge" (Fitznor) and give themselves credit for holding this knowledge.

A series of practice-based anecdotes illustrate the philosophy that sustains learning about the "whirlwind" behind the shaping of knowledge. One participant recalls being,

> in one of the first high schools to have an Elders program ... We went on canoe trips; we had a three-day alone period; and every student in that school took that course as an option, along with ... 40 hours of community service. When I meet people from my past, the most central topic that we discuss is Elders: our experiences with working in a group; helping each other out; navigating hardship; coming to our limits; and

finding a way to dig deep enough so that we can still go on.

The challenge for educators is to build an atmosphere that joins learners with knowledge, a connection that links humans and knowing together. Like Bouvier, the following participant draws on her practice to illustrate how the senses enable coming to know,

> When I facilitate camps, and we go on canoe trips, there is a point when the students are canoeing and they stop and look and recognize that they are in control of their own direction.... [T]hey are out in the boat by themselves, and my job is to get students out on the boat by themselves.

Like the adults in communities, teachers "facilitate coming to know" (Vivian Ayoungman, Siksika Nation). For Little Bear, teachers are "catalyst[s] ... stimulating ... students."

Validating knowledge

> [I]n each of us there is a foundational base that we use to relate to other people, to relate to the world out there, to relate to the environment.... [F]rom a Blackfoot point of view. If I said something and the other person that I am talking to asks me: 'how do you know?' In my Blackfoot worldview what criteria do I use to say what I said is true and that this is something that I can move forward with? (Leroy Little Bear)

Little Bear captures the substantial questions that concern this section, asking how traditionally and in modern society people validate what they know? He goes on to ask: "how do we validate that intake," or coming to know, as "knowledge to the point where we can say, 'I know ... it's true.'" The experience and validation of knowing are interlinked, braided because traditionally "people relied on experiential validation, so experience was important" (Smylie).

In communities, validation occurs at the beginning of life on Earth. Around babies, people "would make ... noises ... they would spontaneously or very consciously start singing lullabies. The lullabies were always about the baby. It was a validation process ... for the babies" (Little Bear), becoming the touchstone to knowing to whom one belongs: the parents, family, community, and nation. The validation undertaken as a child was, for Little Bear, part of instruction in "how to stand with people." Among Inuit, it began with naming, "[T]he very first ... literacy,'" and the "way in which people were recognized in terms of being human." Then, Inuit babies learned "place names," because "knowing the place names and these places knowing you" was the second most important literacy (Cooper, as quoted in Anuik & Battiste, 2008, p. 12).

After recognition of their places in communities, learners set out on their own experiences of coming to know and validating the knowledge so that "it is

important" (Fitznor). Validating as an experience occurs as a,

> child sets out to walk ... test[ing] various feelings of walking, holding on to things, crawling and crawling with one leg up and various things until eventually they get to ... walking.... Experiences are repeating themselves and when you hear the repetitions; you are hearing the reality of the patterns that learning creates. (Marie Battiste)

Each time learners search for truth in their minds, uncovering "what it is that you could sort of call on to assist you" (Bouvier, as quoted in Anuik & Battiste, 2008, p. 17) to find validation and make meaning and then storing the information as truth to draw on in later experiences. The experience itself is the validation of memory, and the memory is preserved, through repetition, on what George calls the Tree of Knowledge, the point where knowledge is accessed. And coming to know and validating knowledge nourish the tree.

For S'ak'ej Henderson, member of the Bear Clan of the Chickasaw Nation and Cheyenne Tribe, teachings from a vision quest enable learners to contribute knowledge for communities to validate. Among Cheyenne and Dakota, "a vision" from a vision quest,

> does not have any power until ... perform[ed] ceremonially for all the people ... [prior to that] it is just a personal force of relationship with the creation ... you put it out there for the entire community to enjoy, to witness, and that's a nourishing form of validation. (Henderson, as quoted in Anuik & Battiste, 2008, p. 28)

Therefore, coming to know is validated through an appreciation of knowledge working and helping the community. Parents, families, and community support learners to engage new situations while also contributing to the shared collective consciousness.

Processes of validation operate in K-12 schools, but the format does not complement validation processes for learners coming to know, partly because of a shift in focus, from the individual as responsible for collective well-being through the pursuit of knowledge to the individual as isolated from the family and community, accumulating others' knowledge that is not always for the benefit of the community:

> [T]hey [teachers] are always testing you to see if you have done what they have told you.... [K]nowledge [becomes] punishment or benefit. If I get a real good grade, they expect me to get a real good grade the next time, the next time, the next time. If I do not get a good grade then their expectations keep dropping till I drop out of school.... If you do as they say, they will give you benefits. If you start resisting and saying, "[W]ell, I am different," then they will start punishing, and that is ... formal education. (Henderson)

Testing in modern schools is training "people to attach a patterned meaning ... [a] validation of others within one worldview" (Smylie). The objective of testing in schools then deviates from coming to know, where people accept knowledge as "a gift.... [B]ut do not ask proof of what people experience" (Little Bear). For George, testing takes away the opportunity for learners "to be able to learn in the moment, be there with ... [the] whole body.... [L]earn as a being, rather than ... learning as a practice of inheriting something, and [the] language to talk about it" (as quoted in Anuik & Battiste, 2008, p. 16). As a literacy teacher in adult basic education classes, George requires learners in her classes to stop measuring themselves against the standards of others, especially the chapters of the textbook, and to consider instead "the changes in their lives, their awareness of themselves" (as quoted in Anuik & Battiste, 2008, p. 24). For George, coming to know and validating knowledge is achieved by getting "learners to realize their purpose for being here; their gifts; and how they can recognize and nurture those gifts and go on and live those gifts."

First Nation, Métis, and Inuit educators seek to "validate that which is human" in the learner (Little Bear, as quoted in Anuik & Gillies, 2012, p. 73). However, the differences between Aboriginal education and modern schooling may be reconciled. Bouvier suggests that schools "strengthen … the community" and validate "needs and aspirations of ... communities." As a teacher educator, Bouvier asks teacher candidates "to assess themselves" as beings, "in a holistic fashion," rating themselves, "their well-being," for example: "on a scale of one to ten ... on every quadrant of the Medicine Wheel." Goulet agrees, recommending that educators "identify their [communities'] scientific knowledge and its effect in the community (wind, water, moons)." Infusing community knowledge in school helps learners to check "credibility" and validate their communities' knowledge (Little Bear). Such a promising practice also helps teachers to inspire students to connect with the collective consciousness that is shared among their families and communities and to judge what is true in the modern curriculum.

Teachers may consider validation of knowledge as "an experience" or a learning in the moment, when an "a-ha" moment comes. It is the "a-ha" moment that brings the product, the knowledge, to the knower, the human (Kelly). It is the recognition that "hey! This is something that I can base my thoughts on, my actions on, and so on." It is saying, "I know, and it went to the word experience.... I know it because I experienced it." Knowing is in the curriculum guide and the community, "[B]ut the knowing is so different" as "you listen to the story again" and again because you experience it (Kelly).

However, coming to know and validating knowledge as First Nation, Métis, and Inuit people in concert with communities has been disrupted by colonization. Fitznor says that in Cree territory in northern Manitoba, the Anglican Church, in the 19th and 20th century, heavily influenced Cree spirituality. Therefore, for teachers to validate learners' knowledge requires recognition not only of the history of colonization but also to "understand that so many ... people are displaced" and need to be reconnected to the traditional ways of coming to know and validating knowledge.

Discussion

The *ICIE* policy builds on communities and teachers providing the opportunity for children "to learn the forces which shape" them: "the history ... values and customs ... [and] language"; and learners knowing themselves and their "potential as ... human being[s]" (NIB, 1972, p. 9). The capacity to learn, understood as nourishing the learning spirit, exists among First Nation, Métis, and Inuit learners in multiple contexts in communities and schools. The forces that shape learners are coming to know and validating knowledge.

Nourishing the learning spirit may be thought of as awakening to coming to know and validating knowledge or "to awaken ([become] aware) to ... meaning," according to Smylie. Battiste teaches,

> Our learning comes from experience, stories, relationships, what others have told us. We have to, in our pedagogy ... use those tools to help others ... see that their experiences are things from which they can learn from as well as learn from others who told them. (as quoted in Anuik & Battiste, 2008, p. 15)

She argues that coming to know is "valuation ... together with validation," acceptance that translates into wisdom, resulting in a profound connection of "words and thoughts." There is "an infusion" and as learners come to know and validate knowledge, they are "constantly being infused." There is "coherence" because there is a capacity to learn, and coming to know; validating knowledge; forming wisdom; and honing intuition are parts of the infusion that keeps coming to know and validating knowledge going and nourishes the learning spirit, often through states of consciousness and unconsciousness.

Fitznor suggests that nurturing may be better than validating to describe how learners make meaning in the moment. She sees her practice as a post-secondary educator as "nurturing ... learning ... nurturing children.... Nurturing interdependence so that you will know how to look after your needs and relate to people." Referring again to a Dialogue participant's practice on student canoe trips, teachers "are creating ... circumstances in the communities so that ... children may nourish their learning spirits."

The consensus reached among Dialogue participants was that learners come to know as whole beings in the present, and validation is ongoing. The challenge is to reconcile modern schools with the foundational knowledge of First Nation, Métis, and Inuit learners and teachers. To recognize that nourishing the learning spirit is the result of a lifelong process of coming to know and validating knowledge. First Nation, Métis, and Inuit learners "walk in two worlds," the modern schools and the traditional ways of knowing, but often do not have a choice and chance to reconcile the two worlds in the formal system of education, despite the acceptance by the Canadian government of the *ICIE* policy (Kelly). This contradiction happens because "the state interferes" as learners are coming to know and validating knowledge by imposing in schools its "own cultural

construction of childhood" (Fitznor).

Coming to know and validating knowledge inform nourishing the learning spirit. The thread sewing the Dialogue together is learning in the moment, coming to know and validating knowledge being the parts.

> More explicitly, it is employing all the senses (at the moment), being in relationship to place (natural surroundings and 'life' around), and being in relationship with family and community—ultimately to all life that you can see (touch, feel, or imagine) and can't see (touch, feel, imagine), yet. (R. Bouvier, personal communication, September 18, 2011)

For Kelly, nurturing the capacities of First Nation, Métis, and Inuit students to learn is literacy on the same standing as English and French literacy and it "depends on experience (i.e., speaking, listening, hearing). This way of nurturing these capacities in the human being so that they are able to make meaning.... [H]onouring people observing, doing, thinking, reflecting." For Henderson, education is "therapeutic ... [because it is dedicated to] finding those gifts." Nourishing the learning spirit is the theory to animate *ICIE* in practice.

The AFN's 2010 renewal of *ICIE* is a commitment to recognizing the directive to institutions "to create grounded cultural constructions" (Fitznor). Space needs also to continue to be opened in all schools to recognize the "living process of knowing" and "honour this process in learning," the process before the shape or the product and the process behind the products (Kelly). The objective continues: the modern and First Nation, Métis, and Inuit processes of coming to know and validating knowledge in nourishing the learning spirit may be joined, and children may come to understand "the forces which shape [them] ... the history of ... [their] people, their values and customs, their language ... [and] potential as ... human being[s]" (NIB, 1972, p. 9).

Conclusion

The 1973 acceptance of the NIB's *ICIE* policy by the Canadian government restored control of First Nation education to First Nation people in principle. In the years that followed, Indigenous scholars and their allies dedicated their investigations to understanding the policy's implementation in First Nation, Métis, and Inuit education in Canada. The participants in the Banff Dialogue recognized that administrative advances in First Nation, Métis, and Inuit education must be accompanied by changes to the foundations that support the delivery of education. They suggested that to come to know and validate the foundational principle of holism in which spirituality is the bedrock nourishes the learning spirit. Learners come to know their gifts and abilities. Teachers are responsible for validation of emerging knowledge, the outcome of interaction with families, communities, and places. Nourishing the learning spirit is the power behind a journey of lifelong learning. Children's education must be shaped by teachers who guide learners to come to know and validate the values, languages, and principles shared by communities.

It is in the early spirit journey when the spirit, embodied with knowledge of its purpose and gifts from the Creator, joins with the body, mind, and emotions to become one on an Earthwalk (George, 2010). First Nation, Métis, and Inuit communities and families support nourishment of the learning spirit by emphasis on community knowledge to strengthen the spirit's integrity and purpose. The practitioners at the Banff Dialogue spoke of the trauma that has been the outcome of colonization and its effect on the learning spirit. Therefore, control of education means understanding how trauma stymies learning and how learners may peel away the layers of oppression; let their spirits out to shine; and reconnect to the gifts bestowed upon them by the Creator. This way, learning environments empower First Nation, Métis, and Inuit and facilitate education that meets the standards set by *ICIE*.

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Using Historic Photographs to Teach about Navajo History and Culture

Evangeline Parsons Yazzie

This chapter describes how historic photographs can be used in classrooms. The photographs used in this article were the property of Navajo Gospel Mission, which operated on the Navajo Reservation for years at Hardrock, Arizona, 14 miles north of Kykotsmovi/Oraibi. My father, the late Rev. Bruce Yazzie, was a Baptist minister of the gospel at Navajo Gospel Mission for nearly 50 years. My mother worked alongside my father at the mission as an interpreter, musician, mid-wife, nurse practitioner, and "social coordinator" for the Navajo people within the mission community.

The photographs used in this chapter are part of a collection accumulated over the 50 years the Navajo Gospel Mission (NGM) was in full operation at Hardrock, Arizona. The main office of the mission was moved to Flagstaff, Arizona in 1980, and a few years later was moved once again to Tuscon, Arizona, where the process of archiving all documents and photographs began. A Navajo has to chuckle knowing the white missionaries had a small part in preserving our culture and lifestyle without even knowing it. It is possible that if the white missionaries only knew, they probably would have destroyed all evidence of the photographs they took. It was not their intention to have a part in preserving the Navajo culture, language, and lifestyle.

Navajo children who attended kindergarten through eighth grade school at the Navajo Gospel Mission were forbidden to speak Navajo. Harsh punishment followed a Navajo word that easily rolled off of a Navajo child's tongue. Punishment could mean being forced to bite off a piece of soap, a spanking with a wooden board, or standing in the corner for a length of time. Ironically though, all the students in the school were required, however, to become proficient in Navajo literacy. The proficient reading of the Navajo Bible was a clearly stated goal of the curriculum.

The major objective of the the missionaries was for the Navajo people to break all ties to their Navajo culture and lifestyle. Missionaries took it upon themselves to decide what the Navajo people were to leave behind upon conversion to the Protestant faith. This objective was not limited to Navajo Gospel Mission. In describing the national objective of missions and missionaries in general, Kraft states,

> Missionaries across the country preached cultural change that made their converts more like themselves in outward form. The motivation being that, different cultures are viewed as inferior to that of the missionary…. the aim was to get converts to think and act like the missionary and his people, since that way is regarded as superior and Christian. (1979, p. 288).

A result of the missionaries' expectation and requirement of the complete separation from their culture left converts becoming alien to their own people, culture, and lifestyle (Winter; 2000). This requirement left many Navajo Christians isolated from their own people and isolated from the missionaries as well.

The missionaries who believed they were superior to the American Indians did not allow themselves to become knowledgeable of the culture of their convert. They were afraid their "new convert" would practice syncretism. Webster defines syncretism as a "union of principles irreconcilably at variance with each other, especially the doctrines of certain religions" (1937, p. 1690). The fear of syncretism by the missionary further caused him to draw the line between the culture and religion of their convert. According to Mastra, the contextualization of the gospel would have been a far less destructive approach, which is "based upon mutual respect in the relationship between races, religion and cultures (1979, p. 355). Osei-Mensah (1979) explains that allowing the Gospel to come into the culture of the convert is another example of contextualization and one that is far less destructive.

The missionaries at NGM did not know the beautiful culture of the Navajo people, nor were they interested in learning about it. The words, in a conversation my father had many years ago with a missionary, still ring in my ears where he said, "Let us Navajo pastors who know our culture decide where to draw the line between culture and religion. You are drawing the line out of the fear that you will lose your converts to their traditional ways because they practice their culture. There are many things that are good about being Navajo. The Navajo culture and being Navajo has sustained us for many years. It is who we are, and the culture has helped us survive all these years through many hardships" (Bruce Yazzie, personal communication, 1970).[1]

Many photographs from the NGM collection were presented in the textbook I co-authored titled, *Rediscovering the Navajo Language* (Parsons Yazzie & Speas, 2008), which teaches students extensively about Navajo culture as they learn to speak, read and write Navajo. Only a few prhotographs have been selected here to demonstrate how the they can be used to teach Navajo culture and history.

The Navajo language will not be addressed in this monograph owing to the difficulty of the use of the Navajo font. However, in an actual Navajo language classroom, the photographs are used to generate vocabulary lists, discussions, culture based essays, for illustration of Navajo lifestyles of old, and to illicit comparisons between the present Navajo culture and the culture of the people of old.

Comments repeatedly made by viewers of the photographs is how thin, how fit, and how tall the Navajo people are who appear in the photographs. A second observation is the presence of extended family members upon whom each Navajo person could rely and depend.

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[1]For a discussion of the attitudes of Christian Navajos towards teaching the Navajo language to their children see my chapter "Missionaries and American Indian Languages" in J. Reyhner, O. Trujillo, R. L. Carrasco & L. Lockard (Eds.), *Nurturing Native Languages* (Flagstaff, AZ: Northern Arizona University, 2003, pp. 165-178).

The photographs are placed in categories based upon the following topics: Navajo Hogans, Modes of Travel, Navajo Food Preparation, Navajo Teachings and Lifestyle, Navajo Traditional Clothing, Forced Education, and Navajo Elders.

Navajo hogans

The traditional Navajo home, the *hogan*, is to be built with the entrance facing the east, from which direction the rising sun brings with it bounties with which to bless the Navajo people. The hogans the Navajo men built have remained sturdy for years and protected Navajo families from the elements. The inside of a hogan is warm the during the cold winter season and cool in the hot summer.

The photograph above was taken in the early 1950s. Notice the doorway of the hogan, which is not very high. A new fixture of a hogan during this time is the door. Previously, a thick rug or blanket hung in the doorway to provide privacy, protection, or to keep the hogan warm.

The hogans in the pictures on the previous page were built at Navajo Gospel Mission for Navajo families while the mother and the father attended the Bible School for adults and their children attended the kindergarten through eighth grade Christian school. The Christian families left their home area to attend the Bible School and the concept behind the cluster of hogans was to provide a sense of community. The families who lived in the hogans became an extended family to their neighbors.

Modes of travel

The Navajo people were used to walking. They walked long distances to herd their sheep and goats to the nearest spring. If longer distance traveling was required, they traveled by means of a horse. New to the Navajo family was a wagon in which the entire family traveled.

The picture above illustrates an important Navajo teaching, which is that a Navajo person is to be busy at all times. Navajo women were always planning or working on their next rug. Regardless of her destination, a Navajo woman took her weaving tools everywhere she went. If she was herding sheep, she took her wool and carding boards or her spindle.While the family is allowing the horses to rest for the next leg of the journey, the mother is spinning wool in preparation for weaving her next rug. The woman is a positive role model for her child. The men, in Navajo society, are the caretakers of cows and horses. The man in the photograph also rests when the horses rest.

One can imagine how alive the Navajo language was where the children heard the Navajo being spoken at all times. The children heard conversation, stories, and songs as the family traveled by means of a wagon and horses.

With the wagon and horse, as pictured below, the Navajos had a new mode of travel, and had to make their own roads. It seems that mules were used to make them, possibly because of their strength.

Navajo food

The Navajo of old ate what was supplied by nature, what they grew in a cornfield, or the livestock they raised. Wild berries, seeds, and vegetables were sought after and at times became a meal in itself. Corn, squash, and melons were grown, harvested, and preserved to sustain the Navajo people throughout the long winter. The people hunted for small game throughout the year and hunted for larger game to see them through the long winter months. The meat was preserved as jerky for the family.

Fresh mutton was, and still is, a Navajo delicacy. The woman in the photograph on the next page is proud she is able to provide for her family by butchering a sheep. She will serve the meat in a stew, cooked over hot coals or preserve as jerky to be eaten in the cold winter months.

Sheep and goats belong to the Navajo women. Sheep unify a family and extended family. When a Navajo woman wants to bring her children and her relatives close, she will butcher a sheep and a "feast" will be held. Stories, jokes, recent happenings are exchanged, providing each family member with pleasant memories. The sounds of life sustain a Navajo mother until the next family gathering.

The scene in the next page was not an unusual happening. Whether it was over a stove or hot coals near an outside fire, young girls were taught to cook at an early age. Many times, the young girls prepared the family meals while their mother was busy weaving a rug to sell at the trading post. There were many reasons to teach a young daughter how to prepare a complete meal for the family.

The photograph above is evidence of when a Navajo family of old traveled several miles from home, they packed fire wood, matches, a coffee pot with enough coffee to make one pot of coffee, water, fresh or boiled mutton or jerky, and possibly dough that had been mixed at home in anticipation of cooking biscuits or fried bread over the hot coals when they reached their destination. Navajo families were self-sufficient.

During the meal, the children heard the Navajo language recited in stories, recent happenings, jokes, and prayers, which sustained the Navajo language for generations.

Transmission of Navajo teachings to the next generation

The Navajo people of old transmitted teachings of their culture, lifestyle, traditions, and their belief system through example. Navajo men prepared their sons and the young men for the future by example, while the women prepared their daughters through their teachings. Formal education interrupted the natural transmission of the Navajo culture, lifestyle, traditions, and belief system from one generation to the next.[2]

Navajo men had the responsibility of showing their sons and the young men how to build a hogan. My father led a team of young Navajo men in building traditional Navajo hogans at NGM and the surrounding community. He taught that in the traditional Navajo society, the hogan was to be built in one day, so he made sure all the materials needed to build a hogan had been gathered before they began assembling the hogan. My father then challenged the young men to complete the hogan on the same day they began assembling it.

It is interesting to note that the missionaries inspected the completed hogans and marveled at the fact that each hogan had been built without the use of one nail (Clarence Blackrock, Navajo Christian elder, personal communication, 2009). The hogans remained in use for years and provided Navajo families with shelter.

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[2]Peterson Zah's autobiography *We Will Secure Our Future: Empowering The Navajo Nation* (University of Arizona Press, 2012) gives a good description of how he and other Navajo children were taught by their elders traditional values such as hard work and respect.

In the photograph below, the little children are learning the art of caring for their mother's herd of lambs, sheep, and goats by helping their mother. The young girls watched and learned the different aspects of the weaving process. Children became aware of the lengthy process of raising the herd, shearing the wool, carding and spinning it, setting up a loom, weaving a rug, and selling the rug.

Navajo clothing

Navajo elders have been heard to say, "If we dress Navajo, it will be as if we are reminding ourselves to speak the Navajo language" (Francis Alts'iisii, Navajo Christian and elder, personal communication, 1995). Necklaces made of shells or silver and turquoise jewelry adorned every Navajo woman and young

girl. "We Navajo women think of our jewelry as if they are our children. When you are not wearing your jewelry, it is as if you left your children behind " (Helen Yazzie, Weaver and Navajo elder, personal communication, 2005).

The photograph on the previous page illustrates the clothing worn every day by the Navajo people of old. Navajo women and young girls wore beautiful velvet blouses and gathered skirts while Navajo men and young boys dressed in western type clothing. Navajo women sewed traditional clothing for themselves and their daughters to ensure they were properly dressed. Mothers and fathers collected jewelry for their daughters.

Navajo women are beautiful and elegant. The photograph below preserved the beauty and elegance of this young group of Navajo women and girls.

Early formal education: A dark time in Navajo history

Navajo families and children, as all American Indian families and children, have suffered in the name of education. Navajo life, as the people knew it, began to change right before their eyes. Forced education imposed upon Navajo children, parents, and elders a sense of extreme loneliness.

Forced education brought about many changes to the Navajo family. It became a threat to the Navajo language and the lifestyle of the Navajo people. The photograph on the next page illustrates the changes brought about as Navajo children began to attend school. The building in the background served as the girl's dormitory at the boarding/day school at NGM. Absent is the security of the hogan and the presence of extended family members. In their place is the presence of the White teacher. Notice the change in the attire of some of the Navajo children.

What an interesting photograph below! The photograph below makes a person very sad. One can only imagine the thoughts of the Navajo parents when their children came home from school dressed in different attire, speaking a different language, and asking different questions. It was during this time the Navajo children were ashamed to be seen in the "enemy's" clothes. They were forced to bear a deep sense of disloyalty to their people when they wore the clothing of the "enemy." After enduring years of forced education, Navajo children began to question their former existence.

It is possible the children in the photograph above shared the feelings of Joseph Suina. Like Suina, these children were taught to read using the Dick and Jane Reading Series. Suina from Cochiti Pueblo described the effect of how even reading a textbook could make a child question the love of their family:

> The Dick and Jane reading series in the primary grades presented me with pictures of a home with a pitched roof, straight walls, and sidewalks. I could not identify with these from my Pueblo world. However, it was clear I didn't have these things and what I did have did not measure up.... I was ashamed of being who I was and 1 wanted to change right then and there. Somehow it became so important to have straight walls, clean hair and teeth, a spotted dog to chase after. 1 even became critical and hateful toward my bony, fleabag of a dog. I loved the familiar and cozy surroundings of my grandmother's house but now I imagined it could be a heck of a lot better if only I had a white man's house with a bed, a nice couch, and a clock. In school books, all the child characters ever did was run around chasing their dog or a kite. They were always happy. As for me, all I seemed to do at home was go back and forth with buckets of water and cut up sticks for a lousy fire. "Didn't the teacher say that drinking coffee would stunt my growth?" ..... "Did my grandmother really care about my well-being?" (Suina, 1988, 298)

Traditionally, it was the Navajo parents and elders who were the children's teachers. The hogan, the environment outside the hogan was the "classroom" where the children were taught, not in a square room as in the photograph above. Oral history and stories were the way the children learned, whereas a book was a foreign object for teaching. The books contained stories of the life of a non-Navajo family, leading the children to be shameful of their own culture and people (Cummins, 1989).

Absent in the photograph above is the traditional attire of the Navajo children and the long hair that was tied back. A strict teaching of the Navajo people is that Navajo girls and women are not to cut their hair. Wisdom, knowledge, and language are stored in the ends of a Navajo person's hair. Cutting one's hair short would be sending a message to the Creator stating that the person does not want wisdom, knowledge, or language. "When they started cutting our children's hair real short at school is when our language started going away. That is when we started losing our language," (Jennie Manybeads, Navajo Hopi relocation resister and elder, personal communication, 1994).

Navajo elders

The strong faith and hope in the Navajo elder's face in the photograph on the next page is evident as she looks forward. She is devoted to her language, her culture, her children and her grandchildren. Sadly though, her role as teacher, one to transmit the Navajo language to the next generation, and one to convey Navajo traditions and lifestyle to her grandchildren have been denied of her. Because of her love for her grandchildren, she and many more Navajo elders have remained hopeful.

Many Navajo youth insist their Navajo grandparents remain close to them to teach them valuable life lessons to help them remain Navajo. Navajo elders are hopeful the youth will commit themselves to become the caretakers of their Navajo elders to ensure the elders continue to transmit the Navajo language to their children and grandchildren. The health of Navajo elders is essential because Navajo parents and elders are needed to convey the Navajo traditions and lifestyle to the next generation so the entire Navajo Nation can begin to heal itself.

Using historical photographs that students can share with their family members may be a way to encourage Navajo elders to begin to discuss Navajo

life of old, how it has changed, and how Navajo life as the elders know it can be maintained and preserved. The photographs can also be a valuable way to make education relevant and more interesting for Indigenous students.

Note

A question I am often asked is, "How did you get a hold of all these beautiful pictures?" A few years ago, I received a call from a woman at Ameritribes, formerly NGM, who wanted to know if I was interested in obtaining photographs of my mother and father. She stated their archiving of the photographs and documents was complete and they were contacting individuals who they thought would be interested in copies of them.

Needless to state, I was very grateful for the offer and agreed to meet with the archivist in Tuscon. She ushered me into a room with a long table in the center. On the table were three boxes of photographs. I was expecting to be given an envelope containing photographs of my parents, instead I was invited to look through the boxes to select the photographs I wanted. At first, I began the process of carefully picking through the photographs in the three boxes. Before I knew it, the time had passed so quickly. I asked the archivist what they were planning to do with the photographs and she said they were giving the photographs away since they had completed the archiving process. I boldly asked if I could have all the contents of the three boxes and she agreed. I assured her I would use the photographs for educational purposes. My ears were ringing! I was delighted! I was delighted that my people of old were coming home with me.

The questions people ask are, What was the intention of the missionaries when they took pictures of Navajo life, culture, and lifestyle? Were they curious?

Were they wanting to study the Navajo people for their own learning purposes? Did they think Navajo life, Navajo culture and Navajo lifestyle were beautiful? Were they really interested in the Navajo people?

Personally, I knew the missionaries published a brochure for the churches who supported the efforts of NGM. What was unclear was the reason the missionaries took photographs of Navajo life, culture and lifestyle. After speaking to several missionaries, I learned they were used in their efforts to raise money for their salary. When they traveled to their home churches and to other churches that supported them, they made presentations using the photographs to illustrate their work among the Navajo people. As Linda Wisdom, a missionary and former employee of NGM and Ameritribes, put it, "We showed the pictures to demonstrate the need of the Navajo people for missionaries and Jesus in their midst" (personal communication, 2005). The misionaries showed the photographs to ask the church members to support them with prayers and monetarily as they worked among the Navajo people as teachers, dorm parents, cooks, nurses, health workers, adminstrators of the mission and the school, witnesses of the gospel, mechanics, and secretaries, just to name a few of the occupations in which the missionaries served. Some missionaries worked at the mission for many years and others for less than a year.

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