EPSCoR Quantitative and Qualitative Evaluation Annual Report

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The Aeronautics Education, Research, and Industry Alliance (AERIAL) is a comprehensive, multi-faceted, 5 year NASA Nebraska EPSCoR initiative that contributes substantially to the strategic research and technology priorities of NASA while intensifying Nebraska’s rapidly growing aeronautics research and development endeavors. This multi-institutional alliance forms the foundation of a new statewide center for aeronautics research and elevates the state’s activities in this regard to national prominence and impact. As an AERIAL researcher, we would like you to review the following questions and answer them in regard to the research your team is conducting.

Please forward any questions you may have regarding this report to the NASA Nebraska EPSCoR Coordinator, Mary Fink, (554-3772 or via e-mail). Completed forms are to be submitted via e-mail to nasa@unomaha.edu.

Name of Project: Nebraska Native American Outreach Program
Principal Investigator(s): Henry Lehrer
Phone: (419) 662-1926
E-mail: hanklehrer@buckeye-express.com

Name of Other Sponsors matching funds, other related grant funding agencies and amount of match/grants:

- Nebraska EPSCoR $9,000
- Aerospace States Association $29,000
- National Science Foundation Pending

Please provide a one-page description of your project’s progress for the current period:

All of these projects are continuations of early efforts. All programs are vital and are producing excellent results.

This outreach initiative has had several distinct parts. Specifically the effort has focused on improving mathematics and science skills among the Native American students in the state’s reservation schools and tribal colleges. The initiative began over 6 years ago and the primary focus at that time was infrastructure building. It was important to interface with Native American administrators as an initial effort before any other additional activities could be developed. Several successful initial meetings took place and it became quickly possible to contact any administrator and receive a response. This type of relationship building is a key reason for the success of the program.

The motivation of students is a second part of the program. Activities that involved 5th and 6th grade students were developed, particularly Aeronautics Day, a field trip, at the Sioux City Airport. Industry sponsors were the FAA, the 185 Fighter Wing of the Iowa Air Guard, the Sioux City Airport Authority, and JetSun Aviation. These same sponsors continue today and total of close to 1,000 5th and 6th grade students have taken the field trip. In addition, library and technology enhancements at several schools and college were awarded as well as several scholarships.

Another part of the program has been the development of curriculum to include aeronautical units. The initial way that this was accomplished was by sending teachers to NASA sponsored workshops. A total of 14 teachers have attended one-week and two-week sessions, with the two-week sessions at NASA Ames. The teachers then have come back to their classrooms, developed implementation plans, and begun to use airplane and rockets as part of the regular science curriculum in upper elementary. We will be adding Remote Sensing (RS) and Geographic Information Systems (GIS) to the curriculum as a result of a new bridge program between Little Priest Tribal College (LPTS) and the Winnebago Public Schools (WPS).
The signature activity that has moved the program from just a small bit of academic involvement in teaching science to a community-based activity has been Family Science Nights. Begun as a demonstration project at Santee Schools and has since been expanded to Walthill and Winnebago, the core idea is that students and their parents will attend evening school sessions that include joint activities based on science in which parents and children are joint participants. There has been active participation by students as well as parents and we are beginning to see many problems like school attendance, attention in class, and better grades overall take place. Although this is just an initial reading on the results, it is expected that this activity will continue to thrive and they have been doing so. We are now in the third year of the program at Santee and the second year at Walthill; results continue to be extremely rewarding.

An innovative geospatial endeavor was introduced to Nebraska’s Santee community during summer 2002. This carefully planned workshop was conducted within the Santee reservation and included seminars on global positioning, collaborations with the University of Nebraska – Lincoln’s Center for Advanced Land Management and Information Technologies (CALMIT), and initial use of the geosciences for agricultural predictions and development. A comprehensive community-wide forum is planned for October 16, 2002, which will provide opportunities for increased collaboration between the Santee tribe and the University of Nebraska system.

A new partnership has been established with Little Priest Tribal College through the development of the Geoscience Learning Opportunities on the Winnebago Indian Reservation (GEOWIRE) proposal. GEOWIRE was submitted in October 2002, with results being available during April 2003. If funded, this proposal will establish a National Center for Native American Geospatial Education, increase Nebraska’s Native American public and educational outreach efforts, and develop geospatial opportunities and solutions for the Winnebago tribal leaders and community members. Additional activities include teacher fellowships, faculty development workshops, and technology and library enhancements. The improvement of math and science facilities and equipment at these schools will also become a focused priority.

Rather than wait for the results of the NSF grant application, a seed grant from NASA NE Space Grant and EPSCoR was received to begin work on setting up Native IMAGE, the Institute for Managing Geospatial Extension at LPTC; this work got underway in January 2003 with the appointment of a Director for the Institute and the opening of an office at LPTC. More will be reported in the coming year.

A partnership in teaching RS to educators is in the development stages with SDSU Office of remote Sensing. A workshop will be given in March 2003 at the EROS Data Center in Sioux Falls, SD sponsored jointly by UNO, SDSU, and LPTC. At the workshop, the basic mechanics of remote sensing will be taught as well as how to apply these techniques to unique tribal situations.

What evaluation mechanisms are in place for this project? Please describe.

We are using subjective work measures so far but have begun to do some accurate student tracking as far as attendance at Family Science Nights and improvement in science grades. While hard data is not yet a part of this effort, it is clear from the responses that have been gathered from parents, teachers, and administrators that the Native American Outreach of this effort is making a different. It is expected that some descriptive as well as inferential statistical measure will be available. We are currently in the process of beginning an evaluation of results at Winnebago. This effort is under the leadership of Dr. Sam Brown of UNO.

For many of the RS and GIS projects, the evaluation will be made through observation of how teachers in the target schools begin to implement these new math and science tools. In addition, the development of student interest in the geosciences will be tracked.

Collaborative efforts take place with the following:

[ ] In Same Department

Name of department/ Type of Collaboration

[X] Other Departments in Same Institution
Collaboration with NASA Installations:  (If any of the following are checked, please provide name, department, phone number, and type of collaboration.  If no collaboration is yet established, please state.)

[X] Ames Research Center, CA
Bonnie Samuelson: 650-604-6355 - Family Science
Tom Clausen: 650-604-5544 - Outreach and Family Science
Geoff Lee: 650-604-6406 - UAO
Liza Alderette: 650-604-3867: Outreach and Family Science
Doug O=Handley: 650-604-6746: NASA Academy
Joe Tanner: 650-604-6832: NASA Academy
Mike Landis: 650-604-6090: GIS Brief
David Petereson: 650-604-5899: GIS Outreach
Donald James: 650-604-4967

[X] Dryden Flight Research Center, CA
Dr. Kajal Gupta: NASA Academy
James Lucero: 661-276-2460: NASA Academy
Jo Ann Larson: 661-276-2472: Outreach

Omaha Nation Schools / Family Science Program

[X ] Teacher Resource Centers
Name of Teacher Resource Center/ Type of Collaboration

[X] Non-Profit Organizations
Name of organization(s)/ Type of Collaboration

Nebraska EPSCoR / Tribal College
Aerospace States Association / Elementary Family Science

[X] Organization(s) Representing Women, Underrepresented Minorities, or Persons with Disabilities
Name of organization(s)/ Type of Collaboration

[X] Industry/Business
Name of company or organization, location, and type of collaboration

185 Fighter Wing Iowa Air Guard / Aeronautics Day
JetSun Aviation / Aeronautics Day
Sioux Gateway Airport / Aeronautics Day
ESRI: Milton Ospina- Arcview GIS Software

[X] Kennedy Space Center, FL
L. Michael Freeman: 321-867-4035: Native American GIS
Gregg Buckingham: 321-867-4035: Native American GIS
[ ] Langley Research Center, VA
[ ] John Glenn Research Center at Lewis Field, OH
[X] Marshall Space Flight Center, AL

Dawn Mercer: 256-544-1726: Native American Outreach

[ ] Wallops

**Collaboration with NASA Enterprises (please describe):**

[ ] Code M. Human Exploration and the Development of Space
[ ] Code Y. Mission to Planet Earth

**Collaborations with:**

[ ] Other Space Grant Consortium program
  Name of Space Grant and program/ Type of Collaboration
  SD Space Grant Consortium: Tom Durkin- Native American Outreach

[ ] Other Federal Government
  Name of agency or program/ Type of Collaboration

[ ] Other State Agencies
  Name of agency or program/ Type of Collaboration
  Nebraska Department of Education: Doug Christensen -402-471-5020: Native American Activities

[X] Other Groups or Agencies
  Name of agency or program/ Type of Collaboration
  **Aerospace States Association; Grant to develop Family Science during Fall 2001**

[X] Other EPSCoR Programs
  Name of EPSCoR Program/ Type of Collaboration
  NE EPSCoR and the collaboration is a funded grant to investigate how to make tribal college student more competitive in math and science.

[ ] Code R. Aeronautics and Space Transportation Technology
[ ] Code S. Space Science

[X] Other EPSCoR Agencies:
  [X] National Science Foundation
  Through NE EPSCoR, an investigation of tribal colleges mathematics and science readiness

[ ] Department of Defense
[ ] Department of Energy
[ ] National Institute of Health
[ ] Environmental Protection Agency
[ ] US Department of Agriculture

Henry Bahn: Don’t have phone: Native American Outreach
George Godfrey: Don’t have phone: Family Science

US Department of Interior – ESGS at ERD

Eric Wood & Dave Meyer: 605-594-6068: Native Image
Eugene Napier: 604-594-6088: Native Image
Please provide the names of the participants involved and indicate gender and ethnic background on the following table.

Names:

1. Terri Greenleaf - Female - Caucasian
2. Gary Hamm - Male - Caucasian
3. Linda Whipple - Female - Native American
4. Wanda Henke - Female - Caucasian
5. LeLand Henke - Male - Caucasian
6. Avonell Aprocaskas - Female – Caucasian
7. John Block – Male – Caucasian
8. Gail Thompson – Female - Caucasian
9. Shelly Richling - Female - Caucasian
10. Shelly Avery - Female – Caucasian
11. Michele Marriot – Female – Caucasian
12. Ann Downes – Female – Native American
13. Betty Red Leaf – Female – Caucasian
14. David White – Male – Native American
15. James Rattling Leaf – Male – Native American
16. Dan Pretends Eagle – Male – Native American
17. Jan Bignen – Female – Caucasian
18. Louis LaRose – Male – Native American
19. Todd Yellow Thunder – Male – Native American

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If other, please specify:

Describe any recruitment and/or retention strategies for members of underrepresented groups (women, minorities, or persons w/disabilities) that ensure participation in this project:

We have appointed and funded John Block at LPTC to work with aspiring students that show promise in mathematics and science and he continues in this work. John also went to a COSGC Satellite workshop.
this past summer. Students to the U of N. AZ Stargazer program this summer. The students were from Winnebago HS schools. In addition, the Earth to Orbit and the Globe program from MSFC are planned for implementation the next two years.

Additional faculty members at LPTC and WPS will now be involved in the development of the Native IMAGE project at LPTC. There will be opportunities

Activities funded by this project:

[X] Seed money for research
[X] Travel to present paper
[X] Travel to attend conference/workshop
[X] Establish research collaboration
[X] Visiting Scholar
[X] Hold conference or Workshop
[X] Proposal Preparation

[X] Technical writing services
[X] Student Assistant
[X] Computer Services
[X] Develop information resources for research opportunities
[X] Other (Specify):
Technology and library enhancement at Little Priest Tribal College

Publication Citations related to NASA EPSCoR funding. Please indicate Peer-reviewed/Refereed (if applicable), presentation (if applicable), include all of the citation.


Presentations


Press Releases


Patents, Patent Applications, or Invention Disclosures related to NASA EPSCoR funding. Please include all of citation.

There are no existing patents for the NNAOP project at this time.

Grants & Financial Awards. Please include the following information in citation(s).

Fellowships to faculty members at tribal colleges.
Scholarships to students at the tribal colleges.

How is this project contributing to the economic development of the state?

We are developing a more educated consumer that is more aware of the benefits of aviation and advanced transportation systems. With the new emphasis on GIS beginning to find its way into the FS program, cutting-edge technology will be finding its way into the reservation schools. It is envisioned that there will be much more development of a skilled Native American workforce among the target population.
Describe senior faculty mentoring junior faculty in this project?

The work with John Block, a mathematics instructor at Little Priest Tribal College, continues. We are investigating applications of mathematics principals that relate to aeronautics that are applicable to elementary and secondary students. I have done faculty development sessions at Little Priest and NICC on several occasions. The primary subjects were developing PowerPoint presentations and using an on-line teaching tool, Blackboard. Com. We held a Grant Proposal Writing Workshop which be presented for tribal colleges in early December; a total of 30 faculty and staff members attended.

Which non-Ph.D. granting institutions are involved in this project?

Nebraska Indian Community College & Little Priest Tribal College