

Financial & Linguistic Profiles of NSF Grants for Native American Education



DREAMS

"Dreams/Remember your dreams
They tell you what you need to do
Ask elders what your dreams mean
You will learn more about / Choices
Meaning in Your Life
The Contributions you should make."

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A Note about the Cover

This picture of three dancers in a dream by Buffy Sainte-Marie is called Neon Hula, and is found on her web site at www.creative-native.com/bsmartshow.html. I selected it for the cover because it is a blend of the human and the technological, and represents the richness and the possibility of developing education. I also believe there is much to be learned through the use and interpretation of metaphor, for students and teachers both. And I particularly liked this imaginative design, with the dancers outlined in neon.

The poem is Advice from an Anishinaabe Elder (Simpson, 2000, p. 28)

Introduction

Schooling in environments designed according to Euro-American educational ideas is characterized by an absence of generosity of spirit. Program developers reduce objectives and goals to thin, sharply-focused, crisply-measurable tasks that are composed primarily of "collections" of "facts". Axiomatic in the environment is the belief that conceptualization, abstraction, and the ability to acquire information through the slimmest transmission channels is the ultimate in intellectualization and proceduralization, and that achieving these reductions is an indicator both of great intelligence and a high degree of refinement.

Native American educators' descriptions of educational models and approaches are characterized by a richness in forms, methods, and interactions. These approaches provide for multiple learning styles, recommending many different ways for students to assimilate and elaborate information, and to explore spiritually, mentally, physically and emotionally (Butterfield, 1994; Cajete, 1988). Other research has shown that traditional Euro-American approaches of rote memorization, repetition, and the development of a cursory understanding is failing many students in the US educational system, particularly in the area of Mathematics (National Academy of Sciences, 2000). All educators must continue to develop new techniques to clarify and challenge their own ability to inform the direction and nature of education, and this is especially true of education for First Nations' Peoples (Ambler, 1999; Butterfield, 1994; Cajete, 1988, 1994; Nihewan Foundation, 1999).

National Science Foundation (NSF) grants are a main source of funding for new educational development. The NSF occupies a unique position in its responsibility not only for the general health and well-being of the Nation's science and engineering, but also for the education of its scientists. As such, the NSF is in a singular position to be able

to channel resources into specific areas for research and development in education. When the NSF issues a grant call, research requirements and related incentives are clearly defined (National Science Foundation [NSF], 2000b; NSF, 2001a; NSF, 2001b). In addition to the specifics of the research focus itself, the NSF includes special requirements for expanding the historically limited access to educational opportunities that marginalized or disenfranchised populations have experienced.

The NSF specifically mandates the information scope of grant summaries, which must include "a statement of objectives, methods to be employed and the potential impact of the project on advancing knowledge, science and mathematics education, and/or human resource development" (NSF, 2000a, p. 11). Because the NSF expects the grant summary to be both specific and comprehensive, readers can reasonably expect that by naming a specific population, as for example "Native American," the Principal Investigator (PI) indicates his or her intention to fulfill the NSF's requirements for increasing opportunity to individuals in that population. As grant summaries be suitable for publication and understandable by knowledgeable lay persons, many readers should be able to understand a grant's scope, projected activities, and the special incentives to which it is responding without difficulty (NSF, 2001a, p. 11).

The granting process is extremely powerful because it attracts dollars and resources to the winning organizations. These funds provide direct benefits in the form of salaries and resources, and indirect benefits through infrastructure development. Each institution negotiates its indirect costs rate directly with the "cognizant Federal negotiating agency" (NSF, 2001a, p. 18). These rates are non-published, but will typically average between 20% and 30% of the direct cost total, exclusive of physical equipment. Indirect costs accrue to the sponsoring organization to provide grant management services and flow out to the local communities in the form of salaries for staff and purchases of offices supplies and services. Grants also fund the purchase of state-of-the-art equipment that

affects the quality of the research performed at that institution, and attracts visiting researchers and faculty. New equipment and famous scholars enhance the reputation of the institution, which increases the likelihood of its future success. The infusion of direct grant funds to an institution gives researchers time to develop new methods and materials, train teachers, provide employment for students, and develop and test new ideas for making education more easily accessible to students, both through improved physical access and through the different ways of presenting information. New physical access programs include: mentoring relationships; summer education camps in Biology, Physics, Computer Science, and Web technologies; laboratory research programs; and, specialized laboratory training. New presentation formats reconfigure and enhance the depth and richness of educational materials themselves. If these new materials, and related educational opportunities such as work study and graduate assistantships, conform to the specialized requirements of Native American students (Cajete, 1988), grants applications can contribute greatly to educational opportunities for First Nations' people, to the development of infrastructure at Tribal colleges, and to educational and employment opportunities for local people.

Based on the history of Native American education (Adams, 1995), being able to determine if the traditional assimilationist attitude is prevalent in the grant awards process would be helpful in determining whether resources are shared equitably. The White elite have traditionally controlled both money and politics and where redistributing funding to those who design more effective Indigenous educational approaches is paramount, it would seem to be valuable to be able to determine if grant moneys that were purportedly being spent on First Nations' educational opportunities were actually reaching people in some meaningful way.

Modern researchers in Psychology have developed sophisticated techniques that can be used to better understand how people construct and use stereotypes, and how

understanding stereotypes can serve a useful function in understanding intentions (Maass, Milesi, Zabbini, & Stahlberg, 1995; Maass, Salvi, Arcuri, & Semin, 1989; Schutz & Baumeister, 1999; Semin & Fiedler, 1988). Stereotypes are composed of sets of beliefs about groups of people that may or may not be factual. While stereotypes contain data that are part truth and part fiction, there is no empirical evidence that a false datum serves its believer differently than a true datum (Jussim, McCauley & Lee 1995, pp. 5-6). Stereotyped predispositions can effectively bias a group's responses toward others, called out-groups, and also toward those in their own group, the in-group. While preemptive biases may serve to justify prejudice, stereotypes more usefully define expectations, and researchers have determined that the ways in which people construct their language reveal these expectations, both in regard to the in-group and to the out-group (Maass, et al., 1995). Thus the construction of the stereotypical structure, or schema, for Native education would establish the expectations of the in-group for those activities. The ways in which people spoke about their activities relative to the Native education schema would identify them as in-group or out-group members of the. Proposed educational methods, materials, approaches, and expectations could be systematically compared for coherence to First Nations' educational requirements.

In the past 25 years, the NSF has awarded 546 grants totaling \$197 million for projects that contained the words "Native American" somewhere in the project summary. Within this framework, a critical question is then whether there is a measure that can be used as a predictor of when the environment will encourage "recruited" Native American students to explore different aspects of who they are as people, and when that environment will encourage them to become more assimilated. The schema simply lists the educational requirements for Native Peoples based on the writings of Native scholars, and then considers whether the language in the grant summaries identifies the grant as Tribally-sensitive (in-group), or Tribally-insensitive (out-group). Simple statistics that show the history

and trends of the grant funding creates a context for this discussion. The question that I address is specifically whether the NSF funding approach appears to be assimilationist or Tribally-sensitive, first when evaluated in light of the trend data, and then when linguistic data are taken into account.

Systematizing the First Nations' Educational Model

Native educators' discussions of educational requirements name and describe the characteristics that can be used to construct the Native Education Schema (NES). Extracting characterizations allows them to be used as *indexical items*, that is, pointers to understandings. "Indexical Item" is a concept that simply means that one single word or phrase will activate a vast number of understandings when the person who uses or encounters that word has the experience of the meaning. Frame Semantics is counterintuitive with English but consistent with many indigenous ontologies, as for example in the Blackfoot word, *Atsimoihkanni*, which indexes the Blackfoot understandings and experiences of "good heart" and in its full panoply expands to "the act of prayer in its various forms" (Mistaken Chief, 2000, p. 26).

Native American Education Models

In Nahuatl tradition, education was a process of exploration in which students searched for their own "faces", their own "hearts", and in so doing evolved understandings of themselves and their relationships with the people and the world around them. These understandings were the frameworks within which they were able to express their true essences. (Cajete, 1988, p. 35) In pre-colonial times, First Nations' people considered learning to be a life-long process that was "embodied in the individual and embedded in the principles of immanence and ceremony, reflection, and sharing. Learning was concerned with the mental, physical, spiritual and emotional being, and was rooted in personal experiences" (Simpson, 2000, p. 26). *Sa'ke'j* Henderson says that Indigenous

consciousness “favors subtlety and poetic understatement” rather than the gross exaggeration or explanation that is typical of those who have assimilated the Proto-Indo-European ontology (Alford, n.d.). “Indigenous consciousness is more an organic, spiritual process. . . Indigenous people learn from their bodies as well as their verbal communications, and this process creates a powerful inner coherence.” (Pinkham, 1998, p. 8) Ethnographers map American languages to European languages, in the process losing “the cultural diversity difference between the various language groups. [Historically there was] such a drive for the linguistic grouping that in the process researchers [lost] sight and appreciation of the beauty of the language, along with its social Native psychological meaning and cultural differences.” (Pinkham, 1998, p. 12)

Tribal Colleges

Tribal College projects reintegrate cultural richness and psychological meaning in their educational programs. Red Crow Community College is establishing the Niitsitapi Teacher Education Project that will reflect “the cultural underpinnings of the Blackfoot Indian communities of southern Alberta and Northern Montana” (Mistaken Chief, 2000, p. 26). The project itself is conducted almost entirely in the Blackfoot language, where words like *Niitsitapi* can be most closely translated “real people”, and where *Aina’kowa*, *Isspommotsisinni*, *Kimma-piipitsinni* and *Atsimoihkanni* are elegantly recognized as indexical pointers to the richer understandings of respect, sharing, kindness and good heart. Elders design teachings to show how the different parts of the words relate to other terms in the Blackfoot language, to the tribes’ spirituality, values, philosophy, and to the Peoples’ everyday lives in every regard (Mistaken Chief, 2000).

Little Big Horn Community College is building the Crow Places Names project. White American names applied to various locations in and around the Apsáalooke (Crow) Reservation give no indication of the rich history of the places and White names, devoid of Apsáalooke cultural significance, leave “no meaning or lesson in Crow etiquette for

the 8,000 Crows still residing on their reservation" ((McCleary, 2000, p. 40). *Apsáalooke* history is composed of places such as *Anmaalapammúua*, "Where the whole camp mourned"; *Bisshilannuusaau*, "Where they laid down yellow blankets"; and, *lichilxaxxish*, "Spotted Horse Creek" (McCleary, 2000, p. 39). Old Coyote, an elder and major storyteller in the tribe, sees this project as hope that the tribe will not lose their Crow identity (McCleary, 2000, p. 40) The Crow Place Names projects shows how the Crow people see their lives in relationship, direction, movement and purpose. Crow place names frequently refer to the physical characteristics of the land. For example, when people from the Pryor district say "they are going to *Alililuttuua* to gather teepee poles," (McCleary2000, p. 40) they are going to a place in the Pryor Mountains. When people who live in the Black Lodge District say they are going to *Alililuttuua*, they mean they are going to a place in the Big Horn Mountains. The names may also refer to the direction in which a stream flows or the way the land looks, as in *Baa'hpakuhke*, Short Butte, or *Alasa'htapumme*, Small Coulee. This close involvement with the land, with place, and the emergent interaction that defines history is essential to the understandings of many who have been raised in tribal cultures. Educational material that is devoid of references and contextualization in this framework, which is part of the knowledge based that students bring with them, does not provide elaborative opportunities for the students.

The CradleBoard Project

The Cradleboard Project designs material to address needs in both Native American and mainstream communities. On the one hand, Native people are misperceived, but when non-Indian children and teachers want to learn, they are limited by inaccurate materials. The Cradleboard Project partners Tribal schools with mainstream schools across the country, encouraging a "study buddy" relationship that partners a Native student with a mainstream student. This interaction allows the children to get to know each other one to one, in groups, and through working on projects (Nihewan, 1999c). The interaction also

shows the mainstream that Natives are alive, are here, and that they have a “unique, fascinating, often charming” reality (Nihewan, 1999b). The Cradleboard Project recognizes that the “lively reality of Native American culture simply doesn’t fit into a mere text-based curriculum. Anyone who has been to a reservation will appreciate our use of video, spoken word, music and live interaction in teaching one another who we are” (Nihewan, 1999b).

Schema Definition

The schema for Native education, based on Tribal educators’ words, includes concepts of “face” and of “hearts”, understandings of one’s self, and understandings of one’s relationships with people and the world. These understandings become frameworks that will serve students throughout their lifetimes, where value is seen in being able to express one’s true self. Education is life-long, is “embodied in the individual” and cannot exist outside “immanence, . . . ceremony, reflection, and sharing.” Learning allows students to explore mentally, physically, spiritually and emotionally and these explorations will then become part of personal experiences. Indigenous education may be subtle, poetic, and will often include a strong kinesthetic component. It will have both cultural richness and psychological meaning, and will include the Native language for the particular Tribe or people. Teachings will be developed by Elders, and will often be focused on reintroducing the language and the cultural meanings and deep implications that it embodies. Because the language frequently includes place and history, Native education will provide elaborative opportunities that are embedded in the local understandings of place, of history, of manners and etiquette. Educational material will also expand beyond the boundaries of each Tribe or group, and will let those who are interested in learning about First Nations’ peoples that they are alive, vibrant, that they are not long dead and represented only as museum relics. Educational material will also be multi-media, using sound, vision and personal interaction.

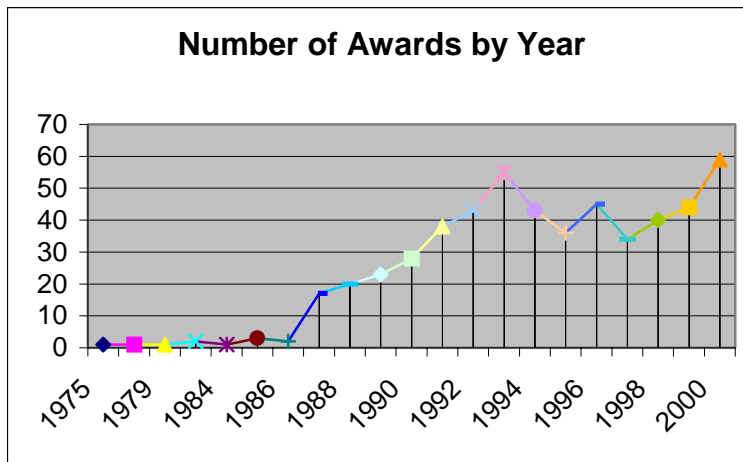
The Mainstream Educational Ethos

Mainstream research shows that the ethos on a college campus, that is, the belief system shared by faculty, students, administrators and others who participate in the academic environment can contribute to academic, social, and emotional outcomes. A strong ethos will produce positive outcomes for both traditional students (17-23 years of age) and non-traditional students (old than 23) (Bradley & Graham, 2000). Interaction with faculty is more important for non-traditional students and faculty availability and empathy may be particularly important. Research in the Native American community produced corresponding results (Tate & Schwartz, 1993).

To meet the needs of students in terms of their racial identity and psychosocial development, racial groups' histories, values, cultures and perspectives may be recognized and acknowledged (Pope, 2000). American Indian students have a cultural world view that is vastly different from American society, and this affects how receptive students will be to math and science education. They have "unique learning characteristics by which they perceive and process information" and this requires a presentation different from the traditional Western approach to present science and math content successfully (Cajete, 1988). Characteristically, Indians, both parents and children, have been in favor of the education but not the ethos. Parents, many of whom also have a boarding school background, may view education with great ambivalence (Cameron, 1968, p. 848). Students who attend white Universities suddenly find themselves in environments where Native values, language and culture are not part of daily life and where the larger population does not value those things that are indigenous. Thus Native American students find themselves in a strong ethos that is positive for members of the dominant culture and class, and working at cross purposes for them (Demmert, 1999).

Financial Overview

The grants in this study were selected from the NSF data base using the phrase "Native American". This search found 546 grants, with start dates ranging from July 1st, 1975, up through the present time. Of the award total of \$197,121,960, \$180,360,959, or 91.5% of the total dollars, was awarded to mainstream organizations. Mainstream organizations



also received more than 90% (90.65%) of the total number of grants awarded (495). The graph shows the sharp increase in the number of grants awarded beginning in 1988 and continuing through the

present time. Appendix 1 lists the complete history for this group of awards, including the number of awards per year, and the minimum, maximum and average amounts.

Table 1 shows the statistics for grants awarded to Tribal and Tribally-affiliated organizations during the same time period. Financial trends seem to indicate that the number of grants that Tribal institutions have been able to secure is very, very small compared to the number of grants that mainstream institutions have managed to secure with the keywords "Native American". Table 2 shows the top-ranking Tribal institutions.

Table 1

"Native American" Grants, 1975 - 2000 (Tribal Institutions)

Program		# Awards	Total	Average	Minimum	Maximum
BIO	Biological Sciences	1	\$160,000.00	\$160,000.00	\$160,000	\$160,000
CSE	Computer & Information Science & Engineering	7	\$1,516,551.00	\$216,650.14	\$6,930	\$1,380,523
EHR	Education & Human Resources	35	\$14,460,808.00	\$413,165.94	\$5,000	\$5,000,000
ENG	Engineering	1	\$100,000.00	\$100,000.00	\$100,000	\$100,000

MPS	Mathematical & Physical Sciences	3	\$311,752.00	\$103,917.33	\$92,952	\$109,400
O/D	The Director	1	\$45,272.00	\$45,272.00	\$45,272	\$45,272
SBE	Social, Behavioral & Economic Science	3	\$166,618.00	\$55,539.33	\$45,000	\$71,618
*Total		51	\$16,761,001.00	\$156,363.54	\$5,000	\$5,000,000

Table 2

Salish Kootenai Coll	6	\$6,762,682
Sinte Gleska University	1	\$1,637,101
Fond du Lac Tribal College	2	\$1,401,502
Northwest Indian Coll	3	\$1,371,328
Little Big Horn College	1	\$709,441
Haskell Indian Nations Uni	2	\$662,994
Dine College	2	\$471,868
Turtle Mountain Cmty Col	3	\$365,339
Lac Courte Oreilles Ojibwa	2	\$335,543
College of the Menominee N	2	\$95,000
Amer Indian Higher Edu Con	3	\$87,140
Makah Cultural & Rsch Ctr	1	\$71,618
Dull Knife Memorial Col	1	\$71,088
Santa Fe Indian School	1	\$50,000
Fond du Lac CC	1	\$20,979
D-Q University	1	\$15,000
Oglala Lakota College	1	\$10,000
*Total		\$14,138,623
* Average		\$1,570,958

Linguistic Characteristics

Based on the numbers, Tribal colleges do seem to fare more poorly than the mainstream organizations. And there are examples of major grants awarded to institutions for projects that seem to be solely focused on the development of that institution's facilities. For example, the grant (\$9,785,000) was awarded to the University of Minnesota for "Materials Research Science and Engineering Center for Hybrid Materials". This grant mentioned that "The MRSEC supports an educational outreach program to the Native

American community in a four-state area surrounding the University of Minnesota.” This statement shows none of the Native American Educational schema characteristics. In the context of intention, this institution is an out-group member and on the basis of a simple analysis of the grant summary, there is little reason to believe that the University of Minnesota is devoting much time or attention to local Native populations¹.

Alternatively, Mesa State College received a grant for nearly \$400,000 in 1994 for a project titled “Environmental Technology Education Transfer to Native American Tribal Colleges.” The grant summary was very Tribally-sensitive, as shown in the excerpts below.

Native American Tribal environments . . . tribes have inadequate resources and expertise . . . tribes need to know how to measure and analyze their own environmental risks, a technologically educated and trained Native American environmental work force. . . . interdisciplinary environmental technology . . . for tribal colleges and other community colleges with roles in educating American Indians. . . The curriculum focuses on . . . prominent environmental issues facing tribal lands. . . students are developing analytical skills . . . The pilot group of tribal and tribally related colleges are Navajo Community College, Northern New Mexico Community College, Crownpoint Institute of Technology and Southwest Indian Polytechnic Institute . . . methodology is interactive . . . hands-on training. The tribal colleges are part of the process . . .

This grant summary, which is just one sample, shows that participatory development is occurring between what were traditionally mainstream organizations and Tribal organizations. This summary seems to indicate that tribes are achieving success in working with larger institutions in ways where they can obtain educational and developmental opportunities on their own terms, and the language shows an in-group member.

Conclusions

For the most part, White people find it very difficult to understand that their interpretations of what they have seen and done in Native culture are not overly useful,

¹ . . . although, this may not be true. What I have presented here is the very neonatal form of an analytic technology, and it is possible that only the *statement* is cursory, rather than the University of Minnesota’s *intentions* being cursory.

nor do they find it particularly easy to recognize and understand on a real level that not everyone wants to reach what mainstream America believes is the supreme pinnacle of success. Mainstream organizations have generally found it easy to learn how to work the system, making grant requests will fit the requirements of diversity and inclusion, sometimes simply by attaching a politically correct statement. The numbers seem to indicate that the traditional assimilationist approach continues even to NSF grants

Simply looking at the numbers, however, does not tell the whole story. This very small sample, based on larger proposed research, shows that by looking at the language that people use to describe proposed activities, a different picture emerges, one that indicates that Tribal ideologies are crossing mainstream boundaries and affecting mainstream institutions. Through understanding what Tribes consider educationally valuable, it might be possible to develop a systematic methodology for determining how much of the grant budget is going toward efforts that will actually reach First Nations' peoples. The value in this is that the dominant society has great regard for things that are "systematized", "regularized", and that can be used as predictors. Where changes cannot necessarily be made using alternative perspectives and alternative technologies, awareness might be improved when data is presented in the format of "the Master's tools". The famous feminist Audra Lorde once said that "the Master's tools will never dismantle the Master's house", but perhaps in this case, careful attention to methodology and discipline, and the needs of human people, might result in the Master's tools at least succeeding in washing the windows in the Master's house.

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Appendix 1 – Overall “Native American” Award Statistics by Year

FY	# Awards	Total	Average	Minimum	Maximum
1975	1	\$35,800	\$35,800	\$35,800	\$35,800
1977	1	\$13,400	\$13,400	\$13,400	\$13,400
1979	1	\$98,911	\$98,911	\$98,911	\$98,911
1980	2	\$62,771	\$31,386	\$12,785	\$49,986
1984	1	\$55,208	\$55,208	\$55,208	\$55,208
1985	3	\$587,632	\$195,877	\$78,442	\$336,555
1986	2	\$1,104,984	\$552,492	\$166,389	\$938,595
1987	17	\$913,961	\$53,762	\$5,000	\$298,866
1988	20	\$1,604,461	\$80,223	\$5,125	\$195,035
1989	23	\$2,660,867	\$115,690	\$5,361	\$553,656
1990	28	\$9,228,500	\$329,589	\$5,628	\$3,712,966
1991	38	\$15,744,721	\$414,335	\$6,930	\$9,719,783
1992	43	\$21,288,472	\$495,081	\$0	\$5,320,883
1993	55	\$21,966,053	\$399,383	\$4,363	\$6,604,937
1994	43	\$17,710,159	\$411,864	\$2,950	\$4,721,957
1995	36	\$15,257,010	\$423,806	\$10,852	\$3,000,000
1996	45	\$7,223,049	\$160,512	\$5,290	\$602,627
1997	34	\$7,458,525	\$219,368	\$8,329	\$3,210,080
1998	40	\$24,104,530	\$602,613	\$1,500	\$9,785,000
1999	44	\$23,446,763	\$532,881	\$7,997	\$3,500,000
2000	59	\$25,113,205	\$425,648	\$5,960	\$5,000,000
2001	10	\$1,442,978	\$144,298	\$32,000	\$385,641