

Teaching American Indian and Alaska Native Students

by

Erin Lee Conway

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by

Erin Lee Conway

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by

Anita Lenges/ Member of the Faculty

Date

ABSTRACT

This paper examines a significant body of research that pertains to American Indian and Alaska Native learners in order to determine what causes the trends of low academic achievement and high drop out rates among this population. The historical background of American Indian and Alaska Native education gives a comprehensive summary of how policies and practices, such as the formation of government boarding schools, were used to acculturate and assimilate students into the Anglo-American, Christian society; and later, how the concept of self-determination was established. The review of the research studies represents a broad range of American Indian and Alaska Native populations in order to reveal some of the potential causes for such trends, and to reveal effective strategies for teaching American Indian and Alaska Native students across the country. The research studies concentrate on the following areas: curriculum, parent and community attitudes, schools and current policies, high drop-out rates, racism, traditionalism, motivation, learning styles, methods of assessment, and teaching strategies. Suggestions for how teachers can improve the academic opportunities of American Indian and Alaska Native students are presented in three key areas: teachers as learners, teachers as innovators, and teachers as allies.

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My decision to research effective strategies for teaching American Indian and Alaska Native students stemmed from a passion to serve as an ally for the indigenous peoples of this country. This passion was ignited by my experiences as a student at Madras High School, near the Warm Springs Indian Reservation, and by the influence of my mother-- Linda Lee Knight-- who served as a community health nurse for the confederated tribes. Her memory lives in my heart and will continue to guide me as I embark on this new and long-lasting journey as a teacher.

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This paper is dedicated to my future students.

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CHAPTER ONE

Introduction

The purpose of this paper is to examine the academic issues that are affecting American Indian and Alaska Native students in the United States of America, and to use this knowledge so that I may teach my students well. My desire to work with American Indian and Alaska Native students and communities stems from my experiences living near the Confederated Tribes of Warm Springs Indian Reservation in Oregon, and the influence of my mother who served as a community health nurse for the Warm Springs tribes.

When I first moved to Central Oregon in eighth grade I knew very little about American Indian people in this country. Throughout the next several years I formed friendships, attended events on the reservation, such as the annual Pi-um-sha/Warm Springs Treaty Days celebration, learned about the suffering health within the community through my mother's experiences as a nurse, and witnessed hate crimes and racism in my high school and in the local area. Through these experiences I developed a profound respect for their culture, along with a feeling of anger and sadness regarding the mistreatment of Indians throughout the history of this country and the continued mistreatment and ignorance that still occurs today.

When my mother passed away in December, 1996, the community of Warm Springs gave her a traditional memorial service, honoring her as they would a member of the tribe. I'll never forget that moment when the elder women guided me out onto the floor of the longhouse to dance with them in mourning, draping a blanket around my shoulders and surrounding me with comfort. Following the ceremony the longhouse was alive with laughter and tears as members of the community told stories about my mother to the large crowd in attendance. This experience made me realize just how much my mother's dedication and efforts had been appreciated by the

community. My decision to become a teacher and work with American Indian and Alaska Native children was greatly influenced by this memory, and a desire to continue in my mother's footsteps.

The term American Indian or Alaska Native (AI/AN) refers to people having origins in any of the indigenous peoples of North, Central and South America who maintain tribal affiliation or community attachment (U.S. Census Bureau, 2006). Wildcat (2001) defined the term indigenous to mean "to be of a place" (p.31) historically and culturally. For the purpose of simplicity and consistency, I will refer to the indigenous people of this country throughout this paper as Indian, or I will use the abbreviation AI/AN, unless referring to specific tribes or nations. It is important to remember that there exists a great diversity among the AI/AN people, with 510 federally recognized tribal nations in this country and several other state-recognized tribal entities (St. Germaine, 1995, as cited in Klug & Whitfield, 2003).

According to the U.S. Census Bureau (2006), in the year 2000 there were a reported 4.3 million AI/AN people, making up 1.5% of the total U.S. population. Individual states with the highest concentrations of AI/AN people, over 100,000 in population, were: Alaska, Arizona, California, New Mexico, New York, North Carolina, Oklahoma, Texas, and Washington. About 33% of the total AI/AN population was under the age of 18, compared to 26% of the total U.S. population. Seventy-two percent of individuals who reported their race as AI/AN spoke only English at home; 18% spoke a language other than English at home, yet spoke English "very well"; and 10% spoke a language other than English and spoke English less than "very well." Navajo people had the highest percentage of people who spoke a language other than English and reported that they spoke English less than "very well" at 25%.

On average, AI/AN people received a lower income than the U.S. population as a whole. According to the U.S. Census Bureau (2006), in the year 2000 the median earnings of AI/AN men was \$28,900, and women \$22,800, who worked full-time, year-round were substantially below those of all men (\$37,100) and women (\$27,200). The ratio of Indians living below the official poverty level in 1999 to that of all people was more than two. Within tribal groupings, in 1999, 18% of Creek, Cherokee and Lumbee, over 32% of Sioux, Navajo, and Apache, and 20% of Alaska Natives lived in poverty.

In 2000, about 34% of the American Indian population lived in American Indian areas (federal AI reservations and/or off-reservation federal trust lands, Oklahoma tribal statistical areas, tribal designated statistical areas, state reservations, and state designated AI statistical areas) (U.S. Census Bureau, 2006). Sixty-four percent lived outside these tribal areas. As seen by these statistics, AI/AN people do not live only on reservations. This also means that they attend a variety of schools throughout the country. According to the Commission on Civil Rights (2003), most American Indians are educated in non-tribal public schools.

According to the Bureau of Indian Affairs (BIA), of the 79,885 public schools in the U.S., 1,260 schools have an AI/AN student enrollment of at least 25% (U.S. Department of Education, 1995, as cited by Klug & Whitfield, 2003). BIA, tribal and public schools with high Indian student enrollment are located mostly in rural areas and small towns. About 8% of AI/AN students attend BIA/tribal schools. The majority of AI/AN students attend public schools with low Indian enrollment.

Since most AI/AN students do not attend BIA schools, a large share of education funding does not flow directly to AI/AN students. The U.S. Department of Education (DOEd) funds American Indian individuals, governments, and organizations through grants and contracts

(Commission on Civil Rights, 2003). Grants are the primary method the DOEd uses to fund schools with high AI/AN student enrollment. The Office for Indian Education (OIE), within the Office of Elementary and Secondary Education, administers federal funds for AI/AN students at DOEd and houses the Indian Education Program. OIE is charged with managing grants, evaluating the national program, promoting communication with individuals in the field, and coordinating programs across federal agencies. The DOEd shares the responsibility of educating AI/AN students with the BIA and the Department of Defense, among other federal agencies.

BIA schools have become notoriously inadequate when it comes to the education of AI/AN students. According to the BIA's *Office of Indian Education Programs Bureau-Wide Annual Report Card for 2004-2005*, the graduation rate for all students was 57.05%. Within specific subject areas, most students were not considered proficient. About 44% of students were proficient in Language Arts, 35.19% were proficient in Reading, and 30.74% were proficient in math. Unfilled vacancies for full-time teachers in BIA schools reached 139.

The statistics are not much better in non-BIA public schools. The National Assessment of Educational Progress test results revealed that fourth-grade AI/AN students scored lower than other groups in basic levels of reading, math, and history. In the last decade, only 66% of AI/AN students graduated from high school, compared with 75% of the general population (DOEd, *No Child Left Behind*, as cited by the Commission on Civil Rights, 2003).

According to the U.S. Census Bureau (2006), in the year 2000 71% of Indians 25 and older had at least a high school education, compared with 80% of the total population. Eleven percent of the AI/AN population had at least a bachelor's degree, compared with 24% of all people. Within tribal groupings, about 80% of Creek, Choctaw, and Iroquois had at least a high school education, and 75% of Alaska Natives had at least a high school education. The

percentage of Indians who had at least a high school education in AI/AN areas was lower than the total population, at 67%.

The academic failure of Indian students has led to many studies (Indian Nations at Risk Task Force, 1992; Kennedy, 1969; Meriam, 1928) to investigate why they have not been as academically successful as other ethnic groups. The details of these studies will be discussed in Chapter Two. Researchers have continued to attempt to explain why AI/AN students suffer from high drop out rates and low proficiency levels within academic areas. In this paper, I have selected a variety of studies to help gain a better understanding of this issue and what direction educators need to go in order to improve the situation. Following a discussion on the history of AI/AN education in Chapter Two, Chapter Three will critically examine a variety of studies that look at such things as schools, curriculum, parents and communities, the students, and teachers. Based in part on these studies, I will present my suggestions and recommendations for teaching AI/AN students in Chapter Four of this paper.

A teacher's responsibility is to ensure that all students are receiving an equitable education and that they are learning to their full potential. For this reason, I have read research extensively in trying to understand some of the potential causes for the trends found among AI/AN students, such as high-drop out rates, low college enrollment, and low levels of achievement in reading, math and other subjects; and examined case studies that reflect success in teaching AI/AN students in order to better inform my practice as a teacher.

What does "success" mean? Even this very definition could differ between cultures. Public schools in the United States tend to socialize for independent success, while many AI/AN cultures may identify success with contributions to their tribe or family. For example, the Yup'ik may value an individual's practical knowledge, such as hunting skills, over an individual's ability

to score well on a standardized test that may not reflect any knowledge that is considered valuable to the community.

The idea of success may vary, but for the purpose of this paper success will refer to academic performance in school as illustrated by grades, teacher evaluations, student's social and emotional behavior, and completion of school (graduating). It is possible that academic success could pertain to both the dominant culture's idea of independent success and to AI/AN collectivist views on success. In order for AI/AN communities to heal and thrive, students may need to learn how to succeed in the dominant culture in order to contribute to their tribe or family.

One way to measure success is through examining graduation rates, achievement test scores, and college enrollment. Within a classroom a teacher should also measure success through various assessment methods that go beyond test scores and statistics, taking into consideration the individual students' goals, abilities and talents. In addition, I believe that success can be measured by the overall improvement in the strength of AI/AN communities in relation to such maladies as poverty, unemployment, disease, suicide and depression.

In this paper I hope to address the following questions: 1) Why are AI/AN students failing (academically) at such high rates? 2) What are effective strategies for teaching AI/AN students? 3) Can culturally relevant education help heal AI/AN communities?

CHAPTER TWO

The History of American Indian and Alaska Native Education

Before the arrival of the Europeans it was estimated that throughout the Americas the population of indigenous people was approximately 75 million people, and 25 million in North America, with two thousand languages spoken (Zinn, 1999). In North America, they were believed to have spoken more than three hundred languages, with beliefs and ways of life varying from tribe to tribe.

Traditional education for AI/AN people began in their extended families, where children were taught survival skills and tribal traditions (Reyhner & Eder, 2004). The methods of learning included observation, ceremonies, storytelling, apprenticeship and play. These educational practices allowed people to survive and prosper in their environment. The arrival of the Europeans changed living conditions for most AI/AN people through the introduction of guns, horses, Christianity, new diseases and people.

The first European teachers in North America were Christian missionaries (Reyhner & Eder, 2004). Their main objective was to Christianize, civilize and assimilate Indians into European culture. Missionaries became frustrated since parental influence far outweighed the influence of the missionaries. For this reason, missionaries soon decided that in order to accomplish their objective they would need to separate Indian children from their parents by placing them in white homes or boarding schools.

Colonial Times

After the arrival of Columbus in 1492, Indians were used primarily for forced labor by the Spanish (Reyhner & Eder, 2004). The Spanish encomienda system gave conquistadors grants of land, to be worked by local Indians who were essentially slaves. The Spanish

government expected these landowners to civilize and convert the Indians to Catholicism, but labor was foremost. According to Bartolomé de Las Casas, a Spanish Catholic priest ordained in America, it was estimated that during the first fifty years of Spanish conquest more than 12 million Indians died (Reyhner & Eder, 2004). Awarded the title “Protector of the Indians” Las Casas recorded his observations and reactions to the conquest and wrote:

And who, down to the lowest idiot, will not think blind and downright malicious those who dared spread this belief and defame so many people, saying Indians need tutors because they are incapable of organization, when, in reality, they have kings and governors, villages, houses and property rights, and communicate with one another on all levels of human, political, economical and social relations, living in peace and harmony? (Miller, 1995, p. 12)

Since the landowners failed to educate the Indians on their lands, in 1542 the king of Spain gave the responsibility to the Catholic friars (Reyhner & Eder, 2004). The Spanish government's mission was to Hispanicize the Indians, while the friars sought to convert them to Catholicism. Missions were established in Havana and what is now Florida, lasting until the English attacked in the early 1700s.

The first permanent mission in New Mexico was founded in 1598 (Reyhner & Eder, 2004). Here, agricultural training was just as important as religious instruction, since the missionaries depended on using Indian labor to survive. One of the consequences of concentrating Indians into these mission villages was that epidemics from new diseases brought from Europe could thrive and kill large groups of people.

Reverend John Eliot arrived in America in 1631 and established a school in Roxbury near Boston (Reyhner & Eder, 2004). Five years later he was instructing Pequot war captives there.

He used the Native language for instruction and encouraged converts to gather in small, self-governing towns, called praying towns, to be instructed in Christian ethics and art. From 1651 to 1674 he helped to create fourteen praying towns with an estimated 1,111 inhabitants, 142 of whom could read in their own language and 72 of whom could write in English. Eliot's teaching method was to deliver lectures followed by student questions and a discussion.

Harvard University was founded in 1636 in part to provide education for Indian youths within a separate building called the Indian College (Reyhner & Eder, 2004). Only five Indian students attended Harvard's Indian College, and only one actually graduated but soon died of tuberculosis. The building was demolished in 1698. Dartmouth and the College of William and Mary were other colonial colleges that were set up in part to Christianize Indians.

Other schools founded by missionaries continued to be formed during the colonial times. Bibles were translated into Native languages and education consisted mainly of assimilating Indian children into Christian, European culture.

The United States Becomes a Country

Following the French Indian war, germ warfare was introduced by the British in 1763 (Miller, 1995). In a letter to British forces, Commander Sir Jeffery Amherst wrote of using smallpox as a weapon: "You will do well to try to inoculate the Indians by means of blankets, as well as to try every other method that can serve to extirpate this execrable race" (Miller, 1995, p.95). This tactic proved to be very effective, as Indian people were so much more susceptible to the disease, and continued to be practiced by the U.S. army throughout the 18th and 19th centuries.

The Five Nations' (Cayuga, Mohawk, Oneida, Onondaga, and Seneca) constitution inspired the creation of the U.S. Constitution. Canassatego, Onondaga, spoke to this in 1775 during a treaty negotiation: "Our wise forefathers established Union and Amity between the Five

Nations. This has made us formidable... We are a powerful Confederacy; and by your observing the same methods, our wise forefathers have taken, you will acquire such strength and power" (Miller, 1995, p.100).

In order to prevent more wars between the settlers and the Indians, the Constitution that went into effect in 1788 gave the federal government the power to regulate commerce and make treaties with the Indian tribes (Reyhner & Eder, 2004). The consensus at that time was that it was necessary to civilize Indians so that they could live in harmony with the settlers who had come to share their land. This would include educating Indians so that they could become independent farmers and free up their vast hunting grounds for white settlement.

Over the next century, the Senate approved almost 400 treaties with Indian tribes, 120 of which contained educational provisions (Reyhner & Eder, 2004). In 1816, Thomas J. McKenney was appointed superintendent of Indian trade and served until 1822. He wanted to establish a national school system for the Indians, and in 1819 succeeded in getting Congress to pass the Indian Civilization Act to provide financial support to religious groups and other interested individuals willing to live among and teach Indians. Teachers were expected to promote government policy, which included the policy of removing eastern tribes west of the Mississippi River. This act was repealed in 1873.

Early Tribally Controlled Schools

The first successful tribally controlled schools were established among the five southeastern tribes: the Cherokee, Choctaw, Chickasaw, Creek, and Seminole (Manuelito, 2005). By 1819, approximately 200 schools, seminaries and academies were established among the five tribes before their forced removal to Oklahoma. There was 90% literacy among these tribes, much higher than non-Indian youth in surrounding communities and states. Many of these

Indian youth attended colleges and received advanced degrees. The Indian Removal Act of 1830, the Dawes Act of 1887, and the Curtis Act of 1898 suppressed and eventually obliterated these early, tribally controlled school systems.

The Cherokee tribe was considered one of the most successful in accepting civilization. Cherokee mission schools were run on the new Lancasterian plan developed in England in about 1800 by Joseph Lancaster (Reyhner & Eder, 2004). The curriculum consisted of reading, writing, arithmetic, and morals, or religion. According to missionaries, it took the children three to four years of regular school attendance to master English reading and writing. The Cherokee also developed their own written language. Sequoyah, a non-English-speaking Cherokee, created a syllabary with 85 symbols representing sounds in his language. This was printed in 1821 and used in both private correspondence and the tribal newspaper, the *Cherokee Phoenix*.

In 1841 the Cherokee National Council set up a national school system with 11 schools in 8 districts (Reyhner & Eder, 2004). The curriculum included reading, writing, arithmetic, bookkeeping, English grammar, geography, and history. Within ten years, locally trained teachers replaced most missionaries. The schools were funded in part by money granted to them by the U.S. government for land they had ceded.

In 1842 there were 52 Indian schools, and 45 of these reported a total enrollment of 2,132 students (Reyhner & Eder, 2004). In 1848 there were 16 manual labor schools with 2,873 students enrolled. In 1861 there were 147 Indian schools, and this jumped to 286, with 6,061 students, by 1871.

Indian Removal and Westward Expansion

Congress passed the Indian Removal Act in 1830 which led to the relocation of southeastern tribes, such as the Choctaw, Creek, and Cherokee, to the west of the Mississippi

River (Miller, 1995). In a message to Congress in 1833 President Andrew Jackson wrote: "They have neither the intelligence, the industry, the moral habits, nor the desire of improvement... Established in the midst of another and superior race... they must necessarily yield... and ere long disappear" (Miller, 1995, p.153).

It was believed that the West would never be desirable for European American settlement; however, continued U.S. expansion proved this belief wrong (Reyhner & Eder, 2004). The discovery of gold in California in 1848 brought thousands of settlers to the West and this heightened the desire for Indian land. The loss of land resulted in severe loss of life due to disease, starvation and other hardships, in addition to a loss of traditional economies and means of subsistence. Many communities became impoverished and dependent upon the government. By 1867 the federal government had removed most of the eastern tribes to Indian Territory, and the western tribes were being confined to reservations. Professional hunters decimated the buffalo herds that the Plains Indians depended on for survival, and were thus starved into submission.

With the completion of the transcontinental railroad in 1869, the West was open to settlement by Whites (Reyhner & Eder, 2004). In 1870, Congress appropriated \$100,000 for the support of industrial and other schools among the Indian tribes. Indian education thus shifted from a largely missionary activity to an activity directly managed by the Office of Indian Affairs. The emphasis was on day, boarding and industrial schools, and the curricula focused on basic skills in arithmetic, speaking, reading, and writing English.

The Shift in Indian Education

In the 1878 *Annual Report of the Commissioner of Indian Affairs*, education was seen as the quickest way to civilize Indians, and education could only be given to children removed from

the examples of their parents and the influence of their communities and kept in boarding schools (Reyhner & Eder, 2004). One year later, the *Annual Report of the Board of Indian Commissioners* estimated that there were 500 teachers in 64 boarding schools and 292 day schools teaching 13,343 students, out of 46,000 school age Indian children. An estimated 44,731 Indians could read.

The Indian Bureau issued regulations in 1880 that all instruction in both mission and government schools had to be in English or lose government funding (Reyhner & Eder, 2004). Enforcement of the English-only regulation was often strict; many times corporal punishment was inflicted on students for speaking their native language. Some missionaries used native languages effectively in schools, mostly as a means to Christianize and civilize their students rapidly. However, the Indian Office continued its efforts to eradicate native languages along with all Indian customs and religions.

In 1881 the U.S. government banned the Plains Indian Sun Dance, and in 1885 this ban became general policy forbidding traditional Indian religious ceremonies and related customs (Reyhner & Eder, 2004). It is important to note that Indians were still not U.S. citizens, despite having these policies of forced assimilation.

In 1887 the General Allotment Act, also called the Dawes Act, was passed (Reyhner & Eder, 2004). The Dawes Act granted 160 acres to each family head and 80 acres to single persons over the age of eighteen and orphans under the age of 18. The government allowed Indians four years to decide what land they wanted, and if they did not decide by then the Secretary of the Interior was directed to decide for them. Land that was not claimed was bought by the federal government and resold to whites. All Indians who received an allotment were to be given citizenship within 25 years. Over the next four decades the Dawes Act reduced tribal

holdings from about 140 million to 50 million acres, as many Indians could not afford the federal taxes on their land and were forced to sell.

The Five Civilized Tribes of Oklahoma was forced into allotment with the passage of the Curtis Act in 1898 (Reyhner & Eder, 2004). Their self-government was replaced by principal chiefs appointed by the president of the U.S., and their schools were taken over by the Department of the Interior and transformed into state-operated public schools.

In 1891 Congress authorized compulsory education for Indians (Reyhner & Eder, 2004). The superintendent of Indian schools embarked on a two-month, 6,000 mile inspection of Indian schools which resulted in a comprehensive field report on Indian education. The report discussed incompetent teachers, schools that had never been inspected, and poor sanitary conditions. This led to the division of Indian country into four districts, each with a supervisor responsible for inspecting schools, and reforms that included the codification of school rules, compulsory attendance, establishment of the merit system for personnel, and standardized curriculum, textbooks, and instruction. Congress also passed laws permitting the Commissioner of Indian Affairs to enforce school attendance through the withholding of rations and annuities from Indian families who did not send their children to school.

In an 1896 report to the Commissioner of Indian Affairs, the superintendent of Indian schools criticized workers in Indian schools for not knowing enough about the Indians they were teaching (Reyhner & Eder, 2004). He believed teachers should study the Indians on their reservations so they would be able to connect the new knowledge they were teaching with the children's previous experiences.

From 1894 to 1900 direct federal funding for mission schools was phased out completely, as Congress was enforcing the constitutional separation between church and state (Reyhner &

Eder, 2004). Mission schools won the right in court, however, to continue to get tribal funds held in trust by the U.S. government, but still the number of mission schools gradually declined. One of the benefits of these mission schools was that many Indian languages were preserved. One example is the Catholic Franciscan Fathers' *Ethnologic Dictionary of the Navajo Language*, printed at a mission school in 1910.

Government Boarding Schools

They told us that Indian ways were bad. They said we must get civilized. I remember that word too. It means "be like the white man."... And the books told how bad the Indians had been to the white men—burning their towns and killing their women and children... We all wore white man's clothes and ate white man's food and went to white man's churches and spoke white man's talk. And so after a while we also began to say Indians were bad. We laughed at our own people and their blankets and cooking pots and sacred societies and dances...
- Sun Elk, Taos (Miller, 1995, p.350)

By the late 1870s, government boarding schools were considered the most promising method of educating American Indians (Adams, 1995). The Indian Office boarding schools offered one-half day of academic instruction and one-half day of vocational instruction. The academic curriculum consisted mainly of elementary subjects, and the vocational curriculum entailed having the students maintain the school. Of these duties were growing and cooking their own food, making and mending their clothes and shoes, and cleaning and maintaining school buildings. Many of these boarding schools were located in old forts and were run like military organizations, so that there would be less expense and fewer staff members.

Richard Henry Pratt started the first off-reservation, government-run boarding school for Indians called Carlisle Indian Industrial School, located in an abandoned army barracks at Carlisle, Pennsylvania (Adams, 1995). The school opened in 1879 with 136 students. By 1887 there were 617 students enrolled, with 106 children of Apache prisoners at Fort Marion in Florida. The *Annual Report of the Commissioner of Indian Affairs* in 1888 noted that 21 out of 637 students had died in the past year at Carlisle. During the first 24 years in operation, Carlisle graduated only 158 students.

During this time Pratt developed the Outing System, which meant that students were placed with area families during the year for a series of months (Reyhner & Eder, 2004). His idea was to place Indian children in white homes as another son or daughter, but in the West this became a way for white families to obtain cheap servants. In 1900, 1,889 Carlisle students participated in the Outing System.

In 1894 the school had 818 students from 53 tribes (Reyhner & Eder, 2004). Pratt's legacy included his insistence that Indians become civilized. He spoke out against the Indian Bureau and the missionaries, and even opposed Buffalo Bill Cody's Wild West shows because they glorified Indian culture. Despite the fact that his belief was to eradicate Indian cultures and assimilate, or civilize, them, Pratt was credited both in his own time and later by historians for his role in convincing the federal government and the American public that Indians could and should be educated.

Due to the publicity generated by Carlisle, many European people were convinced that off-reservation boarding schools were the answer to how to effectively educate Indian students (Reyhner & Eder, 2004). Thus, Congress funded 23 more schools over the next 20 years.

The following excerpt from an interview with "Susie Burch" described one woman's memory of being dropped off at a boarding school:

The doors were metal and they even had this big window, wires running through it. And these women didn't smile or nothin. You watch your mama go down the sidewalk, actually it's the first time I seen a sidewalk, and you see her get in the truck, walk down the sidewalks. You see her get in the truck and the truck starts moving and all the home smell goes with it. You see it all leaving...Then them women takes you by the hand and takes you into another room and they take down your bun. And the first thing they do is cut off your bangs, and you been told the whole time that you never cut you hair because that's your life. And that's the first thing them women does is cut off your bangs. You see that long, black hair drop, and it's like, they take out your heart, and they give you this cold thing that beats inside you. Now you're gonna be just like them. You're gonna be cold. You're never gonna be happy or have that warm feeling and attitude towards life anymore. That's what it feels like, like taking your heart out and putting in a cold river pebble. It just felt empty. (McLaughlin, 1993, p.117)

In both boarding and day schools, Indian students were forced to change their dress, their grooming practices, and their names (Adams, 1995). Their hair was cut upon arrival and many whose names were changed completely lost touch with their families. Many students found it difficult to adjust to schools that devalued their families and cultures, and to learn English. Several students resisted and ran away or refused to cooperate. Oftentimes students were physically and sexually abused.

The Hopi, especially those in the village of Oraibi, were among those who rebelled against the Indian schools (Reyhner & Eder, 2004). These residents who resisted the white man's schools became known as the Hostiles, and those who supported schooling were called Friendlies. A company of Tenth Calvary troops was sent out during the winter of 1890 and again in the summer of 1891 to force Hopi parents in Oraibi to send their children to school. Still, the Hostiles resisted. A day school was built in Oraibi in 1892, but only enrolled children of the Friendlies. Indian agents continued to call troops out to search houses for Hopi children as late as 1911. Many were arrested and shipped to Carlisle Indian School. In 1906, the Friendlies pushed the Hostiles out of town, believing it to be a solution to the ongoing conflict.

Students at government boarding schools suffered from health problems due to poor nutrition and sanitation, crowding, dilapidated buildings that lacked adequate heat in the winter, and other conditions (Adams, 1995). In 1912, 22.7% of Indians and 29.8% of students were reported to have trachoma (Reyhner & Eder, 2004). Fifty percent of students in the Pima and Mescalero Apache schools had contracted trachoma. Many students died from diseases while attending these schools. Those who survived and returned home experienced difficulty in adjusting back into their communities and families because they no longer knew the customs of their tribe. Returned students were even ordered not to attend traditional gatherings, but many resisted.

Since boarding schools concentrated youth from many different tribes for years away from their parents and allowed them to only speak English, a pan-Indian movement was formed (Adams, 1995). Many students bonded due to the prejudice they faced within and outside the school boundaries. Tribal intermarriage also became more common. Criticism of boarding

schools mounted at the beginning of the 1900s because some students were abused and the schools were found to not be producing the rapid cultural assimilation as promised.

Post-WWI to WWII

After World War I, mounting criticism forced the government to rethink federal Indian policy. In 1923, the Secretary of the Interior convened the Committee of One Hundred to recommend changes to Indian policy (Reyhner & Eder, 2004). The Committee's final report called for adequate school facilities, higher salaries to attract more qualified teachers, more schools with a special regard for day schools, an increased number of Indian students in public schools, and high school and college scholarships. Their recommendations helped to bring about reservation day schools for up to sixth grade, and off-reservation boarding schools that offered an eighth grade education. It was hoped that with increased funding education would improve so that Indians would assimilate faster, then the government could close the Indian Office in 25 years.

In 1926 the Secretary of the Interior asked the Institute for Government Research, also called the Brookings Institute, at John Hopkins University to conduct an investigation of Indian affairs (Reyhner & Eder, 2004). This privately financed study was published in 1928 as *The Problem of Indian Administration*, also known as the Meriam Report named after the man who headed the investigation. The report condemned the allotment policy and the poor quality of services provided by the Department of Interior's Indian Office. In addition, it urged protection for Indian property, and recommended that Indians be allowed more freedom to manage their own affairs.

The Meriam Report of 1928 criticized Indian boarding schools, stating that to take Indian children away from their parents was "at variance with modern views of education and social

work, which regard the home and family as essential social institutions from which it is generally undesirable to uproot children" (Reyhner and Eder, 2004, p.208). Among other aspects of the boarding schools criticized in the report were the poor food quality, which contributed to diseases, and the practice of using students as laborers.

In response, President Hoover appointed Charles J. Rhoads as Commissioner of Indian Affairs in 1929, and Carson Ryan Jr. director of Indian education in 1930 (Szasz, 1999). Ryan sought to develop community schools, to support federal-state contracts to put Indian children in public schools, and gradually to phase out boarding schools. Together they planned to address many of the reforms recommended in the Meriam Report, including an end to uniform Indian Service curriculum that stressed only the cultural values of whites. In 1929, Rhoads emphasized local material and the use of Indian daily experiences in teaching students, and he explicitly mentioned the Progressive Education movement in his 1930 report. He recommended that teachers urge their students to write about their lives as Indians.

Willard Beatty, who had been president of the Progressive Education Association since 1933, was appointed as the education director for Indian Services (Szasz, 1999). Beatty began publishing a bimonthly bulletin called *Indian Education* for Indian Service employees. In some articles he noted that elements of white culture needed to be identified and deliberately taught to Indian students, that white teachers needed to learn about Indian cultures and languages, and that intelligence tests should measure cultural experience.

The Johnson-O'Malley (JOM) Act of 1934 authorized the Secretary of the Interior to enter into contracts with states or territories to pay them for providing services to Indians rather than having to deal with each school district individually, as had been done since 1891 (Szasz, 1999). This meant that the federal government could pay states for educating Indians in public

schools. The first states to sign contracts were California, Washington, Minnesota, and Arizona, between 1934 and 1941. During the 1940s all BIA high schools became state accredited. Indian students experienced many problems in public schools. The Great Depression also added a financial crisis within the public school system, which led schools to eliminate health, physical education, shop and other courses.

Post WWII to 1969

In 1946, Congress abolished its standing committees on Indian affairs and transferred their work to committees on public lands dominated by westerners (Reyhner & Eder, 2004). In 1953, Congress passed six termination bills, where reservations were essentially terminated; meaning states were to assume responsibility for the education of all Indian children in public schools. Due to an organization called the National Congress of American Indians, founded in 1944, Indians were able to defend their rights and many termination policies were reversed.

The case of *Brown v. Board of Education* led to the decision in 1954 to desegregate schools (Klug & Whitfield, 2003). This meant that students living on reservations located close to public schools were no longer restricted to attending all-Indian schools, and many began attending schools where they were fewer in number and their needs were overlooked or ignored. Their failure to achieve academically in these situations was seen as a failure on the part of their families and communities.

In 1961 there were 5,000 American Indian and Alaska Native children without available schools (Szasz, 1999). President Kennedy set up a task force that called for a new independent study of Indian education. As a result, the BIA increased classroom square footage, added libraries, and developed a standard list of supplies and equipment. New schools were built based on population trends and available water, which did not include small community schools.

The original 1965 Elementary and Secondary Education Act, that provided funds for disadvantaged students under Title I, did not include BIA schools (Szasz, 1999). A year later, funds were made available to BIA schools. As more Indian children were attending public schools, the BIA schools started to serve the most isolated children and children from broken and disrupted homes. Almost 37,000 children were attending BIA schools in 1952, compared to almost 52,000 in public schools. Almost 10,000 students were attending mission schools and 21,435 were not in school. By 1965, 20% of the children in BIA schools were dropouts from other schools.

The books used in Indian schools during this period reflected the white, middle-class culture, including for example, the Dick and Jane reading series (Reyhner & Eder, 2004). Of the 15 widely used basal reading textbooks used in U.S. schools published between 1957 and 1962, there was only one example of a nonwhite American in them.

In 1953, 15 states and the Territory of Alaska, along with individual school districts in other states, had Johnson-O'Malley contracts which provided funding for educating 51,000 Indian children in public schools (Reyhner & Eder, 2004). The Impact Aid passed laws in 1950 that authorized funds for public schools in federally impacted areas, which added a boost in funding.

Self-Determination

The nationwide civil rights movement of the 1960s-70s inspired a Hawaiian renaissance and sovereignty movement. In 1978, a constitutional amendment mandating that Native Hawaiian people's stories and experiences be included in school curricula was pushed through the state legislature (Kaomea, 2005). A study will be presented in Chapter Three that critically

examined how this Native Hawaiian studies curriculum was actually carried out in classroom practice.

In 1965, the Navajo Education Department launched a new era in Indian participation in shaping their education destiny when the Navajo, the U.S. Office of Economic Opportunity (OEO), the BIA, and a nonprofit organization called Demonstration in Navajo Education (DINE) Inc. joined to establish a community-controlled school on the Navajo reservation, known as the Rough Rock Demonstration School (Manuelito, 2005). In 1968 Navajo Community College, known today as Diné College, was established, making it the first tribally-controlled community college.

In 1970, the Ramah Navajo High School became the first Navajo-controlled high school (Manuelito, 2005). In the spring of 1970 Navajo elders and a recent high school graduate traveled to Washington, D.C. to request funding for a school in their community. When their demands were ignored, Bertha Lorenzo, described as a frail elder, threw her blanket down in the doorway of the BIA building and said she wouldn't leave until they were granted aid. On April 20, 1970, the Commissioner of Indian Affairs approved funding for the Ramah Navajo High School.

In 1964 Congress passed the Economic Opportunity Act, which led to such programs as Head Start, Upward Bound, Job Corp, and Vista (Szasz, 1999). In 1968 Congress passed the Bilingual Education Act, and in 1969 there were five public school Indian-language programs. By 1971 there were 16 Indian language programs.

At the end of the 1960s there were two major studies of Indian education-- the National Study of American Indian Education and the 1969 summary report entitled *Indian Education: A National Tragedy, A National Challenge*, also known as the Kennedy Report (Szasz, 1999).

These studies brought up such issues as the request by Indian communities for schools to focus more attention on Indian heritage and culture, and the fact that dropout rates were higher and achievement levels were lower than any other ethnic group. President Nixon echoed the situation during a special message to Congress on Indian affairs in 1970:

It is long past time that Indian policies of the Federal government began to recognize and build upon the capacities and insights of the Indian people. Both as a matter of justice and as a matter of enlightened social policy, we must begin to act on the basis of what the Indians themselves have long been telling us. The time has come to break decisively with the past and to create the conditions for a new era in which the Indian future is determined by Indian acts and Indian decisions. (Reyhner and Eder, 2004, p.565)

The first major legislative victory for this new policy of self-determination was the passage of the Indian Education Act in 1972, which provided funds for supplemental programs for Indian children in public schools on and off reservations (Szasz, 1999). These supplemental programs were designed to meet the special needs of Indian students, including the use of culturally relevant and bilingual curriculum materials. Schools were also required to involve parents and communities in designing these programs. The Indian Education Act also established the Office of Indian Education in the Office of Education, which became the U.S. Department of Education in 1980, and the National Advisory Council on Indian Education. This council was to report annually to Congress on the state of Indian education.

The Indian Self-Determination and Education Assistance Act passed in 1975 and required the BIA to contract as many of its services to tribes as those tribes desired (Szasz, 1999). Two of the first contracts were the Rough Rock Demonstration School and Rock Point

Community School on the Navajo Reservation in northeastern Arizona. Tribal schools increased from 12 in 1973 to 60 in 1988.

Prior to the Indian Child Welfare Act in 1978, children were oftentimes placed in foster care outside of their Native communities (Klug & Whitfield, 2003). This act was seen as an important step in assisting communities in their efforts of self-determination, since children were no longer being removed from their homes and communities.

In 1974 there were 170 Alaska Native villages, 258 Indian reservations and trust areas concentrated in the western U.S., and 27 federally recognized tribes with trust areas in Oklahoma (Reyhner & Eder, 2004). In 1980 a little less than half of American Indians lived in rural areas, with about a third of a million on reservations and another hundred thousand in the historic areas of Oklahoma. Of adults over 25 years old, 57% had not graduated from high school.

In 1988 the Bureau of Indian Affairs (BIA) issued the *Report on BIA Education* (Szasz, 1999). The report found student test scores in BIA-operated and contract schools well below average. It also noted that BIA schools paid lower than average salaries to teachers. A study to be discussed in Chapter Three examined parents' attitudes toward BIA schools, which continue to be mostly negative.

Alaska

Russian missionaries arrived in Alaska in 1794 and by 1867, when the U.S. gained the territory of Alaska, the Russian Orthodox Church had established around fifty schools there (Reyhner & Eder, 2004). These schools were gradually phased out and replaced with Moravian, Presbyterian, Episcopalian, and Catholic missionary schools.

Sheldon Jackson was appointed as General Agent for Education in Alaska in 1885 (Cox, 1991). He had three major goals for education in Alaska. The first was to establish English-

speaking schools. The second was to provide "moral and sanitary education" (p.23), as defined by non-Natives' standards of health and cleanliness, and morals. Jackson's third goal focused on the enforcement of attendance in the American missionary schools. The overall goal was to replace the Native peoples' cultures with that of the white, Christian, American people.

Jackson reported in 1894 that there were 24 mission schools operating throughout the territory (Cox, 1991). Criticism against Jackson's policy exploded after it was found that almost half of the government subsidies given to mission schools had been directed to those run by Jackson's own Presbyterian Church. As a result, Congress eliminated federal grants to all denominational schools in 1894, but Jackson remained on board.

In 1905 the Nelson Act created a dual system of education for Alaska, providing separate schools for Native children and white or mixed-blood "civilized" children (Cox, 1991). The schools for white children were operated by the state, while the schools for Native children were operated by the federal government. Jackson continued to manage the Native schools and adopted a policy of identifying and sending Native students to industrial schools, some of which included the government boarding schools in the U.S.

Research conducted by Anderson and Eells in 1935 aimed at examining the effects of missionary education on Native communities (Cox, 1991). They found that a cultural transformation had taken place, and Jackson's policy was deemed successful. Many communities had adopted the Western customs and religion, eliminating and sometimes destroying ties to their Native cultures. On the northwest coast they found the khashgii, or community house that had played a central role in Eskimo culture, had disappeared.

Due to this transformation in Alaska Native culture, the government revised its educational policy aimed at providing Natives with the quality of education needed to enable

them to assume positions of leadership within their new culture (Cox, 1991). The Meriam Report urged the idea of cultural appreciation among Native cultures, so the BIA encouraged teachers to incorporate Native culture into the curriculum. However, the educated Native was expected to then become an assimilated American citizen, and the responsibility was placed on secondary schools. Due to the large amount of rural communities, the boarding school of Mount Edgecumbe was opened by the BIA to provide both vocational and academic training. Still, the effort to provide a secondary education to Native students was difficult without removing students from their villages. In addition, most Natives were not able to enroll in high school programs; according to the 1950 census the median level achieved for all Alaskan Natives was the fourth grade.

The problem of rural and Native education continued throughout the 1960s and 1970s. Alaska's Boarding Home Program was established in 1966 where rural Native students were sent to live with a boarding home family in an urban area (Cox, 1991). Regional boarding schools were established throughout the state as well. A study by Kleinfield, in 1973, revealed that these regional boarding schools were failing both academically and socially (Cox, 1991).

Recent Times

The 1991 Audit Report of the U.S. Department of the Interior's Office of Inspector General showed that students in BIA schools achieved far below non-Native students and generally did not receive high-quality education (Reyhner & Eder, 2004).

President Bush signed the Native American Languages Act in 1990 and made it the policy of the U.S. to "preserve, protect, and promote the rights and freedom of Native Americans to use, practice, and develop Native American languages" (Reyhner & Eder, p.309). The Act had three important implications: it was a continuation of the policy of Indian self-determination,

it was a reversal of the historical policy of the U.S. government to suppress Native languages in schools, and it was a reaction to the attempt to make English the official language of the U.S.

The Indian Nations at Risk (INAR) Task Force issued a report in 1991 by gathering testimony at seven regional public hearings and at the annual conference of the National Indian Education Association, making 30 school site visits, and commissioning 21 papers from national experts on AI/AN education on subjects such as current conditions, funding, dropout prevention, and curriculum (Reyhner & Eder, 2004). As a result, the Task Force established ten goals for Native education to include the maintenance of Native languages and cultures, high quality Native and non-Native school personnel, restructuring schools, and parental, community and tribal partnerships. The report also added that Native students experienced racism in schools, which contributed to high dropout rates.

President Clinton issued Executive Order 13096 on American Indian and Alaska Native Education which set six goals (Reyhner & Eder, 2004):

1. Improve reading and mathematics
2. Increase high school completion and postsecondary attendance rates
3. Reduce the influence of long-standing factors that impede education, such as poverty and substance abuse
4. Create strong, safe, and drug-free school environments
5. Improve science education
6. Expand the use of educational technology

In 2002 President Bush signed the reauthorization of the Elementary and Secondary Education Act, known as the No Child Left Behind Act of 2001. The Act contained many provisions for ensuring educational accountability for Indian and other students, which have led

critics to express concerns about assessment methods and the risk of the threat of not graduating which would lead to higher dropout rates.

The influence of missionary schools, boarding schools and assimilation strategies for educating AI/AN children has greatly affected today's generation of students. In addition, the history of this country has resulted in the loss of land, moving tribes and communities to reservations, and a significant loss of life as European Americans brought disease and resorted to intentional killing and outright massacres against the indigenous people that lived on this continent. It is important to think about AI/AN education within a historical context when examining the research that will be presented in the following chapter. As Klug and Whitfield (2003) stated, "The only way educational endeavors can be transformed for American Indian students is through acknowledging past practices and resulting social disorganization for Native peoples" (p.217).

CHAPTER THREE

A Critical Examination of Research Studies

This chapter is dedicated to an array of studies conducted to help explain why AI/AN students are not as academically successful as other students, and to present methods and strategies that have been used and assessed for effectiveness to help lead to a discussion of what might be done about these achievement gaps. The first section will present some examples of curriculum being offered in schools, to get a sense of how the Indian is being portrayed within the education system. Stereotypes formed during the history of this country continue to be perpetuated and indirectly taught in school, which may be one of many factors that contribute to the issues surrounding AI/AN education today.

Many people will argue that AI/AN students will not succeed unless they are taught how to live in both cultures-- their traditional culture and the mainstream culture. Given the statistics on the types of schools that AI/AN students attend, which are mostly public and ethnically diverse, a brief study that looked at attitudes on multicultural education by parents and teachers on a reservation will be presented.

For a different perspective, examples of how specific cultures have blended academic subjects with their traditional cultural knowledge will be presented. One is a case study of a culturally relevant math curriculum designed in collaboration with the Yup'ik of Alaska; the other is a collection of mathematical knowledge and ways of knowing of the Shoshoni.

The second section in this chapter will deal with actual schools where AI/AN students receive their academic education. Parents and educators have shared their views on the schools and whether they believe schools are serving their children and students well. Case studies will be presented on two very different examples of schools that were considered "successful" in

helping close the achievement gap-- one is a standards-based reform system and the other is a tribally-controlled school.

The purpose of sharing studies on curriculum and schooling is to help present all of the factors that may be contributing to AI/AN students' achievement. Of course, many of these factors are not within the scope of this paper, which will conclude in Chapter Four with effective strategies for teachers; but they may affect what strategies to use, where, and how to use them within a variety of school systems serving AI/AN students in this country.

The third section will look at the students themselves. First, a series of studies done to examine dropout rates and reasons for dropping out will be presented. Factors such as racism, traditionalism, motivation, learning styles, methods of assessment and cultural differences in relation to learning will be covered in this section. Finally, the fourth section will look at studies conducted to examine teaching strategies and their effectiveness in improving the academic achievement and learning of AI/AN students.

The Curriculum

Chapter Two discussed the history of AI/AN education. This history is also a large part of this country's history, as efforts to colonize and assimilate the indigenous people in this country included schooling. Today, children are taught history that in many cases can reflect bias and ignorance, especially toward the indigenous people. The problem may be that many history textbooks being used have been written from a Eurocentric perspective, or the perspective of the dominant society. The first two studies discussed in this section deal with history textbooks and a Native studies program in Hawaii, both of which have found that biased curriculum is being used in schools.

A Study of Social Studies Text Books

Ferguson and Fleming (1984) conducted a study of elementary school social studies textbooks to examine how Indians were being portrayed in the curriculum. The researchers believed that children's racial attitudes are developed in their early years, and that schools play an important role in shaping these attitudes. For this reason they chose to conduct a study of elementary social studies textbooks to search for evidence of such things as biased language and stereotypes, with the assumption that many social studies textbooks being used in schools are indeed promoting a negative or inaccurate perspective of Indians.

A total of 34 elementary social studies textbooks from grades K-7 were studied, drawn from eight elementary series that were listed on the adopted textbook list in Virginia at the time of this study. Many of these books had been adopted nationwide, which contributed to the reasons why the researchers chose these textbooks.

The study consisted of three parts. Part one used a concept checklist to determine how ten basic concepts were covered in each textbook: 1) geography, 2) population, 3) AI/AN contributions, 4) education, 5) federal government and AI/AN relations, 6) basic cultural differences between AI/AN and White cultures, 7) chronological framework for AI/AN and non-AI/AN relations, 8) relationships between AI/AN and non-AI/AN people, 9) contemporary AI/AN life, and 10) other. Part two of the study examined the evaluative terms used to describe AI/AN people, and part three examined the treatment of AI/AN people in pictures in the textbooks.

The results of part one will be shared according to each concept that was examined:

1. Geography: The plains location was treated more than any other with 59% of the texts giving some coverage to this area, followed by eastern woodlands with 53% coverage.

California's intermountain region was the least covered, in only 15% of the textbooks.

Seven out of 34 textbooks did not cover at least one of the six geographic areas, and very little was found on natural resources controlled by AI/AN communities.

2. Population: Characteristics of population, such as growth and where AI/AN people live, were given weak coverage, found in only 24% of the textbooks.
3. AI/AN contributions related to such areas as medicine, words, ideas, fruits and vegetables, animals, and trails/roads: The most treated topic was the domestication of fruits and vegetables, and the second most was AI/AN words, found in 42% of the textbooks. The domestication of animals was not mentioned. The 19 texts out of 34 that did cover this concept area expressed coverage in mostly one or two sentences.
4. Education: In only 47% of textbooks was AI/AN education mentioned, and only two books mentioned the role of boarding schools as leading to negative attitudes against education. Twenty-seven percent of the books mentioned missionary activities in regards to education.
5. Federal government and AI/AN relations: One-half of the textbooks dealt with this subject. Forty-one percent of these covered the forced movement of AI/AN people from land and their refusal to leave; however, six of these textbooks covered this in just one sentence. Thirty-one percent of these books mentioned that reservation land was thought to be worthless, 12% covered treaties being broken, and 82% did not inform readers that AI/AN people are U.S. citizens.
6. Basic cultural differences (land, religion, values): This topic was only treated in 44% of the books. Of these, 32% covered religion; however, the treatment was described by the researchers as being so superficial that the reader might easily conclude that all AI/AN

religions were the same. Views of women held by AI/AN people were covered in 12% of the books, and views of land ownership in 21%.

7. Chronological framework for AI/AN and non-AI/AN relations: This was the most highly covered topic with 91% coverage. Eighty percent dealt with the original settlement of AI/AN groups, with considerable disagreement on the time of arrival with a range from 12,000 to 40,000 years ago.
8. Treatment of Europeans by AI/AN people and vice versa: This topic was treated in some form in 71% of the textbooks. Fifty percent of the books did not talk about Samoset and Squanto helping the Pilgrims. Unfavorable portrayal of AI/AN treatment by the white people was shown in 47% of the books.
9. Contemporary life of AI/AN people: Only 24% mentioned that many AI/AN people desire to retain their culture yet compete in the modern world; 33% showed that modern AI/AN people work at diverse occupations, and only one text dealt with the number of reservations in the U.S. today.
10. Other: As far as other topics covered, 33% revealed that AI/AN tribes warred with each other, while one text said they never warred with each other.

Part two of the study consisted of specific terms-- adjectives, verbs, adverbs, and nouns-- used to describe AI/AN people and were classified as either positive, negative or neutral. Thirteen out of 34 books had ten or more evaluative terms. An overall summary of these terms resulted in a 74% favorable score. Although it seemed that most of the terms being used did not express negative connotations, it was noted that some texts still used terms such as "savage" "fierce" or "terror" to describe AI/AN people.

Part three of the study examined the illustrations of AI/AN people in the textbooks. There were a total of 430 illustrations found in 29 textbooks. Of these, 45% depicted AI/AN people in Native costume and 31% showed them as half-naked. Only 12% revealed AI/AN people in Western dress. Sixty-three percent of the illustrations dealt with AI/AN people living in the past, and almost nothing portrayed educational activity.

According to the results of this study, there are many serious omissions or lack of attention given to contemporary Indians and current issues in their lives. The researchers admitted that there were many "good features" (p.15) in the books and more coverage was given to Indians than expected prior to the study. Since the researchers conducted their examination with prior assumptions about what to expect from the textbooks, and interpreted the results using their own judgment of what was appropriate or negative, it is difficult to accept these findings as being indicative of a problematic social studies curriculum. Perhaps the input of AI/AN people themselves (representing each region in the U.S.) having examined these same textbooks would provide a more accurate and sincere interpretation of how AI/AN people are being portrayed in social studies textbooks. For example, a group of Seminole tribal members may best provide a critique on how their ancestors and contemporary communities are being portrayed in these textbooks, rather than two non-Indian college professors.

Although the textbooks examined in this study may no longer be used today, and the results relied heavily on the interpretations of the researchers, it may be a useful strategy for teachers to look carefully at the curriculum and books being used in their school. Based on the inability to accept this particular study as being an accurate interpretation of how AI/AN cultures are being portrayed in social studies textbooks, due to the fact that the researchers used their own

lenses to make their judgments, further research involving AI/AN representatives would be helpful in examining textbooks and curricular materials that involve AI/AN people.

A Study of a Native Studies Curriculum in Hawaii

Kaomea (2005) conducted a case study of a Native studies program in Hawaii elementary schools. The purpose of this case study was to raise questions about the role and responsibility of non-Native educators and their support of Native studies. A Native Hawaiian herself, Kaomea had the experience of attending school in Hawaii and saw how her culture and people were represented in the school curricula. As a Native Hawaiian assistant professor in the College of Education at the University of Hawaii, Kaomea has a vested interest in the subject. She portrayed her knowledge of Native Hawaiian history as being extensive and accurate through her discussion of the study. This study was presented as a cautionary example of how educators, even with the best of intentions, could be counterproductive in their efforts. Suggestions for ways that teachers can become allies of AI/AN people, and to help them with self-determination efforts, will be discussed here as well as in Chapter Four.

The nationwide civil rights movement of the 1960s and 1970s inspired a Hawaiian renaissance and sovereignty movement. In 1978, a constitutional amendment mandating that Native Hawaiian people's stories and experiences be included in school curricula was pushed through the state legislature. This study critically examined how this Native Hawaiian studies curriculum was actually carried out in classroom practice.

Kaomea's analysis consisted of two years of fieldwork that involved interviews, document analyses, and observations in eight elementary schools throughout the state of Hawaii. Schools were selected with the aim of representing the range of racial, ethnic, and socioeconomic demographics found in the Hawaii school system. According to the Hawaii Department of

Education, the largest percentage of students in Hawaii's public schools were of Native Hawaiian ancestry (24.7%), while the large majority of classroom teachers were Japanese American (46.4%) and Caucasian (27.9%). These demographics were reflected in the eight schools selected for this study.

The researcher consulted with various teachers and administrators and presented her findings at forums across the state. This served to verify that her observations were typical and common throughout the state, and not just chance occurrences.

Kaomea's observations in the classroom showed children's emphasis on sadism and violence in regards to the history of Native Hawaiians, observed during class presentations. When she consulted a teacher about this observation, the teacher said that the history might have sounded gory but it was all true. To support her claim, the teacher showed the researcher a copy of her class's Hawaiian studies textbook and found many examples where violence was depicted in the history of the Native people's culture. This textbook was published in 1980 and was found to be widely used in Hawaiian studies classrooms throughout the state.

By using a form of Bakhtinian discourse analysis, Kaomea found that the words from the students' class presentations in their Hawaiian studies course could be traced back to the official discourse of the classroom textbook, and even further to the exaggerated depictions of colonial missionaries and sailors. Kaomea believed that these discourses served to legitimize past colonial oppressions of the Hawaiian people, created a fear or distrust of current movements toward Hawaiian self-determination, and continued to influence the way children and teachers thought and talked about Hawaiians in school.

Although human sacrifice and civil warfare practices did exist in pre-contact Hawaii, the researcher suggested that accounts of these events were highly exaggerated and that the number

of deaths due to such circumstances fell far short of the massive widespread killings that occurred by early colonists.

One instance observed in a classroom that was of particular concern to the researcher was in a "Kapu in Old Hawaii/Kapu in School" lesson. The teacher in a fourth-grade class had students brainstorm a chart outlining the early Hawaiian kapu system, a system of rules, with the rules in their elementary school. When the penalties for breaking rules were examined, the teacher explained that in school the punishment fit the crime, but in old Hawaii the punishment was always death. The researcher believed that by placing the two systems side by side, children would view pre-contact Hawaii as being frightening and oppressive in comparison. She suggested that it might be more appropriate if the kapu system of old Hawaii was compared to the U.S. penal system, which despite the truths of such practices as capital punishment and violence between prisoners, would probably be seen as being too vulgar and offensive for elementary students.

Kaomea's critique of the Native studies curriculum in eight elementary schools in Hawaii made her question the teachers' decisions not to intervene in particular lessons where discourses and presentations of Native Hawaiians was exaggerated and considered offensive. As a Native Hawaiian, the researcher had a different, more personal, perspective of what was going on in the classroom and for this reason her research could be viewed as being quite valid. As a result, Kaomea held the teacher responsible for how the Native studies curriculum was being used in the classroom.

During interviews with several teachers she found that many teachers were not confident in their knowledge of Hawaiian history and Native studies, and reported feeling unprepared to teach these subjects although mandated by the state to do so. Many felt required to teach Native

studies since it was mandated, yet many did not feel they had time to prepare and teach it well. This issue would need to be addressed at the administrative level to ensure that teachers received the proper training and education to be able to teach this subject.

Kaomea concluded her presentation of this study by stating that Native peoples should have authority over Native issues, which related to the idea of self-determination. She suggested that non-Natives interested in assisting with Native self-determination efforts must work collaboratively with Native allies and confront the issues of unearned power and privilege, including one's own, and use this to confront oppression. Still, the potential for insider bias may be seen as problematic given the researcher's strong stance on Native Hawaiian issues and her desire to see her ancestry and culture portrayed in a positive light. Without a thorough and accurate study of Native Hawaiian history and culture placed side by side with the perspective being taught through this curriculum, it would be difficult to assess whether or not Kaomea has a valid and unbiased argument towards the problems she discussed within this Native Hawaiian studies program.

Education can serve as a means of combating stereotypes and giving students the skills to critically examine textbooks, history and literature. Since so many classrooms consist of students of diverse cultures, multicultural education has been increasingly seen as an effective method to be used in school curriculum. The following study was conducted to find out what parents and teachers thought about the idea of implementing a multicultural education program in their school district.

A Study of Parents and Teachers Attitudes about Multicultural Education

Since most AI/AN students attend public schools, the likelihood of having a multitude of cultures inside one classroom is great. This study (Swisher, 1984) asked parents and teachers

about their views toward multicultural education, which prior to the time of this study had begun to gain attention at the state and national levels. The National Council for the Accreditation of Teacher Education (NCATE) had written, in its 1977 revision of *Standards for the Accreditation of Teacher Education*, evidence of planning for multicultural education.

This study summarized the attitudes of parents and teachers in a rural Indian reservation in North Dakota toward multicultural education. The purpose of the study was to investigate and compare the attitudes of parents and teachers toward the meaning and desirability of implementing multicultural education as part of their school's program, and to demonstrate that their opinions were valuable in this process.

The participants were parents and teachers of children at Standing Rock Community Elementary School (SRCES). Fifty parents were randomly selected from a list of 186 families representing 279 parents who had children enrolled in kindergarten through grade six. The teacher sample consisted of 18 classroom teachers at SRCES.

An attitude scale was developed to measure the attitudes of the parents and teachers, and included the following definition of multicultural education: "... learning about the language, diet, costuming, socialization patterns, and code of ethics of many different groups... included in all different subjects taught in school... to help children understand, accept, and appreciate the differences that exist in people" (Swisher, 1981, p.183, as cited in Swisher, 1984). A Likert-type scale contained 30 items which produced a reliability coefficient of .89 when tested using coefficient alpha.

Demographic variables gathered were: age, sex, total years of teaching experience, years taught on a reservation, family size, location of residence, years lived off of the reservation, identified ethnic origin, degree of Indian blood, tribal affiliation and enrollment, first language,

language most often spoken at home, perceived traditionalism, occupation, employment status, family income level, and level of education. The variables were considered independently and/or as subgroups of parents and teachers.

The data were treated for significant differences using the analysis of variance (ANOVA), t-test, and Pearson product-moment correlation co-efficient, r. The varimax rotated factor analysis was used to determine patterns of interrelationships among the variables within the parent group. The .05 level of significance, or less, was considered sufficient to reject a hypothesis of no difference.

There was a significant difference at the .05 level between the attitudes of parents and teachers toward the concept of multicultural education and the desire for an instructional program in multicultural education. When age and sex of parents and teachers were considered separately, there were no significant differences. Variables such as years lived off of the reservation, degree of Indian blood, tribal enrollment, and level of education of parents did produce significant differences in relation to attitudes toward the concept of multicultural education. The age of the teacher and years taught on the reservation were two variables that produced significant negative correlations in regards to attitudes toward the concept of multicultural education and the desire for an instructional program in multicultural education.

The teachers' attitudes were more positive toward such concepts than those of parents. This could be because of the experience and education of teachers. Teachers may also be generally more concerned about curricular issues as they relate to what is happening in school. Parents, then, may tend to be more protective of their cultural heritage and less knowledgeable about multicultural concepts. One can merely speculate as to the reasons for these results.

Data revealed that parents who had lived all of their lives on the Standing Rock Indian Reservation differed significantly from parents who have lived in other places in attitudes toward multicultural education. Those parents who had lived for more than ten years off the reservation had a more positive attitude toward multicultural education. This could be due to an increased awareness and exposure to other cultures outside of the reservation.

The degree of Indian blood also produced a significant difference in relation to attitudes parents had toward multicultural education. A linear relationship occurred in that as the degree of blood increased, the mean score of the group decreased. This meant that those parents who were of full blood had a less positive attitude toward multicultural concepts. Parents whose degree of Indian blood was higher may also have lived on the reservation all of their lives, especially considering that blood quantum was commonly used to determine tribal membership.

Occupation, employment status and family income of parents produced no statistical difference in attitudes toward multicultural education, nor did the age of parents. However, the level of education of parents produced a statistically significant difference in relation to attitudes of multicultural education.

The age of teachers in relation to attitudes toward the concept of multicultural education produced a statistically significant correlation. Based on the results, as age increased attitudes became less positive. This could be explained as a result of more recent exposure of young teachers to concepts of multicultural education.

Total years taught in relation to attitudes of teachers toward multicultural education did not prove to be statistically significant. However, teachers' attitudes had a significant negative correlation to the number of years taught on a reservation. Whether teachers were Indian or non-Indian did not produce a significant difference in their attitudes toward multi-cultural education.

This study may not have answered the question: What are the attitudes of parents and teachers toward multicultural education? But it did provide a set of comparative answers to suggest which groups may be more favorably disposed than others. This study took place several decades ago, and perhaps attitudes have changed since then. One possible outcome of this study would be to encourage the involvement of parents and community members in such decisions regarding school curriculum and instruction. Educating parents on the benefits of multicultural education may also be a needed prerequisite to implementing such programs in schools.

Another factor that may have affected the results of this study was the location this study took place-- a rural Indian reservation. Perhaps in schools with high AI/AN enrollment, multicultural education may not be seen as a necessary aspect of the curriculum. Perhaps these teachers and parents believed that multicultural education would not provide the knowledge and skills most relevant for their culture or help with self-determination efforts. Without further research, it would be difficult to determine why community members felt the way they did about multicultural education.

Further study would be needed to determine if these attitudes have changed over time and why differences occurred among and between the teachers and parents. For example, it would be beneficial to determine what factors contributed to the less positive attitude of those teachers who were older and taught the longest number of years on a reservation. Considering that the study was done at an elementary school on an Indian reservation, the results may not be generalized across other communities or schools. It would be interesting to see a comparison of similar studies done in urban schools where classrooms consist of more diverse cultures.

A Study of Math and the Shoshoni

This study (Barta, et al., 2001) researched mathematics within the traditional culture of the Shoshoni. The results of this study can be used as an example of how cultural knowledge and ways of knowing can be related to academic subjects taught in school, and could serve as a means of enriching or supplementing existing curriculum.

This qualitative study involved semi-structured interviews of Shoshoni representatives to describe the culturally specific use of mathematics in Shoshoni traditional living practices. The Shoshoni historically consisted of four bands of distinct groups of American Indians that lived in the Salmon River Mountains and the Snake River Plains. Today, the majority of Shoshoni people live on or near the Shoshoni-Bannock reservation near Pocatello, Idaho, or the Wind River Reservation near Lander, Wyoming.

This study was conducted for one year as five Shoshoni tribal representatives, who possessed the memory of traditional practices of their people on the Shoshoni-Bannock reservation, were interviewed. Two trained interviewers who were Shoshoni college students conducted the structured interviews. Structural questioning was used to discover basic units of cultural knowledge.

Research methods utilized standard ethnographic techniques including face-to-face key informant and life history interviews; structured formal and informal interviews; inspection of archival documents and directed library research, including official government records, scholarly descriptions in books and articles, less formal written documents including tribal legends and stories; and an examination of collections of non-written artifacts, such as traditional tools and weapons, craft items, artwork, maps, photographs, and videotapes.

Those interviewed were considered elders in the tribe. They were selected based on recommendations by members of the community. The elders were asked to explain how the six aspects of mathematical behavior-- counting, measuring, designing, locating, explaining, and playing-- were a substantial part of Shoshoni traditional daily living. Audio taped descriptions were collected and verbatim transcriptions were made of the interviews. A Shoshoni native speaker was consulted and provided any needed translations.

Triangulation of the data and submission of excerpts of field notes and related interpretations to respective tribal representatives assessed the credibility of the researcher's findings and conclusions. Interview responses were categorized according to their best fit in the six categories. Integrating observations from all other sources was added to the data. Analysis consisted of examining related clusters of mathematical and cultural descriptions from all data sources to illustrate those mathematical behaviors specific to the Shoshoni culture. The researchers agreed that the mathematical practices described would invariably incorporate some degree of western influence, since the Shoshoni have not been isolated since the time of colonization.

The results were as follows:

1. Counting: The Shoshoni counting system was based on groupings of ten that were used to quantify objects, people and events encountered in daily living. Values ranging from one to countless, or infinity, could be described. Gai hai wa'te meant "gone" or "nothing", which could represent zero. Hand gestures to count from zero into the hundreds were used, and could be used in isolation or with verbal counting.

2. Mathematical Operations: Shoshoni counting incorporated the operations of addition, subtraction, and multiplication, or combinations thereof. One example given of where this was used was to ration out flour and sugar between relatives. Numbers were not necessary to name a count when describing a group of objects. Phrases that meant "many/lots" or "few" were adequate to describe the group. When subtracting, the people would use a phrase meaning "what was left." Division was used in activities such as a hunter sharing a recently killed deer. The number of people or families receiving a share of the meat determined the divisor. Equal portions meant everyone got what they needed, rather than everyone received the same amount.
3. Numerical Symbolic Representations: Values were often represented with actual pictures of the objects painted or drawn on buffalo hides. Lines drawn in pictograph fashion on rock faces were also used.
4. Significant Numbers: The numbers four and twelve were considered special to the people. The number four could indicate the four cardinal directions or the number of times a prayer or song was repeated. Twelve poles were used to construct the perimeter of the Sundance enclosure, and some said twelve represented the twelve apostles.
5. Measuring: Mana'ki was to measure by laying out the hands. Parts of the body such as hands, arms, and paces were used and were specific to the person to which they belonged. This made sense considering that individualized measures were used to construct such things as a bow and arrow, which would then be proportionally appropriate for the user. Other measuring devices included sticks

and poles or strips of rawhide. For measuring circles for sweat lodges or teepee rings, the men would select the center of the circle and using the length of a rawhide strip as the radius they would mark the circle's circumference. Volume was measured in relation to the size of the container in which liquid or material was placed, such as a buffalo horn. The experienced cook knew that a particular container or bowl when filled half full would produce a specified amount of food. Distances were described as a function of time and/or speed. A distance may have been described by the number of suns or sleeps occurring during the journey; and time would be influenced by the mode of travel, such as foot or horseback. Weight was measured in relation to another object to which it was compared. For example, one might compare a rock in one hand against an object held in another hand. People would describe temperature in a similar way, as they used their own reference for what was hot or cold.

6. Time: The measurement devices most often used were affiliated with events of nature. Due to constant observation people were always aware of cycles in nature, such as where the sun rose and set daily. The solar cycle determined the length of one day. Increments of time throughout the day were specified by the location of the sun in the sky. Lengths of shadows were also used as indicators of time of day. Longer durations were measured by naming them in relation to the number of suns or moons counted during the event. One's age was described, if at all, by the number of seasons one had lived. Ages were also described in relation to an important event that may have occurred during the time of one's birth, such

as a big fire or storm. Physical calendars consisted of notches cut in a counting stick or knots tied in lengths of rope or rawhide.

7. Shapes: Usually the features of a shape were used to help name the shape. For example, the term doto'aga'nd meant having corners. The number of corners determined the shape-- squares, rectangles or triangles. The word for circle meant round.
8. Patterns: The construction of a structure, tool, or beadwork design incorporated geometrical and mathematical principles and concepts. Both men and women did beadwork, and the stringing of the beads in the proper sequence involved counting, calculating, and patterning.
9. Locating: The Shoshoni had maps that were usually in the minds of those who had made the trip before. Topographical features were used as benchmarks, as well as one's location in reference to where the sun rose and set at different times of the year. Star positions were also used in navigation. Pictographs and petroglyphs helped communicate hunting and camping grounds. Physical maps were made on hides, with certain symbols used to represent certain geographic features. Height or depth was described in reference to how many of something it would take to equal that measurement. Vertical or horizontal orientations were described by indicating it was standing straight up or lying flat on the ground.
10. Explaining: Communication of ideas was related to situations where the Shoshoni shared ideas of wealth and prominence, time, and history. For example, the number of horses one had and how many teepees showed wealth and prominence. In addition a strong family showed wealth and prominence. The

Shoshoni named seasons and had names for the twelve months, or moons.

Examples of names included: goa-mea'a (the freezing moon) for January, ya'a-me'a (the warming moon) for March, daza-mea'a (the summer moon) for July, and naa-mea'a (the rutting moon) for October.

11. Playing: Mathematics was a common aspect of every game the Shoshoni played.

Measuring was used to build sticks for the hockey-like game of Shinny. The Hand Game consisted of probability when guessing, and betting preceded the game. The women played a game of rock juggling, where whoever walked the farthest while juggling a certain number of rocks was the winner.

This knowledge could potentially help a Shoshoni child develop a deeper understanding of mathematics, and at the same time expand their awareness of themselves and their people. Students may learn that the mathematical concepts and principles they are expected to learn in school are very similar to those used by their people traditionally. One possible outcome could be empowerment through the affirmation of one's Shoshoni identity in the classroom. Since assumptions such as these that suggest possible benefits for students who are taught using mathematics that include aspects of Shoshoni traditional culture are not backed by any research, the study does not offer any valid conclusions.

What this study revealed was that the Shoshoni have mathematics embedded in their traditional cultural practices. The researchers offered many ideas of activities and learning objectives for Shoshoni students that draw upon this knowledge. Research would need to be conducted in order to determine the effectiveness of such activities and learning objectives within a variety of classroom settings, in and outside of Shoshoni schools. Without further research it is impossible to make recommendations for classroom practice based on this study

alone. However, there has been extensive research (Lipka, et al., 2005; Rickard, 2005; Webster, et al., 2005) regarding an ethno-mathematics curriculum in western Alaska that will be discussed in this chapter, and may provide a useful example of the effectiveness of integrating traditional cultural knowledge within the academic subject of mathematics.

A Study of Math and the Yup'ik

This case study by Rickard (2005) analyzed a culturally relevant math curriculum, based on Yup'ik knowledge and ways of knowing, in practice in a classroom. The purpose of this study was to see how the teacher and the lesson from the curriculum being observed supported the students' learning of the relationship between constant perimeter and varying area in rectangles.

The curriculum to which this study referred was *Math in a Cultural Context: Lessons Learned from Yup'ik Eskimo Elders* (MCC) and consisted of a series of modules intended to supplement a complete K-6 mathematics curriculum by explicitly connecting mathematics with the culture and knowledge of the Yup'ik people, a major group of Alaska Natives. The modules were aligned with the National Council of Teachers of Mathematics (NCTM) (2000) *Principles and Standards for School Mathematics* and incorporated substantive, inquiry-oriented activities that engaged students in learning about mathematical content and processes by exploring rich mathematical problems. The MCC modules also put standards-based content and pedagogy in the context of Yup'ik culture.

This case study examined a sixth grade classroom in an urban Alaska school district working with the module *Building a Fish Rack: Investigations into Proof, Properties, Perimeter, and Area*, written by Adams and Lipka in 2003. This module incorporated the NCTM process

standards--communication, reasoning and proof, representation, connections, and problem solving-- in addition to addressing mathematics content by investigating perimeter and area.

The module began with an overview of the geography and ecology of southwestern Alaska, particularly the subsistence lifestyle of the Yup'ik people who construct fish racks from available materials to dry harvested salmon. A central problem in this module was to determine what the dimensions of a rectangular fish rack should be if, for a fixed amount of material available to build with, one would want to dry the most fish. Mathematically this meant determining the dimensions of a rectangle that will have the largest area for a fixed, or constant, perimeter.

Data were collected from a variety of sources. The author analyzed transcripts of interviews conducted with the teacher where she was asked about her approach to and beliefs about teaching mathematics. In addition, an informal questionnaire completed by the teacher was studied, along with the demographic information about her students. Detailed classroom observation records were analyzed and videos of the teacher teaching this module were studied numerous times; some portions were transcribed. Mathematical discourse between the teacher and students was analyzed, and samples of students' work (solutions to problems, entries in math journals) were reviewed. The interview, questionnaire, and class observation data were collected between spring 2002 and spring 2004. The teacher was videotaped teaching the *Building a Fish Rack* module during the spring of 2004.

Quantitative data were collected by having students complete pre- and post-tests that focused on perimeter and area concepts and relationships before and after completing the *Building a Fish Rack* unit. There was the treatment group, who learned from the *Building a Fish*

Rack module, and a control group, where students used typical textbooks instead of the MCC module, to compare students' scores.

This case study focused on Activity 12: Investigating the Relationship of Perimeter and Area of Rectangles within the *Building a Fish Rack* module. The reason this particular activity was chosen was to provide a representative example of how the teacher taught the entire module, and other modules within the MCC series.

The teacher, Janet Speed, taught sixth grade in the Fairbanks North Star Borough School District, an urban school district in interior Alaska. Ms. Speed was Caucasian, did not speak Yup'ik, and had been teaching for 19 years. Her class of 22 students included six Alaska Natives, four African Americans, and 12 Caucasians. Only one of the Alaska Native students was Yup'ik. Ms. Speed completed professional development workshops on the use of the MCC materials before she began to teach with them.

Ms. Speed had originally worked with the MCC project as a control group teacher, and her students attained high achievement scores on MCC module post-tests relative to other control-group classes. She was subsequently invited to participate in this study as a treatment group teacher partly because her students' performance in the control group stood out to MCC researchers. In addition, she was selected because her classes had been typically more diverse, with a high population of Alaska Native students, and because she taught in an urban school district.

Ms. Speed introduced Activity 12 by presenting a conjecture that was relevant to the context of the module, and made sure that her students understood the conjecture. The conjecture stated: since all the rectangles on the table have a perimeter of 28, they'll all have the same area too. She also provided clear guidance for an appropriate answer, by providing proof

or a counterexample, and connected the conjecture back to earlier mathematics the students had learned.

Students then discussed the conjecture in small groups while the teacher circulated around the room. As students engaged in a discussion Ms. Speed reminded them that they needed to be able to explain how they proved or disproved the conjecture. At this point students began sketching on graph paper different examples of rectangles with a perimeter of 28 and counting the squares inside the rectangles to determine the area.

One observation noted by the researcher was that the Alaska Native student in the group did not participate verbally as much as the other students; however, she did sketch some of the rectangles and compare the areas with the group's. The researcher believed that this student did participate, but in a nonverbal way. It is unclear whether or not the researcher believed that this was due to the group dynamics-- being the only Native person in the group-- or if it was being dismissed as a cultural trait. It would be meaningful to observe the verbal and nonverbal trends of participation in groups that consist entirely of Alaska Native students.

Following the group work, the teacher brought the students together for a class discussion to summarize the groups' findings. First, Ms. Speed had students individually find the area of each of the seven rectangles on a table on the overhead. Next, she asked students to fill out a table provided with the module listing the width, length and area of all the rectangles that had a perimeter of 28. The purpose of this table was to help students identify patterns among rectangles that had a constant perimeter and varying area.

After completing this task individually, the teacher then put a completed table on the overhead and had students compare their answers. Ms. Speed steered the discussion to include students' comments about how they identified the patterns, their reasoning about what the

patterns meant, and connections back to the rectangles that the data represented. Then she asked the class that if she was to construct the largest possible fish rack and only had enough materials to make it with a perimeter of 28, what shape would they suggest? A student replied with the answer seven-by-seven, and the teacher pushed the student to explain his reasoning further. This was an important observation the researcher made, since students were being taught to verbally explain their reasoning instead of focusing on right or wrong answers.

Later on in the lesson Ms. Speed made an error as she was working through a similar problem. By verbally explaining her own problem-solving methods she was able to model how to share, test, and revise one's mathematical thinking, demonstrating what she expected her students to do.

For the remaining nine minutes of the 75 minute lesson Ms. Speed had students write in their journals about what they learned, an activity included in the module. Examples of student work included: "I learned how to find the biggest possible area if the perimeter is like, 100, 20, or 25 by using doubles" and "... when the length goes between 1-7 the area gets bigger then when it goes from 7-13 the area gets smaller because the numbers are repeating" (p.92). These examples suggested that Ms. Speed's students could explain the mathematics of constant perimeter and varying area with rectangles in their own words, although no explicit connections were made to designing a fish rack. This could be because fish racks are not as common in this urban community.

Achievement was measured by comparing Ms. Speed's students' results on pre- and post-tests designed to assess the concepts of perimeter, area, and proof. The researcher compared achievement between Alaska Native students and non-Alaska Native students, along with a comparison with the control group of students that did not use the MCC module. A comparison

was also made between Ms. Speed's class and other urban treatment classes. Students in the MCC study treatment and control groups showed similar levels of achievement on the pre-test on perimeter, area, and proof concepts but significantly different levels of achievement on the post-test (see Table 1).

Table 1

Test Score Results

	Ms. Speed's whole class; N=22	Ms. Speed's Alaska Native students only; N=6	Urban control students; N= 30
Pre-Test	42.91%	38.29%	37.83%
Post-Test	72.41%	68.0%	40.20%

Note. N = students.

Adapted from Rickard, A. (2005). Constant perimeter, varying area: A case study of teaching and learning mathematics to design a fish rack. *Journal of American Indian Education*, 44(3), 80-100.

Ms. Speed's entire class and her Alaska Native students significantly outperformed the urban control group. This suggests that the *Building a Fish Rack* module made a significant difference in achievement for Ms. Speed's students. However, without the detailed observations, interviews and subsequent analyses of the teachers in the control group, it is difficult to determine how much of the results were due to the implementation of the MCC module and how much was due to the teacher's methods and strategies (i.e. small group work, inquiry-based instruction).

One implication of this study, mentioned by the researcher, is that problem-centered, inquiry-oriented mathematics curricula that embed mathematics in a non-Western cultural

context can support the mathematics achievement of students. This conclusion cannot be generalized across other contexts and students due to the fact that this is an isolated case study. The question remains: To what extent was students' learning shaped by the problem-centered, inquiry-oriented structure of the *Building a Fish Rack* module in tandem with Ms. Speed's pedagogy that fostered and maintained rich mathematical discourse?

More studies will be discussed later in this chapter to help address this question in regards to the MCC curriculum. This particular sample size was too small to make generalizations, especially toward Alaska Native learners specifically. There may also be significant differences between rural and urban student samples, considering that rural schools tend to be predominantly Alaska Native and contain multiage classrooms. The studies to be presented later will present a case where this same module was taught in a rural Alaska school, and may add validity to the claims given in this study.

This study gave an example of how culturally relevant curriculum can be used in a classroom with a variety of cultures to support the learning of all students in this classroom. The data also showed that within this sample, the *Building a Fish Rack* module supported increased mathematics achievement in Alaska Native students that significantly exceeded that of typical textbooks. A larger sample size across a variety of school settings in Alaska could reinforce and add validity to these findings.

A Study on Teaching Science

This study (Zwick, et al., 1996) was conducted to examine the validity of outdoor-based versus classroom-based science education experiences for AI/AN students. The study took place in the Hardin school districts 17-H and One, in Montana on the edge of the Crow Nation. In the 1989-1990 school year, the district received the first of two Eisenhower Grants to develop an

activity-based science curriculum. The activities were centered on the elementary level and were completed through the fifth grade. They were developed cooperatively by a team of Hardin teachers and administrators, community resource people and college personnel through Montana State University-Billings. These 36 activities, mostly outdoor-oriented, were used in this study.

The developed activities were designed to teach students basic concepts of science and required students to utilize the processes of science, such as: collection, measurement and classification of data; analyses, processes and interpretations of collected data through critical thinking; application of the knowledge or insights gained through data analysis to solve problems and use in discussions; evaluation of the meaning of the data collected, and the validity of the method of using the data; work in small groups; and connections made between science, society, art and language arts. Activities were checked by a group of Crow Indian teachers employed by the Hardin school districts to determine if the activities were culturally acceptable.

The student population of the Hardin school districts was composed of 49% American Indian students. The project directly served 360 students, 198 of which were Indian. Among this group 82 were classified as gifted and talented, 191 as economically disadvantaged, 19 having Limited English Proficiency (LEP), and 53 as educationally handicapped. In addition, 165 were from a small city, urban, environment and 195 students were of rural areas.

Evaluation of the program was conducted by selecting two fourth grade classes of similar characteristics and size within the Hardin school districts. Statistical analysis showed that this sample was representative of the total population of fourth grade students in the districts. The two classes were then divided into an experimental and a control class. The experimental class consisted of 24 students, ten of which were Indian. The control class consisted of 25 students, of which 12 were Indian.

The California Achievement Test (CAT 85) scores were selected as a means of statistically comparing science achievement between the experimental and the control classes as a function of curriculum design. Composite scores in science were reported in addition to science sub-discipline scores in botany, zoology, ecology, chemistry, physical and earth science. Statistical analysis of the CAT 85 scores was conducted to determine whether significant differences existed between the students in the experimental and control classes for composite science scores and sub-discipline scores. In addition, scores were compared within both the control and experimental group for both Indian and non-Indian students.

The t-test results were significant at the .005 probability level to indicate that the experimental class scored significantly higher on the CAT 85 science scores than did the control class. Results of a two way ANOVA tests showed that no significant difference in science sub-discipline scores existed between the Indian and non-Indian students within the experimental class.

Results of the one way ANOVA test showed no significant difference in the CAT 85 science sub-discipline scores by Indian students within the experimental class. The results of the t-test showed that a significant difference existed between the mean CAT 85 scores of the Indian students in the experimental and control classes—the Indian students in the experimental class scored significantly higher than those in the control class. The results of the t-test comparison showed that no significant difference existed between the mean CAT 85 science scores of the non-Indian students in the experimental and control classes. The .05 probability level was accepted as a level of significance.

The results showed significantly greater gains by the students in the experimental class. Since the nature of the activities emphasized relevant context-embedded strategies using hands-

on, group-oriented activities, it could be deduced that these methods are effective strategies for teaching science. The only difference that existed between the two classes was the science curriculum used; therefore, a valid conclusion would be that the activity-based science program was more effective. More studies with larger sample sizes would further validate the claim that the activity approach is superior to the traditional textbook approach for AI/AN student learning.

Implications and recommendations from this section of studies involving the curriculum being used and its effectiveness on AI/AN students' learning will be discussed in Chapter Four. The following section will look at schools, presenting teachers and parents' attitudes toward different types of schools serving AI/AN students, along with two case studies of ways in which communities and schools have tried to improve the education of their students.

The Schools

Oftentimes schools are blamed for the low performance levels of their students. In relation to the issue of AI/AN student achievement in school, the following studies will attempt to factor in the positive and negative effects of schooling on students, parents and communities. The purpose of presenting these studies is to include ways in which schools may or may not be serving the students, based on the observations and attitudes of community members, researchers, parents and educators.

A Study on Educators' Perspectives on Self-Determination

Snyder-Joy (1994) conducted a study to examine federal Indian education policies and the request of AI/AN leaders for greater control over the administration of schools in Indian communities. The primary focus of her study was whether self-determination and local control exist, and to what degree they are present within Indian schools.

The Indian Self-Determination and Education Assistance Act of 1975 enabled tribal groups to contract with the Bureau of Indian Affairs (BIA) to operate their own schools. Title V of the Augustus F. Hawkins Robert T. Stafford Elementary and Secondary School Improvement Amendments of 1988 allowed tribal groups to fund education programs through BIA grants. For this study, the three types of schools were called contract schools, grant schools, and BIA administered schools or BIA schools.

Due to a greater concentration of BIA administered or funded education programs, and diverse Indian cultures in the Southwest, this study was conducted in Arizona, where in 1991 there were 21 federally recognized tribes. The total enrolled population of these tribes was 246,087; five tribes were included in the sample and represented 85% of the enrolled Indian population in Arizona. In Arizona 12,558 students were enrolled in BIA administered or funded elementary and secondary schools for the academic year 1991-1992, while 46,412 Indian students attended public schools.

Data were collected through interviews and surveys. The interview schedule contained 30 open-ended questions regarding the school and respondent, and more focused inquires about self-determination and local control. Two primary areas of questions were central to this research. One question asked: How much self-determination do you feel your school has? This was followed by requests to direct their responses toward the design and implementation of local education policies. Other questions included: Does your school have local control over education? How is local control defined and how much is present in your school? Further probing was used to focus on budgetary, personnel, and curriculum issues.

In-depth, semi-structured interviews were given to a sample of 12 administrators and school board members selected from BIA, contract, and grant schools. Six administrators, three

school board members, and one dormitory director were included. Of these ten, three were from grant schools, three from contract schools, and four from BIA schools. A BIA Superintendent for Education and a Tribal Director of Education, although they were not employed at a specific institution, were included as well.

Interview responses helped to develop the survey questionnaire, which consisted of 40 open and closed-ended questions. Respondents were asked for demographic information and their perceptions of self-determination and local control at their schools. Four main questions were central to this study: 1) How much self-determination do you feel the community/tribe where you work has in designing its own education policies? 2) How much self-determination do you feel the community/tribe where you work has in implementing its own education policies? 3) How much local control do you feel the community/tribe has over the administration of the school in implementation issues such as the budget and personnel? 4) How much local control do you feel the community/tribe has over the administration of the school in design issues such as curriculum design? A five-point Likert scale was used (the five responses being none, little, some, a great deal, and total) for each of these four questions.

Three schools from each tribe received the questionnaires; whenever possible a BIA-administered school, a contract school and a grant school were all selected. A total of 337 questionnaires were mailed to administrators at 12 schools. Only 75 of the surveys were returned. This low return rate made it difficult to generalize the findings to other populations. Awareness of tribal diversity also limited extrapolations from one Indian culture to another.

Of the 75 respondents, 59% were teachers and 15% were administrators. Only one school board member responded and 25% of respondents did not indicate their position. Thirty-

nine percent of the respondents were BIA school employees, 37% worked in contract schools, 19% worked at grant schools, and 5% did not identify the type of school where they worked.

Interviews with BIA school employees resulted in various perceptions. One person proposed that getting the local people interested in education would help improve the school. Two BIA school employees suggested that training people from the local community would increase the number of educators in the area and build a greater sense of community. One of these interviewees mentioned that the BIA expected the school boards to take charge, but school board members did not see themselves as elected officials with foresworn duties and thus impeded the development of programs necessary for the community. This was seen as an obstacle to greater self-determination in education.

Other interviews with BIA school employees resulted in the suggestion that compliance with BIA regulations reduced the school boards' self-determination efforts. Interviewees complained that BIA officials dictated policies to the school boards rather than advising them on how to better operate their programs.

Contract school personnel perceived their communities to have greater self-determination in education. One interviewee believed that the school board was free to incorporate whatever policies or curriculums were considered important to the community, and reported that the local culture had a strong influence and was integrated into classrooms.

Grant school employees' responses were similar to those of the contract school interviewees. They said that they had opportunities to create innovative programs and the curriculum included local traditions and language. One grant school employee believed it was the responsibility of the school officials to provide reasons why the students should stay in school. He perceived that the schools had failed the children, as the curriculum was not tied to

the students' lives. In his view, linking the present and future was vital to reducing the dropout rate and increasing graduation numbers.

Perceptions of self-determination and local control varied. BIA school employees reported that people in their communities lacked an awareness of self-determination, which resulted in continuing dependency on the BIA. Contract and grant school personnel reported greater self-determination than BIA school personnel.

The survey data results for the subject were as follows. Nearly all contract school respondents and 86% of grant school respondents perceived that their community had at least some self-determination in education policy design. About two-thirds of the BIA school respondents said that their community had some or more say in the design of policies governing the operations of their schools. The correlation coefficient of .398 was significant at the .001 level. This suggested that contract and grant school respondents perceived greater self-determination than BIA school respondents.

Almost 60% of the BIA-administered school respondents said that their community had at least some self-determination in the implementation of policies. More than 85% of the grant school respondents and 93% of the contract school respondents perceived community self-determination in implementing education policies. A correlation coefficient of .493 ($p=.001$) supported perceptions of greater self-determination in schools operated by local communities as compared to BIA administered programs.

On local control in policy implementation, responses from BIA school personnel ranged from low autonomy to a good deal of local discretion. One educator complained that the BIA was more concerned about paperwork and deadlines, and disliked the BIA's policies because they seemed more confusing than helpful. An interviewee also complained that the BIA had not

provided the funding for some required programs. One example given was that the school was supposed to have a librarian but did not have the money to hire one, meaning the school was not in compliance due to a lack of funds.

Another interviewee believed the BIA discriminated its funding provisions, meaning programs that were important to the BIA received money while other services experienced delays in the arrival of funds. A different interviewee noted that although the laws are set by the BIA, the schools decide locally how these laws can be met. This was supported by another respondent who believed there was not much difference between BIA, contract, and public schools.

Interviews with contract school personnel suggested that the amount of discretion available to them varied by the program area. They perceived that more discretion was given to the upkeep and renovation of the physical school than in the determination of academic standards. Grant school employees perceived largely unrestricted discretion in implementing BIA policies. One interviewee noted that the school administration had autonomy from the tribal council in school operations. In general, the grant school educators perceived more autonomy from the BIA than was reported by contract or BIA school personnel.

When asked how much local control they perceived their communities had, the contract school employees reported having more local control over the budget than did BIA and grant school educators. In regards to school curriculum, there was a significant difference between the answers provided by the educators from all three types of schools. Fifty percent of the BIA school respondents reported some or more control over curriculum design, 80% of contract school employees and 79% of grant school employees related that their community had at least some control over the design of the curriculum ($r= .435$, $p= .001$). Grant school and contract

school personnel perceived greater local control over the curriculum than did BIA school employees.

Although this study, due to the small sample size and specific location, cannot be generalized, there were several insights to be gained from the results. The issue was raised of a need to educate the local community about their responsibilities to the school. This research also suggested that locally-controlled contract and grant schools may provide improvement in education sought by AI/AN communities.

In order to add validity to this study, future inquiry must examine the curriculum offered at locally controlled schools to see if greater self-determination and local control translate into effective instruction and positive experiences for the students. Also, students' academic achievements should be looked at in each of the three schools. Without this essential data it is impossible to know if perceptions on greater self-determination in schools actually helped improve the education of AI/AN students, and if so, what teaching strategies would be most effective.

A Case Study on Self-Determination

Manuelito (2005) conducted an ethnographic study on how education based on Navajo epistemology has reflected the self-determination of the Ramah Navajo community. Under the 1975 Indian Self-Determination and Educational Assistance Act, Indian communities can enact self-determination through community-based schooling. The purpose of Manuelito's study was to examine the concept of self-determination as it was defined and practiced by the Ramah Navajo community which has controlled the Ramah Navajo School (renamed Pine Hill School) since 1970.

In 1970, several Navajo elders and a recent high school graduate traveled to Washington, D.C., to request funding for a school in the Ramah Navajo community. After their requests were ignored, Bertha Lorenzo, described as a frail elder, placed her blanket in the doorway of the BIA building and said she would not leave until they received their funding. As a result of this act the Commissioner of Indian Affairs approved funding for the Ramah Navajo High School, the first Navajo community-controlled secondary school. Although the establishment of the school had its challenges—harassment from the non-Indian Ramah community, rejection of the culturally-embedded curricula by the state superintendent, and inadequate funding—Senator Montoya of New Mexico helped the school obtain the needed approval following court hearings. At the time of this study the school was described as having a multimillion-dollar campus consisting of both K-12 and postsecondary education, and developing bilingual-bicultural curriculum materials for use at other Navajo schools. Manuelito also gave credit to the school for providing jobs and income, influencing the community to create paved roads, water, and electricity for the first time.

The Ramah Navajo community was a satellite Navajo community, or small reservation, in New Mexico with a population of approximately 3,000. The study was conducted from 1999 to 2001 by Manuelito, who was a member of the community and former teacher at Ramah Navajo School. Also, she was bilingual in both English and Navajo. Her relatedness to the study participants helped her establish a rapport with the community and allowed her to conduct interviews in the Navajo language. Manuelito subscribed to a Navajo worldview, which she found to be similar to what she called a naturalistic research paradigm. The similarities were "based on the assumption of multiple realities" (p.80) and knowledge was considered personal and subjective. Both the naturalistic research paradigm and the Navajo worldview also stressed

the importance of social relationships, thus her methodology of gathering knowledge and constructing meaning for this study were built upon these paradigms.

Manuelito used ethnographic techniques such as participant observation, in-depth interviews, and document analysis to reveal and analyze the Ramah Navajo perspectives on self-determination. The research design was described as emergent, with theory thoroughly grounded in the data. The collection of data and the analysis proceeded simultaneously.

Manuelito conducted historical research within the Ramah Navajo community and relied on previously conducted interviews and oral histories. She also interviewed 36 individuals twice, and a focus group of four individuals. School board members, two of whom were former founding members and elders, administrators, teachers, parents and students were all interviewed. Many interviews were recorded in Navajo and later transcribed into English. From this data patterns and themes were discovered, which the researcher referred to as processes, "because processes denote living, nonstatic entities" (p.80). These processes, she argued, represented the basic elements of self-determination expressed and experienced in the Ramah Navajo community. She utilized the processes to construct a metaphoric hooghan, or hogan, which is a traditional Navajo dwelling, to represent self-determination in the Pine Hill School.

Based on an analysis her research, Manuelito concluded that the meaning of self-determination from a Ramah Navajo perspective was based on a commitment to the community. She contrasted this definition with that of the Anglo-American notion of self-determination, stating that it supported "unfair competition among Navajo communities" and created "selfishness among individuals" (p. 81). Her descriptions of both the Ramah Navajo and European American perspectives on self-determination seemed to be influenced by her own

interpretations and beliefs, and revealed a strong bias held toward her own community and against European American society.

The metaphor created by Manuelito to organize her findings consisted of four processes of self-determination-- community-based planning, maintaining an awareness of self, being proactive, and persevering-- which represented the four foundational posts of the hogan. These four processes were seen as being aligned with the development and construction of the Pine Hill School, thus the hogan became a metaphor to describe self-determination in the Ramah Navajo community.

The development of the community-controlled Pine Hill School was attributed to traditional Ramah Navajo beliefs and a worldview that valued education within a cultural context. Manuelito contrasted the perspectives of self-determination and education of the Ramah Navajo with the European American perspective, but also believed that the subject matter contained in the Ramah Navajo view of education-- wisdom, ancestral teachings, Navajo language, and contemporary knowledge-- were not incompatible with European American academic categories such as math, science, social studies or literacy.

Manuelito's case study provided one example of a school that was created and successfully maintained, reflecting the Ramah Navajo community's right of self-determination. Although the school was described as being successful in empowering the community and improving certain structural conditions on the reservation (i.e. roads, water, electricity), the research did not produce any findings on whether or not the school was successful in educating the students and providing them with opportunities to navigate within both their own traditional culture and that of the mainstream, or dominant, culture. What this example has illustrated, however, is that AI/AN communities could potentially assert control and responsibility over their

children's education based on the Indian Self-Determination Act. It is impossible to determine, based on this example, if this right alone would guarantee the success of such a school, a community and its learners.

A Study of Indian Parents and their Relationships with Schools

Robinson-Zanartu and Majel-Dixon (1996) studied the attitudes that Indian parents and parenting community members had about education, satisfaction with schools, the degree to which schools value Indian culture, their involvement with schools, and school expectations for their children. The researchers stated that parent attitudes toward schools and school attitudes toward students' languages and cultures are related to students' academic achievement, citing several studies to support that claim. They also communicated their belief that teachers and schools should collaborate with parents and parenting communities regarding their children's education. The purpose of this study was to advocate that data collected from parent voices is a valuable resource in creating and evaluating educational interventions, considering the trend of low academic achievement among AI/AN students.

Participants for this study included 234 subjects (parents, parenting community and interested community members) representing 55 bands or tribes, predominantly from central and western regions of the U.S. The subjects were recruited at three national American Indian gatherings between 1993 and 1995—two conferences of the National Congress of American Indians (NCAI) held in Albuquerque and San Francisco, and one National Indian Education Association (NIEA) conference held in Albuquerque. The researchers claimed that large numbers of people across many tribes and bands attended these meetings and were often attended by people sent to represent others, especially the NCAI; therefore, these forums were chosen for their broad cross-tribal sample of Indian parents and community members whose

ideas and opinions would be representative. The researchers also hypothesized that this sample may have represented a more highly educated group than the population as a whole, which must be considered when examining the results.

Surveys were administered during the three conferences. A booth was set up, arranged for the American Indian Specialty in School Psychology Project (AISSP), with an AISSP member present to explain the purpose of the study and to listen and record responses where appropriate. A drop-off box was provided and the research co-investigator spoke in front of groups to request participation in the survey.

The questionnaire followed a pilot study and questions were further developed based on the feedback from this study. The pilot study was conducted with 30 Indian parents and community members and five university faculty members, two of which were Indian. The final questionnaire contained 24 items. Twenty-two items requested parent ratings using a Likert scale of one to five (strongly disagree to strongly agree) across several categories of items such as: satisfaction with the child's education; place of culture in the school; value of and respect for parent involvement; expectations of the school for their children; and, if applicable, special education involvement, understanding and concurrence with the procedures and placements. Two items requested narrative responses to the questions: What would you like schools to know about educating Indian children? What would you like to know from the schools?

Geographic and tribal affiliation was each seen as being an important variable, along with the type of school being addressed, whether it was a BIA school, tribally controlled school or public schools. Results from questions one through 22 were compiled by item and subjected to a one way analysis of variance to determine significant variations which should be addressed. The analysis compared each question variable to the variables of gender, age, region, relationship of

respondent, and type of school attended. Narrative response questions were recorded verbatim and then grouped into categories based on the results.

For most of the variables (data, age of child, gender, and tribal affiliation) no significant differences were found. All questions produced significant levels of difference by type of school as determined by the ANOVA and post hoc analysis. Over 200 narrative comments supported and enhanced the numeric data.

The numeric data yielded the following significant themes. Parents and community members ranked themselves and their culture as very important in the education of their children, and 29 narrative responses spoke to this issue. Support of general education in tribally-controlled schools linked to cultural awareness was significantly stronger than for either public or BIA schools. Fourteen of 22 items related to satisfaction with school and they all were ranked as high levels of satisfaction for tribally-controlled schools; 66 narrative responses commented on the need for schools to know more about Indian cultures, and another 11 responses asked about the schools' familiarity and respect for Indian language, tradition and culture.

BIA schools were perceived as significantly less satisfactory to parents. BIA schools varied significantly (lower) from tribally-controlled schools all of the time, and from public schools on three of 14 general education items and five of eight special education specific items. Indian parent involvement in schools with meetings (disagree range), knowledge of the curriculum (neutral) and parent importance in the child's education (rated between agree and neutral) were significantly weaker when the child was enrolled in a BIA school. Virtually all narrative comments which referred to BIA schools spoke to this difference, such as: BIA schools hurt our people, my child should not be taken away from the tribe, and under no circumstances should children be sent to Indian boarding schools.

Tribally-controlled schools were perceived as holding higher expectations in achievement and behavior of Indian children than BIA or public schools. Parents reported fairly strong knowledge of the curriculum, as 34 narrative comments focused on curriculum and methodology issues such as: the importance of accurate historical perspectives, teaching the truth about Indians, if the schools would teach anything Indian, and how students were taught. Other comments included using Indian ways to teach Indian children, better math and science for Indian kids, and the need to attend to gifted and talented Indian children.

Special education services were perceived less favorably than general education. Thirty-four percent of respondents reported that their children had been evaluated for special education, and 25% said they had been placed. For BIA schools, they rated their understanding and involvement in the disagree-strongly disagree range. Considerations of culture fell in the strongly disagree range, and satisfaction with placement fell in the disagree-strongly disagree range. In tribally-controlled schools the ratings fell a full ranking point to the neutral range.

Narrative responses were categorized as such:

1. Know that Indian children are unique (n=9)
2. Know about Indian culture (n=66)
3. Resent my culture being taught to non-Indians (n=2)
4. Respect Indian culture, children and families (n=11)
5. Balance of cultural information needed (n=12)
6. Know that Indian children are important to the community and future (n=3)
7. Curriculum and methodology issues (n=34)
8. Inclusion and communication with Indian parents (n=29)
9. Access to information and specific assistance (n=5)

10. Concerns about teachers and other school personnel (n=17)

11. Comments about special education (n=9)

12. Serious concerns about BIA/boarding schools (n=3)

13. Other concerns and suggestions (n=14)

The method of collecting the data was strategic, considering the range of tribes and bands being represented at such conferences. However, many Indian parents and community members did not attend these conferences and some tribes and bands were not represented at all. In order to include more voices in the study, the survey could have been administered across several locations or mailed to participants.

The findings indicated that parents had a lot of valid concerns and suggestions for what must be done within Indian education. The narrative responses were especially strong to counter the assumption that Indian parents don't care about their children's education. The Indian parents who were surveyed had some negative attitudes toward non-tribally-controlled schools, especially BIA schools, and such programs as special education. They also expressed the impression that schools lack cultural awareness and advocacy, and narrative commentary demanded the need for schools to know more about Indian cultures. This study was unable to reveal a link between negative parent attitudes and the low academic achievement of their children, since it was not in the realm of this research. However, based on this study it may be helpful for teachers to invite the input of parents and community members, and for schools to include their perceptions in decisions that affect students.

A Study on "Standards-Based Education" in Rural Alaska

In what ways does the socio-historical context of Alaska Native schooling play out in contemporary educational policies and practices? This question guided a study by Jester (2002)

that focused on the Tikishla School District (pseudonym), an Alaskan rural school district that operated schools in Alaska Native villages and non-Native communities. Given the history of Alaska Native education, as discussed in Chapter Two, which proved successful in acculturating many Native communities into Anglo-American Christian society, and failed in the areas of academic education, especially in rural areas, Jester sought to uncover an educational system that correlated with that of the state's history.

A qualitative approach was used to examine what Jester named a "standards-based educational reform" (p.1) in the district, with the aim of understanding the meaning and context of this system in the district. The study took place during the 2000-2001 school year. Data were collected over a six-month period from four sources: interviews of school district staff members, observations of district office meetings, observations of school sites and classrooms, and school district documents. The purpose was to elicit the intentions, forms, and meanings of the district's standards-based reform from the school district staff members' perspectives.

A structured interview guide, designed to evoke both objective and interpretive responses that centered on participants' views of standards-based education in the Alaska Native context, was used to conduct 32 in-depth interviews. All interviews were recorded on a cassette tape player and written notes were documented in a notebook during the interviews.

Observational data was collected from the role of a complete observer. Observations included nine field visits at the district office, 14 classroom observations, and eight observations in the school setting, such as teachers' meetings. Data was collected from the school district's documents to provide published information related to the district's "standards-based" reform. Examples of such documents included teacher evaluation forms, agendas and minutes of school board meetings, District Report Card, and curriculum standards and content areas.

The Tikishla School District operated schools in both Alaska Native villages and non-Native communities. The average population of the Alaska Native villages was 106 residents, the majority being Alaska Natives; the average population of the non-Native communities was 243 residents, most non-Native. The district also operated a short-term boarding school, the City House, in an urban setting that focused on career and personal and social development. The district employed nine classroom teachers. During the 2000-2001 school year all professional staff were white.

According to the 1999-2000 District Report Card, 78 students were enrolled in the district's schools. Average student enrollment in the Alaska Native villages was 14 students, and in the non-Native schools it was 32 students. The non-Native community schools' student body was 61% white, 24% Alaska Native, and 15% Asian American.

Collected data was reviewed and coded according to categories related specifically to the district's "standards-based" reform and Alaska Native students. The data was labeled with codes and these labels were used to construct a descriptive portrayal of the district's "standards-based" reform in order to identify significant findings.

This study examined the socio-historical context of Alaska Native education. Much like the history of AI/AN education as described in Chapter Two, Alaska Native schools adopted the same policies in the late 1800s and early 1900s. Boarding schools, English-only requirements, and the establishment of codes of behavior were all implemented for Alaska Natives. Alaska gained statehood in 1959 and since then efforts had been made to improve schooling for Alaska Natives. For example, a 1976 law established secondary schools in rural communities where they had previously been non-existent.

During the 1990s, Alaska launched a standards-based educational reform that has resulted in content and performance standards that districts are required to adopt along with benchmark exams in grades 3, 6, and 8. In addition, a high-stakes graduation exit exam was implemented beginning with the class of 2004, which students must pass in order to receive a high school diploma. A school designating system began in August, 2004, that would rank schools according to students' scores on standardized exams.

Jester argued that based on the socio-historical context of Alaska Native education, a civilization-savagism paradigm continued to play out in the educational arena. The following findings have been used to support his claim.

In 1994 the Tikishla School District perceived a crisis due to students' low standardized achievement test scores, below grade-level reading levels and lack of success in post-secondary endeavors. In response, the district developed a "standards-based" reform initiative that was fully implemented in 1997. They developed a curriculum that consisted of ten content areas including the traditional academic areas (math, reading, writing, etc.) and nonacademic areas, such as personal, social, and career development. Students were allowed to advance through a hierarchy of performance levels in each of the content areas by passing assessments.

During the time the study took place, the district was developing a tracking system that consisted of an academic track and a nonacademic track. While students could advance through all the performance levels in each of the content areas in the academic track and receive a high school diploma, the nonacademic track students would receive an alternative high school diploma that highlighted the transition skills learned. These transition skills were identified as those skills necessary to transition from school to life, and included such things as making eye

contact while communicating with others, choosing positive or healthy free time activities, and identifying attributes of healthy and unhealthy communities.

The district boasted of having achieved overwhelming success and referred to improvements in standardized test scores as the primary indicator of this success. Averages rose from the 36th percentile in 1995 to the 74th percentile in 1999. This captured the attention of national foundations and agencies, one of which awarded almost five million dollars to support the transfer of this district's model to other Alaskan school districts. They even received an award by the U.S. Department of Education for innovative education.

Despite the district's success in raising test scores, privately, administrators and teachers were concerned that many Alaska Native students were not meeting the district's academic graduation requirements. These students' academic failure threatened the validity of the district's "standards-based" system and successful image, which the researcher believed resulted in the district's "unhealthy Native" construct. In his analysis, this discourse functioned to explain the Alaska Native students' academic failure.

The Tikishla School District referred to multiple indicators as evidence of the Alaska Native's so-called unhealthiness. An administrator defined the "unhealthy Native" context as a community laden with psychological and socio-cultural conditions that included overwhelming despair, depression, alcoholism, and suicides. The dysfunctional family was a central feature of the district's definition of the "unhealthy Native." One teacher proposed that an outside family, presumably a white family, was needed to teach Alaska Native families how to live functionally. An administrator also explained that students' low self esteem was due to dysfunctional families, specifically parents' abusive behaviors, drug and alcohol use, and lack of positive role modeling.

These statements were analyzed and found to contain stereotypes inherent in racist assumptions about Alaska Natives.

The district also cited alcohol abuse as a central characteristic of the “unhealthy Native.” Only one student had been medically diagnosed with Fetal Alcohol Syndrome, but according to an administrator many children who did not meet the academic standards were believed to have FAS. In sum, the district had framed the problem of Alaska Native students' academic failure as the result of a deficient Alaska Native, or as they called it, an “unhealthy Native.”

The Tikishla School District undertook a mission to heal the “unhealthy Native,” or as one administrator put it, "do some amputations and rehabilitation of people and communities to help and support what we're doing and to help their villages become better places to live" (p.11). The diagnostic system that was to be used consisted of tests that measured each student's intelligence quotient (IQ), academic achievement, emotional quotient (EQ), and learning modalities. At the time of this study the district had also planned to test students' volition or values to indicate which students had values congruent with the school's values. The results of such tests would be used to identify which students were capable or incapable of academic achievement, to decide which track—academic or nonacademic—to place the students in, and to explain to parents why their child would not meet the academic graduation requirements and so were placed in the nonacademic track. This system served as an instrument to promote the idea of an “unhealthy Native” and to divert attention from the failure of its “standards-based” system to adequately educate all students academically.

The City House, the urban boarding school, served as an instrument for amputation and rehabilitation, terms used by an administrator. The amputation function referred to pulling the

students out of the “unhealthy” villages, and the rehabilitation role was explained as transforming the “unhealthy Native” into a functional, healthy individual.

Looking back on the history of AI/AN education, as discussed in Chapter Two, one can see that the system used in the Tikishla School District resembled the historical educational approach. Jester deduced that the Tikishla School District was utilizing these so-called unhealthy indicators to define the Alaska Natives, and used this to justify the students' academic failure in the “standards-based” system. Since all of the staff was white this decision situated the whites in the superior position, as indicated by the district's strategies to remove Alaska Native children from their villages and immerse them in the dominant society's culture.

Jester believed this school district's “standards-based” system reflected the three strategies used historically to implement what he called a civilization-savagism paradigm: the location of the school, comprehensive nonacademic education, and indoctrination in the civilization-savagism paradigm. The City House served a similar purpose as historical boarding schools, and the focus on non-academics in effect would prepare them for underclass positions in U.S. society. The “unhealthy Native” construct and “amputation and rehabilitation” strategies could send the message to Alaska Native students that their homes and communities were inferior and must be abandoned.

This study revealed that this school district's policy strongly resembled that of the acculturation and assimilation strategies practiced in the state's history of Native education. Due to the implications of these strategies as seen in the history of Alaskan education, it is possible that similar results of current policies may occur that threaten the culture and educational opportunity of Alaska Native students. The fact that this school district was applauded for appearing to raise the academic success of its students, according to standardized test scores,

while in fact they were removing many Alaska Natives from the academic track suggests a sort of deviousness that must serve as a warning.

This study could have been even more meaningful had Alaska Natives' perceptions and responses to the district's so-called standards-based reform been included as well. The implications of such a system on Alaska Native students and communities is worthy of further attention. Stereotypes of Alaska Natives were being perpetuated and students were being tracked according to standardized tests, which may not take into consideration the cultural differences of the students. Looking at all the research being presented in this paper it should be obvious why this study presents a very real and dangerous problem that could easily be overlooked due to the implications of having a small sample size.

What is so dangerous about this case is that any effective teaching strategies that can be discovered to help AI/AN students learn and succeed academically could be dismissed by the so-called success of a district's "standards-based" reform system, which included tracking and acculturation. Students' connection to and respect for their identity as Alaska Natives could be severely damaged as it was in the past. The attention this district received, along with the funding to transfer this model to other school districts, proved that without critical examinations systems like this may spread throughout the country, with major repercussions against the AI/AN people.

The Students

So far, the curriculum being used in schools and the different strategies used by schools to improve academic performance and/or enact self-determination in communities have been discussed. In order to build an understanding of what is contributing to AI/AN students' low achievement levels as a group, studies that focus on the students themselves must be examined.

Statistics discussed in Chapter One revealed that AI/AN students drop out of school at higher rates than any other ethnic group. The following studies have been conducted to try to understand why these students are dropping out at higher rates than non-AI/AN students.

A Study of Dropouts in Montana

Coladarci (1983) conducted a study in 1980 as a response to a request by several educators in a Montana high school district to empirically explore the factors contributing to the high dropout rate of Indian students. At the time of the study the dropout rate was approximately 60% in a district where roughly 90% of the student body was American Indian. Coladarci took on this study as part of a practicum, to earn graduate credit through the University of Montana.

The practicum involved identifying the population, developing instruments, discussing and practicing interviewing techniques, contacting and interviewing high school dropouts, and analyzing the resulting data. Project staff used school records to select 224 students who dropped out in the previous three years to be contacted and interviewed, with consent, about their reasons for dropping out of high school.

Project staff discussed various factors that may have contributed to students dropping out of school and incorporated them into a pilot questionnaire that was distributed among a sample of local teachers and community members. The completed questionnaires were reviewed to find factors that both teachers and community members believed were important, some of which were voluntarily reported, to form the 27 items of the questionnaire that would be administered to the dropouts. An example of one of the items was the statement: I got involved with drugs or alcohol. The response could be one of four choices: 1 (not important at all), 2 (somewhat important), 3 (important), and 4 (very important). Also included were several open-ended questions and demographic questions, such as gender and residency.

The questionnaire was administered in the form of an interview, read aloud to the dropouts, since project staff believed that their varying reading abilities should not influence their responses. In addition to the project staff, several high school students who were enrolled in a peer-counseling class were recruited for interviewing.

Of the 224 people on the dropout list only 46 were successfully contacted and interviewed. Approximately 35 dropouts had moved out of the area and could not be reached, 12 refused to be interviewed, and six were deceased. That left 125 dropouts that were unable to be found. It is possible that the inaccessible dropouts, had they been interviewed, may have differed in significant ways from those who were accessible and agreed to the interview. Therefore, caution must be made in making generalizations from this study.

The responses to the first 27 items, using the four-point scale, were collapsed into an artificial dichotomy. This meant that if the response was a one, they were assigned a zero; and if the response was two, three, and four, they were assigned a one. A zero thus represented a factor that was not important in an individual's decision to drop out, while a one represented a factor that was important, to some degree. The researcher believed this would make it easier to see trends. The inter-correlation among the first 27 items was calculated using the full four-point scale. Responses to the open-ended questions were put into categories. For example, eight responses referred to the nature of the relationship between the dropout and their parent(s); therefore, this was identified as one category for one of the questions. Once categories were established for each question and assigned values, they were coded.

The results indicated that factors that pertained to teacher-student relationships were important in the decision to drop out of school. Over one-third of the dropouts, most of these female, cited the factor that teachers did not seem to care about them. Another salient factor was

the perception that teachers did not provide enough assistance with the student's work. There was high correlation between these factors ($r = .85$). In addition, the perception that teachers did not care was somewhat related ($r = .57$) to the sentiment that school was not important to Indian culture. This is an interesting correlation that may suggest a perceived cultural insensitivity or indifference on the part of teachers by these students.

Having disagreements with teachers was an important factor in one-third of the cases. Getting into trouble was also a factor cited by over a quarter of the dropouts. These two factors correlated strongly ($r = .70$), and one may speculate that getting into trouble might cause disagreements with teachers. When asked what could have been done to change their decision to leave school, many dropouts indicated that greater encouragement by teachers would have been important.

The content of schooling was another salient factor in the decision to drop out of school. A little less than half of the dropouts cited that school was not important for what they wanted to do in life, and roughly one-quarter cited that school was not important to them as Indians. There was a low correlation between these two factors ($r = .15$). Lack of parental support was an important factor for roughly 40% of the cases. Over 40% indicated that problems at home were factored into their decision to drop out, most being females. These factors did correlate ($r = .58$).

Over 90% of the dropouts interviewed would advise prospective dropouts to either stay in school or reconsider their decision. The majority of these dropouts, 78%, indicated a considerable change in attitude after dropping out. Over half reported that one of the consequences of dropping out was that only menial jobs were available and their attitude toward life had suffered.

One of the implications of this study that was suggested was that district officials should examine their curricula and perhaps find ways to adjust the curriculum so that Indian students find more cultural and practical relevance to their lives. If this study had examined the curriculum being used and made observations inside classrooms, students' perceptions may have been validated as being more of a reality. This study could encourage more research in these areas, along with other areas noted by students as being factors in their decision to leave school. Given the scope of this study, it would be difficult to determine whether or not the reasons given by students for dropping out are indeed the reasons that AI/AN students leave school. Other factors may be involved and further research should be made before making conclusions about how to help students achieve academic success and graduate from high school.

An Ethnographic Study of Navajo and Ute Dropouts

To investigate the problem of high dropout rates among Navajo and Ute students, Deyhle (1992) conducted a seven year ethnographic study in a border reservation community. She analyzed such issues as leaving school, race relations, academic achievement, and culture change within the context of school and community. Included in this study were the cultural and structural factors important to understanding why many Navajo and Ute youth leave school, as opposed to only examining student characteristics. This cultural framework included racial and economic relations in the community and school, home child-rearing patterns of non-interference and early adulthood, and cultural integrity and resistance.

The study began in the fall of 1984. Deyhle focused on interactions, understandings, and strategies related to education, schooling, success, and failure both in and out of school among three culturally distinct groups of adolescents— Anglo, Navajo and Ute. This portion of the study focused on school dropouts.

There were four data sets that produced the results: a master data base from school records, ethnographic field notes and collected documents, interviews with a convenience sample of school dropouts, and a questionnaire. A data base was created to track all of the Navajo and Ute students by name who had attended either Border High School (BHS) or Navajo High School (NHS), both are pseudonyms, from 1980-81 to the 1988-89 school year. Within this data base were attendance data, grade point averages, standardized test scores, dropout and graduation rates, community locations, current employment situations, post high school training, and type of diploma received for 1,489 youth. The list was verified by official district records, local Navajo and Ute community members, school officials, and the youth themselves. A total of 629 students from six different cohorts, from the class of 1984 to the class of 1989, from each of the two high schools were represented with complete four year high school records. Students who completed alternative high school degrees or took additional years to complete high school were included in the total graduation figures.

The questionnaire used was developed by Coladarci (1983) from his study of AI/AN dropouts in Montana. This questionnaire contained 27 open-ended statements, expanding to 78 variables with probe questions, to gain information on why the student left school. The statements included issues such as distance from school, alcohol or drug problems, pregnancy, home problems (with specific probes such as abuse, sibling rivalry or crowded homes), reading difficulties, school troubles, teacher attitudes, the lack of Indian teachers, and curriculum content. Analysis of this data was identical to the type done by Coladarci.

A total of 168 people who had left school were interviewed and completed the questionnaire. Of these, 47% were from a small community on the border of the Navajo

reservation. The remaining population was equally divided between the community of Navajo Mesa on the Navajo reservation and a nearby Ute reservation.

The combined school records data from both schools, BHS and NHS, that represented complete high school careers for the six groups of youth showed 59% had graduated through either traditional or non-traditional means. Thirty-four percent left school and seven percent remained unknown. As many as 18% of these youth were physically in school for the entire 12 years but still failed to graduate. Fifty-five percent of the youth that did drop out did so during the twelfth grade.

Success rates differed between the two schools. BHS, located in a small town with 47% Indian student population, graduated 55% of its cohorts; 40% left school and 5% were unknown. NHS, located on the reservation with 99% Indian student population graduated 63% of its cohorts, while 28% left school and 9% were unknown.

Only NHS asked students to explain why they were leaving; these reasons were assigned code numbers and filed in the students' records. Thirty-seven percent were either required to leave because of "behavioral difficulties" or left because they felt "an active dislike of the school experience." About one-third left school because their parents needed them to work at home or at an outside job to support the family. One-fourth of the students left school with the code, "Reason Unknown." No records indicated that students left school due to academic problems, marriage, pregnancy, or poor staff or peer relations. Deyhle pointed out that this data does not mean these were not actual reasons. For example, women who left school to have children admitted a reluctance to provide this information to school officials. Also, there was no official code that reflected a common reason Deyhle noted through her interviews—the perception that teachers did not care about Indian students.

Over one-third of the dropouts from Coladarci's (1983) Montana study and almost half of the Navajo and Ute dropouts from Deyhle's study felt their teachers did not care about them. Students also complained that teachers did not help them enough with their school work. The population from NHS, however, felt that their teachers both cared about them and helped them with their school work. The lack of assistance contributed to the perception of students that teachers did not care due to the high correlation between the two variables ($r=.85$ in Coladarci's study and $r=.65$ in this study). The students' perception that teachers did not care was also correlated with the feeling that school was not related to Indian cultures ($r=.57$ in Coladarci's study and $r=.39$ in this study).

Disagreements between students and teachers was a related factor in both studies, having a significant correlation ($r=.55$) between disagreements and trouble at school. When asked about good teachers, students consistently explained that a good teacher was one who cared. Deyhle found that mistrust of teachers was often justified, based on interviews and observations of teachers that reflected prejudiced views and stereotypes toward their Indian students.

Deyhle observed that tensions in the larger community were often mirrored inside the classroom. This tension seemed to stem from history—the idea that the only path to success for Indians was to become non-Indian, or assimilated into mainstream culture. The Anglo population in this particular region arrived in the 1880s as pioneers from the Church of Jesus Christ of Latter-day Saints (LDS), or Mormons. This philosophy of assimilation guided almost all inter-actions between the Mormons and the Indians, in schools especially. Deyhle believed that this attitude still existed at the time of her study, quoting an Anglo store owner as saying, "The only good Indian is a Mormon" (p.34). A school counselor also expressed the attitude of

viewing Indians who resisted assimilation as being failures, having stated "...they have gone back to the blanket. They will sit in their Hogan and do nothing" (p. 34).

Distinctions made between Anglos and Indians in this community were reflected in the following statistics. Nearly 90% of those who received public assistance in the county were either Navajo or Ute. The unemployment rate of Navajo and Ute was 68%, three times the unemployment rate for Anglos. All public institutions in the county were controlled by individuals who were members of the LDS church. Taking into consideration the fact that almost half of the county's population was Navajo or Ute, these statistics appeared alarming.

Attitudes and stereotypes about Indians contributed to the maintenance of the racist structures in place in this county. Deyhle cited a Navajo parent who expressed that she knew that the Anglos did not like them and that it would help if they would change their attitude. An Anglo teacher also blamed the attitude of the whites, that Indians are dumb, and believed that this attitude may result in Indians acting dumb because the whites expected it. Another teacher told Deyhle that working with Indian kids had turned her into a racist because they would just sit there and do nothing.

A Navajo student recounted an event where she entered a math class late and received a comment from the teacher about how here was another Indian who couldn't see how to get to class. In turn, Indians have formed negative attitudes toward Anglos, speaking openly about their hatred of whites, and their fear of discrimination in the high school due to past experiences of community and family members.

Deyhle also noted academic difficulties, especially in school curriculum and reading, as reasons Navajo and Ute youth had for leaving school. Two-thirds of Navajo and Ute dropouts said school work was too hard for them, but one-third said school work was too easy. Boredom

was a common theme especially in regards to remedial classes, the repetition of the same exercises, and uninteresting subjects.

Over half of the total group, 53%, felt reading difficulties contributed to their problems in school. There was a significant correlation ($r=.46$) between the statements that school was too hard and reading was hard. The average Indian graduate from this district was reading at the seventh grade level, and many Indian youth explained that they did not read outside of school. Deyhle observed the consequences of this reading difficulty among Indian students, who had the tendency to doodle or sleep during silent seat work that involved reading assignments. Much of the materials were beyond their reading ability and some students said they were too embarrassed or overwhelmed to ask for help. This also contributed to boredom, which was a major factor students gave as a reason for leaving school.

The content of what was being taught in school was also an important issue that contributed to Indian students' decision to leave school. In Coladarci's (1983) study, almost half of the school leavers stated that school was not important for what they wanted to do in life, while roughly a quarter indicated that school was not important to them as an Indian. Almost half of the Navajo and almost two-thirds of the Ute felt school was not important for what they wanted to do in life, and one-third of the total group felt school did not teach what was important to them as Indians. Within the most traditional community of Navajos, over 80% did not see this as an issue that led to their leaving school.

In both studies the curriculum, perceived as not being connected to life goals, was an important reason for leaving school. Students resisted the emphasis being placed on basic, remedial, and vocational tracking in the high schools, which they saw as limiting their future opportunities. One student mentioned that he didn't care to finish high school because they didn't

encourage college bound classes. A principal also stated that vocational training was needed for the local Navajo people since that was where the jobs were. The fact that over 90% of official and manager jobs were held by Anglos, compared to 8% held by Indians, may explain his reasoning. However, the fact that job types are related to race is extremely problematic and evident of a racist power structure.

All of the Navajo youth from the high school classes of 1982 to 1989 were tracked over seven years to determine what happened to them after they had graduated or left school. Out of 1,030 youth, both graduates and dropouts, 21% were employed, 29.5% were unemployed, 18.5% were current students, and 31% remained unknown. Out of the 624 graduates 31% were employed, 21% were unemployed, 28% were students, and 20% remained unknown. Of the school dropouts only 11% were employed, 38% were unemployed, 9% were students, and 42% remained unknown.

Both groups of employed youth worked at the same kinds of service industry jobs, such as clerical workers, tour guides, janitors, uranium or oil workers, and construction. As a result, many school dropouts worked side by side with peers who had completed school and possibly led them to question the relevance of completing school.

Another important factor in the dropout decision was lack of parental support. Forty percent of the cases in Coladarci's (1983) study listed this as an important factor. Half of the Navajo and 78% of the Ute said that lack of parental encouragement was a factor. Two-thirds of the total group, however, indicated that their parents wanted them to stay in school. Deyhle speculated that this could be a cultural issue. Navajo culture maintains the sense of autonomy of the individual, while at the same time consensus and cooperation are desired. This could mean that parents felt it was inappropriate to make decisions for their children, since they would be

considered capable of making decisions on their own. While Navajo parents may have called this practice noninterference, Anglo parents and school officials translated this into lack of support or neglect.

Many parents expressed the view that the world of the family and the tribe was equally important for their children as was school. Parents wanted to secure an identity as Navajo in their children, but believed that schools and the LDS community sought assimilation. Other studies presented in this chapter will address this issue more thoroughly, resulting in the conclusion that a strong cultural identity does not interfere with academic performance in school.

In this study, however, Deyhle mentioned the role of women in the matriarchal Navajo culture as being a significant factor in the reason many females left school. Pregnancy and marriage were major causes for almost half of the females who decided to leave school. Within the Navajo community young mothers were supported and seen as being successful, which could have overshadowed the importance of school.

A factor that was not addressed very clearly was the fact that the Anglo teachers and community did not interact much with the Navajo or Ute communities. Teachers had not been to their students' homes, let alone the reservation. The superintendent had never heard of the ceremony of Kinaalda' practiced by young high school age girls for their first menstruation. Not knowing about students' lives could have been a very significant factor that contributed to the perspective that teachers did not seem to care about their Indian students.

This study gave a comprehensive view of possible reasons why Navajo and Ute students dropped out of school. The large sample size, and the correlations found with Coladarci's (1983) study in Montana, indicated that power and status relations may contribute to the fact that AI/AN students suffer from the highest drop out rates in the country.

Deyhle mentioned that caution should be taken when making generalizations from both her and Coladarci's studies; however, the similarities in the results from the two studies across different tribes suggest common experiences with schools. Perhaps more studies that focus on finding out why AI/AN students leave school, using qualitative data that give the students themselves a voice, may be necessary in order to develop effective strategies that could be generalized across other communities. At the same time, studies such as these would be beneficial in establishing an understanding and a plan of action for helping AI/AN students succeed within a specific community or school.

A Study of Alaska Native Dropouts

According to the Alaska Department of Education, dropout rates in Western Alaska have been as high as 100% in some villages in the Lower Kuskokwim River Delta (Freed & Samson, 2004). In many school districts in western Alaska, the majority of students have chosen to withdraw from formal education before completing high school. Freed and Samson (2004) conducted a study to examine the reasons why students left school and what circumstances may have led to their decisions.

Data were collected in the fall and winter of 2002-2003 through observations, interviews, and document analysis. Administrators, GED instructors, counselors, teachers and recent dropouts were interviewed using a standardized interview protocol. Observations took place in elementary and secondary classes in six western Alaska communities by multiple observers. The core of the research came from the words of recent dropouts and some of their former teachers.

The interview protocol was developed around four elements, with questions related to each: pupil-related factors (family, peer pressure, poor academic performance, and economic conditions), school-related factors (inadequate teacher preparation, unresponsive school

structure), constructed factors (attitudes about school and how students and teachers interact), and macro system factors (labor market, demography of the community, changes in the large family structure).

Observations were made in ten schools on 30 days in six communities throughout western Alaska. The student population of the schools was nearly entirely Alaska Native. The size of the villages ranged from a few hundred to over 5,000. Twelve school personnel were interviewed and six dropouts were interviewed about their schooling experiences and their decision to leave school. Of the six Alaska Native dropouts interviewed, one was female and five male. There was a wide range in academic achievement levels and nearly all the interviewees indicated their family structure was very sound. Four of the six had used alcohol or drugs. Their decisions to leave school happened either in their junior or senior year, and one left school with only one uncompleted course.

Based on observations in the classrooms the most common teaching strategies used were lecture, textbooks, and paper/pencil activities. Hands-on activities, project-based learning, or service-learning activities were not observed, with the exception of two student teachers. One of the student teachers was interviewed and complained that he would like to include more community members in the classroom, but the administration was not in favor of elders participating in classes.

Resources were limited and it was observed that there were no materials for science labs. Students did not have calculators for math classes. All classrooms did have access to the Internet, however. The consensus of the dropouts interviewed was that access to computer technology was adequate, but frequently students were not able to use a computer by themselves.

Former students were asked what the school system officials did to encourage them to stay in school and the responses were that nothing was done. A GED instructor was interviewed and indicated unhappiness with the lack of coordination between tribal authorities wanting to assist students considering leaving high school and the local high school authorities. During the time of this study no school official had contacted the tribal official responsible for dropout prevention. A high school counselor was interviewed and mentioned that drop out rates were indeed high. He also indicated that the school system had no formal intervention program for students identified as being at-risk for dropping out.

Former students had mostly negative comments to make about their former teachers, while some of the teachers expressed that they were not impressed with their students or communities. One teacher was quoted as saying, "We [Americans] didn't conquer these people. We rescued them" (p.41). One school administrator said, "If these kids don't want to be [in school], we need to stop forcing them to be here" (p.41).

Despite the statistics that show that high numbers of students are leaving school before completion, the school systems have shown little evidence of changing to meet the human and academic needs of the Indigenous clientele, explained the researchers of this study. "The process of inflicting an educational system conceived and implemented completely by outside forces appears to be a foundational cause of alienation by Native students toward school," (p.42). Efforts to enable AI/AN communities to control their schools, as seen in the study on the Ramah Navajo School, may be more effective in improving the achievement of AI/AN students.

Most of the teachers that were observed came from outside the villages where they taught and could not envision change in the educational system in which they worked. These teachers were often unable to strategize beyond citing blame for poor academic performance or

attendance on Native students or their families. It is important to note that there are high teacher turnover rates at schools in rural Alaska.

It could be assumed that the reasons for such high dropout rates in rural, Native communities in western Alaska involve a lack of relevancy between school and life in the community. However, all of the dropouts interviewed in this study indicated an awareness of the importance of a good education. The issue of giving students a reason to want to succeed in school, even in remote places, will be discussed in Chapter Four.

Racism and negative stereotypes against AI/AN people seemed to be a major factor in their low achievement levels in schools. While examples of schools that reflect the idea of self-determination, where tribes have more control over the school system, exist, there is still the fact that most AI/AN students attend public schools where they are one of several cultures within one classroom. Also, the fact that most teachers are white cannot be ignored as a factor, and will be revisited throughout this paper. The issue of racism in schools is a very real issue. The previous studies suggested that racism was a factor, given the socio-historical context of AI/AN education. Deyhle's ethnography included a careful examination of this trend as reported in the following discussion of a portion of her study that dealt directly with Navajo youth and Anglo racism.

A Study Examining Racism

Deyhle (1995) attempted to answer the question: How do cultural differences and power relations between Anglos and Navajos affect Navajo school success and failure? This study stemmed from Deyhle's ten year ethnographic study of the lives, both in and out of school, of Navajo youth in a border reservation community. This presentation of an aspect of her study specifically addressed the issues of cultural differences, power relations, and racism in relation to

Navajo school success and failure. Deyhle asserted that the students in the study who were able to maintain Navajo or reservation connections gained a solid place in Navajo society and were also more successful in the Anglo world of school and workplace.

Her discussion focused on three events—a racial fight, a meeting of the Native American Church, and a high school career day—to portray the race struggle between Navajos and Anglos and the way that struggle manifested itself in the schools.

Deyhle began this study in the fall of 1984 upon the request of district administrators and Navajo parents who were concerned with the high dropout rate of Navajo youth. Her role was as a participant observer, as she spent ten years documenting the lives of community members in and out of school. Two summers were spent living with a Navajo family on the reservation, herding sheep and cooking with children and adolescents. After returning each year she earned the trust of the community, and in turn they educated her on their cultural norms and values. Written drafts of her observations were shared with Navajos in the community, who confirmed her observations and helped represent their experiences and concerns more accurately.

The first event shared by Deyhle was of a racial conflict involving a fight between a Navajo and an Anglo student at Border High School (BHS). The Navajo junior struck an Anglo student across the face at school during lunch, claiming his younger cousin had been verbally and physically assaulted. The police were called and the Anglo student was released to his parents while the Navajo student was taken to jail. The Navajo community demanded a meeting with school officials to discuss the incident and more than 75 Navajo parents attended.

Transcripts of the dialogue that took place during this meeting reflected the frustration of the Navajo community and the lack of attention being given to racial issues by the school officials. One Navajo parent stated, "We want our kids to go to school and do well. They are far

behind... I hope we can talk about this. It gets worse every time we talk" (p.409). After the incident was discussed, the principal said, "This is the first time I have heard this. I didn't know the Indian students were being picked on" (p.410). This comment led to an emotional reaction by the Navajo parents who claimed they were never asked and that Anglos would not believe them anyway. The principal urged the parents to come to him with future problems. Although the charges against the Navajo youth were dropped, he was told he was not allowed to return to school because he was 18 years old.

The statistics mentioned in the previous discussion of Deyhle's study on Ute and Navajo school leavers revealed the obvious dissonance between Anglos and Navajos in this county, differences in employment, income, and opportunity. Deyhle shared many examples of dialogue and events that suggested the reason for this dissonance was due to racism. For example, a science teacher was noted as having said, "You all listen, you aren't going to be on welfare like all the other Navajos" (p.413), and the Navajo students viewed him as prejudiced.

Deyhle pointed out that the teachers' lack of experience in the Navajo community and stereotyping of Navajos resulted in both the distortion and the dismissal of Navajo culture. An example was seen during an English class where the teacher discussed tall tales, using the example of Pecos Bill who was said to have lived with the coyotes. When two Navajo students joined in the discussion and mentioned that they live on the reservation with coyotes, the teacher replied, "Well, I don't know anything about that. Let's talk about parables now" (p.413). This comment did not encourage dialogue, and instances such as this could discourage students from sharing their culture, learning and participating in school.

Another example was observed in a twelfth-grade English class where a teacher was discussing racial conflict between whites and blacks in *To Kill a Mockingbird*:

It used to be that Whites treated Blacks badly. Remember, this is racial discrimination, when one group treats another badly just because of the color of their skin, and it is against the law. It was a sad part of history and I'm glad it doesn't happen anymore (p.414).

A Navajo student turned to Deyhle after hearing this comment and said, "But it happens to us! Why didn't he say that? What about what happens to us?" These examples, including the event that was recounted regarding the fight at school, add to the validity of the presumption that racial discrimination has been silenced and ignored by the Anglo students, teachers and school administrators.

Deyhle found that sixth-graders from an elementary school feeding into BHS all scored above the national norm in mathematics on the Stanford Achievement Test, yet Navajo children were systematically placed in the lowest level mathematics class. When she asked the principal about this his response was that elementary grades are always inflated and Navajo students always do better in the basic classes. In a school-administrated survey, 85% of the teachers in one school indicated that Navajo students had learned "almost all they can learn" (p.415). The principal gave an explanation as to why the school district's standardized test scores were the lowest in the state: "Our district level scores are low and dropout rate high because we have Navajo students" (p.415). Deyhle believed these attitudes have placed a ceiling on learners. Results from the previous discussion on Navajo and Ute dropouts support this idea.

The Navajo students expressed their acknowledgement of racist attitudes as a major factor that contributed to their decision to leave school. Over half of the 168 students who dropped out that were interviewed stated that they were not wanted in school.

Both high schools tracked students, leading to many Navajo youth to receive vocational training rather than college preparation classes. Deyhle's data did not support the assumption that Navajo youth knew they wanted a future in vocational jobs early in high school. During the 1987-88 school year 132 Anglo and Navajo students in grades 9-12 completed the JOBO, a career inventory test. Although 20% of the Navajo ninth-graders indicated interest in professional careers that required college, twice as many Anglos saw their future jobs as being in the professional fields. Forty-seven percent of Navajo ninth-graders were interested in vocational jobs, while only 30% of Anglo students had such a desire. By twelfth grade the Anglo students desiring vocational jobs dropped by half, from 30% to 15%, and over 60% desired professional careers. The opposite occurred for the Navajo students: 62% had readjusted their goals toward vocational jobs, and only 15% remained determined to achieve professional careers. In addition, it was mentioned that 40% of Navajo youth had already left school by their senior year, meaning these figures represented the most academically successful Navajo youth. In response to this data, the vice principal explained the necessity for the curriculum to be responsive to employers' needs.

This study has brought up some very relevant data that may be used to explain the failure of Navajo students in school. However, this data alone may not be sufficient in constructing solutions for how to remedy this problem. The hostility between Anglos and Navajos in this community revealed itself in the research, but may not directly assume responsibility for the high dropout rates and academic failure of Navajo students. In looking at schools that have high dropout rates and low proficiency rates for AI/AN students it is important to consider many factors, in and out of school, when trying to address the causes and the solutions. This ethnographic study provided detailed insight into a struggling community of Anglos and

Navajos, revealing startling data and observations that show how racial tension can very well be a significant contributor of academic success for AI/AN students.

Since the time of Deyhle's study the school district attempted to implement an English language immersion program, with no bilingual or ESL classes, even for schools with a 99% Navajo population. Administrators and teachers believed Navajo students' difficulties in school were due to their language and culture, and for this reason the district refused to implement a bilingual program that used Navajo as a language of instruction. All ESL classes had been eliminated in the high schools. This model of assimilation historically framed educational policy in schools for AI/AN people, and in some cases continues to this day.

The belief that assimilation is necessary for AI/AN students to succeed in school suggests that their culture is undesirable and that they must change who they are in order to be successful. The following studies will be used to try to counter this belief, to show that possessing strong ties to one's culture does not significantly affect academic success or failure.

Most AI/AN children attend public schools, which according to the Principle of Correspondence reflect the culture, norms and values of the dominant society (S. Walton, personal communication, January 11, 2006). This clash can be problematic if other cultures are not recognized and integrated into the curriculum. It would appear that assimilation is the only means to succeed in school. The question is: must these students assimilate into the dominant culture? Or is academic success possible in public schools when students maintain their traditional culture?

Based on the differences between traditional AI/AN cultures and the dominant, mainstream culture found in public schools, it could be hypothesized that the reason many AI/AN students encounter low rates of academic success in school is due to their involvement in

their traditional cultures. Such a belief, predominant throughout history, suggests that in order for AI/AN students to succeed academically in school they must abandon their traditional cultures and assimilate into the mainstream culture. Assimilation carries many risks to the individual, their families, and their communities, as discussed in the history of AI/AN education and the boarding school experience. Studies, both quantitative and qualitative, have been conducted within a variety of Indian tribes and bands to address this question: Does traditionalism influence the academic performance of AI/AN students?

A Navajo Study on Traditionalism

Willeto (1999) conducted a study to attempt to answer this very question in regards to the Navajo. Willeto also examined the influence of family in Navajo youths' academic achievement. As a Navajo, Willeto had achieved academic success within the mainstream educational system and her personal experiences contributed to her rationale in conducting this study. The study was conducted using empirical design methodology grounded in theoretically embedded concepts of Navajo culture.

After a year of field work in the Navajo Nation area, and a pilot study in the spring of 1991, a random sample of 451 Navajo youths generated from student rosters taken from 11 high schools located on the reservation and in border towns in the eastern and central regions of the Navajo reservation area was created for this study. Of the large random sample of 451 Navajo youths, 143 were freshmen, 138 sophomores, 104 juniors, and 65 seniors.

Data was collected at the schools using questionnaires constructed from a review of literature, analysis of qualitative interviews with high school and college students from the Navajo reservation, interviews with two cultural practitioners (a diagnostician and a medicine man), faculty suggestions, and the researcher's personal experience as a Navajo. The first part of

the instrument contained items on relations with family, school, teachers, and peers, and a variety of educational dimensions, such as reported grades and achievement beliefs. The second part focused on Navajo culture, or traditionalism of the Navajo students.

The independent variable, traditionalism, was defined based on the experiences and understandings of Willeto, a Navajo, and examined through a sociological perspective and empirical methodology. Behavioral and material aspects of Navajo culture were emphasized in the conceptual design of traditionalism which consisted of three domains: 1) ritual behavior, referring to Navajo curative ceremonies and the activities associated with them such as attendance, consultation and participation; 2) cultural conventions, which were recognized Navajo activities such as silversmithing, rug weaving and herding sheep; and 3) language use, or how well Navajo was spoken and understood by the Navajo youths.

Family influence, as an independent variable, was included in the study due to the nature of Navajo culture. Within a matriarchal society, Willeto believed, Navajo women would be expected to reinforce traditional Navajo culture. As a result, it was predicted that identification with the mother would have an effect on academic achievement. Family influences were indexed by five measures: parental cultural practice, parental encouragement and support for education, identification with the mother, identification with the father, and parents' educational aspirations for the student. Family background was also measured by the following four items: the level of parents' education, family income, residential history, and family size. Personal attributes included the gender of the student.

The dependent variables were measured by the three indicators of academic outcomes: 1) grades the student received, which were self-reported; 2) school commitment, measured by three items involving attitudes on school and constructed as a summated average; and 3) college

aspirations measured by two items concerning the importance of going to and graduating from college.

The determinants of Navajo traditionalism (the independent variables) and educational outcomes (the dependent variables) were examined in hierarchical regression models to determine whether family processes explained the influence that family background had on Navajo traditionalism, and whether family processes and background explained the influence that Navajo traditionalism had on educational outcomes. Separate ordinary least square estimation models (OLS, multiple regression) estimated the coefficients for Navajo culture, family processes, and background influences on the dependent variables.

The findings indicated that traditionalism was not a significant predictor of academic achievement among Navajo youths. Personal investment in cultural conventions, activities such as silversmithing, rug weaving and herding sheep, was most strongly correlated with evidence of an achievement orientation, followed at a distance by involvement in Navajo rituals. Only language use was consistently negative in its association with academic performance, school commitment, and college goals.

All of these associations, except those involving cultural conventions, became insignificant when family processes and origins were added to a series of hierarchical regressions. The association between involvement in cultural conventions and college goals was entirely explained by family influences, particularly the college aspirations of parents. Family processes and origins had weak positive effects on school outcomes, but were relatively insignificant.

An orientation to Navajo culture did not influence the grades that youths received. However, the family did emerge as consequential in determining grades, as did gender. In fact,

girls did consistently better than boys on achievement orientations. Adolescents who received good grades were also most likely to identify with their mothers and have parents of higher status defined by education and family income.

Ritual behavior did not result in a significant difference in grades, although the effect was negative. The researcher hypothesized that this could be because men were more involved in ritual behavior than women, which could also explain why girls performed better academically, but the relationship did not reach significance. Willeto determined that whether one was involved in ritual behavior or not had no consequence for the academic success of Navajo youths.

Cultural conventions did have a significant positive effect on college aspirations in the first set of models, but this effect did not hold when family processes were added in the second model, which suggested that family processes influence Navajo traditionalism. Language use had a significant negative effect on college aspirations in the first model, and this relationship was maintained when family processes were added in the second model. However, language use did not influence college aspirations when family background was added in the third model, suggesting that family origins influence the effects of Navajo traditionalism. Language is a central element of culture. Although the direction of effect was consistently negative, the parameter estimate never reached significance.

The most important results of this study, according to Willeto, were: the lack of negative effects of Navajo traditionalism on educational outcomes, the positive influence of family processes, the influence of family background, and the consistent effect of gender. There is no empirical support for the expectation that the greater the student's involvement in traditional culture the worse the student performs in school.

As mentioned, cultural conventions had a positive influence on school commitment. An explanation discussed by the researcher was that these conventions (rug weaving, silversmithing, livestock maintenance and ownership) entail hard work and self-respect as a Navajo. Valuing and practicing hard work may indeed contribute to academic success, as would self-esteem, or self-respect; however, motivation for working hard may not exist in the academic setting for the Navajo who practices these cultural conventions due to a variety of factors. For example, a student who works hard at rug weaving may be motivated by the value the Navajo culture places on weaving, or the significance such an activity has for a family and community.

Being female increased the likelihood of academic success. This trend is apparent in mainstream society as well, so the connection between the Navajo matriarchy and academic success of girls needs further research to see if this is a Navajo trend or a general trend across cultures. The reason for this trend may be due to the value placed on females in school or due to the mainstream culture's gender expectations, such as that of the "macho" man.

Willette's (1999) study was able to rule out the possibility that traditionalism negatively affected academic performance. This study did not explain why AI/AN students, including the Navajo, have the lowest academic attainment of all ethnic groups in this country. However, the tendency to ascribe failure to Indians, specifically due to their involvement with their traditional culture which differs greatly from the mainstream culture found in schools, for their academic woes may be weakened by this study.

An Ojibwa Study on Traditionalism

Coggins, Williams and Radin (1997) conducted a study of northern Michigan Ojibwa families to examine the relationship between the parents' levels of holding traditional values and their children's academic and social functioning in elementary school.

The study was conducted in the Bay Mills Ojibwa Community, a small reservation located on Lake Superior's Whitefish Bay near Sault Ste. Marie, Michigan. Within this community 84% of adults had a high school education and 56% had some college education. To be eligible for the study a family had to include a child in Headstart through grade five and sign a card giving the school permission to give the researchers school reports and academic grades. The study's focal child was the oldest child in the family attending elementary school. The family consisted of a mother, stepmother, or live-in female significant other, a father, stepfather, or live-in male significant other, and focal child. The sample was obtained through the cooperation of the Tribal Council.

Nineteen families volunteered and data was collected from 29 parents, 15 mothers and 14 fathers. In ten families both parents were interviewed; in five the mother only, and in four the father only. Mothers and fathers had an average of one year of college. The mean age for the 19 children was 8.6 (for boys 8.8, girls 8.1).

Prior to beginning the study the researchers met with the Bay Mills community in Brimley, Michigan, to discuss the proposed study. They met with the Tribal Chairman and other members of the Tribal Council to discuss methods for measuring Indian and Ojibwa traditional values to be used in creating the questionnaire. The questionnaire was also reviewed by three University of Michigan Indian graduate students who were working on the project. Pilot testing was conducted with Indians living in the Lansing, Michigan, area recruited through word of mouth. The sample consisted of nine adults and three children. The results from the pilot study helped refine the questionnaire.

Data collection was administered by the completion of a questionnaire through separate interviews with the parents. The interviewers were three Ojibwa undergraduate students enrolled

in the Bay Mills Community College located on the reservation, an Ojibwa employee of the Tribal Council, and an Odawa University of Michigan doctoral student who was also one of the authors of the study.

The independent variables consisted of the levels at which parents held traditional values. The levels of holding traditional values were assessed by an index developed by Arthur Le Blanc, Jr., a former Bay Mills tribal judge, along with the Odawa doctoral student and co-researcher, and were reviewed by the Tribal Council. The eight items chosen to reflect traditional values were: attitudes toward sharing, other centered, harmony with nature, circular time, noninterference, patience, non-confrontation, and broad view of family. The index consisted of values posed to the respondent who was asked to express agreement or disagreement using a five-point scale.

There were 25 dependent variables. Seven assessed academic functioning using report card grades for five subjects (reading, language arts, math, science, and social studies) across six grading periods for the 1990-1991 school year, and two adaptive functioning items to determine overall school performance and learning through teacher evaluations of the student's current performance in each subject using a five-point scale. A mean rating for all of the subjects was computed. The teachers were also asked to compare the student to other pupils of the same age and then rate them on a seven-point scale using Achenbach's Teacher's Report Form of the Child Behavior Check List (CBCL). This is considered a valid, reliable, standardized teacher rating form about socio-emotional performance for students aged six to eleven.

The other 18 dependent variables assessed socio-emotional functioning: three Adaptive Functioning items (working hard, behaving appropriately, and happiness) from the CBCL; eight Problem Behavior Check List items (unpopular, self-destructive, obsessive-compulsive,

inattentive, nervous-overactive, anxious, social withdrawal, and aggressive) from the CBCL; an American Indian Child Behavior Check List consisting of six items (shows sense of responsibility to class, liked by students, dependable, shows respect, can take a joke, and initiates new activities or ideas); and an Index of Future Community Leadership. The American Indian Child Behavior Check List was completed by teachers to score children on a three-point scale (1-not true, 2-somewhat true, 3-very true) and a mean was taken from the responses of teachers. For the Index of Future Community Leadership teachers were asked what they thought the child's chances were of becoming a good member of the community, a political leader in the community, and a cultural leader in the community; the responses were scored on a five-point scale. A mean was taken on each of the three items. Chronbach's alpha was computed to assess whether or not the three items were measuring the same concept; the value was .95, indicating a high internal consistency. The two latter scales were developed by the project staff, including the three University of Michigan Indian graduate students, to assess personality traits important to Indian people. This was all reviewed and approved by the Tribal Council.

The results of the study found thirty-nine significant correlations, or 20%, out of a total 200 correlations; 90% of these were with desirable school behaviors. Of the 39, four correlations associated traditional maternal values with negative outcomes. These correlations were between circular time and social studies ($r(12)=-.77$, $p<.01$; 2); non-interference and anxious ($r(14)=-.54$, $p<.05$; 3); patience and initiates activities ($r(14)=.64$, $p<.05$; and 4); and patience and future leader ($r(14)=.65$, $p<.05$). The remaining 35, or 90%, of the significant correlations showed a relationship with positive child outcomes. Only four significant correlations associated fathers' level of holding traditional values with the children's academic and socio-emotional outcomes.

The five cultural values of mothers found to contribute to their children's school success were sharing, other centeredness, harmony with nature, non-interference, and focus on extended family. Maternal holding of the values of sharing and other-centeredness, each with four beneficial outcomes, had the strongest impact on children's academic performance. Maternal holding of the values of harmony with nature and broad view of family, each with seven beneficial outcomes, had the strongest impact on children's socio-emotional behavior.

The inclusion of students' socio-emotional behavior has provided another dimension to measuring success in school. Healthy socio-emotional behaviors would most likely influence academic success, just as unhealthy behavior would affect academic performance. School is a social institution and healthy socio-emotional behavior may contribute to an individual's success in their future outside and inside of the academic system. The results of this study suggest that commonly held AI/AN traditional values, such as harmony with nature and a broad view of family, positively impact children's behavior in school.

The fact that this study was conducted with elementary students, the average age being around eight years-old, means that the results may differ as children spend more time in school. McInerney's (1992, 1997, 2000) studies, to be discussed later in this chapter, suggested that by high school cultural differences begin to dissolve as students become assimilated through time and exposure to schools that maintain the values and norms of the dominant society. A longitudinal study following these same students would be beneficial in determining the effects that schools have on cultural differences, and to determine if the maintenance of traditionalism does in fact influence academic success.

This study also did not mention college aspirations of children as a dimension of academic achievement. Considering the study was conducted on elementary students, college

aspirations may not yet be relevant. As mentioned, it would be beneficial to the study's claim that traditional values held by parents positively influence school performance by following the students through their academic careers, to examine graduation rates and post-secondary achievements.

Due to the small sample size and exploratory nature of the study, the researchers stated that conclusions may not be generalized; however, the findings do provide insights into the importance of maintaining Ojibwa cultural identity and warrant reporting. The importance of maintaining Navajo cultural identity, since it was found not to negatively influence academic performance, was found in Willetto's (1999) study as well. Each study supports the maintenance of traditional values within these tribes and points to the significance of family support, which could be considered a cultural aspect as well. Both studies help support the idea that assimilation is not necessary for AI/AN students to achieve academic success.

Upper Midwest Study on Traditionalism

Whitbeck, et al., (2001) conducted a quantitative study that examined factors that influenced school success for children from three reservations in the upper Midwest. The findings indicated that traditional culture positively affected academic performance in fifth through eighth grade students.

A sample of 196 Indian children, in grades five through eight, from three Indian reservations in the upper Midwest were selected for the study. Participants were all enrolled tribal members and all of the families lived on or near their respective reservations. Over one-third of the children lived in single-parent households. The research was based on interviews with the children.

The independent variable used was enculturation, which was assessed through a multi-dimensional scale made up of three components. The first component consisted of three interrelated sets of indicators: involvement in tribal powwows, use of tribal language, and involvement in other forms of traditional activities such as beading and spear fishing. The second component consisted of cultural identification, measured using six questions worded to reflect the specific tribal culture, to address the degree to which the students participated in their culture, how much they lived by this culture, and if they felt successful in their native culture.

The third component, traditional spirituality, was measured using three global indicators developed and approved by reservation advisory boards and tribal governments to ensure respect and to prevent infringing on sacred practices. The three global indicators consisted of questions asking students if they participated in traditional spiritual activities, how often, and the importance of traditional spiritual values to their lives. The three dimensions were constructed and measured, inter-correlations ranging from .41 to .49, to be standardized for use in the analyses.

The age of the children was measured as a continuous variable, while gender and family structure were both assessed as dummy variables. Parent education and parent income were both assessed. Maternal warmth was assessed based on a response to six questions on how the mother engaged with the student. Self esteem was assessed with a scale that had been validated among minority culture youth by the Tri-Ethnic Center for Prevention Research at Colorado State University. This consisted of an 11 item scale encompassing the typical domains of self esteem, such as "I am smart," "people like me," and "I am proud of myself."

The study's dependent variable was school success, which was measured using self-reported class grades and positive school attitudes comprised of ten questions. The two

dimensions of class grades and positive school attitudes correlated at .50 and were thus standardized to create the final school success measure.

Bivariate correlations indicated that school success was negatively associated with the age of the child ($r = -.28$), meaning the older the child the lower his or her academic performance. The study did not discuss possible reasons why; further research would be needed to explain how the age of the student influences academic performance.

The most important finding was that enculturation and self-esteem were positively associated with school success ($r = .21$ and $r = .38$), but enculturation and self-esteem were not significantly correlated. Enculturation was significantly associated with gender ($r = -.12$), meaning that girls scored higher. This is another trend found among such studies, which may or may not be a trend found only in AI/AN students but across all cultures.

Maternal warmth was positively related to school success ($r = .32$), a trend that has been seen throughout similar studies. Self-esteem was also positively related to maternal warmth ($r = .27$). This may not be a factor that relates only to AI/AN people, but for all children. The study did not discuss whether or not this was a reflection of this particular culture.

An interesting finding was that those who scored higher on measures of enculturation were somewhat more likely to be from lower income families. This was not discussed by the authors and could have resulted from chance, being that one-third of the participants were from single-parent homes and most of which were receiving some sort of assistance, indicating a lower income.

Family support seemed to be a trend that affected success in school. Considering the collective worldview of many AI/AN cultures, family may play an important role in influencing children's education. In many AI/AN cultures the term family includes other members of the

community besides just the mother, father and siblings. The family serves as a wide network of support for the student, along with the community, which may contribute to the success of the student.

These studies suggested that association with traditional culture either supports or is neutral with respect to school success. The implications of this finding across all three studies leads to further investigation into the potential causes for low academic achievement for AI/AN students, as traditionalism may be ruled out.

The following studies explored the attitudes of AI/AN students as compared to the attitudes of European American students toward education. A study done by Lin (1985) sought to explore these differences to see if ethnic and racial stereotyping were valid theoretical explanations for the problem of low academic achievement. A series of studies conducted by McInerney, et al. (1992, 1997, 2000) explored motivational factors related to the academic achievement and motivation of students. Since graduation rates and test scores do not explain why AI/AN students are not doing as well in school as other ethnic groups, studies such as these may help to reveal first, if there are differences in students' attitudes toward education based on ethnicity, and second, what some of the causes for these differences may be given the students' perspectives.

A Study on Measuring Motivation

The first study by McInerney and Sinclair (1992) was conducted to determine if the Inventory of School Motivation (ISM) instrument was a valid instrument for measuring dimensions of motivation in classroom settings across cultural groups. Since the subsequent studies done by these researchers rely on this instrument in measuring motivation, this particular study will be presented to increase the validity of the results.

The participants of this study included a total of 2,152 Australians: 492 aboriginal students, 487 migrant-background students, and 1,173 Anglo students in years seven to ten in 12 New South Wales high schools. The ISM instrument contained 100 questions written for this survey to measure the following 11 dimensions of Maehr's Personal Investment Model: self-reliance, self-esteem, goal directed, competitiveness, power, recognition, token rewards, social concern, affiliation, task involvement, and striving for excellence. A pre-survey of adult community members from the three groups was undertaken to ensure the cultural relevance of the items. Responses were measured by a Likert-type scale, from strongly agree (1) to strongly disagree (5). Standardized procedures were used to conduct the surveys. Students were given an explanation of purpose and a request for support in completing the survey accurately. The chief researcher read the questions aloud while students filled in their responses.

Preliminary statistical analysis consisted of determining whether the ISM had construct validity for the full group as well as for each of the separate groups-- Aboriginal, Anglo, and migrant. Factor analysis of the set of 100 items for the full group resulted in ten theoretically interpretable factors accounting for 98.2% of the variance in these items. This analysis showed that for the full group of subjects the ISM gave broad support for the existence of several discrete parameters that may influence student motivation in school settings, even though the analysis failed to find all of the 11 dimensions hypothesized by the Maehr model. The dimensions that were demonstrated were: Self-Esteem, Self-Reliance, Affiliation, Social Concern, and Power, defined by group leadership. The other two dimensions-- Token Rewards and Competition-- were supported but to a lesser extent. The items designed my Maehr to measure ego and extrinsic rewards formed one general factor that was termed Extrinsic Motivation. Task rewards,

such as task involvement and striving for excellence, formed one factor called Intrinsic Motivation; and items were also written to measure Goal-Directed behavior.

In order to assess the cross-cultural validity of the model and its reliability, a further series of principal axis factor analyses were performed on the three groups in the sample. The key dimensions of Intrinsic Motivation, Extrinsic Motivation, Self-Esteem, Self-Reliance, Affiliation, Social Concern, and Power emerged again as major factors. The consistency of the findings across all four groups argued very strongly for the reliability of the ISM as well as for its construct validity. Due to the large sample size and thorough analysis of the data, this study achieved its aim of validating the ISM instrument that was used in the subsequent studies.

A Study of Cultural Perspectives on School Motivation

This study (McInerney, et al., 1997) was aimed at determining whether the goals held by students from diverse cultural backgrounds differed, and what the relationship of these goals was to school motivation and achievement. The participants for this study included five groups of students: three Australian samples (496 aboriginal students, 487 migrant-background students, and 1,173 Anglo students in years seven to ten in 12 NSW high schools), 529 Navajo students from the U.S., and 198 Montagnais Betsiamite Indian students from Quebec, Canada. Demographic information on the three indigenous groups indicated similar patterns of socio-economic status, high levels of unemployment, and high school dropout rates.

Using the ISM instrument discussed in the previous study, the researchers set out to challenge stereotypical beliefs about key motivational goals that differentiate between groups within multicultural school contexts. The method for conducting the survey was the same as that discussed in the previous study.

Following the analysis already discussed to determine the validity of the ISM instrument, the researchers analyzed the results of the survey to determine if and how the education goals of Indigenous minority children within Western school settings differed from those of non-Indigenous students. Three hypotheses were made based on an array of literature studied:

1. Western groups will be more task-effort oriented, competitive and power oriented than non-Western Indigenous groups
2. Non-Western Indigenous groups will be more affiliation oriented, socially concerned, and desirous of recognition and token reinforcement than Western groups.
3. Western groups will have a stronger sense of purpose for schooling, higher sense of competence within school settings, and higher self-esteem in the school context than non-Western Indigenous groups.

Dependent variables were the mean scales drawn from the ISM based on confirmatory factor analyses reported in the previous study. To describe the motivational profiles of each group, descriptive statistics were calculated on the ten inventory scales. One-way analyses of variance were then conducted to ascertain if there were significant differences between the groups on each of the scales drawn from the ISM, and if these differences confirmed the three hypotheses listed above.

All groups were found to be strongly task-effort oriented, ambivalent to competition, and negatively oriented to power. Contrary to the first hypothesis, the Navajo group was significantly more task-oriented than either of the Western groups. In addition, the Anglo Australian group was significantly less competitive than the three Indigenous groups, and the

two Western Australian groups were significantly less power oriented than the non-Western Indigenous groups.

All groups were found to be affiliation oriented. The Navajo group was significantly more affiliation oriented than either of the Western groups, which supported the second hypothesis. However, the Betsiamite group expressed the lowest level of affiliation and was significantly less affiliation oriented than the Anglo Australian group. As hypothesized, the Navajo group was significantly more socially concerned than the two Western groups. Contrary to the hypothesis, the Betsiamite and Aboriginal students were less socially concerned than the two Western groups.

All groups expressed a strong sense of purpose in schooling. The two Western groups were stronger in this dimension, as hypothesized. However, the Navajo group was significantly more positive than the Western groups and the other two Indigenous groups. The Navajo group also expressed higher levels of sense of competence than the two Western groups, while the Aboriginal group had a significantly lower sense of competence.

These results, examined in conjunction with the hypotheses, cannot be used to generalize across all Indigenous groups. The differences found between the Navajo and the Aboriginal and Betsiamite groups suggest strong cultural differences between Indigenous groups. Also, motivational profiles would certainly exist within these groups, but they cannot be determined based on these analyses of grouped data and measures of central tendency.

A final analysis of the data was made to examine the usefulness of the ISM in explaining the school performance of these groups on a number of major educational criteria. The independent variables were the mean scales drawn from the ISM based on confirmatory factor analyses reported earlier. The four dependent variables were: English and mathematics

achievement for Aboriginal Australian, Anglo Australian, immigrant Australian and Betsiamite students, and grade point average (GPA) for the Navajo students taken from official school records, days absent for the enrollment period during which this survey was conducted from official school records, and desired occupation after leaving school self-reported by the students and graded on a six-point scale based on occupational prestige of the nominated occupation.

The results found that self-esteem was a significant predictor for each of the groups on academic achievement; the higher the individual's self-esteem the better the academic achievement. Self-esteem was a significant predictor of desired occupation for the two Western groups, but not for the three Indigenous groups. This could be a result of the high unemployment found in the demographics for these groups. Sense of purpose was a significant positive predictor of academic achievement across all five groups.

The findings suggested that motivational profiles of diverse cultural groups are more similar than different, and contradict many stereotypical beliefs about these cultures. It could be that many Indigenous minority groups have been effectively socialized into what it means to be a student in Western schools. Still there are high numbers of children from Indigenous minority groups who fail to cross the cultural boundaries as evidenced by high dropout rates and low academic achievement. It is unclear if a student's sense of self and achievement goals were related to their perception of his or her role as a student within a school setting, or if it was related to specific cultural values outside of the school setting. To answer this question, McInerney conducted qualitative research.

A Longitudinal Qualitative Study of Motivation and Achievement

The purpose of this study (McInerney & McInerney, 2000) was to provide longitudinal qualitative research into the nature of the goals and values that American Indian and Anglo

students hold, and how these are related to school motivation and achievement. In addition, research examined how these goals developed and changed over a period of years in the context of cultural background, family, society and school.

Forty American Indian and Anglo American participants attending the same school in Phoenix, Arizona, were selected from grades seven and eight for the first interview, with the intention that these same participants would be interviewed yearly for a period of five years until they finished high school. In December, 1997, 37 interviews were conducted from this group. Each of the interviews was transcribed and analyzed for themes related to school motivation and achievement and the relationship of these to cultural background, family, society and school.

The second phase of the study in January, 1999, was conducted with 24 participants made up of 11 first interviews and 13 repeat interviews. The researchers focused on the 13 repeat interviews to see how the achievement goals and motivators revealed by these students had developed or changed over the course of the year. In December, 1999, the third phase of the study was conducted and included 11 third interviews, and 13 second interviews.

The interview format was semi-structured, beginning with school-related issues to be discussed generally (i.e. What's school like at X High School?), followed by more targeted questions in relation to students' values and motivational orientations (i.e. Is it important to you to work hard at school because you want to get prizes and rewards?). Text from the interviews was transcribed and coded for the following key conceptual areas: issues, significant people, culture, environment, goals, feelings, perceived difficulties, coping strategies, motivational values, self-concept, success, failure, learning, and valuing education. The three interview transcripts for each participant were compared longitudinally to investigate any changes as

students progressed through school, and analyses were also conducted cross-sectionally in order to make comparisons between students.

Results from the first set of interviews revealed that student attitudes from both groups toward schooling were generally positive. Students from both groups consistently emphasized the role of a supportive family in encouraging motivated learning. American Indian students emphasized three values more than others— seeking excellence in their work, having concern for the welfare of their fellow students and wanting to work with their friends at school. Students from the American Indian group were stronger on social concern than the Anglo students.

Results from the second and third interviews revealed that all students became more positive towards schooling as they progressed through high school. In general, Anglo students more clearly articulated their goals in relation to the purpose of schooling, and it appeared that American Indian students did not link the purpose of schooling to valued lifelong purposes. According to the authors of this study, there were four needs which most motivated both groups of students to succeed in school: seeking excellence in one's work, self-esteem, affiliation, and social concern.

Based on the results of this study, it would appear that in this school Anglos and American Indians had very similar attitudes toward school achievement and motivation. One difference that was noted was that American Indian students appeared not to link the purpose of schooling to valued lifelong purposes, while the Anglo students had more clearly articulated their goals. This may provide guidance for teachers of Indian students to stress the purpose of schooling and education in their teaching methods and curriculum.

The study lacked data that gave evidence of the students' academic success. For example, GPAs, test scores, and teacher's assessments of their learning may have provided

valuable evidence to support the effectiveness of their reported attitudes on motivation and schooling. Since this study stemmed from previous research examining differences between cultures regarding motivation and schooling, the findings may have more validity than if they were looked at alone. It is possible that during interviews students may have reinforced identities they wanted to project.

Taking into consideration all of McInerney's studies, it would seem that there are more similarities than differences between American Indian and Anglo students regarding their attitudes toward motivation and academic goals. At first glance, this could rule out many theories on why AI/AN students are not reaching the same levels of success as white, or Anglo, students. However, it does not answer the question of why.

Perhaps the results of this study may reflect common attitudes of students in schools where there are a variety of cultures, such as most public schools where AI/AN children attend. Previous studies already discussed in this chapter have shown that differences in academic achievement seem to exist between Indian and non-Indian students. One reason for these differences could be that the studies discussed at the beginning of this chapter dealt with students who had dropped out of school, and thus their motivation to succeed in school could be interpreted as being low. If McInerney's studies had included rates of graduation for the student participants, one might develop more insight into the relationship between motivation and academic success.

The next study researched students' attitudes toward education, the results of which may be used to examine trends across all studies that could illuminate possibilities for the reasons why Indian students experience lower academic achievement than non-Indian students.

A Study of Students' Attitudes Toward Education

A study conducted by Lin (1985) researched Indian and non-Indian, white students' attitudes toward education. The purpose of this study was to examine why AI/AN students as a whole have achieved one of the lowest educational levels among all ethnic groups and are not doing well while attending school. This study set out to compare the attitude of the Indian student toward education with that of the White student.

Data were collected from a delinquency research project with 1,063 students in nine high schools in southeastern Montana. Indian students were selected for this study from schools located within or closely bordering the Crow Indian reservation, and white students from schools outside the reservation. Of nine schools, one school was located in and one other bordered the reservation. Of the total 1,063 students, 117 Indian students were on or near the reservation and 705 white students were outside of the reservation. Due to results of a t-test that indicated that grade point average (GPA) was significantly ($s<.001$) related to student's gender and ethnic background, the researcher believed it was necessary to separate male from female students. For this study, he focused his analysis on male students.

The researcher selected 14 variables from the questionnaire used for the delinquency research project to identify differences in attitudes toward education. Nine variables were related to attitude toward education and the five other variables were: GPA, the perception on the necessity of education, whether or not courses were interesting or relevant, the importance of getting good grades, hours spent doing homework, participation in school activities, the importance of teacher's opinion, and the perception on teacher's fairness. The second category of variables was related to worldview: suicidal tendency, feeling of hostility and revenge, violence as problem solution, feeling of helplessness, and trust.

Seven out of the nine variables showed no statistically significant ($s<.01$) difference between the two groups of male students. With the exception of having a lower GPA and not seeing courses as being relevant to their future, Indian male students were equal to white male students in their concern for and motivation toward education.

For the second category of variables (worldview) Indian male students were significantly different from the White male students. Indian male youths were much more likely to have a worldview which questioned the fundamental human relationship of trust. They were also more likely to have the feeling of loneliness and helplessness in facing their personal problems, and to accept violence as a solution to problems.

The researcher felt it necessary to compare Indian and white students with regard to their extent of drug and/or alcohol use as well as the extent of the problem of truancy. The results of the t-test indicated that there was a statistically significant ($s<.005$) difference between Indian male and white male students on drunken driving, use of marijuana, drug peddling, self-perception of having a drug problem, and truancy. Results showed that Indian students reported that they had not consumed more alcoholic beverages or hard drugs than white students reported. The researcher believed this was not an important factor, considering that Indian males were more likely to use marijuana and drive stoned or drunk. On a six-point scale, the mean score for marijuana use was 2.87 for Indian students and 0.86 for white students. For drunken driving, it was 3.10 for Indian students and 1.45 for white students. The question of self-perceived drug or alcohol problems gave a mean score of 4.16 for Indian students and 4.69 for white students.

In order to further determine which factors contributed to the difference in performance within the Indian student group, the researcher investigated further the relationship between GPA and the 19 variables used in the t-test analysis. Three observations were noted as being

significant. First, there was a statistically significant ($p < .05$) between-group GPA difference with regard to student orientation to education. The higher the GPA, the more likely the student was to see the necessity of education, the importance of getting good grades, and the more he cared about what teachers thought about him. Second, within the Indian student group disillusionment and alienation permeated the entire group of students regardless of their GPA. Third, regardless of their GPA, Indian students did not differentiate among themselves with regard to the extent of drug and marijuana use or the extent of truancy.

According to the author of this study, there was found to be little difference between Indian and white students in regards to their orientation toward education. What he found as being the root of the problem of Indian education was the extensive and pervasive use of drugs and alcohol, particularly marijuana, among the Indian male students. Although one of the differences revealed in this study was that Indian male students reported having difficulty relating to courses taught in school to their real lives and futures, the researcher concluded his discussion with, "solving the drug and alcohol problem is the first order of business toward solving the problems in Native American education" (p.16).

There are several precautions that must be made in examining the validity of this study. First of all, the sample consisted of students who had already been chosen for a project on delinquency. The results, particularly those involving truancy and drug and alcohol use, might have a direct correlation with the fact that these students were considered delinquent. In addition, only males were used in this study. To generalize the results across all AI/AN students based on male, delinquent, self-reported data would only serve to reinforce certain stereotypes that this author set out to disprove.

Although it cannot be denied that alcohol and drug abuse are problems that must be dealt with in school, primarily in the form of health education, it is highly unlikely that this will solve the problems of AI/AN education, as stated by the author. The results also showed that these were problems experienced in both white and Indian male student populations, self-reported at different levels, that were considered delinquents, yet the author seemed to suggest that this was only a problem for the Indian students.

The studies thus far have focused primarily on students' attitudes toward education, motivation and achievement. It is important to include students' voices in the data when investigating the reasons why they fail or succeed in school. The following set of studies consists of investigations on AI/AN students' cognition, intelligence, and abilities within certain subject areas. The purpose of these studies is to examine the validity of certain claims that there are cognitive differences between Indians and non-Indians, and to examine strengths and weaknesses in the context of schooling of AI/AN students.

A Study of Cognitive Patterns of Yakima Indians

In an attempt to identify cognitive abilities unique to Yakima Indian students, this study by Diessner and Walker (1989) investigated patterns of Bannatyne's recategorized Wechsler Intelligence Scales (WISC-R and WAIS) scores for 75 Yakima Indian Students. In 1974, Bannatyne described four categories based on the WISC: 1) a Spatial Ability score based on the Picture Completion, Block Design, and Object Assembly subtests; 2) a Sequential Ability score based on the Arithmetic, Digit Span, and Coding subtests; 3) a Verbal Conceptual Ability score based on the Similarities, Vocabulary, and Comprehension subtests; and 4) an Acquired Knowledge Ability score based on the Information, Arithmetic and Vocabulary subtests.

The participants of this study were Yakima Indians enrolled in a private, BIA contracted, tribally-controlled and operated junior and senior high school in the Columbia River Basin of Washington State. There was no selection process; the sample consisted of all students attending the Tribal School during winter quarter of 1982-1983. All of the students spoke English as their primary language. This sample of students was not fully representative of the population of junior and senior high school students of American Indian background in the Columbia River Basin area, or in other areas of the country. The Wechsler tests were given school-wide and the students were informed that the testing was to be used by the administrators of the school to help plan educational policies and curriculum.

The results of the tests were as follows. For the sample of junior high students ($n = 42$) the Spatial Ability score mean was 10.07, the Sequential Ability score mean was 7.55, and the Verbal Conceptual Ability score mean was 6.75. Based on repeated measures of analysis of variance and subsequent Newman-Keuls tests, the differences between the Spatial vs. Sequential and Spatial vs. Verbal Conceptual were significant at .01; and the difference between Sequential and Verbal Conceptual was significant at .05.

The high school students ($n = 33$) demonstrated similar results. The Spatial score mean was 11.33; the Sequential score mean 8.58; and the Verbal Conceptual score mean was 7.59. Significant differences were noted between Spatial vs. Sequential; and Spatial vs. Verbal Conceptual at the .01 level; and the difference between the Sequential vs. Verbal Conceptual at the .05 level.

Although this study cites previous studies done using the Bannatyne categories of the Wechsler Scales that revealed shared cognitive patterns for the Yakima, Tlingit, Inuit, Navajo, and Ojibwa, it is impossible to generalize such results for all AI/AN students. Studies such as

these are problematic in that they attempt to point out cognitive differences among students based on race and ethnicity. Differences in personality, learning style preferences and abilities among children can vary across and within ethnic and cultural groups, and vary between rural and urban areas.

In addition, the samples used for these studies were small and did not represent entire populations of students. The Tlingit and Ojibwa students were selected because they had been referred for psycho-educational evaluation; the Navajo students had been identified as learning disabled and spoke English as a second language, and the Yakima students all attended a private school. To further invalidate these studies, the Wechsler Scales were developed by white upper-middle class researchers, and the tasks on the Wechsler Scales reflected that cultural background. Regardless of the results of such tests, it would be unethical and foolish to determine effective teaching methods for AI/AN students based on studies such as these.

A Study of Learning Styles of Alaska Native and Non-Native Students

This study (Wauters, et al., 1989) examined the results of one learning style instrument, the Productivity Environmental Preference Survey (PEPS), used to evaluate 200 Alaskan high school seniors. A multivariate analysis of variance (MANOVA) was used to analyze differences between Alaska Native and non-Native students, and rural and urban subjects were also compared.

This study was conducted as part of a larger project to determine the instructional needs and preferences of potential freshmen at the University of Alaska- Southeast. University researchers tested high school seniors in eight communities in southeast Alaska: Klawock, Hydaburg, Mt. Edgecumbe, Wrangell, Petersburg, Hoonan, Metlakatla, and Juneau. There were 200 participants, 107 men and 93 women, categorized by ethnicity (Native or non-Native) and

community type (rural or urban). Out of the 200 participants, 112 were Native and 88 non-Native students. There were 138 students from rural areas and 62 students from urban areas. Juneau was the only city to qualify as urban.

The Dunn model of learning style inventory was selected to define learning styles in terms of students' preferences for specific learning modalities, attitudes, and environmental conditions, some of which can be influenced by instructors and educational institutions. The PEPS, the adult version, was used for this study. The PEPS instrument contained 100 items, and students would indicate the extent to which they agree or disagree with each item on a five-point Likert scale. Test-retest reliability for the instrument was .60, which was somewhat low. Testing was conducted on-site at the schools. Groups ranged from six to 60 students and the process took approximately two hours per group.

Participants were asked to rate their responses to 21 variables in four general categories related to learning conditions in school or on the job. The first category, Immediate Environment, measured student preferences in regard to such factors as classroom noise level, lighting and temperature. The second category, Emotionality, dealt with students' self-perceptions about their motivation, persistence, and responsibility as learners. Sociological Needs, the third category, examined student preferences for learning alone, with peers, with authority figures, or in a variety of sociological settings. The fourth category, Physical Needs, covered learning modality preferences, auditory or visual, as well as items related to time of day and level of activity preferred for learning.

Results of a two-way between-groups multivariate analysis of variance (MANOVA) showed that the main effect for Native versus non-Native students was significant. The main effect for rural versus urban students and the interaction effect were not significant. The

univariate F ratios for the main effect of Native versus non-Native students showed that Native students scored significantly higher than non-Native students on the PEPS variables of Persistence, Peer, Authority, and Visual. Native and non-Native students in this study were more similar to each other than to the PEPS norms; both student groups averaged more than one standard deviation above the PEPS mean on nine of the 21 variables.

One interesting finding was the high self-ratings of Motivation and Persistence by both Native and non-Native students. The researchers explained that this may be due to the extreme selectivity of the sample for this study. A previous study cited revealed that up to 60% of Native students in southeast Alaska may have dropped out before their senior year; thus, the students in this study may have been the most persistent and motivated of that population.

Other results revealed that students showed a preference for precise, guided assignments. They also indicated a need for a variety of different classroom interaction patterns, including learning alone, with peers and with help from authorities (teachers and tutors). Native students scored significantly above non-Natives in their desire for frequent student-teacher interactions. Native students were also significantly more peer-oriented than non-Natives.

Alaskan students rated kinesthetic learning highest, followed by strong preferences for visual and tactile learning. These preferences would be very important in developing effective teaching strategies for all students, Native and non-Native. The results of this study suggest that a variety of learning modalities could be implemented in classrooms to better meet the needs and desires of all students. Further research would be needed to evaluate the reliability and validity of such inventories as the PEPS. Testing should also be extended to other levels of students so that possible differences could be detected before students drop out of school.

An Ethnographic Study of Communication on the Warm Springs Reservation

Philips (1983) argued that the children of the Warm Springs Indian Reservation, in central Oregon, were acculturated in their preschool years into modes of organizing the transmission of verbal messages, and were culturally different from those of Anglo middle-class children. She argued that this difference made it more difficult for them to comprehend verbal messages conveyed through the American school's Anglo middle-class modes of organizing classroom interaction.

Research was conducted from the fall of 1968 through the spring of 1973, the bulk of which was done in the fall of 1969 to the spring of 1971 when Philips lived on the reservation. The general purpose of the research was to explore the ways in which Warm Springs Indians' use of language was culturally distinctive. Research done by the tribe indicated that the Indian children tended to do more poorly than Anglos on achievement tests in all skill areas, with the poorest scores being in language-related skill areas. For this reason, Philips decided to explore the possibility that cultural differences in language use were contributing to the difficulties the Indian children were having in school.

Data collection was done through participant observation. She spent time observing in classrooms and taking notes, followed children wherever they went during their school day, but did not actively seek direct involvement with the children. She also repeatedly and informally interviewed teachers in the classes where the observations were taking place and questioned them about her observations. During a second period of observations, Philips tape recorded a number of encounters and took notes.

Within the Warm Springs community, Philips visited with people in their homes, traveled around the reservation with them, and attended community events open to the public. She informally questioned people during this time about "whatever was necessary to make sense of reservation life" (p.15).

A total of four classrooms were observed, for both first and fifth grades. Two were in the Warm Springs grade school, where 95% of the students were Indian and lived on the reservation, and all of the teachers were white. The other two were in the nearby off-reservation town of Madras, where at least 95% of the students were non-Indian. A comparison was needed to establish whether such cultural differences could be identified in the children's behavior.

The research done in the community was meant to investigate patterns in the use of language, to determine how the Indian children came to be different from the Anglo children, and to determine whether and in what ways adult behavior was similar to and different from that of the children. The results of this research indicated that Warm Springs children spent most of their time before they enter school with other Indians. This suggested that by the time children begin school they have already been socialized, and learned to communicate, in culturally distinctive ways.

One of the most salient features of Warm Springs Indian communication in face-to-face interaction was that it occurred more often than among Anglos. People spent more time with others and less time alone. Much of the talk that occurred was done in conjunction with physical activity, usually in the form of work. It was observed that people didn't talk as loud as Anglos tend to do, and they spoke at a slightly slower pace with fewer occurrences of false starts and rephrasing. In addition, people at Warm Springs did not use changes or variation in voice loudness to attract attention in the ways that Anglos tend to do.

Warm Springs Indians used less verbal means to designate specific individual listeners than Anglos. Address was more often general, so that the speaker appeared to include all those present and facing one another as listeners. A stronger preference was noted by the Warm Springs Indians in facing each other, such as during social events or tribal council meetings where people sat around the edges of the room instead of in rows. Indian listeners were observed as being more still, less fidgety, and could stay in one place longer than Anglos. The most directed and designative behavior that listeners engaged in was a change in facial expression in reaction to the speaker's words, particularly around the eyes.

In general, it was observed that Indian change of speakers involved less control over the turns of others and more control over one's own turn. Differences between the Anglos included the lesser frequency of designative activity in Indian interaction and the relative freedom from topical and syntactic constraints placed on the next speaker by the current speaker in Indian interaction. There was almost no interruption of one speaker by another in Warm Springs talk. This could be related to the value that Warm Springs Indians explicitly hold of not putting oneself above others.

Visual reception was seen as a general mode of learning. Babies would be propped up in their cradleboards so that they could see what was going on, and even when asleep they were rarely left alone. Older Indian children engaged in a great deal of intentional learning through watching others. Children were then encouraged to demonstrate their understanding of the information they had received through physical action conveyed in the visual channel.

In regards to authority, the researcher found that Warm Springs children were accustomed to being raised by a number of people and thus lacked authority in the socialization process. If a child misbehaved he would be taken aside and spoken to privately so as not to

attract the attention of others in a way that could be humiliating. People who were angry or sad and withdrew from social interaction were left alone.

Based on Philips' observations in the classrooms, a comparison of Indian and Anglo communicative behavior in classroom interaction can be seen as evidence that the learning difficulties experienced by Warm Springs children were traced to cultural differences between the two systems of communication in face-to-face interaction. Philips emphasized that learning difficulties need not be evident solely in test results, but in the day to day exchange of talk between teacher and students.

Three major sources of evidence of Indian students' lack of comprehension of teacher talk were noted. First, Indian students in both first and fifth grades talked less than their Anglo peers in official classroom interaction controlled by the teacher. In addition, Indian students responded much less often to questions posed by the teacher to the class. Philips argued that the teacher may not be able to determine whether students understand what she has said if they do not respond at all.

The second source of evidence was the greater frequency with which the responses they did make were defined as inappropriate by the teacher through her failure to ratify what they said in her responses to them. The following example best illustrated this point:

Teacher: ... Now without being silly think of something that does not smell good.

Student A: Skunk!

Teacher: Now don't name *that* one again. O.K.

Student A: Skunk.

Student B: A lion.

Teacher: What else doesn't?

Student B: A lion.

Teacher: Well, where did you smell a lion?

(Student B described a story about a lion in Africa)

Teacher: Now, Lee, we said we weren't gonna be silly. We were gonna really name some things that do not smell good without being silly.

(p.97-98)

A third source of evidence was of Indian students' relative noncomprehension as seen in the frequency with which they ask questions in response to the teacher's instructions. More often than not, the questions the children posed were not asked during periods when the floor was open to students for that purpose. This meant that not all questions were answered. This may have been related to the observation that Indian students turned to their peers more often than Anglos did.

Indian students were reprimanded more often than Anglos for not paying attention. This could be due to the fact that their listening behavior is culturally distinctive. The perception of the teacher that Indian students were not paying attention could be due to the lack of eye contact and few demonstrations or interjections by the students.

Indian students were seen as having more interactions with their peers than Anglo students. There was more nonverbal communication, through gestures and body movements, often to try to make others laugh. Indian children were also viewed as being more physical, and physical activity was treated by the teacher as being disruptive. The use of visual and tactile channels seemed to be consistent with the early emphasis on the use of the visual channel in the socialization of Warm Springs children.

Teachers more often than not singled out individuals one at a time for negative sanction rather than discipline the group as a whole, which contrasted with the Warm Springs cultural practice of dealing with misbehavior in private. In the Anglo classrooms students were seen as constantly competing for the teacher's attention, which did not exist in the Indian classrooms. Fewer Indians raised their hands to be called on and often did not respond if they were called upon, even when their behavior indicated that they were paying attention. This could be explained by the Warm Springs cultural value of not drawing attention to oneself.

To summarize the observations made in ways in which the participation of Indian and Anglo student speakers differed, first it was observed that Indian students generally participated less than Anglo students. Second, they did not select themselves as speakers as much, or did not behave in ways that indicated to the teacher that they wished to speak. Third, Indian students did not respond as often when they were asked to speak by the teacher. Fourth, Indian students tended not to talk out of turn or interrupt as often as Anglo students. Finally, talk was more evenly distributed among Indian students.

The Warm Springs community's patterns of interactional organization suggested that Warm Springs Indians were not accustomed to having to appeal to a single individual for permission to speak, but rather determined for themselves whether they would speak. In the classroom, the teacher had this control and was not a familiar member of the community, but an outsider whose behavior could have been seen as strange or unpredictable in many respects. The system for regulating talk in the classroom, therefore, was not seen as compatible with the socialization practices of the Warm Springs community.

Children in the Warm Springs community were encouraged to become more self-sufficient, and in classrooms teachers exerted more control over students. Children were also

expected to get the teacher's attention to be given a turn to talk, which is not encouraged or practiced in the community.

Philips' research supported her argument that Indian students withdraw from classroom interaction because it requires them to behave in ways that are incompatible with Warm Springs community members' notions of socially appropriate behavior. She showed how Indian behavior in the classroom was often consistent with both Warm Springs adult behavior in face-to-face interaction, and the ways in which children were socialized in the community.

Philips also examined the participant structures in the classroom and observed that Indian students participated more actively in some than in others. For example, Show and Tell was attempted in both the first and fifth grade classrooms, but abandoned after several years of no success with it. Indian students were reluctant to speak when they had to assume the teacher's position and stand in front of and facing their peers.

The small group participant structure, in which the teacher interacts with a small number of students, was also met with little enthusiasm by the Indian students. In sixth grade, however, Indian students responded very well to group projects where they were in control of their own interaction. In Indian groups students did not seem to pick a leader, even if they were asked to do so. There was never any conflict observed over who should be directing activity or over who should be carrying out what task. The students were able to work quickly and effectively, and completed tasks without intervention from the teacher. This was seen as being very different from the group dynamics examined in the Anglo classroom where authority was a key factor.

In receiving help with their work, Indian students were much more apt to initiate an encounter with the teacher by approaching her desk, or when the teacher was not formally instructing. Thus, the Warm Springs children participated much more actively in one-to-one

encounters and in group projects than in lessons where the teacher met with the whole class or in small groups. Such modes of interaction were seen to be found in the Warm Springs community as well.

Cultural differences in communicative behavior can cause conflict in the classroom.

Philips believed that this could be a major factor in explaining why Indian students, in general, do not succeed in school more than any other ethnic group. She also believed that this conflict between their community socializing experiences and classroom socialization could continue into adult life. The problem then would be found in the organization of participant structures for the presentation of curriculum that have been developed for the Anglo middle-class child. In addition, there seemed to be a cultural conflict in communication between the Anglo teacher and her Indian students. Since Anglo teachers had little direct experience with the Indian students' activities and communities they may not understand the behaviors of their students.

Both of these issues could be addressed and used to find effective teaching strategies for teachers of American Indian students. Implications of this study suggest that participant structures preferred by Indian students could be implemented, such as cooperative learning or group work. In addition, teachers of AI/AN students should become aware of the culture and community experiences of their students. More suggestions will be discussed in Chapter Four.

A Study on Mathematics Assessments

Marchand, et al., (2005) examined differences in mathematics assessment results between Indian and Anglo students in Western New York. There were four schools that contracted with the New York State Department of Education for tuition assistance and supplemental funding for Indian students in this region. In response to the No Child Left Behind legislation, New York State requires all students to pass a high school examination in mathematics in order to graduate

from high school. Given the significant achievement gaps between AI/AN and Anglo students, this study was conducted to monitor the progress of achievement of Indian learners and to determine specific topic domains, and to what extent, where proficiency in mathematics is most needed.

Both the fourth and eighth grade assessments focused on seven competency areas: patterns/functions, uncertainty, measurement, modeling/representation, operations, number/numeration, and mathematical reasoning. The assessments consisted of multiple choice questions and constructed response items. Multiple choice answers were electronically scored, and detailed rubrics were used to produce a score ranging from one to four for the constructed response items.

For the four schools identified as receiving assistance and funding for Indian students, the researchers obtained assessment scores for all children on the fourth and eighth grade assessments for the years 1999-2002. During this four-year period, scores from 323 Indian and 1,933 Anglo fourth grade students, and 353 Indian and 2,122 Anglo eighth grade students, were recorded. Demographic data indicated that 64% of the Indian students belonged to low-income families, compared to 30% of Anglo students, based on reduced or free lunch data. However, the researchers were unable to compare performance along this dimension.

Analysis of the data involved a comparison of the raw scores of the students' performance on the assessments. Proficiency levels identified by the state of New York served to frame the classification of the scores and were further classified as low, middle or high within each level. Further analysis was done to examine both the differences among Indian and Anglo students' overall performance, and within each of the seven competency areas. Since New York does not indicate a level of proficiency within each competency area, the researchers used a score of 71%

or higher as a benchmark to indicate proficiency. To test whether the differences were substantial, they calculated 99% confidence intervals to provide estimates of the actual difference in performance between Indian and Anglo students.

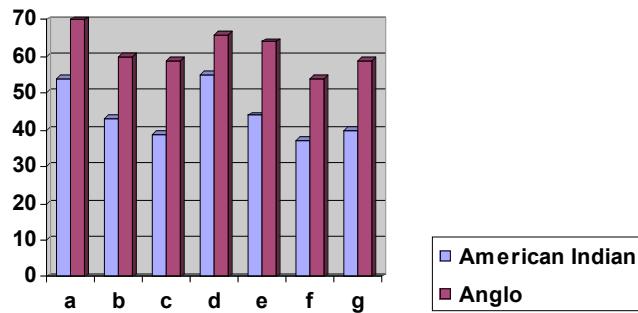


Figure 1. Percentage of fourth grade students scoring at least 71% (proficiency) on mathematics assessment, listed by competency area.

a = Patterns/Functions; b = Uncertainty; c = Measurement; d = Modeling/Representation; e = Operations; f = Number and Numeration, g = Mathematical Reasoning.

Adapted from Marchand, R., Pickreign, J., & Howard, K. (2005). An analysis of the performance gap between American Indian and Anglo students in the New York state fourth and eighth grade mathematics assessments.

Journal of American Indian Education, 44(2), 24-35.

For the whole test, approximately 15% of fourth grade Indian students performed at a high level two, which the researchers suggested that with minor improvement to their academic program they could retest at the third level which indicates proficiency in mathematics. At the fourth grade level, only 58% of Indian students were proficient, compared to 75% of Anglo students.

Within the competency areas, both Anglo and Indian fourth grade students scored the highest in patterns and functions, and modeling/representations (see Figure 1). The lowest level

of proficiency for both groups was number and numeration with 37% of Indians proficient, compared to 54% proficiency among Anglo students. Obvious and consistent differences in proficiency between the Indian and Anglo students are indicated in Figure 1.

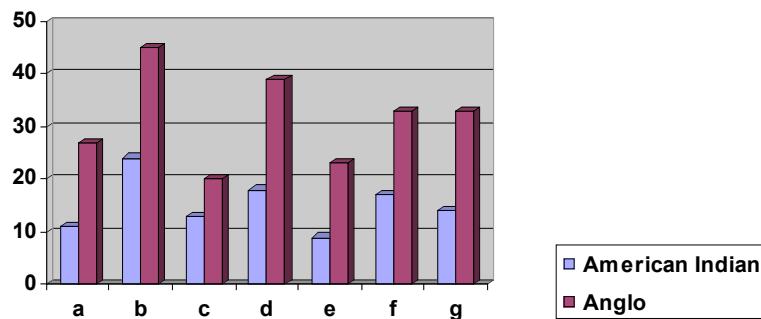


Figure 2. Percentage of eighth grade students scoring at least 71% (proficiency) on mathematics assessment, listed by competency area.

a- Patterns/Functions; b- Uncertainty; c- Measurement; d- Modeling/Representation; e- Operations; f- Number and Numeration, g- Mathematical Reasoning

Adapted from Marchand, R., Pickreign, J., & Howard, K. (2005). An analysis of the performance gap between American Indian and Anglo students in the New York state fourth and eighth grade mathematics assessments. *Journal of American Indian Education*, 44(2), 24-35.

The overall scores on the eighth grade assessment for both groups was considerably lower than in fourth grade in terms of proficiency level, whereas the gap in proficiency was even more significant at 25%; only 20% of Indian and 45% of Anglo students were proficient. This meant that approximately 80% Indian and 55% Anglo students would have a relatively small chance of passing the exam required for graduation. Students who scored in level one, and consisted of 34% Indians and 14% of Anglos, would have virtually no chance of passing the

exam. In grade eight the lowest level of proficiency was in operations, 9% for Indians; and in measurement, 20% for Anglos (see Figure 2).

At fourth grade there was a difference in proficiency of approximately 17% between the Anglo and the Indian students. In eighth grade the proficiency gap was even more significant at 25%. There was some consistency in the proficiency gap between Indians and Anglos for both grade levels in the areas of Mathematical Reasoning, Number and Numeration, Operations, and Patterns/Functions. However, there was a widening of the gap in the areas of Modeling/Representation and Uncertainty from fourth to eighth grade.

Over the four year period, as a result of performance on these assessments, approximately 80% of Indian students were required to receive Academic Intervention Service, implying that the current practice was not proving effective. Without qualitative studies on the teaching methods and curriculum used in these schools, it is difficult to make suggestions or recommendations on how to improve the academic performance of AI/AN learners. This study does reflect the urgent need for attention in trying to figure out why AI/AN students are not as proficient in mathematics as their Anglo counterparts.

A Study on Reading Strengths and Needs

Buly's (2005) study attempted to discover some reading strengths and needs, beyond high-stakes assessment, that could be used to guide instruction for AI/AN students. Her study began with a discussion on how standardized testing results fail to address specific reading strengths and needs of AI/AN students. Reliance on standardized testing, according to Buly, focused educators on a deficit versus difference view of students rather than on an understanding of strengths and differences. The questions that guided this study were: 1) What is the nature of the relationship that exists between the basic reading skills assessed and how

students scored on the state mandated high-stakes reading assessment? 2) What are the basic reading strengths and needs of this group of fourth grade Indian students?

This study took place in the state of Washington, which has implemented a high-stakes standardized assessment entitled the *Washington Assessment of Student Learning* (WASL). The results of this assessment are used to determine whether students have reached a level of proficiency in reading, writing, mathematics, and communication. This study focused on reading.

Reading components discussed in this study were broken down according to the five elemental skills determined by the federal government's Elementary Education and Secondary Act (ESEA), also known as No Child Left Behind. These five elemental skills include: phonemic awareness, word identification, rate, vocabulary, and text comprehension. Buly stated that without diagnostic information, one cannot assume that the reading needs of AI/AN students who struggle on fourth grade assessments fall into any of these five basic areas, nor can one properly identify other factors that may exist which contribute to the lack of success in reading. Her rationale was that without knowing what students' strengths and needs are, one cannot accurately guide instruction.

This study took place in a public school located on a reservation in Washington State. Approximately 7% of the school district's enrollment was AI/AN, and of those, 95% were affiliated with the local reservation and identified themselves as Coast Salish. The exact location and all names of people remained anonymous. The school was chosen based on population, the first two years of low test scores on a state reading assessment, and interest of the district and school in receiving diagnostic information about the reading strengths and needs of its students.

This research relied upon descriptive methods, using quantitative research. The educational phenomena being studied was the basic reading skills and needs of a group of fourth grade AI/AN students. Of these students, 73% were identified as AI/AN the year the study took place. There were 11,439 students enrolled in the school district, making it medium-sized for the state.

In the spring of 2000, about 55.9% of the fourth grade students in the district demonstrated proficiency in reading, according to the WASL scores. The school of focus in this study had its best result, with 31% of fourth graders demonstrating proficiency in reading in 2000. The state reported 66.1% proficiency in reading that year.

There were 58 students enrolled in the fourth grade, and 57 took the WASL. Of the 57, 46 were identified as AI/AN; and of those 46 only 11 demonstrated proficiency in reading. The sample for this study represented 76% of the AI/AN fourth grade students and more than 60% of the total number of fourth grade students enrolled in the school.

Analyses of the data consisted of summarizing the variables, examining the relationships among the variables, and examining relationships among the variables and student performance on a high-stakes assessment of reading. The assessments took place in the office of the Indian Education Coordinator, a tribal member who was employed by the school district. This site was selected because the students were believed to be most comfortable with the coordinator and her office, as she was a well-respected member of the community and known as "auntie" to many.

The assessment selection consisted of five tools that provided various measures of phonemic awareness, word identification, rate, comprehension, and vocabulary. Among the referenced instruments used were the Deletion and Segmentation tasks from the *Comprehensive Test of Phonological Processing* (CTOPP), Word Attack and Word Identification sub-tests from

the *Woodcock-Johnson Psycho-Educational Battery-Revised* (WJ-R), the *Peabody Picture Vocabulary Test-Revised* (PPVT-R), and three years of scores for comprehension and vocabulary from the *Gates-MacGinitie Reading Tests* (GMRT). In addition, students read one narrative and one expository fourth grade reading selection from the WASL, and were asked to read the passage to themselves and then read it aloud to the examiner. Counting accurate words read from these essays were meant to provide a direct measure of students' ability to automatically decode the actual test selections. Timing and coding the errors also contributed to data on fluency and rate. Inter-rater agreement was established on 50% of the 35 students used in this study, using tape recordings and paper records of all measures. Inter-rater agreement ranged between 90% and 98%.

Variable scores for the 35 Indian students were significantly and positively correlated to the reading WASL for all areas with the exception of the two measures of phonemic awareness—segmentation and deletion—and the measure of accuracy when reading a narrative passage. No significant correlations were identified for those who were proficient on the state assessment. The correlations between each variable and scores on the state reading assessment are found in Table 2.

Based on these results, there appeared to be a relationship between the scores that the students received on the reading section of the WASL and the students' measured skills in rate of reading, accuracy, vocabulary, and comprehension. The overall findings for the two measures of phonemic awareness suggested that the majority of the students were phonemically aware at an appropriate level, which is not surprising considering that phonemic awareness is normally fully developed by the end of second grade. Word identification skills of the students also appeared to be at, or close to, grade level based on their average scores on both tests.

Table 2

Significant State Reading Assessment Results

	All Indian Students (n=35)	Not proficient in reading- WASL (n=27)	Proficient in reading- WASL (n=8)
WASL score for reading	1.00	1.00	1.00
Word identification	.611**	.546**	.606
Word Attack	.512**	.364	.341
Accuracy when reading a narrative passage	.223	.102	.233
Accuracy when reading an expository passage	.493**	.438*	.427
Rate when reading a narrative passage	.572**	.407	.344
Rate when reading an expository passage	.617**	.438*	.213
Oral test of vocabulary	.376*	.145	-.025
Written test of vocabulary	.607**	.560**	.227
Comprehension	.733**	.618**	.255
Deletion	.316	.447*	.481
Segmentation	.101	.020	-.026

Note. ** indicates significant at the .01 level; * indicates significant at the .05 level. Adapted from Buly, M.R. (2005). Leaving no American Indian/Alaska Native behind: Identifying reading strengths and needs. *Journal of American Indian Education*, 44(1), 28-52.

Appropriate reading rate appeared to be a primary area of need for most of the students, even those considered proficient on the WASL. Due to the fact that these students were knowingly being assessed, the rate may have appeared higher than normal due to the pressure of being tested and the desire to impress the examiner. The researcher suggested that explicit

instruction in how to adjust rate according to comprehension of material is a skill that may benefit many students.

Students scored substantially below grade level on a standardized assessment of reading comprehension, which was in line with the results of the WASL. The observations and documentation from this study suggested that the students relied heavily on background knowledge to answer comprehension questions, meaning that this could have contributed to their lack of text comprehension during the written assessments. Drawing on prior knowledge is an important skill for readers to have; however, when a student uses prior knowledge with little or no regard for the text it can be problematic. The researcher suggested that additional instruction and practice involving different reading strategies, and when to use different strategies, would strengthen many students' comprehension of text.

Most students were able to identify a picture that represented a word when given a word and four picture choices; however, on a form of vocabulary identification where students had to read a sentence and then choose an appropriate word for a list, students struggled. Perhaps this was due to the familiarity of the format in vocabulary identification, since many of the phonics workbooks used in public school classrooms require students to match a vocabulary word to a picture.

When asked to write in response to reading, students were reluctant. Teachers explained that the school was using a comprehensive reading program that required 90-minute blocks of time, and that they did not have the time to explicitly teach writing. According to Buly, the discrepancy between the oral and written vocabulary scores, along with the reluctance of students to write, suggested that using a variety of assessment formats would best help teachers understand the strengths and needs of these students. Since other portions of the WASL require

writing, there should be more attention given to the fact that teachers are not teaching writing in their classrooms and how this might contribute to assessment scores.

What is missing are specific data that describe what types reading instruction are being practiced in the classroom. This would be necessary in establishing reading strengths and needs to determine what specific instruction, or lack of instruction, may have contributed to the assessment results, and to provide recommendations for future instruction. It was mentioned by the teachers that they had no time to explicitly teach writing, which may be a significant cause for the low levels of proficiency at this school. This study did not appear to give this idea much attention, when it could provide clues and a new avenue for research in assessing the reading strengths and needs of AI/AN students.

The implications of this study are also limited due to the size of the sample. Multiple and diagnostic indicators of strengths and needs are needed for both policy makers and teachers, according to Buly. Buly believed the findings suggested that the students would benefit from explicit instruction, teacher modeling, and think-alouds of key reading comprehension strategies, using a variety of material. Also, teachers should assist readers to actively interact with the text as they read. Explicit instruction has also been suggested to teach the importance of adjusting rate for the reading purpose and comprehension. Buly also has suggested that students may benefit from instruction in test taking as a genre, and should be assessed using a variety of measures.

This study cannot be generalized for all AI/AN students. However, the results provide guidance to educators of AI/AN students regarding the need for diagnostic assessments to determine the skill areas within reading where teachers might want to focus their instruction. Culturally relevant assessments were not used as part of this study, and in working with AI/AN

students they could be very useful. The following study will give an example of where a culturally relevant assessment was used to collect information on students' knowledge.

A Yup'ik Study on Academic and Practical Intelligence

A study (Grigorenko, et al., 2004) was conducted in western Alaska to answer the question: Are academic and practical intelligence, from an individual-differences standpoint, largely distinct constructs? The main objective of this study was to explain the ratings on Yup'ik valued traits in the studied adolescents by their performance indicators on tests of analytical and practical intelligence. The concept of academic, or analytical, intelligence was defined as a person's ability to solve problems in academic, or classroom-like, settings. The concept of practical intelligence was used to signify the person's ability to solve problems in everyday settings.

There was a total of 261 participants in grades nine through twelve. One-hundred and forty-five were female, 74 from rural communities and 71 from a semi-urban community; and 116 were male, 62 rural and 54 semi-urban. The six rural communities, all traditional Yup'ik villages, included: Akiachak (n=27), Akiak (n=21), Manokotak (n=17), New Stuyahok (n=22), Togiak (n=37), and Tuluksak (n=12). The semi-urban, by Alaskan standards, community was Dillingham (n=125), with a population of about 2500, of which 55.8% were Native. The majority of the children in the villages came to school with greater proficiency in Yup'ik than in English.

There were two kinds of independent variables. The first kind consisted of psychometric reference tests: *Test of "g": Culture Fair, Scale 2, Form A* consisted of geometric-reasoning items to measure fluid abilities; *Mill-Hill Vocabulary Scale-- Junior Multiple Choice, U.S Edition (1985 Revision)*, Forms A and B consisted of 32 multiple-choice synonyms items and

measured crystallized abilities. The second variable was the *Yup'ik Scale of Practical Intelligence (YSPI)*, created by the researchers for this study. This test consisted of 36 multiple-choice items to assess the presence of knowledge relevant to the participants' performance in situations encountered in the everyday life of Yup'ik people, and relevant to adaptation in the rural environment in which most of them lived. Two subscales of the YSPI were constructed. One indicated knowledge of sea and river, such as fishing, fish preparation and preservation, and weather in the sea. The other indicated knowledge of land, such as gathering and processing herbs and berries, hunting, trapping and weather in the tundra.

There were three major dependent variables that pertained to practical skills valued by Yup'ik people. The questions were formulated after conducting over 30 interviews with the elders, adults, and adolescents in the rural Yup'ik communities, nominated by the communities members as "good Yup'ik people", meaning people living in Yup'ik ways. Interviewees were asked to identify qualities of the people that were valued most by community members and to share stories about people or situations that illustrated these qualities. This investigation resulted in the following questions aimed at capturing traits valued by traditional Yup'ik culture: 1. Of the adolescents on your list, who is the most *umyuartuli* (a good thinker, one who comes up with novel solutions to problems and uses the mind to survive)? 2. Which of the adolescents on your list is the most *qigcikluki tegganret* (respectful of elders)? 3. Who is the best a) *picul'i* (*great hunter*)? For boys only b) *cayunailnguq* (seamstress, cook, housekeeper)? For girls only. These questions were asked both of adults, such as teachers and community leaders, and of peers of the adolescents.

Standardized units of comparison were used by dividing the sample of adolescents into triples and a formal strategy for quantifying individual differences was implemented. This meant

the "raters" had to choose between a set of three adolescents, a triple. Chosen adolescents were assigned a one, and adolescents failed to be chosen were given a zero. For example, Rater One would choose one out of three adolescents, Adolescents A, B, or C, based on their answers to the questions. If the following question was asked: Who is a great hunter? And the rater chose A, then Adolescent A would have a record of one, and B and C would have a record of zero. Each adolescent would have a quantitative indicator of a skill on which he or she was compared to his or her peers.

Adolescents were tested in schools or community centers in small groups. The practical-intelligence test (YSPI) was administered first, then the tests of fluid and crystallized abilities. Finally, adolescents provided ratings; adults who provided ratings did so at schools or community centers.

To investigate the group differences, they carried out a series of multivariate and univariate analyses of variance. One multivariate model included total indicators of fluid, crystallized, and practical abilities, and investigated the main effect of location and gender, and the interaction between these two effects. The main effect of the location and the interaction effect (location X gender) were significant. Overall, rural boys and girls outperformed semi-urban boys and girls on indicators of practical intelligence while underperforming on indicators of conventional intelligence. Rural boys demonstrated the highest level of performance on the YSPI and the lowest on the Mill-Hill, which measured crystallized abilities.

The first set of multivariate analyses investigated location, gender and location X gender differences for thinking skills and respect for elders. The multivariate effects of gender and location X gender were significant. However, the univariate analyses indicated that there was a significant effect of gender and location X gender only for the thinking skills variable. This

meant that rural boys outperformed everyone else, but rural girls did the worst. The other two analyses were univariate analyses for boys and girls separately-- rural boys outperformed urban boys, but the F statistic was only borderline significant. For the indicator of household skills, urban girls outperformed rural girls.

The correlations between all of the tests showed that for the total sample of the 12 correlations of YSPI with the Mill-Hill and Cattell tests only two were significant, both with land knowledge; one with an indicator of fluid and one with an indicator of crystallized intelligence.

For the total sample, most of the significant correlations between peer and adult ratings and indicators of fluid and crystallized intelligence were observed for the thinking skills ratings. It was also found that hunting skills in boys did not correlate with any conventional intelligence indicators. Overall, the results suggested that the conventional psychometric measures provided modest prediction of some rated skills, such as thinking skills and respect for elders, but not others, such as hunting skills, valued by Yup'ik people.

The models of analyses explained substantially more variance in the latent variable of practical intelligence than in either crystallized or fluid intelligence, indicating substantial predictive power of the measures of practical skills for the indicators of Yup'ik valued traits. Whereas the correlations between the latent indicators of conventional abilities was high (.55 and .40), the correlations between both fluid and crystallized intelligences and practical intelligence was low (.27 and .19 for the first model, and .21 and .08 for the third model). When these correlations were examined in the sub-sample of rural adolescents, the pattern was different. The latent variable for practical intelligence tended to correlate significantly with indicators of fluid and crystallized intelligence. According to the researchers, due to the small sample sizes these

connections may need to be explored in future research before their significance can be fully understood.

The results do suggest that tests of practical intelligence can provide useful supplements to more conventional tests of more academic, analytical abilities. Tests, of course, would vary from culture to culture, but could provide teachers with useful information with which to design teaching strategies and curriculum that is more culturally relevant. Studies will be discussed later in this chapter that show how cultural knowledge and methods of learning, specific to the Yup'ik, have been used by teachers along with a curriculum that integrates practical and academic knowledge.

This section of studies has shown many different ways that abilities and intelligences can be measured, along with a cautionary example of how such assessments can perpetuate or create stereotypes of ethnic or cultural groups. It is important to realize that such assessments cannot be used to generalize across racial or cultural groups of people. Within schools, such assessments may provide some insight into students' academic skills and knowledge; however, they do not always measure all of their strengths and weaknesses, as seen in Buly (2005) and Grigorenko's, et al., (2004) studies. Since standardized tests seem to be a common occurrence in many school districts, students may benefit from being taught specific test-taking strategies. Within the classroom, teachers must use various other means to assess students, including more culturally sensitive assessments of knowledge and skills.

The Teachers

A Yup'ik Teacher and MCC

This study by Lipka, et al., (2005) revealed ways in which a Yup'ik teacher used her cultural knowledge in teaching math content and in her process of teaching. The case study

focused on the teaching style of a Yup'ik teacher named Nancy Sharp, whose instruction seemed to evolve as she taught the modules in the Mathematics in a Cultural Context (MCC) curriculum. The researchers argued that Ms. Sharp created a style of teaching that drew upon her cultural knowledge for both the mathematical content and the process of teaching. Through systematic micro-ethnography, interview data, and "insider" analysis, this study suggested that such methods as expert-apprenticeship modeling, joint productive activity, and cognitive apprenticeship, helped her students become more attentive and highly focused on the math task, and learn about symmetry, congruence and patterns.

Ms. Sharp was chosen for this study because she was a long-term teacher from the village of Manokotak, Alaska, who incorporated a form of instruction nested in the traditions of her community and expertly adapted it to the mathematical content of the curriculum. Also, Ms. Sharp's students made greater gains relative to the other classes on the project's *Parka and Patterns* tests. In addition, her class made greater gains after she began to use expert-apprentice modeling and joint activity in teaching other modules in this series. Expert-apprentice modeling and joint productive activity have been a part of the local culture, as children learned through informal participation in community practices.

Manokotak is a community of approximately 420 people, almost entirely comprised of Yup'ik Eskimo. Nancy Sharp began her work at the Manokotak School in the late 1970s as a bilingual aide and became a teacher in the early 1980s. At that time students came to school speaking Yup'ik as their first language, and even by the early 1990s they were the only community out of approximately 26 villages in Bristol Bay in which students still spoke their natal language. At the time of this study, most of the students who came to school were no longer speakers of Yup'ik, and Ms. Sharp had become the Yup'ik immersion teacher. Her

mother was one of several elders who worked with the team that developed the curriculum and instruction known as MCC.

This case study was part of a large research project that studied the effectiveness of teaching MCC, a curriculum collaboratively created by Yup'ik elders, mathematicians, educators and teachers. Draft modules were produced and piloted in schools, and were studied by analyzing observational data and videotapes of lessons to determine the efficacy of the curriculum and how the curriculum was enacted. From these analyses, further module revisions occurred and these refinements required more rounds of implementation and critique.

The modules were also tested quantitatively, using a 2 x 2 block design. The quasi-experimental design had two conditions: treatment, where teachers were assigned or volunteered to teach the MCC curriculum; or control, where teachers used the curriculum in place. The researchers also constructed their analysis along rural and urban dimensions, but were most interested in rural treatment vs. rural control. They ran ANOVA's and sometimes ANCOVA's when they co-varied pre-test scores. Each analysis was conducted and statistical significance and effect size were calculated.

The case of Ms. Sharp came to the attention of the research team due to significant gains in scores when compared to all treatment and control groups who used the *Parka and Patterns* module during the spring of 2004. The rural treatment groups had an average gain score of 2%, the control group being -3.30%; while the urban treatment groups had an average gain score of 3.30%, the control group being -5.30%. Ms. Sharp's students had an average gain score of 7.20%. However, it is important to realize that there were only four second grade students in her multiage class, the grade level that corresponds to this module.

Qualitative analysis was the key research tool used in this case. Transana, an advanced videotape analysis tool, was used for relevant sections selected of videotaped classroom lessons. Four hours of videotape from four different lessons and two different classes became the focus for this analysis. The analysis consisted of repeated individual viewings, upon which identification of scenes for discourse and video were linked through Transana, and the classroom events were catalogued and categorized. Key elements from each event were also analyzed. Video analysis meetings with colleagues occurred periodically, the most influential being the meetings in which Yup'ik elders and expert Yup'ik teachers joined with university faculty. Ms. Sharp also met with the authors and elders several times as she observed and commented on her teaching, and asked the elders to offer their observations and comments. The research team also interviewed Ms. Sharp many times.

The *Parka and Patterns* module blended the art of creating Yup'ik border patterns for women's fur parkas to basic geometrical concepts, such as shapes (rectangles, squares, rhombi), symmetry, congruence, balance and pattern. During the spring of 2004, when this study took place, Ms. Sharp had just begun teaching this particular module. In her classroom hung her mother's unfinished parka pattern strips, and Ms. Sharp had many other cultural artifacts that pertained to this module.

The first videotape analysis was of Ms. Sharp's kindergarten and first grade class during the second lesson of the module. In this lesson she demonstrated the participant structure commonly seen in the traditional mathematics classroom, where she asked questions and the students responded with short answers, often in chorus. Students seemed to lose interest quickly, which Ms. Sharp picked up on and moved to modeling the mathematical activity that she wanted the students to do. The lesson concluded with joint activity as Ms. Sharp joined the students in a

circle, creating different geometric shapes from the paper. Even after all of the students had left for recess, Ms. Sharp continued to finish her pattern. In this lesson, Ms. Sharp moved from a traditional participant structure to structures that increasingly reflected the ways that Yup'ik teaching and learning has occurred outside of school.

Two other analyses showed the same sequence unfold over the course of three lessons, only with an older group of students. In contrast with the younger children, these students responded to her questions individually rather than in chorus. There was also more emphasis upon the Yup'ik language when the teacher asked students to identify the geometric shapes. When Ms. Sharp led a discussion on the properties of shapes, she invited students to come to the board and draw their responses to the question of symmetry. She challenged students to find additional lines of symmetry and additional shapes, expecting nonverbal responses which led to more students actively participating in the lesson.

Later in the lesson, Ms. Sharp instructed students on the next task. Each student was to begin with a three-inch square of paper, but must end up with their unique set of pattern pieces following the rules of symmetry, congruence and midpoints as a way to cut out related pieces from the larger square. Ms. Sharp had two students model two different ways to fold a square and cut it into proportionally related but different shapes. The dialogue that took place during the last ten minutes of the lesson stressed and repeated four things: each student would be making different sizes and shapes, students had autonomy in what they made and how, there would be no waste in the process, and the principle of symmetry was to guide the process.

During another videotape analysis of a first through third grade group of students, Ms. Sharp demonstrated a form of modeling called cognitive apprenticeship. As students prepared to make bookmarks based on the Yup'ik pattern set, Ms. Sharp talked aloud about what she was

thinking as she made her bookmark. When she ran into difficulty, students were able to observe an expert at work and how an expert resolves problems. A Yup'ik teacher who analyzed this video stated that one of the most important things Ms. Sharp did was to say aloud, "I'm going to try to see if I can make one. I don't know what the end product will be but I'm going to try. I'm going to see if I can make something. I'm not sure if I can" (p. 48). The reason she found this so important was that it made her think that if she was the student, she would want to see if her end product would be different. In other words, not knowing what the outcome would be could serve to motivate a student.

Students then joined in, working individually yet occasionally observing the teacher. The result was that each student made a different design. The researchers believed this to be an example of how modeling does not, and should not, have to result in learning by copying. By giving heuristic rather than procedural directions, and letting the students know that the end outcome was open to their choice of patterns and pieces, were believed to have contributed to the success of the cognitive apprenticeship and joint activity.

Although the sample size was small, and the remote and traditional Native village a rarity outside of rural Alaska, the success of Ms. Sharp's teaching methods are worthy of consideration. Many students learn by doing, or observing, and these students seemed eager to get involved when Ms. Sharp coordinated her verbal behavior with her physical modeling. Ms. Sharp also participated in the activity, working alongside her students, which may contribute to classroom dynamics in terms of students' rights, responsibilities, and ownership.

What is important about this study was Ms. Sharp's ability to fuse a core academic subject, math, and connect it to everyday knowledge and ways of learning in a school setting. Her use of modeling, joint activity, and culturally relevant pattern creation seemed to create a

system of culturally relevant cognitive apprenticeship adapted to schooling. The test results provided supporting evidence in the effectiveness of her approach. The test results and the success of her teaching methods may also be due to the fact that she is a Yup'ik herself and a member of the community; therefore, there is not that common cultural dissonance between the teacher and the students. It would be beneficial to look at a study of a non-Native teacher in a remote Yup'ik village, using the same module and perhaps similar strategies, in order to make that distinction. The following study attempts to do just that.

A Non-Native Teacher and MCC

A study by Webster, et al., (2005), examined what factors contributed to students' academic success when a non-Native teacher implemented Math in a Cultural Context (MCC) curriculum. Stacy Clark, a novice teacher, was teaching in rural Alaska in the village of Ilutuq and gained the attention of the researchers because the students in her multiage class made significantly high gains on scores on pre- and post-tests for the *Building a Fish Rack* module within the MCC curriculum.

Ms. Clark joined the study in her second year at Ilutuq. Ms. Clark's students gained 41.5% as compared to gain scores of all students in urban control (12.94%), rural control (.60%), urban treatment (15.95%) and rural treatment (12.05%). This particular school district had been one of the lower scoring districts in both state and national tests of achievement. The researchers hypothesized that the relationships between Ms. Clark and her students was a key element that contributed to her students' academic success. The purpose of this case study was to analyze the development of a dynamic learning environment based on mutual respect and trust, which was co-created by Ms. Clark and her students.

Three theoretical perspectives guided this case study. The first was sociocultural theory, specifically drawing from the theory of Vygotsky which stresses the social nature of all human activity and situates learning within social contexts. The second perspective came from the notion of Funds of Knowledge, meaning teachers learn firsthand about the experiences and knowledge individual students bring to the classroom instead of relying on generalized notions about the culture of their students as a whole.

The third perspective drew from the idea of a third space, which was described as a space between the culture of traditional Western notions of knowledge and schooling and the ways of knowing, interpreting, and interacting of the heritage cultures of Indigenous peoples. It was suggested by the researchers in this study that a third space could be created through a culturally based curriculum such as MCC, since it brings academic content knowledge into dialogue with Indigenous cultural knowledge. In addition, they suggested that a third space was co-created by Ms. Clark and her students as they negotiated and constructed new cultural norms in the classroom.

Data for this case were collected from a variety of sources, such as: videotaped lessons, formal and informal teacher interviews, classroom observational field notes, phone and e-mail debriefings with the teacher, and student work and journals. Analysis of the data was conducted through research team video analysis sessions, teacher and case researcher's video analysis sessions, and researcher's discourse analysis of lesson and interview transcripts. The research team video analysis sessions were designed to examine specific incidences of math and cultural content and pedagogy evidenced in the lesson, such as use of math vocabulary, collaborative work, student-driven questions, and conceptual rather than procedural development. Analyses of videotapes were also conducted in collaborative sessions with the teacher, Ms. Clark, and case

authors, which focused on identifying and examining emerging themes, or categories. Further analysis of the videos was conducted by a group of Yup'ik educator consultants and university project researchers, which provided a cultural lens. A critical discourse analysis was also conducted using the transcripts and emerging trends and categories from other analysis sessions.

Based on interviews with Ms. Clark about her methods and strategies of teaching, it was evident that one of her priorities was in establishing norms in the classroom that were conducive to inquiry-oriented instruction. In her words she stated, "We did spend a lot of time setting that up, that it is okay to get something wrong" (p.14). According to the researchers in this study, her success in teaching MCC curriculum was largely due to her dedication and effort to developing a classroom environment that would support inquiry and allow students to feel comfortable taking risks.

The module within the MCC curriculum that was taught and analyzed in this study was *Building a Fish Rack: Investigations into Proof, Properties, Perimeter, and Area*. One of the early activities within this module had students investigating properties of rectangles. Working collaboratively in groups, students were to establish a rectangular base for their fish rack and demonstrate whether the shape they had made was or was not a rectangle. By doing this, students had to decide what the properties of a rectangle were and how to show that the shape they created possessed these properties.

Building a fish rack is integral to the subsistence lifestyle that many Alaska Natives embrace, and the kids in this community were familiar with fish racks since they were found everywhere in the village. Before beginning the lesson, the first four activities in the module established the cultural and ecological context through discussing fishing and the life cycles of salmon. Although it was not used in this particular case, the module suggested that an elder in

the village first demonstrate building a fish rack for the students to provide a cultural perspective. Through this activity, elders' knowledge and Yup'ik language can be integrated.

This case study focused on the activity in the module that spanned three class periods where students investigated the properties of a rectangle. Through the analysis of these lessons, two critical components were identified as being central to Ms. Clark's development of a classroom culture. First, Ms. Clark devoted a significant amount of time to open-ended exploration, using tasks that were suitably complex so that multiple solutions and strategies were possible. She paid attention to students' actions and maintained high expectations for her students' ability to reason and communicate their thinking. Second, Ms. Clark developed a student-centered learning environment. She frequently made use of her students' input to guide and direct her instruction while playing a critical role in guiding students toward more sophisticated mathematical ideas, requiring them to critically examine their statements and become more precise in the way that they talked about mathematics.

Ms. Clark's emphasis was to give students a voice and to gauge their thinking about the mathematical ideas. She engaged with students and offered them support, but never told the students what a rectangle was or what properties they should be looking for. Her role was more collaborative than directive, even when the ideas that the students offered weren't mathematically correct. The culture of the classroom that she had created with her students, making a safe environment where students were comfortable offering their own thinking, allowed her to push students to work on the issue as a class.

The researchers interpreted the interactions of the students and the teacher as flowing with an ease that usually characterized a strong, collaborative learning community that has been working effectively together for a period of time. Ms. Clark had accepted her position as an

outsider to the indigenous culture of her students and this cultural dissonance was mediated by three common themes to create a new cultural consonance within the learning environment. The first theme was valuing students and the unique abilities and knowledge they bring with them to the classroom, and maintaining high expectations of them. The second theme was student ownership and autonomy, as Ms. Clark explained, "I told them that everything in the room belongs to them... That is why they take care of the things here" (p.24). Students were also allowed to move freely throughout the classroom, an example being that while Ms. Clark was at the front board recording student responses during a discussion, two students began taking notes on a whiteboard at the back of the class.

The third theme refers to the relationships between students and teacher, or principal, and among the students themselves. Ms. Clark began developing this relationship of trust built on mutual respect outside of the classroom, spending time with her students on the river every day during the first week of school. According to Ms. Clark, she wanted to learn about her students on their turf, a place where students were the experts and could share their knowledge with her as well as the rest of the students in the class. Trust and team building games were played, talks about community, listening and observing the environment, drawing, writing in journals and just having fun all took place during this first week on the river.

Perhaps the most important thing that must be considered in this study is the region in which this case took place. Rural Alaska does not represent a typical rural area anywhere else in the country-- western Alaska is virtually isolated from the rest of the state. The Yup'ik culture is also unique, and it might not be relevant to other cultures across the state and country. However, in referring to a previous study already discussed in this paper by Rickard (2005), research involving the MCC and the *Building a Fish Rack* module specifically has been conducted in an

urban school district. In addition, Rickard's (2005) study included a treatment group and a control group, both in a highly-diverse urban school district with very few Yup'ik students. The success of the students, Alaska Native and non-Native, in both studies, rural and urban, suggest that the MCC curriculum and the specific strategies outlined in the studies used by both teachers may be effective in helping students from various cultures and communities learn mathematics.

What is important to gain from this particular study are the methods used by the teacher, Ms. Clark, in establishing a learning community within her classroom based on the cultural dissonance between herself and her students. This is what was referred to as a third space. Spending time during the first week of school outside of the classroom may not be feasible in all school districts, but can be effective in building relationships with students and teachers. In addition, constructing classroom norms with the students and giving them ownership of the classroom and its materials was an effective method used by Ms. Clark. Based on the observations and analyses of this particular lesson, the researchers could see that there was a successful collaborative learning environment in action where students were comfortable taking risks, communicating their ideas, and engaging in the activities.

This study made no correlation between the actual curriculum being used and the students' responsiveness to the activities in the module. Instead it owed much of the success of the students, based on their test scores, to the efforts of this particular teacher in creating a collaborative learning community. Such efforts could reasonably be applied to any classroom in the country and it would be interesting to see if such efforts, when applied, might be more effective in a classroom with AI/AN students, considering the cultural difference between a teacher and her students.

Referring back to Rickert's (2005) study and the significant increase in students' assessment scores from both studies, suggests that perhaps a combination of MCC curriculum and effective teaching strategies may both contribute to students' success in learning and doing mathematics. No studies have been found that show a decrease in students' achievement after using the MCC modules; however, more research should be conducted to examine the pedagogy, in conjunction with both culturally relevant and euro-centric curriculum, by a variety of teachers across the state of Alaska in order to pinpoint specific effective teaching strategies for AI/AN students.

A Study of Urban Iroquois Faculty

Hollowell and Jeffries (2004) investigated how the worldviews of Iroquois teachers helped to dispel the myths about the educability of urban Iroquois children. This qualitative case study took place in Buffalo's Native American Magnet School, also known as P.S. #19. The goals of this study were to dispel myths about the educability of urban Iroquois children and introduce readers to the philosophies, or worldviews, which grounded the work of these Iroquois teachers.

The school's Indian population constituted one-third of the entire student body and consisted of members from the six Iroquois tribes: Oneida, Seneca, Mohawk, Cayuga, Onondaga, and Tuscarora, with the majority being Seneca and Mohawk. Most of the students were second or third generation removed from reservations, as parents or grandparents had moved to the city in search of jobs. This school was located on Buffalo's West Side, a poor neighborhood in which few homes were owner occupied. Ninety-nine percent of the students in the school were eligible for free lunch. There was tight security at the school due to a high crime rate and problems with drug trafficking in the area. Many of the teachers did not live in the

neighborhood. P.S. #19 had been considered one of the first schools in the country to effectively address the needs of urban Indian children and has served as a model for similar schools in Milwaukee, Wisconsin, and St. Paul, Minnesota.

The term faculty referred to the eight persons involved in the Native American Resource Program (NARP): one program director, two counselors, three Native studies teachers, one secretary, and one director of tutoring. The program had several volunteers involved in the program as well. There were two classrooms devoted exclusively to Native studies instruction.

This study was based on 240 hours of participant observation conducted on Fridays during the 1998-1999 school year. Researchers observed in classrooms, during assemblies, and during meetings. Field notes were also gathered through informal lunches with teachers, both in and out of school. Researchers also participated in community events. Interviews were conducted with ten persons in the NARP, seven Iroquois faculty members plus three non-Natives: the director of tutoring, a tutor, and a former student. An extensive literature review in the field of Iroquois education was also conducted. Triangulation in data collection and analysis, such as having the final paper checked by participants for accuracy, observing extensively over a long period of time, and having the study peer reviewed by fellow qualitative researchers at different stages, was employed.

Native instruction at PS #19 was funded by a five-year formula grant from the Office of Indian Education, authorized by the Indian Education Act of 1972. As a result, the NARP must conduct annual evaluations and meet state curriculum standards. Both Native and non-Native children received instruction in Native studies, but the classes were segregated. Native children were pulled out of their regular classrooms four times a week.

An example of the type of instruction received for both Native and non-Native students was found during the fall. Loma, a teacher who taught younger students in a pull-out classroom, highlighted Iroquois thanksgiving ceremonies, such as Midwinter, Green Bean, Strawberry, Green Corn, Harvest, Maple Syrup, and seed ceremonies. In Joyce's, a member of the Cayuga tribe and the Cultural Resource Specialist, class for non-Natives, students were also learning about how Native Americans celebrated the thanksgivings throughout the year. Her purpose was to teach the non-Native students about Iroquois culture and to rid them of stereotypes. All lessons were aligned with academic standards in place for public elementary schools in New York.

Rosy, a member of the Mohawk tribe, was both the cultural resource specialist and a certified social worker who worked with Native students at the school. She dealt mostly with behavior and attendance problems at the school and served as the home-school liaison. One of her strategies in dealing with students was to approach kids and let them know that she cared about them. For example, she would ask a student if they had breakfast and what she could do to help them.

Key concepts taught in Native studies classes at PS #19 included matrilineal clans and the symbolism of the circle. Native children learned their clan symbols, traced their family trees, and learned the duties of clan mothers and the ceremonies, such as the naming of children. Many creative projects at the school were based on the project methods of progressive education. This was explained as global learning, or learning that is not so segmented and works through all the senses. Examples of creative projects included students presenting their family trees, including photographs and interview data, in genealogy fairs. Other activities included planting,

caring for, and harvesting plants in the classroom as students document growth through drawing, measuring and graphing changes.

Children also learned about the diversity among Indian tribes in the U.S., comparing and contrasting such things as housing, food, and ways of life. Students created geo-cultural maps and teachers expressed hope to exchange email messages with Native children around the country. Older children learned about the history and government of the League of Iroquois. They studied treaties and Grand Council Laws, and reenacted the negotiation of treaties in skits. They also wrote diaries from the perspectives of Iroquois children who lived in past eras.

Tribal elders had been invited into classrooms to tell stories, and students had created their own stories based on their ideas. Native studies activities integrated several different fields. For example, social studies and biology were integrated when raising seedlings; social studies and language arts were integrated when creating stories; and social studies and math were integrated when creating patterns in wampum strings. Author visits, field trips and fairs were special events that were included but sometimes curtailed due to budget cuts. Seneca and Mohawk language instruction was no longer provided due to retirement and a lack of speakers.

Teachers emphasized the value of humor in their culture, and valued laughter in the classroom. Several faculty members recounted how this value of humor had helped to develop a sense of family at the school. The NARP also maintained an open-door policy and shared office space to foster the sense of community.

Values emphasized at PS #19 included respect, wellness and higher education. Native studies faculty emphasized respect for oneself, respect for the environment, and respect for others, particularly elders. Wellness was emphasized throughout the entire school, and included

the Growing Healthy curriculum, which the teachers praised for promoting hands-on learning.

The nutritional value of traditional Native foods was also discussed in Native studies classes.

A 1996 drug survey of Indian students in grades four through eight at PS #19 found that 88% of them had been offered entry level drugs (tobacco, alcohol and/or marijuana). A Native-specific intervention program was created as a talking circle support group in which at-risk students could discuss their drug or alcohol related concerns.

The school counselor, a Cayuga Indian, worked with Indian teenagers in various high schools in the city. She explained that she met with students to consult about school work, offer advice, suggest resources, and urge them to attend college. Her other goals included improving attendance and reducing the dropout rate of Indian students.

The faculty also served as role models for students. One example was the former principal, an Onondaga Indian, who role modeled spirituality to his teachers and students. He allowed and encouraged students and faculty to take days off to attend their traditional ceremonies at the Longhouse.

This case study has shown many significant and effective ways in which committed teachers can use AI/AN worldviews to holistically instruct students of Native and non-Native origin. One of the weaknesses of this study was that it did not include data to support the effectiveness of these strategies, such as graduation rates or academic success statistics. In addition, this was an example of a magnet school which may not be representative of most public and BIA-administered schools with high AI/AN enrollment; therefore, this study may not be generalized as being a solution or realistic model of a public school that can best serve AI/AN students. Magnet schools are designed with a specialized curriculum designed to enhance

student interest and promote academic achievement. In addition, students were admitted at this school via lottery, and preference was given to Indian students.

Based on the results of several studies discussed so far, this case study addressed many issues by illustrating specific strategies that were implemented to deal with certain problems, such as dropping out of school, drug and alcohol exposure, and the perception of uncaring teachers and irrelevant curriculum. This case study contained a myriad of strategies that will be discussed further in Chapter Four. Although this study examined the strategies of a magnet school, focusing on the Iroquois faculty, there may be much to be learned from it. White teachers, as allies of AI/AN communities, may take this case study as an example to be considered and learned from, since it involved Indian teachers and culturally relevant curricula.

This chapter has presented an array of studies contained in sections relating to the curriculum, the schools, the students, and the teachers. Although it is difficult to generalize such studies across the entire nation's population of AI/AN people, several trends and revelations have been discovered. Key points from these studies will be reviewed at the beginning of Chapter Four, followed by suggestions and recommendations for effective strategies for teaching AI/AN students.

CHAPTER FOUR

Conclusions and Recommendations

Before discussing my conclusions regarding effective strategies for teaching American Indian and Alaska Native students, it is important to remember that variances exist across tribes, nations, and communities. There is not one specific learning style or cognitive ability level unique to AI/AN students. What is unique and must be considered is the history of the Indigenous people of this country— forced assimilation practices such as boarding schools, the forced removal of Indians from their land, broken treaties, the wars and massacres such as Wounded Knee, disease epidemics, and society's ignorance of their current presence in our country.

In the following discussion ideas will be presented within the socio-historical context of AI/AN education, taking into account the research that has been conducted across a variety of regions within the U.S., and my own understandings and recommendations for what I, as a future teacher, must strive for in my endeavors to work with AI/AN students and communities. This chapter will begin with an introduction to discuss some unanswered questions and to revisit key points found in the research. The effective strategies I have gathered and discovered will be presented in three subsections: Teachers as Learners, Teachers as Innovators, and Teachers as Allies.

The first question that must be answered before discussing effective teaching strategies is: What is the purpose of education? Based on the research presented in Chapter Three, it might seem as if some schools, parents, students and teachers have different perceptions of what education should entail. Historically, the purpose of education was to assimilate AI/AN people into the mainstream European culture. In the case of public schools today, the Principle of

Correspondence saw schools as reflecting the norms and values of the dominant society (Walton, 2006). In order for students to learn how to navigate within the dominant society it would be reasonable to agree that schools should be teaching the norms and values of mainstream society. However, I would argue that students must also learn how to navigate within their own cultures and societies. This is where teachers and communities can play an important role in assisting students to become competent in many areas of their lives, and to provide equitable opportunities for their futures.

Deloria (2001) explained education as needing to have "a transitional function of moving individuals from one status or condition to another" (p.79). Given the statistics presented in Chapter One regarding the AI/AN people as having higher dropout rates, lower incomes and widespread poverty, not to mention high unemployment, alcoholism, suicide and depression, the need for a transition is apparent. The studies presented in this paper further reaffirmed the need for such a transition, as students experience low academic achievement, perceive a lack of relevance and purpose to schooling, and encounter racism within schools and communities.

What schools and teachers must strive for is to provide an environment where all students can learn what is needed to navigate between both worlds-- the individual's home culture and mainstream culture-- and this consists of a blend of knowledge, skills and values relevant to both cultures. Wildcat (2001) summed up this purpose, stating that AI/AN students are "...dying of thirst for what Deloria calls understanding and I would call wisdom, a 'big picture,' a worldview in which information and knowledge are integrated meaningfully ...ultimately, understanding or wisdom ought to be the goal of education" (p.30).

According to Garcia and Goldenstein Ahler (1992), teachers and schools must be committed to literacy. Literacy here was defined as a "hierarchically arranged complex of skills,

attitudes, and knowledge" (p.18). The first level was functional literacy, which refers to the ability to speak, read, write, and comprehend standard American English and technical literature (to understand simple mathematical and scientific concepts). For bilingual students, functional literacy in both languages would be necessary. The second tier was cultural literacy, which refers to knowledge of the literature, history, and grand traditions of the core American culture, including major scientific and technological accomplishments. This also referred to knowledge about a person's ethnic or cultural heritage. Garcia and Goldenstein Ahler (1992) stressed that "it is equally important that Indian children be taught the content of their tribal cultures, including, if their parents desire, a knowledge of the tribe's language and oral tradition" (p.19). In addition, cultural literacy must also serve to increase global awareness and appreciation of the peoples of the world.

The highest tier of literacy was called critical literacy, and it referred to the ability to think analytically and creatively. The specific abilities outlined by Garcia and Goldenstein Ahler (1992) were:

1. The ability to analyze and evaluate oral and written expression, including the ability to detect a writer's or speaker's biases;
2. In the area of mathematics, rather than rote memorization of formulas, the ability to reason quantitatively with mathematical concepts and formulas and apply that reasoning to real world situations;
3. In the area of science, the ability to propose tentative explanations of phenomena, to gather data systematically and examine them to check the correctness of those explanations, and to evaluate scientific theories in relationship to empirical data;

4. In the fine arts and the performing arts, the ability to understand the disciplined routines or forms used by artists to express ideas or emotions or to produce a desired response (p.19).

I agree with Garcia and Goldenstein Ahler (1992), and Wildcat and Deloria (2001) on their ideas on what the purpose and content of education should be. With this as a foundation, effective teaching strategies may be developed.

The next question that must be addressed is how to combat racism. Several of the studies in Chapter Three (Deyhle, 1995, 1992; Jester, 2002; Kaomea, 2005; Lin, 1985) brought up the significance of racism as playing a role in the academic failure of AI/AN students. In addition, my experiences at Madras High School, where the student body was approximately one-third Indian, made it obvious that racism was a factor as seen in the treatment of Indian students by teachers, comments made in and outside of school, gang violence, and the sometimes brutal crimes against Indian students by white students. Teachers may not be able to simply eliminate racism in schools and communities, since racism is a national and global problem. However, the effects of racism on students of color must be acknowledged, and there are effective strategies that teachers can use to help combat racism. Ideas on how to do this will be discussed throughout this chapter, as the underlying purpose that guides these effective strategies is equity for all students in education.

Several of the studies (Coladarci, 1983; Deyhle, 1995, 1992; Freed & Samson, 2004; and Robinson-Zanartu & Majel-Dixon, 1996) that listened to students' and parents' voices revealed that many people believed that teachers and schools do not care about AI/AN students. This leads to my final question that remains unanswered: What about teachers who don't care? Or if they do care, how can they better express it?

The perception of students who had dropped out of school was that teachers did not care about them and that they felt unwanted in school. This is a very real issue for students and suggests that if teachers were able to show their students that they did indeed care, AI/AN students might be more successful in school. Since nobody can force a teacher to care, what can a teacher with genuine passion and sincerity do for students who may be coming from or going into classrooms with uncaring teachers? Any answer to this question would be laden with idealism and unrealistic expectations; however, caring about my students is foremost in my endeavors as a teacher, and many of the strategies to be discussed in this chapter will reveal ways in which teachers can show students and communities that they care.

As mentioned earlier, many of the studies (Coladarci, 1983; Deyhle, 1995, 1992; Freed & Samson, 2004; and Robinson-Zanartu & Majel-Dixon, 1996) where students were asked about their reasons for dropping out of school revealed the trend that teachers did not seem to care about them. Another common complaint was the perception of a lack of purpose or relevance of school to the students' lives. Other studies discovered that there seemed to be very little difference in motivation between AI/AN students and Anglo students (Lin, 1985; McInerney, 1992, 1997, 2000), suggesting that students should not be blamed for their academic failure if they do indeed possess the levels of motivation and goals needed to succeed. I would argue that teachers must keep this in mind by holding high expectations of all their students, and not to assume that because a student is Indian they will find no purpose to school or will likely drop out.

Another major finding in the studies presented in Chapter Three was that traditionalism was found to not be a factor in AI/AN students' academic success or failure (Coggins, et al., 1997; Whitbeck, et al., 2001; Willetto, 1999). This finding can be used to support such strategies

as culturally relevant curriculum, and to discount methods meant to assimilate students in order for them to succeed.

Several studies (Buly, 2005; Coggins, et al., 1997; Grigorenko, et al., 2004; Jester, 2005; Marchand, et al., 2005) looked at assessment methods used to measure intelligence and skills, revealing that ideas of intelligence and valued skills may differ between the home and school cultures. In addition, in order to recognize the strengths of our AI/AN students it is necessary to employ other assessment methods, such as performance-based rather than high-stakes, standardized assessments. More ideas will be discussed in the sections Teachers as Innovators and Teachers as Allies.

Studies (Hollowell & Baynes, 2004; Manuelito, 2005; Robinson-Zanartu & Majel-Dixon, 1996; Snyder-Joy, 1994) also dealt with schools and the idea of self-determination, revealing that many people continue to mistrust schools, especially BIA schools; and that some efforts for self-determination have been successfully implemented and may serve as a model for other communities. Effective strategies for teachers who wish to assist communities in their self-determination efforts will be discussed in the section, Teachers as Allies.

Buly's (2005) study on reading and the AI/AN learner revealed that teachers had explained that they had no time to explicitly teach writing. Based on the results of the WASL and other assessments conducted by the researchers, this startling point could only lead to one solution: teach writing. This will not be discussed as an effective strategy, however methods that may relate directly to AI/AN students will be shared, for it is simply a basic skill that all children must have in order to succeed academically.

I would argue that writing is an integral component of any literacy program at all grade levels. Deyhle's (1995) study revealed that most of the dropouts felt reading difficulties

contributed to their problems in school. The average Indian graduate from this district was reading at the seventh grade level, and many Indian youth explained that they did not read outside of school. In order to provide all children with an equitable education, careful attention must be given to students who are experiencing difficulty reading. It is my belief that exposing children to authentic literature that is interesting and enjoyable is a good way to encourage the practice of reading. More ideas regarding the teaching of reading and writing will be discussed later in this chapter.

The proficiency gap in a mathematics assessment was found between AI/AN students and Anglo students from Marchand, et al.'s (2005) study, along with the fact that over the four year period, as a result of performance on these assessments, approximately 80% of American Indians were required to receive Academic Intervention Service. I would argue that anytime significant gaps in achievement are noted, the curriculum and methods of teaching must be examined and adjusted. Several examples of research conducted in Alaska that examined a culturally-relevant math curriculum have provided great insight into ideas on how to teach math, and will be revisited in the following sections.

This chapter will thus be divided into three sub-sections that will cover an array of strategies within each one: Teachers as Learners, Teachers as Innovators, and Teachers as Allies. Given the assumption that teachers do indeed care, the following suggestions may be applied.

Teachers as Learners

Ferguson and Fleming's (1984) study that examined social studies textbooks and Kaomea's (2005) study on Hawaiian Native studies curriculum revealed that the books being used in schools could be perpetuating negative stereotypes about Indians, and may be seriously lacking in material that is authentic and current. Kaomea observed that students are learning,

which is not the problem, but the problem lies in what they are learning. In this case the students were learning to perpetuate stereotypes, and citing or echoing pervasive colonial discourse concerning the Native Hawaiian decline, which according to the textbooks was due to their savage and self-destructive practices, such as human sacrifice and internal warfare (Kaomea, 2005). By this example, it can be seen that the curriculum is a critical element of teaching. Teachers must examine the textbooks and other curricular materials they are given, or plan to use, for bias and supplement curriculum as necessary.

Klug and Whitfield (2003) suggested asking the following questions when examining materials for stereotypes and biases toward AI/AN people:

1. Are AI/AN people portrayed with respect or as humorous objects of derision?
2. Is their use of Native languages to be ridiculed, or is it rendered respectfully?
3. Are AI/AN people portrayed as part of the present and future, or only as a footnote of the past?
4. Are AI/AN cultures shown to be vibrant and living, with Native people making contributions to their communities and societies, or as humorous spectacles?
5. Are AI/AN heroes and sheroes respectfully portrayed in materials, or are they given insignificant roles and presented as Disney-like caricatures? (p.156)

When stereotyping does appear, it should be identified so that students will be "sensitized to its pernicious effect rather than victimized by it" (Garcia & Goldenstein Ahler, 1992, p.29). I would agree that students should also be taught to critically examine literature and textbooks instead of passively receiving information and accepting it as truth. *Rethinking Columbus: The Next 500 Years* contains a myriad of suggestions, resources and lesson ideas that can be used to

teach students these essential critical thinking skills, and to provide a comprehensive and unbiased education of the history of this country.

Having knowledge of U.S. history and AI/AN cultures would be a requirement for conducting a critical examination of such books. Kaomea's study revealed that teachers admitted to not being prepared to teach a mandated curriculum in Native studies. If teachers are not given the proper training, they should become prepared some other way-- taking classes, reading and studying histories and culture from a variety of perspectives, and working collaboratively with other teachers and Native people. It is our responsibility as teachers to prepare ourselves so we can best teach our students, and working with AI/AN communities is essential.

Most of us who went through the U.S. public school system learned history from a white man's perspective. All teachers should relearn history. Some suggestions I would recommend for teachers are Howard Zinn's *A People's History of the United States*, Lee Miller's *From the Heart*, Dee Brown's *Bury My Heart at Wounded Knee*, and the recently released documentary series entitled *500 Nations*. Teachers of AI/AN students should research the specific culture and history of the tribes and communities of their students, a practice that is necessary in working in areas with high AI/AN enrollment-- like schools on reservations or bordering AI/AN communities. By doing this, teachers can show their students and the communities in which they serve that they do care about their children's education and culture. This is an important practice for teachers to who are working with AI/AN children, as it reveals a willingness to learn about and serve the community, and it demonstrates respect for students and their culture.

Also, it is important to take into consideration the potential effect of history that current generations have as a result of maltreatment in the past, a term called intergenerational trauma (Klug & Whitfield, 2003). For example, parents or grandparents may have attended boarding

schools and had negative experiences there, resulting in mistrust of the BIA and public school systems. In addition, being away from their families may have prevented traditional ways of parenting from being experienced, and thus passed down to their children. (Klug & Whitfield, 2003).

Involved in the idea of teachers as learners, is the need to critically examine the school system itself. Just because a school is deemed successful, does not mean that students are learning, or more importantly learning equitably. Jester's (2002) study of the "unhealthy Native" construct provided a startling example of how, what he called a standards-based reform system, was used to improve the reputation of a school district in Alaska, yet revealed that Alaska Native students were being taught in ways that reflected the socio-historical context of AI/AN education-- removal from homes and school-based assimilation strategies.

Deyhle (1995) mentioned in her study that Anglo teachers and community members did not interact much with the nearby Navajo or Ute communities. Teachers had not been to their students' homes, let alone the reservation. The superintendent had never heard of the ceremony of Kinaalda' practiced by young high school age girls for their first menstruation. Not knowing about students' lives and cultures could have been a very significant factor that contributed to the perspective that teachers did not seem to care about their Indian students. Teachers must learn about their students, and this includes their families, communities and histories.

Philips' (1983) research supported her argument that Warm Springs Indian students withdraw from classroom interaction because it requires them to behave in ways that are incompatible with their community's notions of socially appropriate behavior. She showed how Indian behavior in the classroom was often consistent with both Warm Springs adult behavior in face-to-face interaction, and the ways in which children were socialized in the community.

Warm Springs children participated much more actively in one-to-one encounters and in group projects than in lessons where the teacher met with the whole class or in small groups. Such modes of interaction were seen to be found in the Warm Springs community as well.

By learning about the Warm Springs community, specifically their methods of communication and socialization, and comparing it to what was being observed in the classroom, Philips was able to form conclusions about why students may not be succeeding in school. It would be important for teachers to learn as much as possible about students' culture in order to understand so-called differences and perhaps design methods for teaching that are more compatible with that of the community.

During a conversation with a Skokomish staff member at the Hood Canal School in Washington, I asked her what advice she would have for a teacher wanting to work in an Indian community. Her response was to absorb into the community by attending events open the public, such as Head Start graduation, "even if you don't say anything" (M. Williams, personal communication, May 30, 2006). She stressed the importance of meeting community members and parents so that they would feel comfortable approaching me; and if invited to anything, go. Most importantly, she said, be open and observant. This is what it means to be a teacher as learner.

Several of the studies mentioned that students believed that the curriculum in school was not relevant to their lives. In order to learn, people must be able to make connections to their lives—How is this knowledge useful to me? Why would I want to know this, or know how to do this? Miller Cleary and Peacock (1998) gave examples for teachers who want to encourage student curiosity as a motivator for learning. First, teachers need to support the student in reconnecting with their interests. One method teachers can use is to conduct "interest

inventories" (p.230) at the beginning of the school year, no matter what subject or grade a teacher teaches. In addition, teachers must be good listeners, seeking to understand the student's inclinations and questions about the world. Students who pick up on their teachers' interest in them may also realize that they care about them.

Teachers must also learn about themselves. Teachers can self-assess their own stereotypes about how AI/AN students learn through practice. In addition, teachers should examine their own biases and attitudes toward education, and be open to different perspectives. Learning possibilities are endless, and teachers must continue to learn in order to teach effectively.

Teachers as Innovators

I have used the term Teachers as Innovators to refer to the necessary ability teachers must have to teach to each and all of his or her students; this is a direct result of being a teacher as learner. It is guaranteed that classrooms will be made up of a variety of different individuals, each with their own personalities and interests, and as teachers we must be prepared to teach to a variety of learning styles. In addition to learning about students' preferences and building upon their strengths, new learning styles should be introduced to help students become more competent in their academic and non-academic careers. For this reason, effective strategies for teaching AI/AN students should involve a variety of methods. Oftentimes teachers may have to innovate, or figure out ways to diversify their teaching methods and supplement curriculum. Included in this section are suggestions for teaching methods and for making the curriculum more relevant to students' lives.

Coladarci's (1983) and Deyhle's (1995, 1997) studies found that the content of what was being taught in school was an important issue that contributed to AI/AN students' decisions to

leave school. In both cases, almost half of the school leavers stated that school was not important for what they wanted to do in life, while roughly a quarter to a third indicated that school was not important to them as Indians. The results of these studies call for a change in the curriculum and ways of engaging students in school.

An effective strategy that could be applied in classrooms with high AI/AN enrollment is the use of culturally relevant pedagogy. Culturally relevant pedagogy, according to Pewewardy (1994), "entails the creation of a teaching/learning environment that takes into account the learning styles of groups of children, their ways of knowing, and their ways of interacting in social learning situations in the classroom" (as cited in Klug & Whitfield, 2003). Indian children have a right, like all children, to be educated in schools that reinforce the culture of their homes (Reyhner, 1992). Teachers may need to supplement existing curriculum with local/tribal stories and history to teach reading, language arts, and social studies. As Indians students get older, they should be introduced to the wider non-Indian world in such a way that does not make their own world seem inferior or superior (Reyhner, 1992).

Barta, et al., (2001) shared a wealth of knowledge on mathematics according to the traditional Shoshoni culture. This study provided an example of how cultural knowledge and ways of knowing can be integrated into academic subjects such as math. These ideas could be implemented in a classroom of Shoshoni students to reflect and connect math to their traditional culture, or in any classroom to add a multicultural element to what is being studied, which could increase all students' knowledge of how indigenous cultures contributed, used and viewed such subjects as mathematics in this nation. Specific ideas on activities and lessons contained in this study included the following:

1. The Shoshoni counting system can help students understand place value by analyzing patterns of the system and describing the values in a number sentence. This would incorporate linguistics and mathematics.
2. Students could use body parts (feet, hands, etc.) to measure objects around them, compare the results and discuss differences with other students.
3. Students could create maps of locations using self-selected frames of references. They could do so by interviewing tribal elders as well.
4. Students could observe and work with patterns using beadwork and design their own patterns using beads.
5. Students could create ways to describe the passage of time (minutes, hours, days, years) and compare them with the Shoshoni techniques.
6. The Shoshoni games, such as the Hand Game, could be played, and students could also invent their own guessing games to determine the probability of successfully selecting playing objects.

The success of the Math in a Cultural Context (MCC) curriculum as examined by Lipka, et al. (2005), Rickard (2005) and Webster (2005), provided an example of how the integration of Yup'ik cultural knowledge into mathematics, along with culturally-responsive teaching, improved the academic success of Alaska Native students. Rickard's (2005) study of urban, diverse classrooms using this same curriculum (MCC) revealed that all students-- Native and non-Native-- succeeded in learning, more so than the control group that used textbooks. This study gave an example of how culturally-relevant pedagogy was successful in a classroom with a variety of cultures to support the learning of all students, particularly Alaska Native students.

Further research is needed, however, to determine whether the inclusion of ethno-mathematics affects motivation and participation of students in school.

In addition to making curriculum culturally relevant is the idea of place-based education. This might be incredibly beneficial to teaching science, as students may be naturally drawn and curious about the world around them. Based on the success of a hands-on, outdoor program, using the resources available in the area where the children are most familiar would serve as a strong foundation to begin diving into scientific questions and ideas (Zwick, et al., 1996).

A study of two different approaches to science curriculum conducted by Zwick, et al., (1996) revealed that students who learned using a hands-on, inquiry-based curriculum showed significantly greater gains than a control group that used textbooks. Since the nature of the activities emphasized relevant context embedded strategies using hands-on, group oriented activities, it could be deduced that these methods were effective strategies for teaching science. The only difference that existed between the two classes was the science curriculum used; therefore, a valid conclusion would be that the activity-based science program was more effective.

Place-based education need not be limited to the sciences. A project in a Navajo community initiated by teachers was based on the premise that education was best when it reflected a sense of place (Begay, et al., 2003). This project referred to as experiential learning involved oral history interviews, archival photos, primary documents, and visits to landmarks in the community. One student who participated in the project described it as this: "The purpose of our research project was to document the oral history of the meaningful landmarks in the Leupp community. We collected this information to increase our historical knowledge and increase our

sense of pride in the community where we live. It is one way of preserving our Navajo language and culture" (p.3).

Another aspect of how curriculum can be improved to best serve AI/AN students is through interdisciplinary, or holistic, curriculum. So many students interviewed in various studies expressed the attitude that the curriculum seemed irrelevant or lacked purpose to the students' lives. Perhaps instead of compartmentalizing subjects as being separate bodies of knowledge, teachers could work to integrate themes and ideas across many subject areas. The possibilities are broad—integrating art, science, math, reading, writing, music, and movement—and may require some innovation on the part of the teacher. Interdisciplinary or thematic projects would permit students to learn while seeing the wholeness of the topic or concept and of the endeavor, while seeing the way different disciplines fit together to accomplish real end results (Miller Cleary & Peacock, 1998).

Many AI/AN students may come to school with limited proficiency in English, and/or speaking different dialects of English. One way that teachers can help students navigate between both cultures—their own and the dominant culture—is to acknowledge these differences in language. Miller Cleary and Peacock (1998) mentioned a strategy used by a teacher who had her students keep a "Grammar Log," with the heading "Home Language" in one column and "Written Language" in another to set up an explicit comparison (p.182). It is important for teachers and students to view their home language as a strength instead of as a problem. Some teachers may even wish to study and learn the Native language of his or her students.

Buly's (2005) study of reading strengths and needs for AI/AN children revealed that many of the teachers had admitted to not having the time to explicitly teach writing. This was not mentioned by the researcher as a potential factor that may have contributed to the reading

difficulties of the students in the sample, as seen by their multiple assessment scores. Miller Cleary and Peacock (1998) have stressed the need for explicit lessons in writing, to include lessons on what the dominant culture expects from their writing. Within some of the lessons they suggested was the development of skills such as the need for introductions, development of ideas, and drawing conclusions, which are necessary skills to have if students want to write in ways that will win them power in the dominant culture. In addition, students need to be able to express themselves through other mediums, such as poetry, story, drawing, or any other preferences they may have.

Discussed so far were ideas on how teachers can become innovators by adopting culturally relevant and interdisciplinary curriculum, and place-based learning. In addition to working to ensure that the curricula are engaging and relevant to the students' lives, teaching methods must also be adapted and diversified to fit the learning style needs of all students.

Freed and Samson's (2004) study in rural Alaska revealed that the most common teaching strategies used in the classrooms experiencing high dropout rates were lecture, textbooks, and paper/pencil activities. Hands-on activities, project-based learning, or service-learning activities were not observed, with the exception of two student teachers. Based on the relative success of such activities as seen in other classrooms in rural Alaska, particularly with the MCC curriculum, there may be a strong argument that supports more hands-on, project-based learning in classrooms.

Wauters', et al., (1989) study of Alaska Native learning styles revealed that students had indicated a need for a variety of different classroom interaction patterns, including learning alone, with peers and with help from authorities (teachers and tutors). Native students were also significantly more peer-oriented than non-Natives. Alaskan students rated kinesthetic learning

highest, followed by strong preferences for visual and tactile learning. These preferences would be very important in developing effective teaching strategies for all students, Native and non-Native. This study suggested that a variety of learning modalities could be implemented in classrooms to better meet the needs and desires of all students.

Teachers can establish a visual learning environment with a variety of tools to meet the visual learning needs of students, including flow charts, visual outlines, pictures, maps, and unit charts on the classroom walls (Miller Cleary & Peacock, 1998). Classroom activities can combine visual arts across the curriculum. The use of learning centers, or work stations, may also be an effective strategy to include a variety of learners.

Philips' (1983) study echoed the call for innovative learning methods for students. In sixth grade, for example, Indian students responded very well to group projects where they were in control of their own interaction. This study also revealed a trend seen among Warm Springs Indian students who preferred not to speak in front of class. Teachers should assess each student's comfort level with engaging in activities and then design activities to encourage group performances and to ensure success for all learners, while being cautious of calling on students to perform if they are not comfortable (Miller Cleary & Peacock, 1998).

Vygotsky theorized that learning occurs within a social and cultural context, in collaboration with more capable peers (Miller, 1993). One method teachers can employ in their classrooms is that of collaborative learning. Miller Cleary and Peacock (1998) also mentioned that collaboration can build feelings of competence as those with lesser skills have the chance to observe those with greater skills, learning that they too can use them. It may also build feelings of competence in those with greater skills because they can emerge as the role of teacher, and solidify their learning through an articulation or demonstration of the process (Miller Cleary &

Peacock, 1998). Collaborative learning also provides for social interaction that helps students grow more independent in their ability as solutions and steps of a process are modeled to them.

Lipka's, et al., (2005) case study of a Yup'ik teacher working with the MCC curriculum brought into light other culturally relevant learning methods successfully practiced by the teacher and students. Expert-apprenticeship modeling, joint productive activity, and cognitive apprenticeship helped her students become more attentive and highly focused on the math task, and learn about symmetry, congruence and patterns. Apprenticeship methods have traditionally been common ways of learning in many AI/AN communities, and a joint productive activity entails the teacher working side by side with the students, which serves as another form of modeling and a way to engage students.

Webster's, et al., (2005) case study of a non-Yup'ik teacher, Ms. Clark, included other effective strategies that could be used across any classroom where there are cultural differences between the teacher and students. This teacher designed a "third space," which was described as a space between the culture of traditional Western notions of knowledge and schooling and the ways of knowing, interpreting, and interacting of the heritage cultures of Indigenous peoples. It has been suggested by the researchers in this study that a third space can be created through the use of culturally based curriculum, such as MCC, since it brings academic content knowledge into dialogue with indigenous cultural knowledge. In addition, they suggested that a third space was co-created by Ms. Clark and her students as they negotiated and constructed new cultural norms in the classroom.

Ms. Clark had accepted her position as an outsider to the indigenous culture of her students and this cultural dissonance was mediated by three common themes to create a new cultural consonance within the learning environment. The first theme was valuing students and

the unique abilities and knowledge they brought with them to the classroom, and maintaining high expectations of them. The second theme was student ownership and autonomy; as Ms. Clark explained, "I told them that everything in the room belongs to them... That is why they take care of the things here" (p.24). Students were also allowed to move freely throughout the classroom, an example being that while Ms. Clark was at the front board recording student responses during a discussion, two students began taking notes on a whiteboard at the back of the class.

The third theme referred to the relationships between students and teacher or principal and among the students themselves. Ms. Clark began developing this relationship of trust built on mutual respect outside of the classroom, spending time with her students on the river every day during the first week of school. According to Ms. Clark, she wanted to learn about her students on their turf, a place where students were the experts and could share their knowledge with her as well as the rest of the students in the class. Trust and team building games were played, talks about community, listening and observing the environment, drawing, writing in journals and just having fun all took place during this first week on the river.

This example of Ms. Clark has been an inspiration to me as a future teacher. Not only was she just beginning her teaching career, but she committed herself to becoming an innovator in a school where she was an outsider to the Native culture of her students. Most importantly, her methods were successful, and are worth replicating in other similar situations.

Teachers may need to become innovators by using a variety of assessment methods to measure students' learning. Assessments also serve as ways to gather prior knowledge of students, which brings us back to the idea of teachers as learners. A study by Grigorenko, et al. (2004) compared Yup'ik academic intelligence, as measured by a standardized test, to practical

intelligence by using an assessment constructed to measure local knowledge and skills. The results suggested that tests of practical intelligence can provide useful supplements to more conventional tests of more academic, analytical abilities. Tests, of course, would vary from culture to culture, but could provide teachers with useful information with which to design teaching strategies and curriculum that is more culturally relevant. Designing assessments with the students' culture in mind may also serve to support self-determination, and will be discussed in the following section, Teachers as Allies.

Teachers as innovators must work collaboratively with the AI/AN communities in the process of collecting knowledge and integrating it into academic subject areas. Inviting elders and community members to teach and serve as role models in the classroom is an important strategy so students are receiving the knowledge first-hand. Deloria (1991) stated that "elders are the best living examples of what the end product of education and life experiences should be" (p.23).

Teachers as Allies

Deloria (1991) believed that "wherever possible local communities should begin to take control of primary and part of secondary education, even if it starts in one-room school houses" (p.66). Local control should include curriculum that teaches about tribal history, tribal customs and traditions, and tribal language at the earliest possible age using traditional people. Deloria went on to say that a considerable part of the school activities, including testing, should be transformed into social/educational events of the community. As a non-Indian teacher, the best thing I can do is to stand behind these efforts and involve parents and the community as much as possible.

Most importantly, teachers need to work with communities and invite them to participate in the decisions made in the school system. At times, teachers may need to take a stand against inequity, such as in the case of the "standards-based" reform system in an Alaska school district (Jester, 2002). However, this brings up a very important question: How can teachers improve trust between the schools and the parents? Trust can be earned if the teacher is seen as being caring and genuinely interested in the lives of her students and communities. Attending public events and meeting parents and community members is the best first step in establishing trust. As far as schools go, mistrust is often justified by past experiences of parents and grandparents in government boarding schools, and teachers must be aware of this and not take it personally.

Robinson-Zanartu & Majel-Dixon (1996) revealed in their study of parents attitudes toward schools that many parents mistrust schools, especially BIA-schools, for not meeting the needs of their students and communities. In addition to the problem of education in BIA-schools as being inadequate, Miller Cleary and Peacock (1998) described many BIA-funded school facilities were in an advanced state of deterioration and in need of replacement. Since tribes oftentimes do not have the funds to replace or fix these facilities, with no tax resources to back the issuing of bonds to construct facilities, progress is slow or not at all. They go on to state that Congress has been reluctant to allocate sufficient funds for facilities because of the BIA's poor educational track record (Miller Cleary & Peacock, 1998). The problem of BIA schools presents many difficult and unanswered questions that require attention.

With the passage of the Indian Self-Determination and Educational Assistance Act, it would seem as if tribes would be more able to have control over their schools. Deloria (2001) has suggested that part of the problem lies within the tribal governments: "We have part of the message of the Five Tribes educational system today—tribal control—but we do not have the

tribal concern to make education the primary function of the tribal government" (p.83). He also added that it is impossible for tribes to fund their own schools today since "most American communities do not support their own schools but receive federal, state, county, and private financial assistance so that, to a certain degree, no school district in the United States has the financial freedom to determine either the process or the content of its education" (p.84). Despite the problem of funding schools, Deloria believes this is not the issue, rather "the issue is providing the context in which what is taught and the processes by which it is taught make sense" (p.84). This comment is worth noting for teachers wanting to serve as allies in AI/AN schools and communities.

Miller Cleary and Peacock (1998) believed there are two ways in which teachers can connect with the motivation that comes from students' innate need for feelings of self-determination: "First they can help students develop strategies by which they can understand the world they live in, and second, they can help students learn strategies to act on their worlds" (p.213). Miller Cleary and Peacock (1998) included teachers' ideas on effective strategies they have used to help students understand their world and act on their worlds. One non-Indian teacher explained how her students' grandparents remembered being forced to go to school and to not speak their languages, resulting in a "hostility factor" (p.214) as English teaching was associated with the coming of the white man. This teacher found that by having students write in journals everyday, they soon did not need to be given topics but were writing about "what they wanted to write about" and they "started to have opinions" (p.214).

Another teacher pointed out that although students may not have much control in their lives, they can have some feelings of self determination in a school setting (Miller Cleary & Peacock, 1998). She designed her classroom so that students were making group decisions.

Many other teachers told of the effectiveness of activity-based learning, or project-based learning, in which there were real products and results. "Shared decision making and goal setting alone increases ownership in instruction and models of self-determination, but the advantage to having real audience and purpose in student work can also be a powerful motivation force" (p.215).

Miller Cleary and Peacock (1998) mentioned that on reservations that have their own schools, the community may have more say in the curriculum and assessment methods. In the case of assessments, the community may decide what they think is important for their students to know before they leave school, and this list could be used to create performance-based assessments for students. Portfolio assessments, where students collect evidence of their competence, or rubric assessments, where students and teachers keep checklists of competencies met, were also suggested by Miller Cleary and Peacock (1998) to help students have some feelings of self-determination in the assessment process.

One of the main issues regarding schooling that needs to be supported by teachers working in AI/AN communities is to serve as allies in self-determination efforts. Kaomea (2005) believed that Native peoples should have authority over Native issues, which relates to the idea of self-determination. She suggested that non-Natives interested in assisting with self-determination efforts must work collaboratively with Natives as allies and confront the issues of unearned power and privilege, including one's own, and use this to confront oppression.

Snyder-Joy's (1994) study on self-determination in AI/AN education by sharing educators' perspectives on grant, contract, and BIA-administered schools revealed that many issues in schooling must be addressed. One suggestion given was that the local people should be encouraged to be interested in education, which would help improve the school. Teachers can

help do this by actively pursuing relationships with families and parents, inviting them into the classroom, and keeping them abreast of what the students are learning.

In Snyder-Joy's (1994) study, BIA school employees reported that people in their communities lacked an awareness of self-determination, which resulted in continuing dependency on the BIA. Contract and grant school personnel reported greater self-determination than BIA school personnel. It is unclear how non-Indian teachers can help people in the communities become more aware of the concept and right of self-determination. Perhaps serving as an ally for these efforts is the most important thing a teacher can do. Manuelito (2005) presented a case study of the Ramah Community School, which had successfully adopted self-determination. She believed that the inclusion of Indigenous epistemologies in public education can only strengthen the development of self-determination, and empower Indians and non-Indians alike.

Robinson-Zanartu and Majel-Dixon's (1996) study of parents' views on their relationships with schools revealed that parents and community members ranked themselves and their culture as very important in the education of their children. Comments made by parents should be listened to by teachers. This study included many comments that could help inform teachers, if their intent is indeed to serve their communities and students. These comments included issues such as the importance of accurate historical perspectives, teaching the truth about Indians, that schools should teach Indian knowledge and use Indian ways in methods of teaching.

As a future teacher, I would take these voices to heart—this is what they are asking of us, and this means more to me than any number or statistic. They want to be valued and they want education to reflect their culture as well as prepare students to successfully navigate between both worlds, that of the dominant society their own culture as well. They want teachers

to know what they're doing and they want better schools for their children. I found this study to be very relevant and important in framing my conclusions on effective teaching strategies.

Conclusion

One can only speculate on the actual causes for low academic achievement among AI/AN students. As a teacher, it is important to treat all children as individuals and to learn about their interests, skills, past experiences, culture, family, and community in order to design effective strategies for helping them learn. Further research must be done that examines specific strategies and curriculum, as seen in the studies regarding the MCC, within a variety of cultural groups—tribes, national regions, urban and rural settings.

I would also suggest that more longitudinal studies be done to follow students after school to see how their learning is applied to their post-academic lives. Considering that much of the research in this paper included the voices of students, teachers, and community members, it would benefit teachers and schools to listen to these voices in order to evaluate the effectiveness of certain strategies. Finally, I believe research can be conducted within specific communities to address the needs within that community, instead of trying to generalize across the very diverse population of American Indians and Alaska Natives as shown by several studies presented in this paper (Barta, et al. 2001; Coggins, et al. 1997; Deyhle, 1995 & 1992; Grigorenko, et al. 2004; Lipka, et al. 2005; Manuelito, 2005; Phillips, 1983; Rickard, 2004; Webster, 2005; Whitbeck, 2001; Willetto, 1999).

The purpose of education must be clear, and this is best done by combining the skills and knowledge students need to participate in the dominant society with the skills and knowledge that are relevant to students' lives and cultures, whoever and wherever they may be. Most importantly, teachers must care about their students. "Seeing students on a continuum between

where they are at the moment and where they are capable of being or where they want to be is a caring and essential way to think of students" (Miller Cleary & Peacock, 1998). Several strategies have been given as ways teachers can best nudge students along the continuum. The most important strategy is to learn about one's students, and this includes their cultures, communities, and families.

Teachers must also become innovators. Teachers must not feel limited by standardized curriculum, but at the same time they must adhere to state and national standards and expectations. Much research has been shared that shows that supplementing curriculum to make it more culturally relevant for AI/AN students has led to increased test scores, higher engagement, and all around success in learning. Teachers must also experiment with different methods of teaching to reach all students' varying learning styles. This can include individual work, collaborative learning, project-based or inquiry-based learning, outdoor, hands-on learning, visual and place-based learning. Also, interdisciplinary or thematic units may be helpful for students to gain a broader perspective of topics and concepts and how they connect to real life.

In conclusion, teachers working in AI/AN communities must become allies for self-determination. The following poem named "Huli" (meaning to overturn), by the Native Hawaiian poet 'Imaikalani Kalahale, contains valuable advice for teachers: "If to help us is your wish then stand behind us. Not to the side, And not to the front" (Kaomea, 2005, p.41).

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