A PROCESS PLAN FOR CONSENSUS BUILDING IN THE EVALUATION OF THE NSGC & EPSCOR NATIVE AMERICAN OUTREACH PROGRAM

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ABSTRACT

The NASA Nebraska Space Grant (NSGC) & EPSCoR Programs at the University of Nebraska at Omaha have embarked on a unique educational journey known as the Nebraska Native American Outreach program (NNAOP). The NNAOP's main objective is to encourage and motivate Native American students to be more competitive in mathematics and science. This program has allowed for a variety of educational and public outreach activities to take place. However, in order to continually provide effective support to Nebraska's Native American community, NSGC & EPSCoR sought an evaluation technique for the NNAOP. To execute such an evaluation, NSGC organized the first Nebraska Aeronautics Education Summit (NAES) Meeting. This diverse group of educators, researchers, and practitioners provided a unique opportunity to gather the evaluative information. The utilization of the summit participants' recommendations and innovative future plans will ensure continued shared success between NSGC & EPSCoR and the Nebraska Native American community.

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INTRODUCTION

The NASA Nebraska Space Grant (NSGC) & Experimental Program to Stimulate Competitive Research (EPSCoR) Programs at the University of Nebraska at Omaha (UNO) have embarked on a unique educational journey. This journey, known as the Nebraska Native American Outreach Program (NNAOP), has been a highly successful endeavor since its inception 6 years ago. NSGC & EPSCoR programs have a rich tradition of reaching out to Nebraska's Native American educational community, particularly in the areas of improving mathematics, science, and technology. Such an initiative finds its philosophical underpinnings in not only NASA's desire to aid such indigenous populations, but also in NSGC's efforts to serve the same population for the same reasons. To further this effort, numerous activities to enhance the viability of the program have been funded.

PROGRAM DEVELOPMENT

The first involvement of NSGC & EPSCoR with the Native American community occurred in Rapid City, South Dakota in October 1996 when NSGC researchers were invited to address college presidents at the American Indian Higher Education Consortium. It was discovered during these presentations that a need existed to interface and build a stronger relationship between Nebraska's two tribal colleges, Little Priest Tribal College (LPTC) and Nebraska Indian Community College (NICC), and UNO. The outreach initiative was quickly conceived, with the initial focus being educational partnerships, enhancement grants, and infrastructure building (Lehrer, 1996). This exploration into the needs of Nebraska's Native American community resulted in establishing the NNAOP.

STUDY RATIONALE

Since the inception of the NNAOP, its leaders have become increasingly concerned with how to encourage and motivate Nebraska's Native American students to be more competitive in mathematics and science. The programs in place such as Family Aeronautical Science (FAS), Aeronautics Day, and Geospatial Workshops have assisted educators within the Native American community to obtain and incorporate new and innovative resources into their curriculum. However, in order to successfully continue to provide educators, students, and parents with resources and direction, NNAOP researchers realized that an evaluation of their program would be necessary. The development and collection of evaluative data, as well as ensuing recommendations for improving program administration, is documented in this article.

THE NNAOP BACKBONE

The Three Programmatic Pillars

The need to develop the envisioned Native American program of outreach initially focused on the development of three foundational areas: infrastructure building, curriculum enhancement, and student motivation. So strong was the belief that these three areas were the foundation for any future outreach endeavor, they became the project's three programmatic pillars. The following section discusses each pillar (Lehrer, 2000).

Infrastructure building

The meaning of infrastructure building in the case of this endeavor is the ability to be able to identify and utilize the underlying network of people, processes, resources, and organization(s) that make up the Native American community. This infrastructure is viewed as not

being limited by the state boundaries of Nebraska but includes neighboring states and the region as well. The reason for this definition is that many of the tribes in one state are closely linked to other related tribes in another state.

Specific activities closely related to infrastructure building included the formation of the Nebraska Native American Working Group (NNAWG) and development of a Memorandum of Understanding with the NASA Space Grant of South Dakota. The NNAWG was formed in February 1997 and included presidents from Nebraska's two tribal colleges, superintendents of the State's four reservation schools (Winnebago, Walthill, Santee, and the Omaha Nation), as well as researchers from NSGC. A series of meetings then took place in which the following issues were discussed:

- Tribal School/NSGC future educational partnerships;
- Joint research and grant writing possibilities;
- Scholarships opportunities and funding mechanisms;
- Curriculum development for improving K - 12 mathematics, science, and technology education through the use of aeronautics;
- Faculty enhancement workshops; and
- Development of a Model of Best Practice.

With respect to the signing of a Memorandum of Understanding between the Nebraska and South Dakota Space Grant (SDSG) Programs, that document called for both programs to begin:

Engaging in faculty interaction and the enhancing of curricular development activities focused on improving mathematics, science, and technology educational opportunities for Native Americans.

Exploring joint research and collaborative opportunities.
Expanding student scholarship opportunities and funding mechanisms in aeronautics, space, and related fields.
Moving jointly to encourage, at our respective institutions, expanded upper administrative level involvement in this initiative.

Curriculum enhancement

Improving school mathematics and science curriculum through the use of aeronautics focused on developing instructional skills of teachers in upper elementary and middle school students. To further this development, selected teachers were awarded grants to attend NASA sponsored workshops. The first of these events took place during the summer of 1998. Four teachers participated in the week long Aerospace in the Curriculum Teacher Workshop that was held at Augustana College in Sioux Fall, SD. During the intensive 5-day sessions, sponsored by the SDSG, attendees worked on numerous activities that were appropriate for elementary and secondary school children. In addition, classroom materials were made available for distribution to schools and students.

More recently, Terri Greenleaf, Winnebago Public School science teacher, attended the International Space Station Educators' Conference at NASA Johnson Space Center in Houston, TX. A major focus of NASA educational initiatives is to encourage and support outreach programs that impact underrepresented minorities. NASA's support of such constituencies includes the provision of educational materials such as books, videotapes, etc. This assistance has been a catalyst for the FAS program.

NASA has supported the FAS Program in other ways as well. In the past few years, NASA Ames Research Center (ARC) has invited eight teachers from Nebraska's Native American public schools (Omaha Nation, Winnebago, Walthill, and Santee) to participate in its 2-week residential NASA Educational Workshop at Moffett Field, CA. A significant component of this workshop is the focus on teachers of Native American students in rural areas and the unique needs of their educational communities.

The NASA Educational Workshop provided opportunities for educators to visit research and applied science facilities. Educators also examined topics relating to earth science, aerospace technology, space science, human exploration and development of space, and biological and physical research. In addition to meeting with NASA scientists, engineers, and education specialists, participants worked together to model teaching, learning, assessment, and professional development strategies called for in the science, mathematics, technology, and geography education standards (NASA, 2000).

Along with tours led by NASA experts at ARC research facilities, participants took field trips to study space and earth science topics at local destinations such as the James Lick Observatory, U.S. Geological Survey, and Asilomar State Beach. The teachers returned home with a plan for sharing information from the workshop with their colleagues and communities. The objectives of such a plan should include the following:

- Sharing information about NASA resources, programs, and services with teams from traditionally under- represented populations;
- Providing an opportunity for the teams to exchange ideas;

- Providing an opportunity for the teams to develop and implement an action plan that will support standards-based teaching and learning of science, mathematics, technology, and geography;
- Strengthening partnerships with NASA by sustaining interaction and collaboration after the conclusion of the workshop; and
- Developing and implementing an assessment plan designed to evaluate the effectiveness of the action plan (NASA, 2000).

This workshop has endeavored to adapt its focus and style to the needs of its audience. "In Native American cultures, education is grounded in the challenge of learning practical skills and knowledge in a real-life context" (Cajete, 1999, p. 145). NASA workshop leaders recognize the importance of the relationship between Native American people and the Earth. Therefore, several days of class time are dedicated to earth science content – an area of NASA's mission that is frequently less emphasized than space topics. With NASA ARC's extensive work in aeronautics and the relevance of its mission to the everyday world, significant classroom time is given to concepts of flight and cutting-edge technologies that are being developed by NASA.

Workshop participants engage in more hands-on activities and fewer lectures in order to present NASA scientific content in line "with more culturally relevant and learner-sensitive educational approaches" (Cajete, 1999, p. 136). Rather than seeking to present a bicultural approach to science, however, this workshop presents "Western" science concepts and provides informal opportunities for participants to process and discuss the information in light of Native American traditions and ways of knowing. This is particularly important for participants who are from

Native American communities where up to 60 different tribes are represented in one school.

Student motivation

An overwhelmingly successful endeavor has been the Annual NASA Aeronautics Day at the Sioux City, IA Airport. Begun in 1997, the thrust has been to familiarize students at Nebraska's Native American public schools with aeronautics in general and the application of scientific activities in aviation settings. Since the program began, over 1,000 5th grade students have spent a day at the airport viewing military and general aviation operations. One central theme that runs through the day's activities is that it is critical to stay in school, do well in the sciences, and avoid any involvement in drugs or alcohol. These projects have been extremely successful and have been aimed solely at the schools, teachers, and students. The main focus is to highlight aviation and aerospace as fields for possible career options and compelling reasons for students to stay in school.

Family Aeronautical Science (FAS) Program

The FAS program is an innovative technique to create student interest in math, science, and technological aspects of educational curriculum. These programs are "designed to involve families working together on several different hands-on activities during evening meetings at school" (Lehrer & Zendejas, 2001, p. 4). Special demonstrations and guest speakers are regularly included in these programs. Additionally, "ideas are given to parents on how to [complete] experiments and projects at home with their children" (Lehrer & Zendejas, 2001, p. 4). Each activity is selected and demonstrated with materials that are readily available in most homes or supplied by the school.

FAS is intended to help parents and students realize that science can be fun.

However, "the purpose of this program is not to make parents into scientists or the primary teacher of their child, but to provide an opportunity for families to work together in an interesting and enjoyable manner" (Lehrer & Zendejas, 2001, p. 4). By doing such activities, it may become apparent that science is not only for school activities, but also applicable in real life situations. These activities provide necessary extracurricular time for learning science and enhancing student-learning skills.

The Demonstration Project

The initial FAS project involved selected Native American students and their teachers. This demonstration project, which began in September 2002, targets upper elementary children approximately 11-12 years of age. "The specific population was students in the Santee Community Schools" located on the Santee Sioux reservation near Niobrara, NE (Lehrer & Zendejas, 2001, p. 4-5). The project included the students' parents and families, school faculty, and NSGC researchers.

This project involved a teaching paradigm that "called for students and teachers to cover several appropriate parts of an aeronautical science unit at school" (Lehrer & Zendejas, 2001. p. 5). Currently, students complete the unit after school hours with their family members and during bi-monthly Family Fun Nights at the school. These Family Fun Nights include an evening meal with a combination of science demonstrations, group activities, and fellowship. "The underlying goal [is] the continued improvement of mathematics and science skills among these Native American students through

involvement [and encouragement] of their family unit" (Lehrer & Zendejas, 2001, p. 5).

Program Expansion

Since the Family Fun Nights began in September 1999, the program has expanded into the Winnebago, Santee Sioux Nation, and Walthill school districts. Over 1,000 parents, staff, faculty, and students have participated. "Key activities include basic aerodynamics, flight control systems, wing design, and basic flight" (Lehrer, 1996, p. 5). "This endeavor will, in the long term, focus on systemic change for the entire Nebraska Native American reservation school network through the implementation of family science" (Lehrer, 1996, p. 5). It is anticipated that similar programs will be implemented in non-Native American schools in subsequent years. Statewide educational change in Nebraska would be difficult due to the large area of the state and the small population density. "A more reachable short-term goal [is] to focus on change within a minority population that is in need of . . . assistance" (Lehrer, 1996, p. 5).

According to Lehrer (1996), the involvement and encouragement of parents is an integral portion of the educational process.

"The benefits of involving parents in education are not confined solely to the early school years. Significant gains at all ages and grade levels can be achieved when parents share in their children's education. Junior high and high school students whose parents remain involved make better transitions, maintain the quality of their work, and develop more realistic plans for their future. Children from diverse cultural backgrounds tend to do better when parents

and professionals collaborate to bridge the gap between the culture at home and the learning institution."

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Establishing the Evaluation

The Nebraska Native American Outreach Program's main objective is to make Native American students more competitive in mathematics and science. This program is the most comprehensive Native American program of any state. In order to continually provide effective support to Nebraska's Native American community, NSGC & EPSCoR sought an evaluative technique for the NNAOP.

Therefore, NSGC & EPSCoR and the Aerospace States Association sponsored the first Nebraska Aeronautics Education Summit (NAES) Meeting, which was held in South Sioux City, Nebraska near the state's tribal lands. This event was organized to seek a common vision between educators of students in grades K-12 from four Native American public schools and two tribal colleges. (Please see Table A for a list of NAES attendees.)

Table A

Nebraska Aeronautics Education Summit Meeting Participants

Shelly Avery, Nebraska Indian Community College
Otto Bauer, University of Nebraska at Omaha
John Block, Little Priest Tribal College
Brent Bowen, University of Nebraska at Omaha
Larry Carstenson, University of Nebraska – Kearney
Ann Downes, Little Priest Tribal College
Lynne Farr, University of Nebraska Medical Center
Mary Fink, University of Nebraska at Omaha
Terry Foster, University of Nebraska – Lincoln
David Friedli, Omaha Nation
George Gogos, University of Nebraska – Lincoln
Terri Greenleaf, Winnebago Schools
Gary Ham, Walthill Schools
Wanda Henke, Santee School
Julia Hoffman, University of Nebraska at Omaha
Crystal Klein, Omaha Nation
Hank Lehrer, University of Nebraska at Omaha
Roger Lempke, Nebraska National Guard
Virgil Likness, Winnebago Public Schools
Jocelyn Nickerson, University of Nebraska at Omaha
Sandra Ostrand, Walthill Schools
Bob Pawloski, University of Nebraska at Omaha
Avonell Prochaska, Walthill Schools
Betty Red Leaf, Little Priest Tribal College
Michelle Richling-Milliken, Walthill Schools
Michaela Schaaf, University of Nebraska at Omaha
John Schalles, Creighton University
Robert Stands, Nebraska Indian Community College
Gail Thompson, Little Priest Tribal College
Ed Zendejas, University of Nebraska at Omaha

Dr. Henry Lehrer, NSGC Native American Outreach liaison, began the NAES discussion with an overview of the many activities that have taken place since the inception of the NNAOP six years ago. Numerous presentations have been made, interfacing between schools has begun, administrative leadership conferences have been held, and NASA data and models have been utilized to improve mathematics and science programs in Native American public schools. (Please see Table B for a NAES agenda.)

Table B
Nebraska Aeronautics Education Summit (NAES) Agenda
♦ Marina Inn – S. Sioux City, NE

Sponsored by NSGC and EPSCoR in conjunction with Aerospace States Association
Overview
NSGC & EPSCoR has engaged in outreach to the state's Native American educational community for 5 years.
Interface has occurred at the elementary, secondary, and collegiate levels.
The main focus has been to improve mathematics and science using NASA data and models.
One faculty member has been tasked with developing a broad-based educational assistance plan.
Numerous presentations on activities have been made at the regional and national level.
Nebraska has the most comprehensive Native American outreach program of any state.
Tribal College Specifics (LPTC and NICC)
Assistance in faculty development through workshops and faculty fellowships.
Grants for technology and library enhancements.
Aiding administration in developing and enhancing curriculum.

Development of institutional guidelines for better preparation of students in the sciences and specifically pre-engineering and nursing.
Discussions have begun about how to assist these colleges in better equipping their science labs.
One mathematics faculty member has been given a fellowship focused solely on identifying and nurturing future mathematics and science students.
Elementary/Secondary Specifics (Omaha Nation, Walthill, Winnebago, and Santee)
Aeronautics Day at Sioux City Airport has involved close to 1,000 5th grade students from the schools above over a 5-year period.
Selected teachers (four in 1999 and four in 2001) have attended a two-week NASA Ames Summer Workshop.
Family Aeronautical Science began at Santee in the 2000-2001 school year.
Additional Family Aeronautical Science programs have started this fall at Walthill and Winnebago
Omaha Nation will begin Family Aeronautical Science next term.
Santee students have attended ACE (Aviation Career Education) Academy
Library enhancements at Santee.
The NAU Stargazer program will have Nebraska students the summer of 2002.
Family Aeronautical Science
Basic aeronautics are taught during the school days as part of the class science period.
After school use of the computer lab is encouraged.
Evening meetings, with dinner included, for parents and children. Activities include science-based activities.
The primary focus of the program is to get students to become more interested in mathematics and science through the use of airplane and rocket study units.

Strengthening the family unit through studying science together is a value-added benefit.

Future Plans

It is imperative that more attention be given to grades 7 through 12.

A focus needs to be developed that views the elementary and secondary school science and mathematics courses as "feeder programs" for post-secondary institutions.

More use of distance education or other time/place independent methods of instructional delivery to reach non-traditional collegiate students that have trouble attending regular class sessions due to family/work obligations.

A summer mathematics institute for recent high school graduates. Priority given to pre-engineering or pre-nursing students.

Science field trips and/or summer science camps for rising high school or collegiate science students.

Discussion Questions and Focus Group Topics Include:

Is the use of NASA-based aeronautics and space to teach mathematics, science, and technology a viable motivator of Native American youth, particularly at-risk students?

Can Family Science make a difference and how can the concept be streamlined? Has the ASA sponsored Family United (FUN) in the Discovery of Mathematics, Science, and Technology initiative been effective?

Should there be a continuous NASA-based science and mathematics track from elementary/secondary to tribal college?

How should the UNO Aviation Institute and the Nebraska NASA Space Grant & EPSCoR proceed in the coming years to better serve the students, faculty, and staff of the state's four reservation schools and two tribal colleges?

A variety of enrichment activities have taken place at LPTC and NICC to support their students, faculty and staff. The NNAOP has assisted in faculty development, aided

administration in enhancing curriculum, and developed institutional guidelines for better preparation of students in the sciences. This team of motivated individuals has already begun taking steps toward assisting these colleges in better equipping their science labs.

However, achievements have not been limited to the college level. Nebraska's Native American school systems, comprised of Omaha Nation, Walthill, Winnebago, and Santee, have also participated in educational events and activities. Those include:

- Eight teachers have attended annual two-week NASA Ames Summer Workshops;
- Over 1,000 5th grade students have participated in the annual Aeronautics Day at Sioux City Airport;
- Santee students have attended the annual Aviation Career Education (ACE) Academy sponsored by the Nebraska Department of Aeronautics; and
- The FAS program has been introduced and is functioning at Walthill, Santee, and Winnebago schools.

The accomplishments that this program has achieved provide the guidelines for implementation of such programs in other states throughout the nation.

In order to conduct their planned evaluation, NNAOP researchers utilized the presence of those attending the NAES meeting. The diverse group of educators, researchers, and practitioners present at the summit provided a unique opportunity to gather information by employing a focus group research technique. This opportunity was not only beneficial to the NNAOP by assessing its strengths and weaknesses, but also to those who participated in the study by providing them with a worthwhile learning experience. The results and

recommendations acquired and included in this document were indeed remarkable. The utilization of the summit participants' recommendations and innovative future plans will ensure continued shared success between NSGC & EPSCoR and Nebraska's Native American community.

UTILIZING THE QUALITATIVE RESEARCH FRAMEWORK

The NNAOP researchers utilized a qualitative research framework to ensure that their evaluative study would produce the most appropriate and meaningful information possible. According to Bruce L. Berg (2001), "Qualitative research . . . refers to the meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions of things" (p. 3). The NNAOP researchers sought the human and social characteristics of a society that could be defined and determined through qualitative research. "Qualitative research properly seeks answers to questions by examining various social settings and the individuals who inhabit these settings" (Berg, 2002, p. 6). Therefore, the NNAOP researchers focused on the human aspects of the participants' living environment.

Why Qualitative Research?

NNAOP researchers understood that qualitative research requires a commitment to the problem at hand and demands a great deal of time and resources. According to John W. Creswell (1998), a qualitative researcher must be willing to do the following:

- Commit to extensive time in the field;
- Engage in complex, time-consuming data analysis;
- Write long passages; and

- Participate in research that has no firm guidelines. (p. 16-17)

The NNAOP researchers achieved these tasks and were able to explore a variety of humanly important topics by obtaining a detailed view of the individuals involved. The qualitative research framework allowed the researchers to focus on "emotions, motivations, symbols and their meaning, empathy, and other subjective aspects associated with naturally evolving lives of individuals and groups" that were studied (Berg, 2002, p. 10-11). The seven primary ways in which qualitative data should be collected are: "interviewing, focus groups, ethnography, sociometry, unobtrusive measures, historiography, and case studies. Each method . . . reveals slightly different facets of the same symbolic reality" (Berg, 2001, p. 4). The NNAOP researchers utilized the interviewing tool in the form of focus groups when conducting their investigation.

Ethical Concerns

Qualitative research examines the humanistic issues surrounding societal concerns. Such personal information and documentation creates a necessity for researchers to pursue their investigations with increased sensitivity to the issues they are creating and reporting. "Social scientists . . . have an ethical obligation to their colleagues, their study population, and the larger society" (Berg, 2001, p. 39). As the scope of research expands through the use of more sophisticated and penetrating techniques, so does the need for increased awareness and concerns over research ethics (Berg, 2001).

Through prior planning processes with people who are knowledgeable of the Native American culture, the NNAOP researchers were able to remain sensitive to

specific cultural issues. No one was forced or coerced into participating, as each individual was required to join the session voluntarily. Additionally, the researchers provided a positive and welcoming environment to ensure that all of the participants' opinions and concerns could be shared freely.

METHODOLOGY

The educators, researchers, and practitioners present at the NAES meeting created a wealth of knowledge with which to draw upon during this evaluation. The summit participants' recommendations and innovative future plans will ensure continued NNAOP success. Additionally, the collective opinions and ideas will create a new body of knowledge with which to disseminate among Nebraska's Native American educators.

Current NNAOP initiatives offer Nebraska's Native American children unique opportunities for participating in mathematic and scientific activities. Such initiatives were created and implemented to assist teachers within Nebraska's Native American educational system in their quest to help students become more competitive in math, science and technology-related curriculum. However, in order to gain a better understanding of the teachers' needs for future endeavors, the NNAOP sought ways to evaluate their programs.

Apparatus

The NNAOP researchers carefully developed a set of four unique questions to obtain such data. Each question provided specific information regarding the operation of the NNAOP and its initiatives. These questions were then utilized within a specifically designed focus group session. These questions were stated as follows:

Is the use of NASA-based aeronautics and space to teach mathematics, science, and technology a viable motivator of Native American youth, particularly at-risk students?

Can Family Science make a difference and how can the concept be streamlined? Has the ASA sponsored Family United (FUN) in the Discovery of Mathematics, Science, and Technology initiative been effective?

Should there be a continuous NASA-based science and mathematics track from elementary/secondary to tribal college?

How should the UNO Aviation Institute and the Nebraska NASA Space Grant & EPSCoR proceed in the coming years to better serve the students, faculty, and staff of the state's four reservation schools and two tribal colleges?

Apparatus Analysis

The focus group method of data collection was chosen for a variety of reasons. The NAES leaders' intent was to collect data through comprehensive and open discussions regarding certain NNAOP topics or issues. Although "focus group interviews are . . . limited by the fact that the bulk of the behavior is verbal" (Berg, 2001, p. 117), extensive notes were recorded for each focus group, ensuring that each groups' contribution would be clearly documented and analyzed.

Additionally, the focus group method of data collection was employed due to its uniqueness in not only providing answers to specifically addressed questions, but also in providing a means of interaction between summit participants. Additionally, focus groups "require far less time than individual interviews [while involving] the same

number of participants" (Berg, 2001, p. 116). The only disadvantage of using a focus group in this situation is that "only a limited number of questions are used" (Ulmar, 2001). However, each question was carefully constructed to solicit specific and useful information for further examination and evaluation.

"Focus groups are advantageous when the interaction among the interviewees will likely yield the best information, when interviewees are similar and cooperative with each other, when time to collect information is limited, and when individuals interviewed one on one may be hesitant to provide information" (Creswell, 1998, p. 124). NAES focus group subjects were carefully selected due to their expertise and willingness to voluntarily participate in the study.

The focus group method has the ability to generate insights that might not otherwise emerge. The NAES focus groups provided a more informal atmosphere to a research group, which allowed "subjects to speak freely and completely about behaviors, attitudes, and opinions they possess" (Berg, 2001, p. 111). Participants were able to draw from each other's thoughts and ideas, which resulted in collective brainstorming session. This allowed for a larger number of issues to be addressed and solutions to be generated. "It is this group energy that distinguishes focus group interviews from more conventional styles [such as] . . . face-to-face interviewing" (Berg, 2001, p. 112).

"Focus group interviews allow the researcher to observe a process that is often of profound importance to qualitative investigations – namely, interaction" (Berg, 2001, p. 112). This interactive format allowed the NAES participants' attitudes, experiences, and opinions to permeate the session. The collective viewpoints of the

study participants were given greater emphasis "because interactions between group members largely replaces the usual interaction between interviewer and subject" (Berg, 2001, p. 115).

The data that was obtained through these focus groups was not limited to the participants' answers. "Researchers can observe session participants interacting and sharing specific attitudes and experiences, and they can explore these issues" (Berg, 2001, p. 115). This interaction produces "greater amounts of detail on various attitudes, opinions, and experiences" (Berg, 2001, p. 115).

Participants

A variety of disciplines and institutions were represented at the Saturday event. Those present included educators and administrators from Nebraska's four Native American public schools (Macy, Santee, Walthill, and Winnebago) and two tribal colleges (LPTC and NICC), university faculty from several Nebraska institutions, researchers, and industry representatives. Each participant was carefully selected on the basis of their expertise regarding issues that affect Nebraska's Native American population. In order to continue to provide consistently effective support to Nebraska's Native American community, NSGC & EPSCoR sought an evaluation technique that would not only benefit the program by assessing its strengths and weaknesses, but also offer a learning experience for those involved.

Sampling

A nonprobability sampling technique was chosen "to create a kind of quasi-random sample and . . . to have a clear idea about what larger group or groups the sample

may reflect" (Berg, 2001, p. 31-32). "Nonprobability samples offer the benefits of not requiring a list of all possible elements in a full population, and the ability to access otherwise highly sensitive or difficult to research study populations" (Berg, 2001, p. 32). The NNAOP researchers' objective was to configure the groups with persons who were capable of providing the highest-quality discussion about the NNAOP (Greenbaum, 1998).

The NNAOP researchers' assembled their group of participants through purposive sampling. The participants were gathered in an effort to generate intelligent contributions to the Nebraska Aeronautics Education Summit meeting discussions. Each individual was purposely and specifically selected to attend due to their knowledge and expertise in the educational arena of Nebraska's Native American community. Additionally, each attendee agreed voluntarily to contribute their thoughts and feelings to the interactive discussion of the focus group interviews.

The researchers remained sensitive to various Native American issues when determining who would be invited to participate in the focus groups. The researchers used their knowledge of Nebraska's Native American educators to select subjects who would sufficiently represent this population (Berg, 2001). This allowed for a very targeted and intricate purposive sample to be made. This participant gathering technique offered an efficient and effective method for collecting the necessary evaluative data (Berg, 2001).

According to Shipman (1997), "The problem here . . . is the dependence on the researcher and the cooperation of those" participating in the study (p. 59). However, the NNAOP researchers took great care in ensuring that

representatives from each of Nebraska's four Native American public schools and two Native American colleges were present. Also present were members of Nebraska's Omaha Nation tribe.

Procedure

Before conducting the focus groups, the researchers determined that the interviews would be limited to thirty minutes in length. This took into consideration that each attendee was participating voluntarily and that each individual has already attended the NAES meeting. In order to not take advantage of the participants, the researchers remained sensitive and committed to the amount of time allotted for interviewing.

Rather than provide payment in exchange for focus group participation, the researchers determined that other rewards would ensue from attendance. All participants were offered a variety of foods and beverages for their effort as well as a comfortable working environment. Additionally, the researchers created the opportunity to voice concerns and comments regarding a program that is intricately involved in the education of Nebraska's Native American children. Attendees could interact with each other and benefit from a worthwhile learning experience.

It was determined that the most efficient way of collecting the necessary evaluation data through the focus group method would be to divide the participants into three small groups. The NNAOP researchers administered their carefully developed questions during these simultaneous focus groups with their selected sample of respondents. Dr. Ed Zendejas, Mrs. Michaela Schaaf, and Mrs. Mary Fink were selected as group leaders, while Dr. Henry Lehrer served as overall focus group moderator. Additionally,

each group was provided with a recorder to ensure that group leaders could focus on the group discussion, rather than documenting each response. Each leader kept their participants focused on the issues at hand; making sure each opinion was documented. NAES Focus Group participants were encouraged to share their perspectives and insights about each issue. Responses from each focus group are presented in Tables C, D, and E.

Table C
NAES Focus Group #1 Data Set
Leader: Ed Zendejas

Question #1 Answers
Hands on, exciting
Starting with younger children who are ready to learn
Information must be integrated into curriculum and culture rather than imported
Native American culture uses rewards and positive reinforcement and this must be integrated into the program
When the students leave the classroom they should be given something tangible (not a t-shirt)
Gives career options by being exposed to different vocabulary, technology, etc. for building careers and inspiring interest
Bringing students to the actual field laboratories to expose them to the field/career
Teaching students that these careers are attainable and overcoming obstacles
Bringing in successful role models (Native American astronaut)
Try to catch the interest of students at an earlier age
We must account for the non-traditional student
Perhaps part-time education could allow additional students to obtain degrees

Question #2 Answers
Seems very effective to involve families to work together
Excellent concept (it is streamlining itself) – holistic, cohesive
Very close to the Native American values of involving the entire community
Would work best to get suggestions from those involved
Question #3 Answers
Building on a continuous flow
If done right, we can create stability
Must start younger (Headstart Program)
Track students to specific fields (camps, classes, etc.) by determining what interests them
Must adapt to the next generation
Coordinate elementary, secondary and college (these institutions must dialogue)
Losing students to lack of opportunities
Question #4 Answers
Must create mutually/equally beneficial partnerships
Native American schools lack resources, NASA could fund the salary of a science teacher (filling the labor shortage while producing a better quality education)
Must have serious and realistic partnerships
Native American schools lack space and resources (personnel)

Table D
NAES Focus Group #2 Data Set
Leader: Mary Fink

Question #1 Answers
Staff/faculty development must be continuous
Teacher training
Community awareness
Lesson plans
NASA needs to follow-up post workshop
Need to highlight connections between science and real world applications – filling the gap
How is motivator (NASA) connected to the entire education experience?

Question #2 Answers
Scope and sequence must have uniformity (determining the what and when)
Remove excess duplication
Necessary to reinforce via applications such as tutoring
FOUNDATIONS/BLUEPRINT
Our measure or "success" = should be retention through to college graduation
The time spent on each task should lead to success
Parent/Community/NASA involvement
Question #3 Answers
Must have a NASA-based math/science track
Track attendance of students (emphasizing 4th through 9th grades who sometimes lose interest)
Target start grade needs to be earlier such as Pre-K (Headstart Program)
Use to promote Math and Reading readiness
Utilize the Nebraska Department of Education Commission's student database
Must have correlation with state standards

Question #4 Answers
Consider other large-scale events for all schools and community to attend
i.e. Science fairs, Rallies, contests, speakers (Native American astronaut, John Herrington)
Need technology networking
distance learning at Santee
college recruitment
Provide a resource website to offer employment opportunities

Table E
NAES Focus Group #3 Data Set
Leader: Michaela Schaaf

Question #1 Answers
Hands on activities such as:
Earth Kam on ISS: (3 or 4 IBM thinkpads / students assigned roles)
Fish & Wildlife – endangered species
Archeological digs (Lynch, NE)
Civil Air Patrol
Construction
SASM Camp – certificate
Zoo – hands on
Fontenelle Forest
Ham Radio License: Talk to astronauts, Emergency response, Community implications
Astronomy, space, blow-up planetarium
Seeing career opportunities here in Nebraska
Exposure
Maintenance, etc., National Park Service, Army Corp. or Engineers
NSIP
NASA Student Involvement Program

Question #2 Answers
Validation:
Take away mystery and fear of math and science
Get families together: family perception of education generates success
Parents develop respect for children and build faith in their abilities
Future educational and career opportunities look more promising from parents' perspective
Food, family time
Freedom of picking a station
Emphasizing food and prayer
Community buy-in
Tracking numbers in classes
Must be able to adapt

Question #3 Answers
Career awareness
Hand pick students to track their progress
Girls need more encouragement and reinforcement
LPTC: Average age is 34, 80% female, 60% part-time
"Turf" issues
AISES Chapter
Mentoring Programs: such as LPTC Mentors for high school students
Speaker Series
Meeting between faculty to discuss scope and sequence
Community-wide workshops
Standards
Create a database for standard lesson plans
Themes need to identify standards of they will not be utilized

Question #4 Answers
Research
Break down into skills

Needs to be done – important
Baselines are needed
Action research
Research as "inquiry"
Use the word from each tribe that is similar to "research"
Faculty development
Train in curriculum areas, lesson plans and courses
Substitute teachers need a solid foundation
Need to tie scholarships to these needs
Limitations

When utilizing judgment samples or non-probability samples, the NAAOP researchers realized that they ran the risk of relaxing their reliability. "Sampling error, the difference between a population value and a sample estimate of that value, occurs because only a sample rather than a complete consensus of the population is surveyed" (Gubrium & Holstein, 2002, p. 60). However, given the small number of Native American educators in Nebraska and the educated method that was used to select focus group participants, the researchers created a more reliable and, thus reproducible, study.

Gubrium and Holstein (2002) discuss three nonsampling errors in their book "Handbook of Interview Research." Those errors include: "coverage error, the failure to give some members of the target population any chance of being included in the sample; nonresponse error, the failure to obtain data from all sampled persons; and measurement error, inaccuracies in what respondents report" (p. 60). The NAES focus group participants were encouraged to discuss their thoughts and opinions regarding each research question. Group leaders monitored this discussion, ensuring each response was recorded. Although this qualitative method of data collection does not address answers that were not offered, the focus groups

created an enticing atmosphere for learning and consensus building.

The researchers were aware that a limited number of participants would be studied in the somewhat artificial environment that had been created under experimental conditions. Therefore, they cannot rule out the possibility that participants may have felt time pressure. The researchers attempted to minimize this by explicitly instructing participants to take time in producing high quality answers rather than quick responses.

Reliability

According to Babbie (1998), reliability refers to whether or not specific research techniques can be "applied repeatedly to the same object [and] yield the same result each time" (p. 129). The NAES focus group research is unique in that responses were enhanced by the interaction of study participants. Thus, even if the same participants were convened and questioned repeatedly, outside variables such as environment, health, etc. could impact their responses. The responses may be similar, yet not exact. However, this addresses the accuracy of the responses rather than the reliability of the researchers' techniques.

Reliability is a concern because there is "no certain guard against the impact of [an] observer's subjectivity" (Babbie, 1998, p. 131). However, qualitative studies are subjective in nature, where researchers' objectives are to seek subjective information such as experiences or feelings. The researchers conducting the NNAOP focus groups were not only collecting this personal and unpredictable humanistic information, they were relying on the data to answer evaluative questions regarding the program.

Validity

According to Babbie (1998), "validity refers to the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration" (p. 133). However, concepts such as the effectiveness of a program cannot be assigned a particular measure that adequately reflects their meaning. Researchers must agree on the criteria that will be used to measure success. Thus, the NAES focus group questions were systematically developed to produce a specific set of responses in regard to the efficiency and effectiveness of the NNAOP. By avoiding erroneous and irrelevant responses, the researchers formulated questions that would produce a significant amount of data with which to analyze past NNAOP activities and base future endeavors.

This study's researchers realize that a variety of decisions will be made as a result of the data collected. However, to remain unbiased regarding the results, the NNAOP researchers will maintain open points of view while analyzing the data. Additionally, an outside researcher will independently examine the data, in an effort to draw comparable conclusions, a "kind of inter-coder reliability check" (Berg, 2001, p. 36). It is intended that through this research study, the evaluative data will not only be presented to the academic community, but also to NNAOP personnel to ensure continued program success. The researchers understand that the analyzed information "must be disseminated if it is to be considered both worthwhile and complete" (Berg, 2001, p. 37).

RESULTS

Summit Recommendations

After all questions were addressed by each focus group, the NAES was reconvened to identify major points of agreement. The opinions, perspectives, and recommendations from each group were discussed and recorded. Each group provided valuable opinions and suggestions for refining the NNAOP. The following is a list of key recommendations that were offered and that are being addressed:

- Staff development could be increased in Native American schools by addressing scope and sequence through training and regular faculty and staff meetings.
- Engage teachers in research and inquiry to involve them in the gathering of information and to allow them to experience tangible results.
- Integrate Native American culture and values into the NASA sponsored programs to ensure not only that the students are aware of their heritage, but also to provide consistency between school and home.
- Cultivate and promote Native American administration and partnerships with NASA as advised by the Presidential Executive Order.
- Develop a partnership format between the Native American schools and the grant agency that will promote equally beneficial outcomes.
- Create a Space Grant facility to be staffed by professionals in the Native American community.
- Communicate the importance of Native American Outreach program awareness to teachers and administrators through promotion and visibility.

- Utilize banners at each involved school to promote community awareness of the Native American Outreach Program components and activities.

Focus Group Analysis

After the researchers gathered all NAES focus group data, they returned to the university to begin the analysis process. The focus group responses were initially documented in Microsoft Word, which prepared the data for transfer into a qualitative analysis software package. This information was then entered into the Centers for Disease Control and Prevention (CDC) EZ-Text qualitative analysis software.

EZ-Text Analysis

The innovative qualitative data analyzing software, EZ Text, was utilized in determining correlation between NAES focus group responses. The EZ-Text program allows researchers to design a series of data entry templates tailored to their questionnaire (CDC, 2000). NNAOP researchers created their data entry templates in an effort to extrapolate the most desirable and helpful evaluative recommendations.

When utilizing the EZ-Text capabilities, codes were assigned to specific response passages in an effort to identify text passages that met the NNAOP researchers' conditions in identifying themes in the study. All responses were entered into EZ-Text as a summary generated from the focus group recorders' notes. The data files from the three focus groups were then merged for combined cross-site analyses.

EZ-Text Coding

Specific codes were assigned to each NAES focus group question. These codes were entered into the EZ-Text program to aid in analyzing the data. For example, the first question was read as follows:

"Is the use of NASA-based aeronautics and space to teach mathematics, science, and technology a viable motivator of Native American youth, particularly at-risk youth?"

The associated assigned codes for this question were:

The reason to motivate people
Timing of motivating activity
Culturalized discipline
Real-world hands-on experience
Create possible future
Role model
Education format for Native Americans
NASA's role in motivation
Motivator of faculties

The responses from each focus group for question #1 were compared to this list of codes, allowing the researchers to identify themes. A complete set of EZ-Text analyzed data for Questions 1 and 2 is presented in Table F, while a complete set of EZ-Text analyzed data for Questions 3 and 4 is presented in Table G. Please see Table H for an operator critique of EZ-Text.

Table F
NAES Focus Group Questions vs. EZ-Text Interpretations
NAES focus group questions from NAES Meeting:

Is the use of NASA-based aeronautics and space to teach mathematics, science, and technology a viable motivator of Native American youth, particularly at-risk students?

In order to motivate Native American youth to more aggressively learn mathematics, science, and technology, all three focus groups appear to agree on the importance of hands-on experiences. The participants suggested that teachers should do the following: 1) bring students to the actual field laboratories to expose them to the field/career; and 2) highlight connections between science and real world applications to fill the learning gap. Additionally, activities such as understanding fish and wildlife, archeological digs, national park service, astronomy, space, blow-up planetarium SASM camping, ham radio licensing, and activities of Civil Air Patrol, are good motivators to elevate the excitement of learning scientific courses for Native American youth.

Groups one and three also agreed on two other points: 1) create possible futures; and 2) a revised format of education in science. Both groups stated that teachers should give career options by exposing students to additional and different vocabulary, technology, etc. for building careers and inspiring interest. This teaches the students that careers in science and technology are attainable, helping students overcome obstacles of self-doubt.

In addition, groups one and three also suggested that educational information must be integrated into

curriculum and culture rather than imported. Due to the amount of non-traditional students, the option of part-time education should be researched to allow additional students to obtain degrees.

Can Family Science make a difference and how can the concept be streamlined? Has the ASA sponsored Family United (FUN) in the Discovery of Mathematics, Science, and Technology initiative been effective?

All three focus groups agreed that it seems very effective to encourage families to work together. Evaluation would work best by obtaining suggestions from those involved (i.e., parents, Native American community, NASA, etc.). Family Science could be seen as successful because it provides a positive family perception of education and parents can develop respect for their children and build faith in their children's abilities. Thus, future educational and career opportunities look more promising from the parents' perspective.

Groups one and three agreed that the Family Science should truly reflect local culture value. The concept should be streamlining, holistic, and cohesive. It should also be very close to the Native American values especially in attempting to involve the entire community (community buy-in).

Table G
NAES Focus Group Questions vs. EZ-Text Interpretations
NAES focus group questions from NAES Meeting:

Should there be a continuous NASA-based science and mathematics track from elementary/secondary to tribal college?

All three groups agreed that building a continuous flow of tracking system is essential. The tracking system should be in a continuous format through to the student's college graduation. If done right, stability in progress tracking can be created.

Groups one and two suggested that the NASA-based math/science track system be developed into a uniform system or the state standards of evaluation be adopted. Likewise, a database for standard lesson plans should be created.

Groups one and two agreed that the performance tracking should be done as early as possible, such as Pre-K. Additionally, the most important duration of progress tracking is between 4th and 9th grade.

How should the UNO Aviation Institute and the Nebraska NASA Space Grant & EPSCoR proceed in the coming years to better serve the students, faculty, and staff of the state's four reservation schools and two tribal colleges?

There is no overall agreement among the three focus groups regarding this question. However, groups one and two were in agreement on three concepts involving the future of the UNO Aviation Institute (UNOAI) and the Nebraska NASA Space Grant (NSGC) & EPSCoR Programs. First, strengthen a beneficial alliance between

NSGC & EPSCoR and the Native American community; second, support better-equipped and more efficient Native American school facilities; and third, create more useful partnerships. Both groups suggested that NSGC & EPSCoR create mutually/equally beneficial partnerships (i.e., Native American schools lack resources, NASA could fund the salary of a science teacher, filling the labor shortage while producing a better quality education). In addition to pursuing higher income for qualified teachers, NSGC & EPSCoR must provide serious and realistic partnerships that sincerely seek to help Native American schools. NSGC & EPSCoR should consider other large-scale events for all schools and the Native American community to attend (i.e., science fairs, rallies, contests, guest speakers like Native American astronaut - John Herrington). The technology networking is also helpful to overcome the barriers of distance and shortage of facilities while providing a more aggressive Internet announcement of job openings.

Table H
Operator Critique of EZ-Text

The EZ-Text should be convenient to use. Yet, during my trial-and-error duration, an important part of the user guide was missing, which assigned coders to each respondent. According to EZ-Text (97 version), a qualitative researcher should first design his/her semi-structured questionnaire. After the design, researcher should create a database to store all collected feedback from respondents. When all feedback is documented, the researcher must use his/her own codes based on the uniqueness/category of themes or meanings personally interpreted.

After completing the coding process, the researcher should assign codes to each response. There is only one codebook that collects all codes from all responses. Therefore, the researcher must recognize which codes are specifically associated with a particular response's ID. The researcher must assign those unique codes from the codebook to specific response's questions before their data search. However, most of the assigned code combinations are different and the codebook has already been generated. This situation made the response assigning coder a complex process due to the large amount of responses.

My only suggestion for revision of the EZ-Text software would solve the two aforementioned problems. The suggestion would be to automatically assign codes to the response's ID and store into project codebook when coding each response's feedback. This would not only dramatically reduce time in the coding process and assigning data, but also reduce man-made input errors.

FOCUS GROUP COMBINED SYNTHESIS

After themes were extracted from the independent review and the EZ-Text analyzed focus group responses, the researchers developed a combined synthesis of the data. This has provided critique of the NNAOP and direction for future events and activities. Each question and their subsequent identified themes are provided below:

Is the use of NASA-based aeronautics and space to teach mathematics, science, and technology a viable motivator of Native American youth, particularly at-risk students?

Two of the three focus groups expressed their desire to see more exciting, hands-on activities become available for participating students. These activities could include archeological digs, zoo visits, forest excursions, camp stays, and planetarium demonstrations, among others. Such tangible events would expose students to career options and opportunities in Nebraska, while teaching youngsters that math and science related careers are attainable. Additionally, the focus groups highlighted the need for continuous staff and faculty development, including teacher training in community awareness, lesson plans, and other related educational requirements. Other needs included starting the program in younger grades, better integration of math and science into the curriculum and culture, and accounting for the non-traditional Native American student.

Can Family Science make a difference and how can the concept be streamlined? Has the ASA sponsored Family United (FUN) in the Discovery of Mathematics, Science, and Technology initiative been effective?

According to the participants, the FUN Program is an excellent concept, which is streamlining itself by its holistic and cohesive model. The FUN Program emphasizes food and prayer, while encouraging parents and the community to join the activities. Of high priority was the fact that families are learning the positive aspects of working together and seeing the benefits of a Parent-Community-NASA partnership. The values of this program are very near those of the Native American culture, focusing on the involvement of the entire community. Additionally, this program removes the mystery and fear of math and science. This provides a positive family perception of education and the increased opportunity for parents to build faith in the abilities of their children. However, as stated by two of the focus groups, the scope and sequence of FUN must have uniformity to clearly define the "what" and "when" aspects of the program. A clear foundation or blueprint would allow the curriculum and staff to adapt to changing needs, which could allow for greater retention of students through college graduation and ultimately lead to a higher level of success.

Should there be a continuous NASA-based science and mathematics track from elementary/secondary to tribal college?

Overall, a tracking system was seen as a positive step toward collegiate success for Native American students. However, such an endeavor should include a NASA-based math and science track with the incorporation of camps, classes and other activities that could help determine what fields interest students. In order to aid in the NNAOP's success, extra emphasis should be placed on the progress of students in grades 4 through 9 and specific

students should be selected to track their individual progress.

Also mentioned was the need to include younger students in the program, such as those in pre-Kindergarten classes. In order to adapt to future generations, the scope and sequence for these and other classes should be evaluated through faculty meetings. Additionally, a database that correlates with state standards should be created for providing uniform lesson plans. A worthy perspective that was offered by only one focus group was the necessity for elementary, secondary and college institutions to coordinate their efforts and to dialogue between themselves. Another single opinion stated that schools are losing students to lack of opportunities. Remedies to this problem included increased encouragement and reinforcement of female students and the implementation of mentoring programs. The importance of promoting Math and Reading readiness was also offered, which should involve the utilization of the Nebraska Department of Education Commission's student database.

How should the UNO Aviation Institute and the Nebraska NASA Space Grant & EPSCoR proceed in the coming years to better serve the students, faculty, and staff of the state's four reservation schools and two tribal colleges?

One opinion that echoed throughout the summit was the necessity to create mutually and equally beneficial partnerships between the Native American schools and their funding sources. These partnerships must be serious and realistic since many Native American schools lack necessary space and resources. The need for incorporating speakers into the NNAOP was also discussed. Native

American professionals such as NASA Astronaut, John Herrington, could speak to students and provide academic encouragement. Also mentioned was the need for increased faculty development. Additional training in curriculum, lesson planning, specific courses, and research techniques should be addressed in the proposed development. Those items discussed at the reconvened meeting, yet offered by only one focus group, include the following:

Introducing large-scale events, such as science fairs, rallies, and contests, for the entire community to attend;
Technology networking is needed for distance learning and college recruitment;
A resource website should be provided for employment opportunities;
Research is important and needed to enhance educators' background and to provide baselines for continued improvement of the Native American Outreach Program; and
Scholarships should be tied to the specific needs of the student and the community.

DISCUSSION

The NAES focus group results have confirmed that Nebraska's Native American elementary schools, secondary schools, and colleges with which our Outreach Program is working are in need of resources for technological and educational advancement. Additionally, the need for integration between all levels of schooling is imperative to ensure reinforcement of educational information and to provide a tracking process for students interested in mathematics and science. The recommendations provided by the focus group participants allow NNAOP personnel to improve their delivery of the

Family Science Program and other educational outreach activities.

The Native American culture is one that promotes community involvement and awareness. The Family Science program integrates this involvement into the schools by providing a positive environment for families to learn together through science-based activities. This program is flourishing. Any enhancement of this program would allow a more widespread acceptance of its intentions and objectives.

NSGC & EPSCoR continually seeks improved and innovative ways of delivering its educational outreach programs, such as Family Science. Additionally, NSGC & EPSCoR programs will continue to provide the development and enhancement of additional community-wide educational opportunities. Future plans developed from specific NAES recommendations include:

Developing elementary and secondary school mathematics and science courses as "feeder programs" for colleges and universities;
Using distance education to reach non-traditional collegiate students;
Creation of a summer mathematics institute for recent high school graduates;
Providing science field trips and summer science camps;
Designing a Native American Aeronautics Education Outreach website; and
Increasing community involvement and awareness through a banner program.

CONCLUSION

The Nebraska Native American Outreach Program is focused on encouraging and motivating Native American students to be more competitive in mathematics and science. Whether this is done by providing additional scholarships and fellowships or by cultivating the relationships being established between educators and NASA, the program is a prime example of prophetic thinking and planning. Those involved in the Nebraska Aeronautics Education Summit participated in this forward thinking by offering their ideas and contributing their expertise. Although the culmination of the first six years of this successful program has taken place, the collaboration provided by the summit participants gives vision for many years to come.

Of particular importance is the need to assess the NNAOP program as its activities are facilitated over time. NNAOP researchers are concerned with the development of Nebraska's Native American students as they continue their studies and progress toward anticipated enrollment in higher education. Quantitative techniques such as cataloging program attendance records are consistently maintained. This is conducted to document retention in and recruitment to program initiatives. Additionally, qualitative techniques such as personnel interviews are being pursued to establish the disposition of attitudes toward program endeavors and achievement.

An implementation team funded by a NASA EPSCoR grant has been established to ensure that future NNAOP outcomes see fruition. This team works closely with educators and administrators within Nebraska's Native American community to develop new ways of delivering educational resources to the state's reservations. Those in ASA, NSGC & EPSCoR, and Nebraska's Native American

schools and communities look forward to experiencing a high level of achievement in the future.

REFERENCES

Babbie, Earl R. (1998). The Practice of Social Research (8th ed.). Belmont, CA: Wadsworth Publishing.

Berg, Bruce L. (2001). Qualitative Research Methods for the Social Sciences. Boston, MA: Allyn and Bacon.

Cajete, Gregory A. (1999). The Native American Learner and Bicultural Science Education. In K.G. Swisher & J.W. Tippeconnic III (eds.), Next Steps: Research and Practice to Advance Indian Education (pp. 135-160). Charleston, WV: Appalachia Educational Laboratory.

Centers for Disease Control and Prevention (CDC) (2000). CDC EZ-Text. (August): Retrieved January, 2002 from http://www.cdc.gov/hiv/software/ez-text.htm

Creswell, John W. (1998). Qualitative Inquiry and Research Design: Choosing Among Five Traditions. Thousand Oaks, CA: Sage Publications, Inc.

Greenbaum, Thomas L. (1998). The Handbook for Focus Group Research Thousand Oaks, CA: Sage Publications, Inc.

Gubrium, Jaber F. and James A. Holstein (Eds.) (2002). Handbook on Interview Research (2nd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Lehrer, Henry R. (1996). A Nebraska Space Grant/EPSCoR Aeronautics Initiative: An

Articulation Model with Tribal Colleges Western Region Space Grant Meeting, Santa Fe, NM (November).

Lehrer, Henry R. (2000). Articulation Between UNOAI and the Nebraska Native American Educational Community: An Exciting And Fulfilling Adventure National Indian Impacted Schools Association Conference, Omaha, NE (June).

Lehrer, Henry R. and Edwardo Zendejas (2001). Family Aeronautical Science: Improving Math, Science, and Technology Skills Among Nebraska Native American Children Omaha, NE: NASA Nebraska Space Grant & EPSCoR.

National Aeronautics and Space Administration (NASA) (2000). NASA Educational Workshops (NEW) for Urban and Rural Teams (EP-2000-11-394-HQ) [Brochure]. Washington, DC: Author.

Shipman, Marten (1997). The Limitations of Social Research (4th ed.). New York, NY: Addison Wesley Longman.

Ulmar, Sharon. (2001). Focus Groups Retrieved December 2001 from http://cid.unomaha.edu/~unoai/avn8120/tools/definitions/focusgroup.html

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