THESIS

PEDAGOGICAL PROCESSES AND ETHNOBOTANIC KNOWLEDGE ON THE PINE RIDGE INDIAN RESERVATION

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ABSTRACT

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While observing the processes of engaging participatory-based methods in developing a culturally appropriate approach to environmental education on the Pine Ridge Indian Reservation, this paper seeks to understand the current perceptions that Lakota youth have of their relationship to traditional ecological knowledge and their local ecosystems, and to understand the role that traditional knowledge serves for the participants today.

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INTRODUCTION

A century's impact of western management approaches has left deep wounds on the Lakota people and their historical lands. The complex socio-ecological systems that comprise the present day area of the Pine Ridge Indian Reservation in South Dakota are rife with power appropriations and their implications. Since the birth of the reservations, the Lakota, like many tribes, have been engaged in constant ongoing struggles. Specifically, obtaining the political autonomy required to overcome the institutional barriers that prevent access to subsistence resources (Clow and Sutton 2001; Ross et al 2011) and decision-making power regarding natural resources management on their historical lands (Sherman 2007). "The combination of colonial and state policies, loss of historical homelands, and over-emphasis on commodity production has devastated both the biological diversity of ecosystems and the lifestyles of indigenous peoples" (Ross et al 2011: 260).

Stewardship of our natural resources presents a growing challenge due to the myriad of demands that humans continue to place on it. Climate and land-use changes reflect the consumption patterns of different sectors of society as well as the need for adequate and appropriate natural resource management goals. Consumption patterns are affecting the physical and socio-economic components of the world around us, thereby impacting aspects of social-ecological systems such as soil fertility, water resources, and habitat for wildlife. Management decisions today are being developed in ways that call for meeting these multiple, and often competing agendas across sectors and policy interests ranging from ranching to conservation to economic development and the use of a suite of natural resources, both renewable and non-renewable.

The Lakota Ecological Stewardship Model promotes the Lakota knowledge system while simultaneously serving as a model for other indigenous nations to modify as they deem necessary to accommodate their specific needs. The motivation for creating the *Indigenous Stewardship Model* was inspired by the Lakota Ecological Stewardship Model to establish a culturally appropriate alternative method for bridging communication between western natural resource managers and indigenous communities. While each element stands on its own and can be pursued respectively, it can also be a part of a comprehensive plan (Interview with Richard Sherman September 2010).

Traditional pedagogy is one of eleven components that comprise the *Indigenous Stewardship Model* created by Richard Sherman (2007). The focus of this component is to teach Lakota youth on traditional means of caring for the environment and their local communities and resonates with the "primary goal of the *Indigenous Stewardship Model* [which] is to revive, record, and implement the ecological values and practices of Indigenous Knowledge Systems" (Ross et al 2011: 239). Sherman states that, "Indigenous pedagogy transfers knowledge from elders to children, in turn empowering children to become the real stewards of the environment in the future" (Ross et al. 2011:241). Empowering youth and elder relationships through stewardship education is an essential step toward enabling them to use their knowledge and experience to further collaborative conservation efforts, and ensure the biological diversity that the community depends on. Sherman goes on to write that, "…damage inflicted on native plant biological diversity and ecosystems needs to be mitigated and remedied, so that viable populations of plants and animals are maintained, fragile habitats protected, and culturally significant medicinal, ceremonial, and food practices involving wild plants and animals are preserved" (Ross et al 2011: 241).

Foundations of the research presented

The basis of the project through which the research presented in this thesis was gathered was guided by the *Indigenous Stewardship Model*. Richard Sherman, a Lakota elder and former wildlife biologist with the Oglala Sioux Parks and Recreation Authority (OSPRA), developed the *Indigenous Stewardship Model* over the course of a lifetime, incorporating traditional ecological knowledge through stories, lived-experiences, and his former position with OSPRA. Since the fall of 2011, I have been graced with the opportunity to learn from Mr. Sherman throughout various projects and consequent discussions. In the summer of 2012, I spent six weeks conducting ethnographic research on the Pine Ridge Indian Reservation. During this time, Mr. Sherman, Michael Brydge[1], and I collaborated with the Little Wound Middle school, teachers, youth and elders to incorporate a multi-generational, two-day ethnobotany workshop into Little Wound's Summer school. Specifically, the creation of this workshop addressed *Element 7: Indigenous Pedagogy: Intergenerational transfer of Indigenous Knowledge.*

Project and research objectives

The goals of the 2012 ethnobotany workshop contained the following objectives: Facilitate the continuation of traditional ecological knowledge through the intergenerational transfer of traditional ecological knowledge, empower youth as knowledge stakeholders, and facilitate the momentum of the Lakota community and other community development initiatives on Pine Ridge through a sustainable model (Sherman 2012: 3).

The aim of my research was to document the processes of a participatory community development initiative from preparation to implementation, to understand the current perceptions

[1] Mr. Brydge graduated with an M.A. in Cultural Anthropology from Colorado State University in May 2012.

that the participants[2] have of their relationship to traditional ecological knowledge and their local ecosystems, and finally to understand the role that traditional knowledge serves for the participants today. My position as a co-facilitator during the planning and implementation processes of this project enabled me to work closely with fellow tribal collaborators and participants. During these interactions I was able to observe and gather feedback pertaining to the processes of a community led participatory project and the multi-generational transference of Lakota traditional ecological knowledge that took place during the implementation of the *Indigenous Stewardship Model.*

Traditional ecological knowledge

Traditional ecological knowledge is defined by Berkes (1999: 7) as the "knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings, including humans, with one another and with their environment." Moreover, traditional ecological knowledge among indigenous folks is embedded in belief systems which *form* indigenous perspectives of the natural world. Such indigenous worldviews are practical and spiritual; reflecting "reverence and stewardship" over domination with ecological practices created through "intensive, first-hand knowledge of the environment, knowledge that was acquired and passed on over countless generations" (Ross et al 2011: 239).

The practical and spiritual dimensions of indigenous engagement with the land have changed over generations. However, the core beliefs and values that emanate from the embedded nature of traditional ecological knowledge still resonate through indigenous cultures in the 21st

[2] Participants included youth, young adults, and elders from the community in Kyle, South Dakota and teachers from the Little Wound School.

century. Wahpetunwan Dakota from the Pezihutazizi Otunwe (Yellow Medicine Village) in southwestern Minnesota articulates the value of traditional knowledge to Native peoples today,

> At the dawn of the twenty-first century the recovery of indigenous knowledge is a conscious and systematic effort to revalue that which has been denigrated and revive that which has been destroyed. It is about regaining the ways of being that allowed our peoples to live a spiritually balanced, sustainable existence within our ancient homelands for thousands of years (2004: 359).

The "spiritually balanced" and "sustainable existence" that Wahpetunwan Dakota calls for is for many indigenous folk, the Lakota included, centered in both cultural revitalization and land restoration. Environmental biologist and social scientist Robin Kimmerer (2011: 258) observes that, "The fate of the land and the consequences for culture are much more strongly linked for Native peoples than for those in the dominant culture." The land contains spiritual connections, and relationships are formed through processes of respect and reciprocity[3]. Furthermore, "Revitalizing language and culture protects and disseminates traditional ecological knowledge, and *builds* [emphasis added] relationships of reciprocity and respect, all of which are good for the land" (2011: 258).

Traditional ecological knowledge & the pedagogical process

Traditionally, Lakota elders were the teachers who passed on knowledge about "all aspects of the Lakota Body of Knowledge." The intergenerational transfer of traditional plant knowledge between Lakota youth and elders is essential for restoring and preserving such knowledge. Furthermore, this pedagogical process promotes the intertwined importance of youth development, community development and natural resource stewardship on Pine Ridge Indian Reservation; bridging human communities and natural communities in a collaborative process to learn, discover, share and act. Mr. Sherman has discovered through his experience leading

[3] The relationship between the land, traditional ecological knowledge, spirituality is fleshed out in the chapter, 'Data Analysis and Interpretation'.

ethnobotany excursions, that the pedagogical process works both ways, sometimes the young teach the elders as well as the elders teaching the young. These interactions mirror Freire's assertions of dialogue which render reflection and action by all participants involved in a pedagogical process (Freire 2000: 125).

The *Indigenous Stewardship Model* stresses the importance of approaching this style of learning through implementing a program that rests in promoting mentoring between elders and youth while emphasizing first hand experiences (Sherman 2007:13) in a manner that is "completely appropriate for the ability level of each child" (Ross et al 2011: 253). The culturally appropriate processes that naturally constitute the transference of traditional ecological knowledge cannot be weighed lightly as they provide a welcomed counterbalance to the dominant western curriculums that mark reservation school systems today. As Mr. Sherman states, incorporating *only* western educational models into Lakota school systems is culturally inappropriate, and often results in negatively impacting the Lakota youth as they are often deemed as "special needs" and thus struggle with difficulties such as "low self-esteem" (2011: 253).

Environmental education as a mode to enhance natural resource stewardship and indigenous communities

Ecological restoration and environmental education in indigenous communities takes on a special depth and dimension. Unfortunately, few studies have looked into the transmission of traditional ecological knowledge as an approach to enhance natural resource stewardship in indigenous communities (Simpson 2002; Reid et al 2002). Thus, further studies are needed to better understand the relationship between the transmission of traditional ecological knowledge as a mode to enhance the transference of stewardship values and community development.

The notion of holistic community development has been accentuated in the current work of academic researchers and development practitioners alike. Although, while some have demonstrated the importance of youth development, fewer have demonstrated it as a mode to enhance community development (see Kizito et al. 2012; Greenhalf and McGee 2011; and Villarruel et al. 2003). The *Indigenous Stewardship Model* provides a practitioner's approach in which youth and elders join together as stewardship partners to ensure healthier youth livelihoods while promoting environmental stewardship education (Sherman 2007:18–19).

While the United States as a whole may average a life expectancy of 77 years, the average age of death on the Reservation is 52 years old for women and 48 years old for men (Chase 2012: 4). Therefore, at even more accelerated rates than other communities knowledge is being lost with each passing elder on the Reservation. Nonetheless, Lakota communities reflect ingenuity and resilience in their efforts as they work to assure the perpetuation of traditional knowledge. Such efforts are apparent throughout the community: Language immersion programs are being incorporated by Reservation schools; Lakota symbols and language adorn jewelry and clothing; contests are often held which require community members to compete against their peers in traditional hand drum songs; and at graduations, students with the greatest Lakota language competency receive special recognition. Several community entities have expressed interest in integrating elements, particularly Element 7 of the *Indigenous Stewardship Model*.

The *Indigenous Stewardship Model* guided the goals of the project thereby ensuring it was culturally appropriate and served the needs of the Lakota community. However, currently there is insufficient literature available on how to engage and evaluate effective environmental education programs in unique cultural contexts (Bray, Clark & Stevens, 1998; James, 1998; Reid et al 2002). This lack of data speaks to the need to better understand the processes which create

culturally appropriate environmental education programs within the context of specific indigenous communities.

The cultural anthropologist's place in community development & environmental education initiatives

Implementing and evaluating culturally appropriate environmental programs can be a complex process. Decades of poorly constructed development and research projects have taken their toll on indigenous folks. Winona LaDuke (2005: 214) writes, Native American communities "have seen more than their share of lemon projects and been ripped off by a long list of unscrupulous and shady Indian agents, corporations, and *wasichus*, "those who take the fat," the Lakota word for white people." Poorly developed research and development projects have resulted in distrusting relationships between outside researchers and the Lakota community today. Presently, it is often the case that many indigenous communities have feelings of research exhaustion, literally. Those conducting research with indigenous communities hear the phrase: "*We've been researched to death*" (Schnarch 2004: 3). Furthermore, many indigenous folks never experience the benefits of academic research as it often stays within the confines of academia "complaints are often leveled that studies are shelved and nothing is ever accomplished" (Elias & O'Neil 2001). Cultural Anthropologists must be aware of the contingent nature that past relationships extend into the present perceptions of indigenous communities.

However, the lack of culturally sensitive research and development agendas is only part of the problem that has contributed to the marginalizing of indigenous peoples. Black liberation movement leader Kwame Turé (Stokely Carmichael) observed that, "Where the old racism ruled through physical violence, racism in its new form asserts its dominance through sheer mendacity (Carmichael 1987). Historian and writer Devon Mihesuah, an enrolled tribal member of the

Choctaw Nation of Oklahoma, writes (2000: 285), “Most Americans know little, if anything, about Indians. To them Indians are people of the past, or drunks of the present who live in poverty and cry at the sight of litter.” Anthropologists are not exempt from those who have perpetuated ill-informed myopic versions of Native Americans today, anthropologist James Clifton’s "The Invented Indian: Cultural Fictions and Government Policies" is a solid example of what Ward Churchill describes as a “new racism” (Churchill 1991). Ian Frazier’s *On the Rez* is another example of the role modern literature plays in perpetuating stereotypes of Native Americans thus actively contributing to the cycle of dominance and cultural appropriation through authorizing the outsider perspective over local indigenous voice and insights.

Taking the *Indigenous Stewardship Model’s* call for collaboration into consideration, and given the aforementioned contextual circumstances that challenges collaboration, how should one proceed in implementing a research-friendly, community development project? In the chapter that follows I critically discuss the role of Participatory Theory as a mode to enhancing community development in indigenous communities.

PARTICIPATORY THEORY

Introduction

Relationships between indigenous communities and social scientists and community development practitioners alike have a history fraught with dilemmas and tensions linked to European imperialism and colonialism. The legacies of past approaches continue to reverberate into practices favored by social scientists and development practitioners today. The practices of the 21st century have emerged from a western research paradigm that largely places the practitioner or researcher as the liable knowledge holder and producer, with the voices and opinions of the indigenous community held as subordinate to the researcher. The term research, as expressed by Linda Tuhiwai Smith (Ngāti Awa, Ngāti Porou) is one of the 'dirtiest' words in the indigenous world's vocabulary (Smith 1999: 1).

The so-called problem of underdevelopment has been attributed and justified by juxtaposing indigenous communities against western communities - but through a western lens emphasizing the ideals represented of rational progress as evidenced by "economics, technology, and management" (Hobart 1993:2). Anthropologist Mark Hobart observes that,

> A largely neglected aspect of such development is the part played by western scientific knowledge. Not only are indigenous knowledge's ignored or dismissed, but the nature of the problem of underdevelopment and its solution are defined by reference to this world-ordering knowledge (Hobart 1993: 1).

The practitioner's project designed to aid the "underdeveloped" communities whom they deem as in need of *their* knowledge and expertise or the academic who skillfully places individuals and communities under an "objective"[4] lens to reveal the 'realities' of impoverished communities are both laden with power appropriation and subjugation.

[4]A participatory perspective according to Wallerstein "is based on the notion that reality is not an objective truth to be discovered (1999: 40-41), it "includes the ways in which the people involved with facts perceive them…[T]he

Smith states that “For indigenous peoples, research has a significant impact that is embedded in our history as natives under the gaze of western science and colonialism” (Smith 2006: 87). While social researchers and practitioners may have the end goal of increasing humanity’s understanding of indigenous cultures or helping them better cope with the issues that they face, ironically the means taken to justify the ends have resulted in feelings of distrust, while actively preserving the social, political and economic *status quo* of hegemonic interests. Indigenous peoples contend that the academic research and development processes are “so deeply embedded in colonization that it has been regarded as a tool only of colonization and not as a potential tool for self-determination” (2006: 87).

To take the implications emanating from the aforementioned viewpoints to heart, one may appreciate the delicate, reflexive and deliberate process they must engage in when making any attempt to learn from, and when working and building collaborative relationships with people. Participatory theory has emerged as a possible method for counteracting the side-effects of top-down strategies and empowering indigenous folks as co-researchers and collaborators. As Catlin Cahill (2007:325) states “Participatory theory offers the potential for challenging the normative production of knowledge by including excluded perspectives and engaging those most affected by the research in the process.” As the theoretical foundation that drove the collaborative planning processes, data collection and evaluation during the implementation of Element 7 of the *Indigenous Stewardship Model*, a brief discussion of the participatory research tradition and its place within the practices of community-based development initiatives is warranted.

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concrete reality is the connection between subjectivity and objectivity, never objectivity isolated from subjectivity" (Freire: 1982: 30).

Community-based development

The ineffective and discouraging outcomes of hegemonic, management, technological and capital-intensive interventions following WWII that marked the self-described "developed countries" development endeavors in indigenous communities resulted in an outcry from the affected communities. The indigenous uproar was the driving force behind growing recognition of the failures of top-down approaches, serving as a catalyst for change as community advisory boards and government and private foundations began stressing mandates for coalitions, and community engagement (Goodman et al. 1993a,1993b; Kaftarian and Hansen 1994; Connell et al.1995; CDC 1997).[5] However, as Hobart reminds us,

> Because the prevailing rhetoric is of altruistic concern for the less fortunate, it is wise to remember that development is big business [...] In one form or another, development is very profitable not just to the western industries involved, but to those parts of governments which receive aid, let alone to development agencies (1993: 1).

These aforementioned drivers marked a conceptual shift toward community-based research in the mid-1970s.

An increasing number of anthropologists had also turned a critical gaze on the paralleled negative outcomes in both academic research and community development agendas during the 1970s from which a new set of sensitivities arose as consideration for social and cultural factors in development activities grew (Escobar 1997: 497). Development practitioners and applied anthropologists began to see the possibility that their practices, couched as they were within their top-down research and development agendas, were "irrelevant to community needs [regardless of their potential scientific merit], a threat to local autonomy and a drain on resources" (Elias & O'Neil 2001). Community-based participatory programs and research agendas therefore are the

[5] Cited by Wallerstein (1999:39).

result of a transition from a "[…] model of research `on' the community to a model of research `with' the community" (Wallerstein 1999: 39).

While the idea of community-based participatory development has gained in popularity, the politically charged rhetoric espoused by development researchers and international institutions such as the World Health Organization have recently come under scrutiny among development researchers and indigenous folks (Wallerstein 1999: 41). Institutions and politics without a doubt serve play an influential part in development initiatives and academia and vice versa. Holbart however brings to light the complexity of this relationship:

> The difficulties of planned economic and social development are not simply the work of self-interested industries and governments. The social and historical vision of the world order, and the rationality which subtends it, has been in no small part constituted and justified by academic writings. [6] Insofar as such accounts are adopted by the governments or people of developing countries as constitutive of their aspirations, they are hegemonic in Gramsci's sense (e.g. 1988: 189-221) (1993: 2).

Participatory rhetoric heralding collaboration, partnership, and verbal displays of counter-hegemonic discourse have recently been accused of being juxtaposed against rather rigid and prescribed agendas (Cooke 2001: 105). Such occurrences have led researchers (Tandon 1988; Chisholm and Elden 1993), as Wallerstein (1999: 41) points out, to "question the authenticity or openness of the participatory process." David Mosse (2001: 29) explains participatory rhetoric has also been a means to further political aspirations in India where participatory development initiatives are "testimony to the diverse agendas clothed in the language of 'participation': government agencies use 'participation' to reach expenditure targets through enrolling in NGOs

[6] Holbart (1993:2) clarifies that "More detailed accounts of such representations and the role of western scholars in formulating them are to be found in Alatas 1977; Said 1978; Pagden 1982; Fardon 1990; Inden 1990; Mason 1990. Most of these authors make use in some way of the work of Michel Foucault (especially perhaps 1961, 1966, [6]1975, 1976), whose approach more implicitly informs the Introduction and a number of essays in this volume."

or community institutions in implementation." Meanwhile others, such as NGOs and academics engage participatory language as a means to secure grant money or for "reputation building".

This section has provided a brief glimpse into both past and current areas of contention in community-based development research approaches. Regardless of the rhetoric such approaches claim to be operating within, the pervasiveness of parasitic top-down, hegemonic approaches continue to create problematic conditions for building fair and balanced relationships around the globe. They not only degrade the perceived integrity of a participatory approach, but the work of the academics, practitioners and indigenous researchers who associate themselves with it and who have had success integrating it as a framework. Thus, academics and practitioners have become increasingly keen to the reality that talking about community participation and truly practicing inclusivity are two very distinct processes.

Participatory discourse & collaborative research: Avoiding the illusion of inclusion

Nearly all social research involves some degree of participation between the researcher and community members (for example asking people to fill out a survey or to sign a petition could be considered a form of participation in some circles). This begs the question, what makes participatory research *participatory*? (Cornwall & Jewkes 1995: 1668). The word "participatory" in its own right, and especially when occurring as part of community-based participatory development rhetoric, *suggests* co-involvement or collaboration. Hampshire (2005: 340) points out that many researchers deem the endorsement of "qualitative methods such as participatory mapping and ranking" as the defining mark of a participatory approach. However, it is not select qualitative methods that lie at the heart of what makes participatory research *participatory*. Employing qualitative participatory methods does not recognize that research in its own right as an active construct that represents a contested space. As alluded to in the beginning of this

chapter, research is rife with the social and political ideologies of the institutions and individuals who design, fund, participate and ultimately publish the research project. Researchers must acknowledge and make overtly known such implicit barriers of distinction and the social expectations and myths that accompany them. Acknowledging such barriers creates transparency and trust, and allows for collaboration to occur in spite of differences that acknowledge the awkwardness of power and representation. The nexus of power differentials within the community itself presents yet another contested space, which must also be recognized and responded to appropriately by the researcher.

Individuals within a given community do not uniformly share interests and concerns, and often represent varying degrees of access to resources and positions of power. Communities are not homogenous, and yet as Chambers (1997: 183) writes "Again and again, outsider professionals treat communities as homogenous." Often outsiders lack an intimate knowledge of local power dynamics, and can thus unwittingly create power imbalances within the community by misappropriating funds, permission, and supporting the marginalization of individuals who are already marginalized (such members usually include the elderly, those who are less powerful and poor, women, the disabled, social inferiors and children) within the community (1997: 183). It is therefore the practitioner's responsibility to ensure that they clearly identify and include the voices and engagement (with their permission) of those who are socially insubordinate.

Johnson (2001:221) discusses how varying levels of capacity of different participants can lead to uneven power dynamics which inhibit collective dialogue and involvement. Johnson, however does not lend forth any ideas on how to deal with such matters when they arise between members of a community as there can be much disagreement within a community over deciding which issues to address and how to address them. Facilitators therefore need to seek out

respected members of that community to help them aid in establishing the community's wants and needs to help ensure that capacity building is not being limited due to outsiders' (such as the facilitators) unknowingly favoring ill-respected members of the community. Pertinent to the success of every participatory research project and the participants involves a collaborative effort to answer key questions concerning the possible roles of both the facilitator and participants. Questions need to be resolved by both the facilitator and community members concerning *what* issues the community wants to address, *who* decides to participate in the research (for example don't assume some want to participate and others do not; ask individuals if they want to be a co-researcher?), *how* they want to participate, and *when* they participate (Bopp 1994; Cornwall and Jewkes 1995; Smith 1999: 10). Thus as Wilmsen et al write:

> [...] choices need to be made about how the community is defined; […] what should be the focus of observation; […]; what variable should be measured; what methods of data collection and analysis are appropriate; what actions, if any, for social change should be taken; and many other aspects of the project (2008: 259).

Along a similar thread of reasoning, Linda Tuwahi Smith (1999) writes that researchers and practitioners must attend to the *particular context* of the community or situation, and then choose the appropriate methodologies that will best represent the needs of the community.

Selecting the best methodologies that serve the goals of the project, the professional desires of the researcher while simultaneously empowering participants can be a tricky process. Barbara Harrison (2001:87) raises a crucial point to consider, "Someone from outside the community may be able to propose a rationale for a new program, but if potential program participants do not 'buy into' the proposal [and consequent methodologies], there is little hope for success." Following Harrison's suggestion it should also be noted that facilitators must be keen to the fact that the social, economic and environmental dimensions of communities are

dynamic and their needs change over time depending on the flux and influence of these systems. Therefore, what may have been relevant during previous collaborative efforts may not have precedence over emerging concerns. Johnson (2001: 218) points out that "capacity building must be fluid and responsive [...]"; therefore, project goals and methodologies must be flexible, regardless of rigid project timelines or expectations, in order to accommodate changes reflected in the expressed needs of the community over time. This facilitates collaboration every step of the way and thus better addresses the issues of the community as they emerge, rather than working towards inappropriate or outdated goals.

Collaborative research proceeds from a two-way exchange of knowledge and capacity. However, for this two-way exchange to occur, certain prerequisites must be in place before such an exchange can be beneficial for all. The relationship between community members and researchers should ultimately be built upon principles such as trust, transparency, reciprocity and credibility in creating a foundation to build sound relationships. Trust proceeds from transparency as transparency requires the researcher to be honest about their intentions (for example, how their involvement with the project fulfills their professional needs) in clearly explaining all aspects of planning, any perceived risks involved, as well as being realistic about expectations.

Aligning the methods and processes of participatory theory to the needs of the community presents a new set of difficulties to researchers and thus presents a learning curve that the researcher will need to adapt appropriately. As Wallerstein (1999: 40) notes "I became painfully aware how difficult it is to walk the talk of participatory evaluation." Several community-based participatory researchers (Harrison 2001; Chambers 1997; Johnson 2001) have expressed that in their experience participatory-based methods require more transparency,

flexibility, reflexivity and patience on the end of the researcher than most other models require. According to Wilmsen (2008: 260) “It takes careful work and careful attention to establishing relationships to bring about such promised results.” However, if researchers fail to adapt their approaches, expectations, and attitudes, then epistemological barriers and power appropriation will continue to be reinforced not only between the researcher and indigenous folks, but within the domains of academia and other institutions as well. More specifically obstacles created by “bureaucratic policies [will continue to] lock scientists into a western political system in which compartmentalization and demarcation of functions and even office structures serve to inhibit incipient partnerships” (Ross et al 2011: 106). Wilmsen (2008: 261) points out that if “participatory-based research extracts knowledge from the community to the benefit of the researcher or researchers, [then] that community is left unchanged or worse off than it was before” and thus falling into the same digression as conventional science.

Bopp and Bopp (2001:155) write about the importance of “networking with resources and allies connecting people and their struggle to others outside the process who can provide support, information, ideas, and possibly money.” A sense of true community or a shared purpose enables people to transcend differences (Chambers 2002: 52). More specifically, networking resources can provide the spark plug needed to form “collaboratives" to maintain partnerships that are “inclusively democratic” and community driven (Bopp and Bopp 2001: 158).

The principles espoused by a participatory approach hold a lot of promise for creating connections through encouraging dialogue between participants. Helping or facilitating these interactions may be necessary in order to make this process constructive through “building relations, developing constructive processes, and eventually building an appropriate sustaining

structure" and thus create one that will move towards evolving relationships conducive to broad-based community action (Bopp and Bopp 2001:144). Reinforcing unity by bringing representatives from various sectors together is critical. Encouraging unity allows cultural differences to be embraced and permits expression, therefore enabling issues to be worked through collaboratively (2001:146). Through achieving aspects of community building and organization through participatory gatherings, Bopp and Bopp (2001:153) suggest that such activities can lead to "increasing social capital by reinforcing values as trust, caring, gratitude, sharing and unity." Chambers (2002: 180) writes about something he calls *interactive equity* that refers to encouraging equality in sharing the time given to interact; quiet people are able to interact without being dominated by those who are more loquacious and so forth.

Concluding remarks

Community-based participatory networks continue past the implementation of the project and into the process of evaluation and data analysis. Essentially, "Evaluation adds the important questions of who judges and interprets the data, with an eye to how the evaluation will be used" (Wallerstein 1999: 49). Adhering to collaborative processes while interpreting the data gathered can allow new opportunities for the participants and facilitator(s) to work together to discern what the projects strengths and weaknesses are, the conclusions of which can be applied to informing future projects. It will be equally important for the researcher to ask for guidance from the community when interpreting culturally specific data and to cross check any assumptions or theories they might derive from data such as survey responses, participant observation reflections, journal responses and so forth. Both cases of collaboration will provide the means to produce meaningful and relevant document(s) that can simultaneously serve the needs of both facilitator and participants.

METHODS

Richard Sherman, former anthropology graduate student Michael Brydge and Kristy Glenn partnered with the tribal entities in Kyle, South Dakota to facilitate a two day, Lakota ethnobotany workshop during the summer of 2012. Collaborators included the Little Wound Middle School Summer School Program, the Kyle Senior Center, the Pine Ridge Area Chamber of Commerce (PRACC), and OSPRA. The workshop included an initial assessment of plant knowledge from the youth and adults, a hands-on excursion which included the identification, collection, and documentation of local native plants, slide show presentations created by youth, a knowledge exchange from youth and elders, and the sharing of a traditional meal prepared from buffalo meat and edibles collected by the youth.

Research was conducted while simultaneously assuring the generational momentum of traditional knowledge and community development on the Pine Ridge Indian Reservation. Richard Sherman, Michael Brydge and I worked in tandem with tribal and non-tribal entities, Lakota elders, and Lakota youth in an effort to strengthen human and natural communities through enhancing natural resource stewardship on the Reservation. Quantitative and qualitative methods enabled us to collect, process, and evaluate the data. The methods used include: structured surveys, qualitative interviews, evaluation assessments, participant observation, journal analysis, and Photovoice analysis.

The goal of using the participatory process and methods is not only to shed light on the educational and cultural experience of the youth, elders and mentors, but also to obtain the perspective of individual participants regarding their perceptions about traditional ecological knowledge and the role that it serves today in their lives and community. The following quote describes the juncture of the methods listed above with the participatory process which guided

the development of the ethnobotany workshop as well as the research gathered. Research guided by a community-based participatory process offers the "potential for challenging the normative production of knowledge by including excluded perspectives and engaging those most affected by the research in the process" (Cahill 2007:325).

The voices of the Lakota community in antecedent research resonant with the perspectives set forth in Element 7 of the *Indigenous Stewardship Model*, and indicate preference for community-centered youth stewardship programs. Responses elicited through a seven year longitudinal (2001-2008) study of 1,800 randomly selected individuals on the Pine Ridge Indian Reservation[7] assert the importance of programs aimed at youth stewardship as a means of providing guidance for the well-being of youth on the Reservation. The results from this study reveal not only a capacious desire among Lakota households to restore local ecosystems[8] but also unveils the perceived potential of youth in "overcoming social conflict and resource fragmentation" through creating projects aimed at teaching stewardship knowledge through pedagogical processes (Sherman, K., Van Lanen, J. and Sherman, R. 2010: 515)[9]. The fact that the *Indigenous Stewardship Model* expresses the desires and concerns of the Lakota community is a strong source of support for the creation of this project in its own right however, in recognition that the Lakota community on Pine Ridge, like any other community, is heterogeneous we drew on these previous studies and subsequent interviews to ensure that the ethnobotany workshop coincided with all members involved in process.

[7]Data presented collected in 2007 from 180 households responding to specific follow-up survey questions about natural resource use and conservation ethics, spiritual perspectives, land sharing and ecological restoration of reservation lands. See Sherman, K., Van Lanen, J. and Sherman, R. 2010; Pickering, K. and Jewel, B. 2008.

[8] Results indicate that 95% of household respondents believe that plants and animals have as much right to exist as humans (Pickering and Jewell 2008)

[9] Research (Sherman, K., Van Lanen, J. and Sherman, R. 2010: 515) results show that 96% of respondents "agreed or strongly agreed that youth and education and stewardship programs should be developed on Pine Ridge."

Identifying community partnerships

Mr. Sherman has led many youth on ethnobotany tours in the past and through this experience indicated a preference to work with middle-age school students. Mr. Sherman selected four middle schools that were in close proximity to areas rich with native plants. From January to May 2012, Michael Brydge and Kristy Glenn under the guidance of Mr. Sherman began contacting schools on Pine Ridge to seek out those interested in partaking in the ethnobotany excursion. Project details were described and discussed with four schools in which feedback from school officials pertaining to youth involvement were solicited. Through emails and telephone calls we proposed the goals of the project by stating the objectives that Mr. Sherman defined which was to facilitate the continuation of traditional ecological knowledge through youth/elder interactions by engaging in a hands-on ethnobotany workshop. This workshop was designed by Mr. Sherman to ensure pedagogical processes and hands-on activities to engage youth as they learn about natural resource stewardship through gaining knowledge of Lakota traditional ecological knowledge.

Interest in facilitating an ethnobotany excursion was solicited through communication efforts with four schools on Pine Ridge. While there was interest expressed throughout all of the schools, we found that the timing of the excursion (between the middle of May and late June) was at a juncture of coinciding factors such as: commencement of school term for summer holiday, graduation ceremonies, and/or construction projects taking place on school grounds. When speaking with a secretary at the Wounded Knee school about the ethnobotany workshop, she expressed interest and her tone further conveyed her excitement. However, Wounded Knee and Crazy Horse middle schools were not able to participate due to graduation ceremonies taking place and then youth leaving for summer break. American Horse School was also very interested,

but due to construction taking place at the school they would not be able to accommodate the facilitation. In mid-May, we met with the Little Wound School and spoke with Superintendent, Linda Hunter. Prior correspondence with the school had not yet led to solidifying partnerships concerning the planning and execution of the ethnobotany excursion at the school. The Little Wound Superintendent was in favor of the ethnobotany excursion, and suggested working it into the summer school activities. The Superintendent directed us to the Special Education Director, who also expressed her interest in the ethnobotany workshop. Thus, we began working on plans to integrate the excursion appropriately into the summer school's activities and it was through our collaboration with the Special Education Director that the organization of the ethnobotany workshop's incorporation with the GEARUP (Gaining Early Awareness and Readiness for Undergraduate Programs) and Special Education Summer program commenced.

Impromptu partnerships were created and networks formed through interested community members as well. While helping another field school student with her research one day at PRACC, I was introduced to a PRACC staff member who, following our conversation about the ethnobotany workshop, expressed a desire to involve the PRACC high school summer interns as well. The engagement and education of participants such as teachers and students from Little Wound and elders from the District were well received and provided a positive experience for those involved.

Other partnerships, such as OSPRA and the Kyle Senior center were acquired through suggestions from members of the community. Thanks to Mr. Sherman's prior employment at OSPRA we were able to engage the interest and help of OSPRA. Meanwhile, the Special Education Director was able to connect us with the Kyle Senior Center.

Collaboration with partners

Facilitating collaboration was necessary during every step of the project in order to lay a foundation from which we could adequately address any issues and concerns that may arise from the participants in regards to the project rather than those that we merely perceived. Initially, we thought that it might be easier to have the community meal at the school and then invite elders from the community to the school. During one of our discussions with the Special Education Director, we asked if the school cafeteria would be an appropriate place to host the community feed. The Special Education Director informed us that the school's kitchen must adhere to [strict federal health codes. These federal health codes were in contended with the fact that the meal would consist of incorporating wild plants collected during the excursion, and buffalo meat obtained through OSPRA. The Special Education Director suggested that it would be best to have the community feed at the Elder Center in Kyle, where local elders gather throughout the week for lunch.

Each community organization involved represented a unique role in the process of planning the workshop. In the weeks preceding the workshop, ongoing communication either in person or by telephone with the Special Education Director, OSPRA, Kyle Senior Center coordinator and PRACC was necessary to communicate and plan to best fit the needs and schedules of everyone involved. One of the many lessons I learned about the logistics of planning was that talking in person with people is a lot more effective than by phone or email. This continued to be true for me throughout the entire planning process. Communication and personal interaction with the Senior Center was critical as we worked together to inform each other of the estimated needs and supplies for providing the meal, as well as setting up an area from which the youth would present their slideshow. Visits to the OSPRA office in Kyle took

place once a week in the four weeks leading up to the workshop. Communication with OSPRA was also necessary in planning the workshop as they provided the group with access to the buffalo pasture and buffalo meat for the stew at the community meal. Originally, a field biologist from OSPRA was going to accompany us on the excursion, however a turn of events within OSPRA management resulted in understaffing and thus the field biologist was unable to forfeit a workday to join us. Visits to PRACC were also necessary as the interns had a busy schedule of events and activities during the month of June, of which we had to plan around.

The Special Education Director from Little Wound Middle School suggested that we include all summer school students to participate in the workshop. Participants therefore included all summer school children who were present during the days of the workshop. The attendance of summer school students varied greatly from day to day, ranging from five students to twenty students. This aspect made it very important to engage in ongoing communication with the Special Education Director so as to plan for food and supplies accordingly. Three teachers accompanied the ethnobotanical excursion, along with five Lakota young adult interns from the PRACC. Glenn and Brydge facilitated small groups while Mr. Sherman led the excursion through OSPRA's south buffalo pasture in Allen, SD.

Syncing quantitative and qualitative methods with collaborative processes

In order to determine the extent to which knowledge was transferred, we implemented a 25 question plant identification quiz prior to Mr. Sherman's introduction and field trip to establish baseline data of the extent of plant knowledge the youth and elders held before engaging in the plant instruction and excursion. This initial baseline data was compared with a post-excursion test to assess what knowledge was transferred. For example, prior to Mr. Sherman's presentation we asked the youth and mentors to match pictures of the plants with the

names of plants. Mr. Sherman's selection of plants for the quiz reflected those commonly used on the Reservation and/or plants that would be viewed and discussed during the excursion. Once we arrived at the buffalo pasture, Mr. Sherman discussed the field worksheet activity where youth, mentors and elders collaborated together using their field guides to identify plants found in the Buffalo pasture and then matched such plants to a corresponding list that included the scientific, common and Lakota names of plants. When they were finished with the activity, Richard gave a presentation to the group, discussing in some detail the Lakota uses of the plants found in the pasture and how and when to harvest such plants. During our lunch break, journaling was engaged as a method that served as an opportunity for youth to reflect on the morning's lessons and experiences. This consisted of asking the youth to reflect and record in the provided journals concerning their thoughts on the excursion thus far as well as commenting on pictures that they took and their reasons for taking them. This proved to be useful in gathering feedback relevant to Mr. Sherman and planning of future projects as well as to myself, as their reflections offered a glimpse into what aspects of the knowledge or experience stood out for them. At the end of the day, another test identical to the first was distributed and completed. Upon comparing the results of the two tests we were able to evaluate what knowledge was transferred.

The intent of engaging Photovoice was not to serve as a primary method, but rather to provide another means in which the youth could express the aspects of the experience they felt were meaningful. Adhering to participatory principle of building inclusivity via maintaining transparency between collaborators, I discussed the relevance of engaging the Photovoice tool in the project. Endorsements from both the Special Education Director and Mr. Sherman were received.

Photovoice provided an additional method of data collection to gather feedback of the youths' experience. Employing visual methods to gather insight from youth is valuable, because rather than duplicating data, it has been proven to generate responses that offer complementary insights and understandings from the youth that might otherwise be limited when deriving responses from only written or verbal interviews (Darbyshire et al 2005; Strack et al; Wang & Burris 1997; Wang & Redwood-Jones 2001). Therefore, Photovoice offers an additional technique to capture that might otherwise be limited by relying on a single method.

Before the group departed to the buffalo pasture, participants were briefed on the basics of digital camera use, the Photovoice concept, guidelines for taking pictures and the goals of the project. Guidelines for taking pictures included taking pictures of whatever they encountered that they felt was important or meaningful to them. Keeping this open ended allowed space for personal reflection and freedom to capture what they deemed as meaningful. The importance of care and respect for the cameras was emphasized along with the basics of taking photographs, viewing them on the digital camera screen, and deleting pictures was reviewed briefly. At the end of the second day of the workshop during the community feed, the youth and PRACC mentors worked together to display and present their images to the elders, selecting images that they felt the most compelled to share.

The three main goals of Photovoice consist of the following: enabling people to record and reflect their community's strength and concerns, promoting critical dialogue and knowledge about important issues through large and small group discussion, and reaching policy makers (Wang and Burris 1997: 369). Photovoice is a research method that allows not only hands on participatory involvement, but also requires individual members of the community to explain their stories behind the photos they took (Kenny 2009: 100). Photovoice encourages group

discussion on the meanings behind the photos and those of which most accurately reflect the views and concerns of the community (Kenny 2009: 100). Essentially, it allows for action and reflection to take place at the same time (Freire 2000: 41). Digital cameras were distributed to the youth and mentors during the excursion portion of the workshop. Six of the cameras used were acquired through donations of previously owned cameras from the faculty and students of the Mathematics Department at Colorado State University - Fort Collins, while the remaining four cameras were purchased at a Kingsoopers in Fort Collins, Colorado. We discovered that the donated cameras were more reliable and provided higher quality photos than the discount digital cameras purchased at a grocery store in Fort Collins, Colorado. Two out of the four discount digital cameras were not working consistently during the workshop. However, since there were ten cameras overall and nine youth and mentors, one of the teachers who had the tenth camera gave her camera to one of the youth. The two remaining participants with the discount digital cameras paired up with students who had the more reliable cameras. The majority of photos from the discount digital camera that consistently worked resulted in images with grainy resolution, with some photos of decent quality. This student chose one of the other student's photos that she liked and presented on during the presentation with the elders.

Observations of the processes of participant engagement and involvement were recorded throughout all stages of the workshop. Five anthropology field school students were along during the first day of the excursion to record their observations, while only two field school students were available on the second day. During both days I was quite busy interviewing students, teachers, and mentors however I jotted down reflexive and observational notes when I could and also maintained a reflexive journal throughout the entire planning and workshop processes.

The Special Education Director of the Little Wound school district requested that we utilize the Elder Center in Kyle to facilitate youth/elder interactions among elders who were physically unable to make the trek through the buffalo pasture during the plant identification phase of the workshop. Thus, the following day, the Elder Center prepared a meal from the plants that were harvest by the youth and buffalo meat from OSPRA. Students presented in groups of two or three, with at least one mentor in each group to the Lakota elders who had gathered at the Senior Center in Kyle for lunch. Each youth created 2-slide power points and explained to the elders, and other attendees, their most enjoyable experiences or the most interesting fact they learned during the excursion; further, they showcased corresponding photographs taken during the excursion. Following the presentations, Mr. Sherman distributed certificates to the youth, mentors to recognize their completion of the program. Lunch was then served with youth and mentors taking the initiative to serve the elders first. During the meal elders began discussing their stories of growing up on the prairie, eating soup made from wild plants and meat, and picking traditional plants.

Evaluation Assessment

Two surveys were distributed, one designed for the youth and the other for the mentors, elders and teachers. The difference between the two surveys was only reflected in questions concerning the youths' and elder's interactions. The questions on the youth survey pertained to their interaction with elders and the elders, teachers and mentors survey questions pertained to their interaction with youth. The surveys were distributed pre-excursion as well as post-excursion in order to compare responses that might indicate how the ethnobotany experience resonated with them, and if any changes in perception arose. Quantitative data gathered included: age, gender, school year, tribal affiliation. The Likert scale was used to indicate general feedback

in relation to the participants' perceptions on: the importance of plants on the Reservation, knowledge of plants, perceived individual and communal connection to nature, and perceptions of new knowledge gained. The Likert scale engaged is as follows: 1) Unimportant, 2) Of Little Importance, 3) Sometimes Important, 4) Important, 5) Very important. Each Likert scale question had a space under it where the participant could expand on or further explain their answer. The survey also contained open ended questions where the participants could provide their answer in as little or much detail as they desired. These questions were related to youth and elder interactions both during the excursion and in general, their perceptions of the excursion and their general satisfaction or dissatisfaction concerning it, and concerns of human impacts on the environment.

Quizzes, as described above, were also distributed both pre-excursion and post-excursion. The content of the quiz focused on matching names of plants to pictures of plants. The plants represented in the quiz were chosen by Sherman as species commonly used on the Reservation and/or plants of which could be viewed and discussed during the excursion. The purpose of the first quiz was to gather baseline data upon which the results from the second quiz could be measured. This was conducted in order to measure to what extent the knowledge was absorbed by the youth, mentors, and teachers.

A field worksheet activity was used during the excursion in which youth, mentors and elders collaborated together using their field guides to identify plants found in the buffalo pasture and then matched such plants to a corresponding list that included the scientific, common and Lakota names of plants. As suggested by Sherman, the participants kept these worksheets after the excursion, as the purpose of engaging them was to serve as an education tool. Completion of

these worksheets, as well as the interactions that they facilitated, provided a useful opportunity for participant observation.

Journaling was another participatory-based method engaged. This method was employed in order to receive feedback from youth in a less structured manner than the surveys, as they were able to record in their journals at any point during the excursion that they desired. The youth recorded in journals about their thoughts on the excursion, as well as commenting on pictures that they took and why they took them. The purpose of journaling is to provide an opportunity for the participant to reflect and respond without being prompt or guided by particular questions that the researcher concocts.

Participatory observation was conducted and documented from the preliminary stages of gathering interest to the engagement of the project. Aside from observation notes taken by myself, during the excursion on the first day, five CSU anthropology field school students provided feedback, and during the second day two field school students were able to provide feedback.

Informal interviews were conducted with teachers, youth, mentors and other community members in Kyle throughout the summer pertaining to their perceived interests in the project, to gathering ideas and input in relation to implementing the workshop. Many times these interviews would develop into a conversation, prompt by the person I was talking with, about the need and desire for a continuation of traditional knowledge as well as the importance of passing traditional knowledge to Lakota youth.

Concluding remarks

The conclusions of my analyzing and interpreting the data is verified by triangulating the above sources and contents, and having participants review my interpretations for feedback and

critiques, as well as offer any advice for implementing and planning the excursion in future years. Thus, the final set of interviews were conducted with a thirty minute interview with the Special Education Director on November 15, 2012, as well an hour-long interview on March 18, 2013 with each of the two teachers that participated. The interview questions pertained to eliciting an explication of the information provided through their survey answers gathered during the workshop. I also gathered their feedback on my attempts at coding their value orientation to plants and natural resources in relation to particular survey responses. Through consulting with the teachers I was able to cross check my own interpretations by discussing my perceptions of the participant observation notes of youth behaviors and youth-elder interactions during the workshop as well as particular youth responses. Beginning in August of 2011 and extending to the present, Mr. Sherman continues to serve as my primary contact with whom I frequently discuss questions and concerns relating to further understanding Lakota traditions and culture.

SETTING

Introduction

The Lakota people have an immense and rich history. However, the description of historical circumstances provided here have been narrowed down in light of the concerns and issues that arose during the many discussions with members of the Lakota community on Pine Ridge I have had over the past couple years. This historical description has been issued with the intent to provide a context from which to better understand "the contested ways people invoke the past to talk about the present and the present to talk about the past" (Cruikshank 1998: 2).

The displacement that the Lakota faced through being removed from their traditional territories created not only a physical and geographic disjuncture, but a social and cultural one as well. Compounding the loss of land and Reservation borders was the imposition of a foreign political structure, boarding schools, and the thwarting of traditional activities and ceremonies.[10] Such attempts to assimilate the Lakota have constrained the capacity of individuals and the Lakota community to pass on traditional values to their children and have taken a toll on Lakota youth right up to the present (Kirmayer et al. 2000).

Participants reported that traditional Lakota knowledge has eroded on Pine Ridge Indian Reservation and expressed concerns about extending what traditional knowledge is left to Lakota youth today. To understand this project's importance for the Lakota it is pertinent to discuss the historical factors that have contributed to the loss of land, traditional ecological knowledge and the socio-ecological issues.

[10] Also noted by Kirmayer et al (2000) are the influence of missionary activity and male-oriented Victorian values.

Processes of dispossession

The process of dispossessing Native Americans from the land not only led to the creation of reservations, but was coupled with attempts to "civilize" and deconstruct Native American ways of life (Spence 1999: 32). Much of Native American history, as stated by Vine Deloria, Jr. (1989) "is the history of land." Robertson (2002:3-4) argues that the socio-ecological issues that critically concern the present day Lakota community are closely linked to the "extension and administration of US colonial rule and to the integration of the land base into the market system."

Prior to European migration to America, the Lakota had existed entirely unfettered by European hegemonic powers. Gradually, with an ever broadening need for land and resources, the US reacted to the "Indian Problem" (Miles 2005[1879]:153) with increasingly pervasive forms of various power apparatuses exercised through the creation and implantation of institutions within the following domains: military, government, and civic institutions such as education. The aforementioned institutions have confronted generations of Lakota people and their cultural practices in various ways (Fenelon 1998:72). Many native tribes reacted against US military policies and thus represented a serious threat to such advancements (Spence 1999: 31). Land was first lost through a "series of treaties, and later through negotiated Agreements, then legislated Acts" (Ross et al 2011: 139). By 1885, the Lakota no longer roamed the Plains, but were resigned to the boundaries of the Great Sioux Reservation (Biolsi 1995: 28).

Since the formation of reservations in the 1880s, the US government has deliberately attempted to challenge the Lakota and other Native American people of their culture in favor of creating more 'civilized,' 'progressive' peoples (Fenelon and Hall 2009: 98; Robertson 2002:33; Pickering and Jewell 2008:151). The bureaucrats creating the early reservation and land policies had virtually no knowledge of Native American culture or way of life, and as result, such "efforts

proved disastrous for Native American people" (Spence 1999: 30). Spence (1999: 30) provides a quote from historian Richard White depicting White's account on this process, "The reservation system grew like Frankenstein's monster, bolted together from the corpse of the older hope for a permanent Indian territory west of the Missouri." Like many Native American tribes, the Lakota were inherently tied to their landscape through their subsistence lifestyle and spiritual beliefs.

The Lakota have held Wind Cave in the Black Hills as one of their most sacred sites for centuries due to it being their place of origin. Wind Cave is the hollowed site from which all life emerged and is where the Lakota "emerged from the living, breathing cave that protects the lungs of the Black Hills ... and on an out breath in the Creation time, life was breathed into humans and buffalo" (Ross et al 2011: 196), and is home to the feared and revered *Wakinyan* (Thunder Bird, Thunder Being or Thunder Spirits) (Halder 2003: 106). The Black Hills serves not only as an important site for ceremony today, but also served as a critical source of shelter, food and water during the winter months for the Lakota prior to 1877.

Attempts at removing and relocating the Lakota from the Black Hills came through a series of US military excursions beginning most eminently in 1874, followed by ongoing Lakota resistance. After four years of struggling to restrain the Lakota bands, Congress passed the Black Hills Act in 1877 (Halder 2003, Fenelon 1998: 140). Following the dislocation from the Black Hills, the boundaries for the Great Sioux Reservation stipulated by the Fort Laramie Treaty of 1868 were drastically reduced in 1889 by the Sioux Act (Robertson 2002: 20-21; Fenelon 2002:83). The Sioux Act took nine million acres of Sioux land and designated it as public land, creating opportunities for white homesteaders, while establishing six separate reservations (Robertson 2002:28).

The assassination at Fort Robinson of the great Lakota leader, Crazy Horse, in 1877 (Standing Bear 1928: 84; Young Bear 1994: xxix), and the Black Hills Act in the same year foreshadowed not only the US government's increasing zeal to subdue the Lakota people in an effort to gain control over the land they called home, but also the influence of colonialism on the increasing stratification and tensions within Native American communities. "The mid-1800s were years of great upheaval and confusion brought about by a more powerful government intent on the destruction of our reverence for life" (Littlemoon 2009: 15). Referring to his father, who was a *Heyoka*, or medicine man, born in 1894, Walter Littlemoon states:

> It was not an easy thing to be in those days because the rulings from the US Indian Courts outlawing our spirituality were still in effect. Men were punished severely for practicing traditional ways. Everyone on this reservation was to be Episcopal as declared through Presidents Grant's 1870 "Peace Policy" … Those rulings forced our spiritual practices to "go underground" for over one hundred years (2009: 18).

The Lakota community continued with traditional customs when living under duress (Fenelon 1998: 287-294). Biolsi's paper, "The Birth of the Reservation" (1995: 44), views Lakota "traditionalism" as a "source of recurrent resistance to domination-from the time of the Ghost Dance in 1890 to the occupation of Wounded Knee in 1973." The US government specifically barred the Sun Dance in 1883 statutes, but this proved to be insufficient, as secretive practices of Sun Dances continued to be carried out, and "more precisely typified a form of resistance that would ultimately become directly tied to cultural survival of traditional Lakota spirituality"; hence "Lakota resistance, and therefore survival are linked to cultural sovereignty" (Fenelon 1998: 87).

The Lakota's relatively autonomous culture caused considerable frustration to the US government. Biolsi (1995: 46) states, "Neither the state apparatus nor the capitalist system is, nor can be, omnipotent; instead, each generates its own peculiar contradictions." In 1887, the US

crafted the General Allotment Act, which divided communally held tribal lands into individual parcels, some of which were obtainable to outsiders. Walter Littlemoon writes, "to this day, much of our land is still held in trust by the US government and is not freely ours" (2009: 18). Through her many years of working with Australian aboriginal peoples, Deborah Bird Land has observed that land is intimately linked with social organization and kinship affiliations to the extent that any disconnect between people and their land results in an immediate impact on social structure and power relationships (Rose 1996a, 1996b).

The Allotment policy however, was not merely limited to securing land for US interests, but also included the aim of disrupting the traditional band structures held together through the *tiyospayes*[11] by abolishing the power of the chiefs. During the 1880s, the US government, via the Bureau of Indian Affairs (BIA), an agency developed by federal government within the US Department of the Interior, started breaking up *tiyospayes* through the compounded effect of retaining their movement to restricted spaces within the Reservation as well as through the withholding and granting of rations (Weinberg 2001: 11). A drought struck and aided the suppression of the Lakota, as starvation became eminent; forcing many to rely on government promises and rations (Young Bear 1994: xxix; Robertson 2002: 70). Once the Lakota were "emproperited as individuals" the state was in a position to "stand above" and "represent" the "common interest" (Biolsi 1995:34). Mandatory deterioration of the traditional political system regulated by the *tiyospaye* occurred as the Lakota were confined to the federally determined Reservation boundaries. The BIA replaced former tribal leaders with compliant tribal members as new leaders, making Reservation leadership ultimately accountable to the federal government.

[11] The *tiyospaye* was the "core of society" for the Lakota and still serves a vital role in social organization today. Prior to the reservation, the *tiyospaye* was comprised of extended family networks which served as the primary camp or "lodge-group" and thus regulated "kinship and societal functions, such as production, consumption, and protection" (Gibbon 2003: 180).

Meanwhile, they labeled the Lakota people who cooperated as “progressive”; while the Lakota who defied the agency’s views were labeled as “backward” (Biolsi 1995: 35).

Processes of “civilizing”

The US government was set on transforming traditional hunter-gatherer families into small-scale farmers and assigned BIA agents to ensure Lakota cooperation. The implications of the government’s actions were clear as they “equated removing Lakota people’s culture with removing them from nature” (Ross 2011: 140). The Lakota’s traditional subsistence methods were standing in the way ‘progress.’ The juxtaposition of “civilized” against “primitive” facilitated the notion of a “progressive civilization” thereby serving as the ideological justification for land dispossession, political subjugation, forced assimilationist schooling, and natural resource development for capitalistic pursuits.

During the late 19th and 20th centuries young Native American children were taken from their families, and forced to enroll in boarding schools far away from their homes (Jacobs 2006: 202). Their cultural heritage was deemed inferior to the dominant White European culture, and as a result “All things Indian in a child were to be destroyed” (Littlemoon 2009: 89). Boarding schools prohibited the children from speaking in their native language, wearing traditional clothes, and from engaging in any native cultural rituals or practices (Iadicola and Shupe, 2003: 31). Margaret Jacobs (2006: 202) argues that, the underlying intention of non-Indians in placing Indian children within boarding schools was to make them “useful” to non-Indians. The farms, orchards, sewing rooms, and machine shops that were part of the boarding schools were viewed as educational experiences for the students. The aim of providing work related experiences to ensure quality education was far from the truth. On the contrary, the schools’ were subsidizing their operating costs from items produced by student labor (Pickering 2000: 24). The curriculums

in boarding schools were designed to benefit employers who could exploit Indian labor (Jacobs 2006: 203), while simultaneously attempting to dispossess them from their traditional way of life (Iadicola and Shupe, 2003: 31).

The United States government deliberately displaced Indian children from their homes to boarding schools under the guise that assimilation was necessary to help them become 'civilized'. In reality, however, the act of displacement was to maintain control over them. Walter Littlemoon (2009: ix) describes his boarding school experience as, "The boarding school experiences attempted to get the children to betray their culture, their sense of morality and their relationship with the Creator, with nature, and everything that they understood to be human."

Concluding remarks

Ultimately, the combination of factors such as murders of kin during events such as the US military siege at Wounded Knee[12], starvation policies, and fracturing of families through forced attendance of children at boarding schools has without question interrupted the cultivation of traditional knowledge as well as limited the intergenerational transfer of knowledge between youth and elders in the Lakota community. Walter Littlemoon states that,

> Every generation in my family has been impacted by the laws of the US Indian Courts, written in the 1800s, forbidding us to practice our spirituality and cultural traditions, forcing our people to pray, sing, and dance in hiding. Although we were finally given freedom of religion in 1979, much of our knowledge of traditional practices has been lost (2009: 84).

Winona LaDuke (1999: 149) citing the work of Maria Brave Heart-Jordan a Lakota author, points out that the allotment process was and continues to be especially detrimental to the quality of life felt on reservations. LaDuke supports Brave Heart-Jordan's assertion in that the loss of self-sufficiency and low self-esteem results in part from a lack of access to reservation

[12] The United States Army killed over 300 Lakota (majority of which were women and children) on December 29, 1890 near Wounded Knee Creek on Pine Ridge Indian Reservation. The majority of

lands, where lack of access is attributed to the leasing of those lands to non-Indian ranchers[13]. Shantz (2010: 230) further notes the extension such atrocities can have within the physiological domains of human bodies on the Reservation, "Cultural disruption has been linked to high rates of depression, alcoholism, suicide and violence in many communities, with the greatest impact on youth."

[13] Maria Yellow Horse Brave Heart-Jordan, *The Return of the Sacred Path: healing Historical Trauma from Unresolved Grief among the Lakota*, Smith College dissertation, 1995.

DATA RESULTS AND INTERPRETATION

Based on the results from the interpretative participatory qualitative study of the integration of the *Indigenous Stewardship Model* into the Little Wound Middle School Summer Program, the ethnobotany workshop was successful in cultivating and preserving traditional Lakota ethnobotanical knowledge of native plants, building social connections through the transmission of cultural knowledge and creating hands-on, positive experiences for Lakota youth and young adults. In addition, the mix of quantitative and qualitative participatory methodologies employed in this study was successful in yielding useful feedback for future ethnobotany workshops on Pine Ridge Reservation.

Through interviews and interactions with the Lakota community in Kyle[14] I was offered a glimpse into the multiple functions that traditional ecological knowledge has today which provides a better understanding of how the transmission of cultural knowledge and values can play a role in influencing the outcomes of environmental education programs in these areas. Just as many of the participants often reminded me during our interviews that their views do not necessarily speak for the entire Lakota community, it's important to make note of this aspect again and acknowledge that the responses elicited here are not in any way meant to encapsulate the entire community or trends overall.

Understanding the data required situating it within the appropriate historical context. The incorporation of supplemental literature was also necessary to provoke a better understanding of the data. Through the process of cross-analyzing the data several themes emerged, particularly

[14] Interviews were conducted with various members (see Methods chapter) of the Lakota community in Kyle in May and June of 2012. Special Education Director of Little Wound School was interviewed in November 2012, and the Little Wound High School English teacher and Middle School Math teacher were both interviewed in March 2013. Interviews with Richard Sherman have been ongoing since September 2011.

the importance of hands-on activities, place, interconnectedness of humans, nature and community, and identity. The importance of traditional ecological knowledge was reaffirmed by both youth and elders. What was most notable while analyzing the responses and the follow-up interviews was that Lakota traditional ecological knowledge and the process of pedagogy not only reinforces learning and values associated with environmental stewardship, but has other benefits as well. I employ Bourdieu's concepts of cultural capital, *habitus* and social capital to analyze the relationship between Lakota culture, pedagogy, community and traditional ecological knowledge.

Practical engagement

Lakota traditional knowledge is cultivated through practical, everyday hands-on engagement with their local ecosystem. A notable characteristic of the pedagogical process of traditional ecological knowledge is the hands-on engagement with nature that the learning process requires (Sherman et al 2010: 508). Traditional knowledge cannot be learned from reading a book, but is taught by directly engaging with others in one's community and with the surrounding landscape. Recalling memories from her childhood, the Math teacher from the Little Wound School expressed to me that she "[L]earned how to harvest plants from her grandmother" and further explained that "[M]y grandmother learned from her great grandmother who was a medicine woman." She stated that "[W]hen I was a little girl, my grandmother would place tobacco in place of the plant after harvesting. I learned by *watching* her that is what you do." She emphasized this element of watching as she learned from her grandmother how to harvest plants as well as the spiritual component of harvesting and showing gratitude which is often shown

through "offering tobacco and praying."[15] Merleau-Ponty writes, citing the work of Paul Guillaume on imitation in children, 'we do not at first imitate others but rather the actions of others, and [. . .] find others at the point of origin of these actions' (1964: 117; Bourdieu 1977: 87)[16].

The very nature of the intergenerational transmission of indigenous ecological knowledge results from processes of long-term knowing, learning, and remembering (Ingold 2000; Davidson-Hunt and Berkes 2003; Nadasdy 2003; Sherman et al 2010). Interestingly, hands-on activities during the workshop were perceived by the youth as encompassing their most favorite activities during excursion. In response to the question, '*What was your favorite part of the day?'* Digging and/or finding *timpsila* was the most frequent response in the survey, interview, and journal responses. "Digging *timpsilas*" was the most favorite activity among youth, mentors and elders alike. A side conversation with two of the youth and the teacher's aide revealed that this activity marked the first time that they had been involved in actually digging up *timpsila.*[17] While they said that they had ate wild turnips before they had never been actively involved in identifying the plant and digging them up. The second most popular response included "searching for plants" and "identifying plants"," followed by "looking for flowers" and "taking pictures of the plants." While "being outside" was cited by one of the participants as of their favorite part of the day, this aspect was also noted by the teachers during interviews that hiking outside in a buffalo pasture constituted a unique experience for the youth, mentors and adults alike. The only complaints were that some of the participants felt the weather was exceptionally

[15] Unless specific otherwise all interviews with the math and English teacher mentioned this section were conducted March 2013.
[16] See Ingold 2000: 358 (complete citation under 'References').
[17] Looking back it would have been useful to include a question in the survey to elicit if the workshop activities constituted new experiences for the youth, mentors and adults. However, the impact of novel experiences did shine through during side conversations with participants.

hot. Overall, however, being outside and being involved in hands-on activities was clearly a novel experience and a valuable one as well.

The appropriateness of such activities is also reflected in the extent to which the participants could recall information. Journal entries were rich with examples and the names of plants that had been focused on during the morning session. For example some expressed the attainment of new knowledge such as: “Well I learned some new things about the Lakota and how they used medicine and like, when they used them for soldiers in the army when their men are hurt” and “Today I learned that there are a lot of types of plants. Some heal wounds. Some give toxics. One type of plant is edible. If you eat the berry, it will make you not thirsty anymore [referring to ground plum].” The most common plants mentioned in the journal reflections by the youth in reference to finding them during the excursion include: poison ivy, lead plant, ground plum, coneflower, low fleabane, common yarrow, field pussy toes. And, some of the reflections regarding the photos that were taken were expressed in the following statements: “I think I took this picture because I like what it looks like. I took pictures of flowers that where in the book that we had and I took a picture of a flower that its leaves look like cups;” “I took a lot of pictures of different plants like a woolly verbena and a gray goldenrod and a field bindweed and a meadow rose and Indian hemp and some other plant I took picture of some flowers that I don't know their names and the trip was fun walking around looking for flowers with Michael and I took a picture of a Buffalo.”

Furthermore, the value of hands-on activities and knowledge transfer was evident from the increase in quiz scores as the youth and mentors performed strongly on the final quiz, indicating that they had been actively engaged throughout the excursion, absorbing the information presented. Out of the students and mentors over 70 percent of them improved their

score from the initial quiz (given before the excursion) in comparison to the post excursion quiz. Also, during a follow up interview[18] one of the teachers mentioned that they had an interaction with a participant which demonstrated that knowledge was retained at least in some students throughout the summer. The English teacher stated that one of the middle school participants came in to her class with poison ivy, the English teacher asked her if she remembered which plant helps with poison ivy and the youth responded, "The sticky one." The math teacher also had an experience with a student who demonstrated that she retained at least a portion of the ethnobotany lesson by identifying *timpsila.* She stated that one of high school mentors "stopped in her class back in August" to tell her that over the summer "she went out with her cousins to look for *timpsila* and they could not find any so they started singing the *timpsila* song and then *timpsila* started showing up."

Traditional knowledge and adaptation

Traditionally, Lakota ecological knowledge implied an ability to survive on the land. Although it is no longer a necessary means for survival, today it yields not only practical value, but symbolic value as well. On the practical side, the transmission of traditional knowledge can be especially valuable when living in a marginalized economy (Pickering 2001). Richard Sherman in Ross et al (2011: 238) explains that the weak market economy on the Pine Ridge Reservation has made it difficult "for Lakota residents to be fully employed in wage work or to develop small businesses in the mainstream model." While the weak market economy presents significant challenges, the Lakota have been able to incorporate traditional knowledge in creative

[18] Follow up interviews (one hour each) with both the math and English teachers were conducted March 2013.

ways, enabling them to make ends meet. For the Lakota and other indigenous communities, Daskon states that,

> [R]ecognition of and support for the realization of the potential of their own culture and traditional values will be critical in attaining livelihood security and sustainability. People instinctively make the most of their beliefs, norms, customs, traditional knowledge, religion and spiritual elements and other creative sources to meet diverse livelihood objectives (2010: 1081).

While helping organize the ethnobotany workshop it was brought to my attention that some of the knowledge holders within the community are able to earn funds by extending their knowledge to the greater public off the Reservation such as sharing creation stories with tourists at Wind Cave National Park and teaching at the local college (Oglala Lakota College). Meanwhile other Lakota have used their knowledge to incorporate into their business. During my visit to the Reservation in March 2013, I met a woman who had just started up her own business near Kyle, S.D. While at her place of business I noticed she had bags of dried leaves, swaths of sweet grass and bundles of sage for sale. I asked her what was in the bags and she told me it was "*ceyaka*" a tea made from wild varieties of mint, in this case it was creek mint, which she had collected from a nearby creek the previous fall. She went on to tell me all the benefits of drinking this tea which included: "soothing stomach issues, stress relief and the cooling menthol qualities make it nice during hot summer days." I asked her how she knew all of this and she said that "[M]y grandma taught me a lot when I was little," but that she also sought out others in the Lakota community with ethnobotanical knowledge when she got older because she wanted to know more. Berkes (1999: 27) explains that, "Each generation rediscovers its cultural knowledge and must combine what is remembered from the past with what is experienced in the present." The aforementioned example indicates that even if the practical use of traditional

knowledge is not immediately helpful, it by all means can be later on in helping the Lakota adapt to changing and at times challenging economic conditions.

Place-based environmental stewardship

The connection between the land and traditional ecological knowledge is inextricably bound for the Lakota. Keith Basso an anthropologist who has worked extensively with the Apache explains that, “When places are actively sensed, the physical landscape becomes wedded to the landscape of the mind” (1996: 107). Lakota elder Walter Littlemoon writes,

> My ancestors’ tribes had such a simple code to maintain social harmony, and they followed that code without words or thought because it was as natural as breathing. My grandparents were attached to the land they had lived on. They knew the land provided all they needed to live. The plants, the animals, water, air, and humans were all a part of the brotherhood of life on earth (2009: 15).

During a conversation I had with a young adult mentor from the Pine Ridge Area Chamber of Commerce last summer prior to the ethnobotany workshop, we discussed his recent four day camping trip in the Black Hills where he helped chaperon some of the local school children who attended. After talking for some time about the rainy weather and how tired he was from watching the kids and sleeping outside (something he apparently was not accustomed to under the given circumstances), he went on to explain that the experience was “really awesome.” Without taking much time to reflect on what he had said, I asked, "What it was about the trip that was great?" I thought surely his choice of the descriptive word "awesome" must have arisen from a significant event or encounter. He looked at me kind of puzzled and said, “Just being there, being able to camp in the Black Hills...You know that it’s sacred to us, right? It’s where we came from.” Though I had heard that the Black Hills were sacred and was said to be the site of origin of the Lakota, in my ignorance I had not realized the significance of being physically present in the Black Hills and the impact that this had on the young adult’s experience. Edward Casey

(1993: 33) writes that "the cultural dimension of place contributes to the felt destiny of a particular place, the sense that there is something lasting in it." Casey goes on to explain how places "last not just by the perdurance of material constituents but also by the binding force of cultural restraints."

Traditional ecological knowledge as embodied, place-based cultural capital

Traditional knowledge develops from and is maintained through cultural, social and economic activity and represents a form of embodied cultural capital (1986: 243), or a set of place-grounded practices enduring "in the form of long-lasting dispositions of the mind and body." Cultural capital is created in part from the social relationships that form as a result of existing within a particular place. In his essay *Human Values and Natural Systems,* Rolston indicates how humans are constantly repositioning themselves to their environment through a cultural lens that also reflects the changes in nature. It follows that, "[embodied] cultural capital needs to be understood in terms of the places where it can be negotiated" (Corbett 2004:463).

Homes Rolston writes,

> No culture develops in independence of the environment on which it is superimposed, no matter how relatively free humans are in their cultural options [...] The human differences include conscious self-affirmations and heritages for which nature provides little precedent. But nature first is never twice the same, and the idiographic features in nature blend with those in culture to particularize and enrich the combined story (1988: 277).

An individual and society's orientation to place forms a unique relationship overtime, thereby creating its own specific set consequences. Place however, is not limited to the natural world, but is impacted by various individuals and their corresponding values which encounter these places.

As with many indigenous peoples around the world, cultural blending is a reality and has become another filter on the lens through which Lakota people view their surroundings. An interesting outlier to the rest of the responses in reference to what places or things in nature that the youth perceived as their family being connected to,[19] one of the Lakota youth wrote that his family connected most to the burrito stand. This response proves interesting in light of the cultural blending that has taken place between Lakota people and other ethnic groups over the past several decades. In the 1950s and 1960s, Hispanic workers and Lakota were often recruited to harvest potatoes on farms in Nebraska and these annual meetings resulted in some intermarriage as well as sharing of cultural traditions. One of these traditions took the form of food and is evident in the community of Kyle today as one of the few eating establishments is a small burrito café, Angie's Burritos.

Cultural blending has resulted in a multi-ethnic composition in the Lakota community on Pine Ridge, which has taken place through assimilation, acculturation, and intermarriage with non-Natives, and like most other communities, "Individuals and communities manage this diversity in different ways" (Gibbon 2003: 208). The teacher expressed during an interview, that her "mother's side of the family are very traditional Lakota, however [her] father's side is Episcopalian", and although less traditional than her mother's side she added that "they still observe and respect traditions." She further explained that at the Episcopal Church she attends the woman pastor often speaks in Lakota. The Lakota community is heterogeneous; there are many English-speaking Lakota who live on or near the reservations, many of whom practice a combination of Lakota spiritual practices and/or Christian beliefs (Pickering and Jewell 2010).

[19] In response to the pre-excursion survey question "*Are there particular places or things in nature your family is connected to the most?*"

The workshop participants expressed connections to particular places on the Reservation with responses falling primarily in reference to native plants and "Sundance grounds". Other responses ranged from "sweat lodge", "home", "Black Hills" to "open areas" while one of the elders wrote, "People are connected to their surroundings and share their plants/berries." Basso (1996: 110) writes that "places and their meanings are continually woven into the fabric of social life." The responses from the youth, mentors and teachers provided on the pre-excursion surveys in relation to their perception of why plants were important[20] were largely in reference to the cultural connection that was denoted to certain plants through uses such as "ceremony", "medicinal" or "traditional food." Furthermore, the single most commonly mentioned plant[21] in the youth journals, youth and elder interviews and surveys was sage. In an interview with Mr. Sherman he stated that sage is "primarily associated with ceremony" where prior to the ceremony "it is used to clear the room of bad spirits." Whether it be sage, ceremonial grounds or the Black Hills, features of the landscape and natural world can not only "become symbols of a culture [but also] the enduring moral character of its people" (1996: 63).

Community

Consistent with traditional knowledge as actively unfolding through processes of knowing, learning, and remembering, "Knowledge is socially constructed and is situated in time, space, and culture" (Marshall et al 2008: 140). Understanding the role of Bourdieu's *habitus* is important because it disposes individuals to act in certain ways based on their experiences, upbringing, education, environment and is also influenced by the histories and experiences which, through the process of socialization, become internalized (Bourdieu 2007[1972]:72). The

[20] In response to the question "*Are plants on the rez important to you?"* They indicated on a scale from 1-5 how important plants were to them and had the option to further discuss under "Why?"
[21] Frequency of plant names tallied over all data collected during the two day workshop.

dominant organizational principle for Lakota communities on Pine Ridge is kinship relations (Deloria 1998 [1944]: 120; Pickering 2000:11; Ross et al 2011:238; Fenelon 1998:210). Although *oyate*, in Lakota, is often used in reference to community, the Lakota like many other indigenous peoples do not limit their sense of what encompasses a 'community' to only humans. Duane Champagne explains how *oyate* entails more than the unity of the Lakota community with other communities, but extends to encapsulating the Lakota community "with the spirit beings of the universe, including the plants, animals, water, wind, fire and the entire collection of beings that make up the universe" (2007: 107).

For the Lakota, humans only comprise a part of the whole and it is how they perceive their role as humans within the universe that further exemplifies beliefs and roles that are important for community members to exercise. Therefore, a sufficient understanding of the Lakota *oyate*, must be carried out within the context of understanding the sacred relations and obligations that the Lakota have toward other spirit beings. In March of 2013, during our interview the English teacher expressed that "[W]hen harvesting the plants, I like to offer the spirits tobacco to give thanks" she further explained that she doesn't usually carry tobacco on her unless she intends to harvest plants, and in the case she doesn't have tobacco to offer then she prays adding that "it's a good feeling to feel grateful."

Tobacco and praying were the most often expressed by the elder participants as the symbolic offering of gratitude. Mr. Sherman explained to me that, "[I]t is not what you offer [in the material sense] but more your intention that is important." A sense of responsibility "to the more-than-human world are simultaneously material and spiritual, and, in fact, the two are inseparable" (Kimmerer 2011: 257). One of the elders expressed her intention to me during the excursion to the buffalo pasture as she told me, "There's a song my mother taught me that she

would sing when we picked chokecherries together. Whenever I'm collecting plants I like to sing it, but only if I am alone…I prefer to sing than pray. There's a stronger connection I feel when I sing." The "stronger connection" she describes is indicative of how the Lakota[22] cognize the natural world as an amalgamation of spiritual representations of which all interconnected. During one of our meetings, Mr. Sherman shared the following quote by *Chief Luther Standing Bear*, a member of the Oglala Lakota tribe who was born on the Pine Ridge Reservation, to help me better understand this relationship of "interconnection":

> From *Wakan Tanka*, the Great Spirit, there came a great unifying life force that flowed in and through all things - the flowers of the plains, blowing winds, rocks, trees, birds, animals - and was the same force that had been breathed into the first man. Thus all things were kindred, and were brought together by the same Great Mystery[23]

The idea of reciprocity with the natural world is common to many indigenous philosophies, as Kimmerer states (257), "Indeed, such beliefs serve as the foundation for what have been described as "cultures of gratitude." The Lakota community is not independent of the natural world, and the values are reflected in the ways Lakota orient themselves to nature and are reflected in their social relationships. Duane Champagne (1997: 13) articulates the connection between the social and natural world well, "While social relations and institutions are sacred and require mutual obligations and responsibilities [...] social relations and institutions are part of a set of rules, relations and community with all beings of the universe." *Habitus* is what positions each individual within a field, it is "the framework within which the value associated with [cultural] capital is established" (Kelly and Lusis 2006:834). Therefore, attributes of reciprocity

[22] Here "Lakota" is in reference to my conversations with the Lakota elders and teachers, in which it became apparent that expressions of reciprocity do not merely stem from their practical engagement with resources and their community, but rather reflects their spiritual orientation to the natural world. THE youth did indicate this relationship of interconnectedness in their survey responses; however I did not ask them to extrapolate this relationship to me.

[23] See Nerburn 1999:36 (complete citation under 'References').

and generosity as expressed by the Lakota in their relationship with the natural world is also embedded in everyday interactions within the Lakota community. The individual's role within a kinship system is unique and reflects the values and demands of that system itself. Sherman (1988:15) states that because of the reality of extended kinship ties, an individual finds that any money which he accumulates is not his own. The moral system of kin relationships demand that an individual share with his/her relatives. Bourdieu states that *habitus* is a quality of groups, as well as individuals, and provides the framework through kinship relations which serve as a key element in social reproduction (Bourdieu 2007 [1972]:25).

Mr. Sherman told me several times that the Lakota are very giving people and I certainly felt this sense of reciprocity during my time there. When driving away from the Little Wound School after my interview with the English teacher in March 2013, I saw someone waving me down alongside the road next to the school. It was the English teacher who had run out to give me two posters and a few bananas for the drive back to Fort Collins. I had made a scrapbook with Mr. Sherman's plants notes and pictures that the youth had taken and given one to each of the teachers. My intention was to bring a gift to thank them for *their time;* I wasn't expecting anything in return. Generosity and reciprocity continue to have a strong influence today as it did in the traditional life way of the Lakota. Ceremonial give-aways and community feeds are an important feature of sustaining Lakota livelihoods which help balance income disparities by redistributing goods and resources to kin networks and the community. Give-aways and community feeds, for example, are hosted by a family or families who accumulate goods, which are usually, collected a year in advance in honor of a ceremony such as a graduation or wedding at which time the goods are redistributed back to the community. Subsistence activities such as hunting for wild game and harvesting native plants play supplementing the desirable food

resources to be shared between kin. Pickering and Jewel (2010: 138) explain that, "Householding is a crucial element of the Pine Ridge economy, where subsistence and self-sufficiency are common terms used by Lakota households to describe their economic ideals."

The *tiospaye* or Lakota extended family, serve as the foundation for the Lakota economic system. A key feature of subsistence societies, such as the Lakota, is the absence of exclusive ownership or resources by any single kinship group, rather resources are shared by a number of kinship groups (Ross et al. 2011: 238). Traditionally, Lakota leadership was organized within a system that valued group consensus, honor and respect. The kinship group was dependent on one another and encouraged the cultivation of each individual's unique talents within the *tiyospaye* (Ross et al. 2011:238; Sherman 1988:7). Richard Sherman (2011: 253) writes that today "some of this inclusiveness has been lost." Vine Deloria explains, "Even the most severely eroded Indian community today still has a substantial fragment of the old ways left, and these ways are to be found in the Indian family." Deloria goes on to write that the family, "Was a rather multigenerational complex of people where remembering a distant ancestor's name and achievements might be equally as important as feeding a visiting cousin or showing a niece how to sew and cook" (2001: 45). In the Lakota language children are known as *wakanyeja*, "*wakan*" meaning sacred (Morrison and Locke-Flying Earth 2003). Lakota families' desire for *nagi ecel iyapi* (balance) must be maintained through the *tiwahe* (family), *tiospaye* (extended family), and *oyate wiconi* (community) (Allen et al 2011: 349). Familial structures within Native American communities do not resemble the nuclear family that is representative of American families. During a discussion I had with Mr. Sherman about family structures on Pine Ridge, he stated that according to Lakota culture, "it takes a community to raise a child." Aunts and uncles, grandparents and family friends can all serve as mothers and fathers, so that there will always be

someone to take care of the children in case something would happen to their immediate family, and therefore surrogate parents are common. Mr. Sherman also stated that when he was a child the elders called every little child "*Takoja*" or grandchild, regardless of whether they were their genetic grandchild or not. Mr. Sherman stated that he taught the children of a close friend of his how to hunt over the years and they continue refer to him as "Uncle Richard". The use of such terms in Lakota culture "apply to a broad range of relationships, some consistent with western kinship, some consistent with Lakota kinship, and some purely fictive" (Pickering 2000: 6).

The spiritual phrase used at the end of prayer and speeches, "*Mitakuye Oyasin*" which means "All my relatives," speaks to the above idea as well; it means that everyone and everything is connected. Therefore, one's connections to "relatives" not only extend beyond blood relatives to the greater community, but also extend to the physical and cosmological environments[24] (Pickering 2000:6). In indigenous societies, unlike in American culture[25], the role of the individual is not esteemed over the role of community. As I have explained previously, the social organization around community lays at the heart of Lakota livelihoods. Furthermore this "social organization is based on kin relationships, land and resources" (Ross et al 2011: 320).

Pedagogy is an integral component within the fluid composition of Lakota ecological knowledge. During the community feed on the last day of the excursion one could witness the bridging of the generational gap between youth and elders. An older man was explaining to one of the 5th grade boys about tradition, but was using modern day references as he referred to what his grandfather used to use to dig up wild turnips, a *Wopta* stick to dig *timpsila*, there was a mark on the stick to show how far to put it in the ground to reach the *timpsila,* while they were using

[24]The Lakota do not distinguish between these environments, but rather perceive them as interconnected.
[25] See Chapter 14 (Individualism and Equality in the United States) by Nathan Glazer, In: *Making America: the society and culture of the United States,* edited by Luther S. Luedtke.

the stick, they were giving thanks while harvesting the food thanks to *tunkasila* or the Great spirit. The elder went on to say that today vast majority use a shovel, but you have to be careful with the shovel because it will nick the turnips - "[M]ust be a shovel from Wal-Mart, not K-Mart," he jested. This conversation between the elder and the boy show that show how traditional knowledge, like Lakota culture is not stagnant, but dynamic and creative.

In a follow up interview the English teacher shared that her favorite memory of the workshop was "[T]he storytelling under the tree during lunch," adding that "[T]he kids really tuned into that." Stories are often told over and over again and reinforced through hands-on experience that put elements of the story into practice, impressing it onto one's mental map. The continuation of traditional ecological knowledge, as a social construct requires more than simply recording it or reading about it from a text, rather "it has a particular role within these social processes of which is to be developed within a social, rather than individual, framework" (Ross et al 2011: 320). Indigenous knowledge is dispersed across the community as it relates to and reflects the local ecosystem niches and thus it is not centralized. Knowledge is formed through social processes and it is dependent of the function of communication between social agents where "the different knower's are required to come together to share their knowledge in a social system that facilitates the integration of knowledge to produce a holistic understanding of the environment" (2011: 320). Lakota spiritual beliefs underlie the traditional beliefs that govern the pedagogical processes through which traditional ecological knowledge is accessed, verified, and transmitted. This illustrates that although traditional ecological knowledge, like culture, is fluid and dynamic; the preservation of traditional ecological knowledge is sustained through maintenance of core values and beliefs pertinent to the indigenous *habitus* and perpetuated through the transmission of social and cultural capital.

When speaking with the mentors and the teachers at Little Wound Middle School last summer, it became clear that their interest in the ethnobotany excursion had comparatively less to do with gaining practical knowledge of the plants in a material sense and more to do with the chance to learn about the *Lakota uses* of the plants. I had talked with one of the mentors prior to the excursion about the possibility of getting the PRACC interns involved in the ethnobotany excursion -- upon hearing me describe the project ideas that Mr. Sherman had laid out, he had become very enthusiastic about getting involved. As we talked, it became evident that projects rooted in traditional ways, such as the youth ethnobotany workshop, were something that he perceived as important in its own right for youth to have the chance to learn about their heritage, and it was especially critical for youth and young adults to learn about such Lakota traditions and culture from an elder within the community. Vine Deloria Jr. (2001: 46) writes, "Traditional knowledge enables us to see our place and our responsibility within the movement of history as it is experienced by the community." Furthermore, it is through culturally relevant processes such as pedagogy that help students affirm and accept their own cultural identity (Ladson-Billings 1995).

Identity

The study of identity is a rather amorphous and daunting task to philosophers and social scientists alike, and is no less complicated within the realm of indigenous studies. Indigenous identity as described by Lakota author and social scientist Hilary N. Weaver (2001: 224) "is a truly complex and somewhat controversial topic. There is little agreement on precisely what constitutes an indigenous identity, how to measure it, and who truly has it." The following analysis on identity, however, applies to the topic as it has emerged from the voices of the Lakota people with whom I interacted. The focus is centralized within the connection between

cultural identity, traditional ecological knowledge and wellbeing among Lakota youth. In particular, it is reflected in the cultural components of place, community and spirituality of which are expressed in the responses that are to follow.

Social relationships play a very important role within creating or impeding societal functions and thus reflect the power of social networks in influencing the individual behavior and beliefs within these systems. Identity came up often in relation to the perceived benefits Lakota participants felt in relation to traditional knowledge. During our follow up interview, in response to the question, "*How do Lakota youth and adults benefit from learning about traditional knowledge?*" The English teacher responded: "[I]t helps validate who we are, keeps you grounded." In response to the same question, the Math teacher exclaimed that learning about traditional uses of plants has a significant impact on youth. She said, "[It] gives them a sense of self, identity...makes them feel proud, makes them feel good, more Lakota." During the ethnobotany workshop, feedback from the participants demonstrated that they were very pleased with the workshop. When discussing the teacher's remarks with Mr. Sherman, he reminded me that while many youth and young adults readily soak up traditional stories and teachings there are however, other Lakota youth who don't want anything to do with practicing Lakota traditions.

Many indigenous authors and scholars such as Deloria, Smith, Sherman, Weaver, LaDuke, Momaday, and others write how returning to traditional ways has the potential to stimulate positive reactions from youth, claiming that learning and practicing traditional ecological knowledge is a proactive route for healing the wounds of colonial past while simultaneously empowering Native communities through self-determination in confronting the barriers of the neocolonial present. "Prayer, ceremony, and storytelling actively regenerate Lakota tradition, developing a sense of relatedness that extends beyond colonial categorization"

(Petrillo 2007: 82). As Daskon (2010: 1081) states, "Cultural values enhance people's ability to be agents of change, and their ability to question, challenge, propose and ultimately bring in new ways of doing things." Bourdieu argues that social networks are the foundation for creating social cohesion as they "create spaces wherein people can gather, find common ground and take collective action to accomplish their purposes" (Magis 2007: 17). Cultural values can become actualized through practical engagement with the land and through creating intergenerational networks, can be beneficial for youth and elders alike "in terms of positive self-esteem, intergenerational interactions, and restoring traditional values" (Ross et al 2011: 239). Intergenerational interactions during the workshop created positive interactions and memories for the participants involved.

Brave Heart-Jordan, who is from Pine Ridge, argues that the Lakota's unresolved grief, what she describes as "a repercussion of the loss of lives, land, and aspects of culture rendered by the European conquest of the Americas, [is a] significant factor contributing to current Lakota social pathology" (LaDuke 1999: 148).[26] Nowhere is this more apparent than in youth today. During the follow up interviews with the teachers, I asked what the challenges facing youth today were in their opinion. After a long pause, the first teacher I interviewed stated, "Depression and apathy." She proceeded to say that it was a combination of factors that perpetuate such dominant feelings among the youth including: lack of role models, poverty, high suicide rates, and deaths resulting from car accidents. As the English teacher spoke of the suicides and deaths she gestured behind her, where there was a wall with pictures of students and newspaper clippings. She nodded to the left side and said "It's important to keep their memory alive." She

[26] Maria Yellow Horse Brave Heart-Jordan, *The Return of the Sacred Path: healing Historical Trauma from Unresolved Grief among the Lakota,* Smith College dissertation, 1995.

went on to say that she has had 60 of her students pass away since she has been teaching at Little Wound (this number didn't include elementary and middle school students at Little Wound). I asked her how long she had been teaching and she said 26 years. Later into the interview, a male student came in and handed her some change and she then handed him a candy bar from her desk drawer. During her brief interaction with the male student she commented on the black and white beaded necklace the boy was wearing with an Air Jordan emblem on it. She complimented the beadwork and the student replied, "Thanks, my brother made it." After he left the room she turned to me and said, "His brother is in prison now." She then looked back at the wall and said that a family friend had recently lost their daughter in a car accident near here [Kyle] and so the English teacher had started a college fund in her honor, nodding at the drawer where she put the money the student gave her. She said "OLC [Oglala Lakota College] is expensive, traveling, books [...] this will just be enough to help them get to school or buy groceries."

For Native American youth, positive experiences with their community and heritage are directly related to self-esteem, while indirectly related to alleviating mental health issues (McShane 1988). As explained previously, the Lakota community is in many ways connected to the land and resources, and therefore, "There are cultural and spiritual reasons for needing access to natural resources, and community healing that flows from restoring the connection between Lakota identity and the wild resources of the land" (Ross et al 2011: 242). The everyday experiences of "Bourdieu's theory of practice sets out to re-embed perception and cognition within the practical contexts of people's ongoing engagement with their environments in the ordinary course of life" (Ingold 2000: 167). The English teacher described how "[P]lants like sage and willow" resonate with qualities described as "[S]imple, humble and revered" and learning about their uses and using them keeps us "[I]nterconnected with the environment and

grounded [...] can't separate the well-being of the people from the environment" she said. For the Lakota, animals and humans are relatives -- *Wolakota* means living in spiritual harmony with nature, peace, friendship, and a respectful relationship between human beings and all other forms of life.

The Lakota youth demonstrated perceptions of interconnectedness to nature through their orientation to place, community and symbolic purposes. If environmental values are situated within the particular cultural context from which such value-oriented cognitions arise then Lakota environmental education agendas should reflect such values. However, traditional ecological knowledge is transmitted through *active social learning* and is not something that can be read (as explained earlier). The very essence of Lakota traditional ecological knowledge is a part of the social tissue of the Lakota. More importantly the myriad of social and individual benefits that accrue as a result of the content and pedagogical processes are pertinent to the difficulties facing Lakota youth today.

DISCUSSION

The data gathered from the ethnobotany workshop along with supporting literature has clearly indicated the importance of traditional ecological knowledge as a culturally appropriate, place-based approach to environmental education on Pine Ridge. Turner et al (2008: 48) cite four elements that impede the acquisition of traditional knowledge as identified by Ohmagari and Berkes (1997) including: 1. Changes in the educational environment and peer influence. 2. Effects on the diminished time available to spend in traditional skills resulting from formal schooling and wage employment. 3. Problems related to learning traditional skills at later ages or delayed transmission. 4. Effects of changes in value systems. Elements one, and four were brought up by participants and are discussed below.

Interviews with the teachers indicate that there is a disconnect among the youth between their perceived symbolic importance of the land and their practical engagement with it. The Math teacher expressed technology as a concern for preoccupying youth away from practical engagement today. While she emphasized that she wasn't speaking for everyone, just those that she is around such as her family and some of her students, she stated that,

> I didn't have electricity as a child and every summer we used to go out a pick buffalo berries together, but nowadays they don't go outside that much, they spend their time watching television or on Facebook, making friends all around the country, but are not playing outside with their friends here...Some students go hunting, and there are still some that collect berries, but other students get caught up in technology.

She went on to add that, "When I hear a loon that reminds me that spring and summer are coming, I can remember hearing that sound when I was little and associating it with springtime and still every time I hear it reminds me." Indicating that she is cognizant of her surroundings in

an intimate way, of which lends itself from the memories and lessons she formed as a child spending time outdoors.

The Lakota community on Pine Ridge Reservation like many other indigenous and western communities is living with the inundations of globalization. A common concern expressed among Lakota elders I spoke with was the perceived negative impacts of media on young Native people. Anthropologist Duane Champagne illuminates that this fear exists among other indigenous folks as well, “Inuit elders complain that their children know more about the Los Angeles Lakers than about their own cultural teachings [and] Hopi and Navajo elders fear that their languages are disappearing among their children and blame television” (1997: 339).

In his 2008 best-selling book, “Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder”, Richard Louv discusses how children in modern society have become increasingly withdrawn from nature. Louv addresses “nature-deficit disorder” a term he uses to describe the multi-scale changes in modern society by the coupled impacts of technological advancements, urbanization, and economic development (Foehr & Rideout 2005, Clements, 2004) and changes in land tenure, population growth (Cordell, Bergstrom, Betz & Green 2004), as well as the effect of sensationalist media coverage contributing to a culture of apprehension that doesn't encourage kids to play imaginatively outdoors. While, the Lakota participant responses do not speak to the latter, they do speak to the former. Also implicit to this thesis topic is one of the many questions raised by Louv in light of the aforementioned cultural trends, "*Where will our future stewards of nature come from?"*

Follow-up interviews with the teachers further demonstrated the barriers that the school systems face today in incorporating traditional forms of knowledge into the curriculum. Bourdieu’s (1986) concept of the use of cultural capital helps us understand the limitations and

situated nature of incorporating traditional ecological knowledge into streamlined western curriculums. As Webb et al (2202: 110) point out, "Education is an important field because of its capacity to confer capital, particularly cultural capital, upon its participants […] the field of education plays a critical role in reproducing dominant social relations and structures." Bourdieu recognizes that the value of capital gained from educational institutions can only be transferred among social fields which recognize and share this value. Traditional ecological knowledge, represented here as a form of cultural capital, markedly contrasts with western science-based ways of learning and understanding the natural world.

The curriculums within the mainstream school systems largely reflect the dominant culture's educational preference. Since reservation schools must abide by standards set by the state of South Dakota, it follows that their curricula are also to a great extent determined by the state. The *Indigenous Stewardship Model* recognizes the need for Lakota youth to learn both the western scientific and Lakota traditional forms of knowledge. However, while many Lakota see the need to incorporate both forms of knowledge, the mainstream education system does not recognize the value of incorporating traditional forms of knowledge. Reid et al make a poignant claim:

> Despite the apparent pedagogic, economic, and environmental value of traditional ecological knowledge in assimilating, applying, and integrating traditional ecological knowledge systems within environmental management and education, traditional ecological knowledge remains of marginal interest to mainstream western education systems (2002: 124).

The English teacher expressed such frustrations of trying to incorporate traditional knowledge into the current curriculum. She stated,

> Curriculum is content driven [...] moving more and more in the direction of content being pushed to increase test scores [...] It used to be easier, we used to do more [referring to Little Wound School in general, as well as in her classroom] to incorporate more Lakota stories and we used to incorporate more of the

> traditions during school ceremonies, but since the No Child Left Behind went into place, improving test scores has taken priority [...] we are gaining in test scores, but losing in culture.

The Math teacher also discussed during our interview how the, "TFA (Teach for America) teachers are content driven, only have one year here and then they leave. They are usually fine teachers, but they don't have much investment in the community just treat it as a job, not much investment in the community." She went on to add, "[I]t's not the best for the kids either, they need to see the same familiar faces when they come back year after year. They need that consistency in their lives."

The twenty-first century presents a new set of not only environmental challenges, but economic challenges as well, and indigenous and rural communities alike face difficulties of "integrating the wisdom of past generation with the reality of the present" (Kimmerer & Lake 2001, Kwan 2005). While nearly all the Lakota that I spoke with would agree with the statement that traditional knowledge is being lost with each passing generation, I think it is also important to note that both teachers have not been quick to surrender their values under the current structural constraints. Both teachers noted that they do find ways to incorporate Lakota traditions and teachings despite the challenges of their curriculum. The Math teacher stated that she has her home room class reading "Land of the Spotted Eagle" a book by Lakota author and storyteller Luther Standing Bear during their study hour at the end of the day. While stressing the value of focusing on spiritual beliefs, the Math teacher also emphasized that her home room class will "[P]ray on Monday mornings." The English teacher said that in her classroom they start everyday with prayer songs sang in Lakota because it helps us "[B]e grateful, thankful for what we have. It's good to take time to slow down and think of others." I asked her what type of

prayers they say and she responded that there is "[N]o one set prayer" explaining that it's more of a type of "[M]editation for myself and the students."

Concluding remarks

Lakota traditional knowledge is embedded within broader cultural traditions which serve as a foundation from which Lakota self-identify with and generate values from. Values represent enduring beliefs that correspond to preferred modes of conduct, which are reinforced and adjusted simultaneously by both the community and the individuals who comprise it. This corresponds with Bourdieu's notion of *habitus*, which was introduced earlier in this chapter. Furthermore, it is the functioning of *habitus* which maintain traditional ecological knowledge as a recognized form of cultural capital within the Lakota community. Traditional ecological knowledge creates social capital by way of pedagogical processes. It follows that, worldviews are formed through a culturally specific lens and sets in motion social norms which influence the community (Bourdieu, 1999). To this end, social capital reinforces a moral dimension to understanding the implications influenced by cultural capital as well as social capital. Environmental values are thereby culturally constructed as they reflect the multiple ways in which people perceive of the world.

CONCLUSION

Environmental ethics scholars, such as Arne Naess (1989) and Aldo Leopold (1949), have long recognized that environmental philosophies, values, and ethics vary from culture to culture. The historical and economical contexts that underpin communities are unique. These particular contexts play a critical role in shaping environmental values of the present (Nakanishi & Dawia 2006: 147). To some extent, our disposition toward the natural world is guided by basic attitudes and beliefs that we have been introduced to from early childhood onward. These inherited attitudes regarding our particular outlooks on nature are derived from both our personal experiences and the influence of our community or social groups (Taylor 2011: 51). Thus, what constitutes environmental ethics in a given culture is a reflection of how individuals and communities in that particular culture relate themselves to their surroundings. Environmental values are inextricably linked to both the historical and social existence of humans in relation to their land (see Hiatt 1982: 13-26). “In other words, environmental value is a kind of human cognition limited by the way we live at a given time” (Rowlands 2000: 17-33).

Value orientations

For social scientists understanding an individual’s value toward the natural world is important because as Manfredo (2008: 142) states will help us “understand how that [individual] will think and behave in wildlife-associated situations.” In order to better understand value orientations to the natural world, researchers often implement survey or interview questions to elicit responses related how individuals orientate themselves to the natural world. Analysis of data is conducted using frameworks or typologies whereby responses are coded for specific values (see Manfredo 2008; Kellert 1997). Kellert’s typology of wildlife values is recognized as one of the more popular approaches among social scientists (Manfredo 2008: 144; Hunter and

Brehm 2004). Kellert's typology identifies nine basic value orientations that individuals tend to have toward wildlife and the natural world. These value orientations include: Utilitarian, naturalistic, ecologistic-scientific, aesthetic, symbolic, humanistic, moralistic, dominionistic, and negativistic (Kellert 1997).

While analyzing the survey data[27] I attempted to follow the lead of past researchers and encapsulate the survey responses within Kellert's typology. Many of the responses included references to using plants for traditional purposes including food, ceremony and medicinal. In these cases, I thought that such responses best represented a "Utilitarian" value orientation whereas "Utilitarian" is defined by Kellert as the, "Practical and material exploitation of nature" (1997: 38). A utilitarian value orientation implies using wildlife or plants as a means to an end in which any value placed on the resource is in direct correlation to the benefits one gains from using said resources or its *instrumental values.* Attributing this value orientation to the Lakota participants however did not sit comfortably with me as I understood that many of the Lakota participants viewed the natural world as being inseparable from humans[28]. Furthermore, instrumental values stand in contrast to what environmental ethic scholar Jamieson (2002: 205) describe as intrinsic values. An intrinsic orientation perceives of plants and wildlife as valuable as an end in itself. While the Lakota do use plants and wildlife for utilitarian purposes, they also view natural resources as valuable in their own right regardless of any instrumental value they may also place on such resources.

Following the participatory methodology of including participants in the interpretative process of data analysis, I consulted the two teachers and Mr. Sherman during follow-up

[27] Questions in particular that corresponded directly to eliciting responses on how Lakota perceive of and use natural resources included: *How does your family and community have a connection with nature?; Do you feel like you have a connection with nature? How?; Are plants on the rez important to you? Why?*
[28] See previous chapter, particularly the discussion on *Mitakuye Oyasin.*

interviews. I showed them Kellert's typology and asked which value orientation they thought best described them. After reading through it, they all had similar responses which were that they did not think that any one orientation value encapsulated how they value nature. I asked them how they would describe the values they have toward plants and wildlife. While they agreed that for them plants and wildlife both have instrumental and intrinsic value, they also pointed out that the way they value nature is more nuanced than such descriptions can offer. Their responses alluded to the Lakota worldview of everything and everyone being interconnected, and that they did not view plants as separated from the rest of nature[29]. The participatory process of consulting with participants demonstrated that collaboration must continue into the interpretative processes to ensure sufficient understanding.

An important lesson I learned is that while such categories or typologies may serve as appropriate tools for other data sets, they do not always aid one's understanding of wildlife value orientations in every context. Value orientation typologies can be very limiting because such frameworks reduce values to a single descriptive phrase or word thereby simplifying and abstracting from the meaning of the actual values. Furthermore, while both qualitative and quantitative methods present useful tools for the social scientists, such methods should be used appropriately or else they can limit or distort the data. In the case I describe here demonstrates that interview and survey responses can represent forms of rich qualitative data. Placing responses within a framework, as I originally had, in order to synthesize and quantify the data by

[29] Intrinsically-orientated values often encourage an environmental ethic within individuals toward plants and wildlife (Jamieson 2002). Encouraging Lakota value orientations through environmental education is critical because such an ethic encourages a more contextualized utility while simultaneously recognizing that the Lakota participants in this study did not decontextualize plants and wildlife. Hornborg (2001: 184) points out, "The neoclassical concept of "utility," for instance, imposes on local worlds everywhere the axiom of universal interchangeability, dissolving complex codifications of resources flows and paving the way for a system the blind logic of which is simply to reward an accelerating rate of destruction...such a cosmological shift was a prerequisite to industrialism: the notion of a decontextualized "utility" has very tangible material repercussions."

putting it into discrete categories[30] distorts the values that are expressed in the responses and therefore has ramifications for practical use of the data. In consideration of the aforementioned issues that result from distilling rich qualitative data into distinct categories, perhaps more social scientists could learn from engineers, computer scientists and other natural science researchers who have decidedly embraced a more "fuzzy logic" where appropriate (see Lafuente et al 1998; Uddin 2012) as fuzzy logic recognizes the inherent value in retaining the complexity of rich data sets. Uddin (2012: 7) citing Pipino and Gigh (1981: 21-35) exemplifies the usefulness of employing fuzzy logic, "Therefore, fuzzy logic seems to fit perfectly with the needs of social scientist that look for mathematical precise models to deal with vague, imprecise data."

Concluding remarks

Understanding the local cultural context in places such as on Pine Ridge has the potential to improve efforts that reconnect children from distinct cultural backgrounds to nature. Furthermore, this points to the need for culturally sensitive approaches when engaging with communities. Such approaches must be implicated within the processes of planning and implementing programs that are designed to effectively reach underrepresented groups. Developing culturally sensitive evaluation methodologies from which others can learn from and apply to other communities is also needed. To this end, traditional ecological knowledge is best placed for providing a useful framework for better understanding how to develop and evaluate more targeted educational initiatives that are tailored to specific audiences.

The strength of the ethnobotany workshop can be attributed to the project idea and goals being rooted within the needs of the community. Furthermore, it aligned with the value orientations of the participants and therefore was culturally appropriate and meaningful. The

[30] Codifying values helps researchers not only understand the data better, but is also a preferred method as it aids in making the data easier to work with (Manfredo 2008).

workshop engaged traditional ecological knowledge which reinforced cultural values critical to maintaining community cohesiveness while supporting a healthy Lakota identity. Moreover, the teaching of cultural values through traditional ecological knowledge in the Lakota community has the potential to contribute towards a community environmental ethic.

The Lakota community on Pine Ridge Reservation was deprived of their cultural and social capital in an attempt to extinguish their way of life throughout history. Over a century of attempts to assimilate the Lakota have created detrimental effects within the economic, social, cultural and political arenas of the Lakota community, some of which still exist today. The question raised is the previous chapter, *"Where will our future stewards of nature come from?"*[31] is important in light of the barriers to implementing traditional ecological knowledge as a way to enhance environmental educational programs. In order to best answer this question one must consider the role of a community-based participatory approach that is driven by needs identified by the community. Furthermore, traditional ecological knowledge is a possible means to develop and rebuild these communities and allow Lakota culture to redefine itself, while simultaneously preparing Lakota youth as future environmental stewards. However, taking steps to provide the Lakota community with secure, long term access to environmental resources and a greater degree of autonomy can ultimately result in the preservation of Lakota ecological knowledge by supporting the Lakota to define their future from within.

[31] Richard Louv poses this question (see Interpretation chapter).

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APPENDIX

Pre Excursion Survey (Youth)

Name:

Date:

Age:

Gender:

Grade (if in school):

Where are you from?

Are you Lakota?

Do you feel like you have a connection with nature? How?

How do your family and community have a connection with nature?

Are there particular places or things outdoors that your family is connected to the most?

Do you have any concerns about how humans treat the environment? What are they?

What significance do plants and animals have in your family?

How does your family care for the land, plants, and animals?

Why are you here today?

Can you identify these plants? [Insert pictures of plants that Richard recommends]

Why are plants important?

What native plants do you or your family use for food?

What native plants do you or your family use for medicine?

What native plants do you or your family use for ceremonies?

What do you expect to do today on the plant field trip?

Do you usually visit and learn from elders?

Is there anything else you want to write about?

Post Excursion Survey (Youth)

Name:

Are you glad you came today?

What was your favorite part of the day?

What did you dislike about today?

Can you identify these plants? [Insert pictures of plants that Richard recommends]?

Why are plants important?

Did you learn about any plants today that you had never heard of?

How much did you visit and learn from elders?

List 2 things you learned today?

Is there anything you want to learn more about?

[Insert questions that Richard recommends based on general themes that he will discuss]

Is there anything else you want to write about?

Pre Excursion Survey (Elders)

Name:

Date:

Age:

Gender:

Grade (if in school):

Where are you from?

Are you Lakota?

Do you feel like you have a connection with nature? How?

How do your family and community have a connection with nature?

Are there particular places or things outdoors that your family is connected to the most?

Do you have any concerns about how humans treat the environment? What are they?

What significance do plants and animals have in your family?

How does your family care for the land, plants, and animals?

Why are you here today?

What native plants do you or your family use for food?

What native plants do you or your family use for medicine?

What native plants do you or your family use for ceremonies?

Can you identify these plants? [Insert pictures of plants that Richard recommends]

Why are plants important?

What do you expect to do today on the plant excursion?

Do you usually visit with youth? Do you learn from them?

Post Excursion Survey (Elders)

Name:

Are you glad you came today?

What was your favorite part of the day?

What did you dislike about today?

Can you identify these plants? [Insert pictures of plants that Richard recommends]?

Why are plants important?

Did you learn about any plants today that you had never heard of?

How much did you visit and learn from elders?

List 2 things you learned today?

Is there anything you want to learn more about?