

ATTACHMENT 1

GRANT APPLICATION

1. Project Title: Hopi Footprints: Building Better Teachers With a Community-Based Culture Curriculum
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- Telephone: _____ Fax Number: _____
- Mailing Address: _____
- E-Mail Address: _____
5. Project Starting Date: March 1, 2003 Ending Date: March 1, 2004
6. Total Amount Requested: \$49,999.00
7. Program: (Check one only)
- () Innovative () Traineeship / Preservice
- (X) Teacher /Principal Enhancement/Inservice () Other
8. Type of Project (Check one only): New (X) Continuation ()
9. Signatures: _____
- Principal Investigator Date
- _____
- Authorized Institutional Agent(s) Date

Arizona Board of Regents
IMPROVING TEACHER QUALITY
2001-2002 General Competition

1. Project Number: _____
2. Panel Recommendation:
3. Action:

Hopi Footprints: Building Better Teachers With a Community-Based Culture Curriculum

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PROJECT SUMMARY

Applicant/University or College: Northern Arizona University

Project Title: Hopi Footprints: Building Better Teachers With a Community-Based Culture Curriculum

Principal Investigator: George Gumerman IV

Project Summary

Traditional Hopi culture is in a crisis and elders are finding it difficult to pass along on traditional knowledge. Educators also have responsibility for teaching culture as stated in the national and social studies standards. Our three-year professional development program for Hopi educators presents an opportunity to address these needs. The goal of this project is to improve classroom teaching practice while creating a standards-based Hopi culture curriculum in CD ROM and web site formats. Collaborating with the Hopi Cultural Preservation Office educators, elders, tribal cultural professionals and archaeologists, will work together to develop a curriculum focusing on culture education, technology integration, and action research in classrooms. The CD-ROM and web site will provide documentation of the professional development outcomes, while also including Hopi cultural lessons for students. The first year will focus on building the action research and professional development model with teachers and paraprofessionals at Moencopi Day School (K-6). The key components of the project are a one-week summer institute (35 hours), 2 intensive school site visits throughout the academic year (5 hours), and 4 follow-up Saturdays (28 hours) for project participants accumulating a minimum contact time of 68 hours per project participant.

Hopi Footprints: Building Better Teachers With a Community-Based Culture Curriculum

Project Description

Most of the literature and research in educational change indicates that change is a long process taking a minimum of three to five years for any innovation to become routine and part of a school system (Fullan 1991). Thus this proposal is offered as the first of a three-year project to change how culture is taught in Hopi schools through professional development of teachers and paraprofessionals. An incredible opportunity exists to improve teacher quality that uses archaeology and elder oral history as a foundation to build a standards-based cultural curriculum. Across the Colorado Plateau, abundant archaeological sites provide a stimulating arena for cultivating an understanding of past cultural traditions that are linked to today's Hopi people. Hopi oral history discusses these archaeological sites telling the story of Hopi migrations across much of the Colorado Plateau. Referred to as their *footprints*, the archaeological sites and the oral history surrounding them connect the past to the present. Interaction of elders and archaeologists provide a powerful force for teachers to bring together knowledge that surprisingly corroborate each other. Our culturally appropriate professional development and subsequent curriculum will enable Hopi youth to connect to their cultural history and thereby facilitate student learning of social studies and technology standards.

The first year of the project focuses on the community of Moencopi in developing a professional development model in which educators, tribal elders, community members, cultural specialists, archaeologists work together to implement social studies standards in classrooms. The second year will build and expand upon this model to other Hopi schools. The third year will concentrate efforts on refining and sustaining culture education in Hopi schools.

Needs

The most at risk students in our country are Native Americans. Indeed, they have the highest dropout rate. Of course, the reasons for their poor performance are multi-faceted; however the problems stem from the Native American education system—poor educational practices and teacher quality. In addition, poverty, violence, substance abuse, as well as family and community social issues affect the student's ability to succeed (Indian Nations at Risk 1991; Reyhner et al 1993). St. Germaine (2000: 10) points out that changes in Indian education “ must be action oriented, innovative, community and tribally based.”

The Hopi have a tremendous need for cultural and social studies professional development. Hopi schools consist of 100% underserved populations. Many students do not receive high school diplomas and are not motivated to continue their education. The Bureau for Indian Affairs (BIA) school average for high school dropout in 1999-2000 is 11%. This trend is higher in remote reservation areas where curriculum is not tied to the real world and where students have little to no career opportunities near home (Mehojah 2000). We propose to concentrate our efforts in smaller communities on the Hopi reservation, concentrating on local issues, needs and reform efforts. Year one will focus on the needs of Moencopi Day School and Community (See Appendix A for SY 2000-2001 school report card). Other Hopi villages will be added to our program in following years using the first year as a model.

The Hopi people live in an isolated section of northeastern Arizona. Currently, the tribal population is approximately 12,000 and is governed by the Hopi Tribal Council. A distinctive feature about Hopi life and governance is the tenacity of each village to make their own local decisions in areas such as ceremonial activities, education, and land use. Every village is considered to be separate and autonomous (Hopi Cultural Preservation Office. 2001)

Hopi cultural traditions are adversely affected by an ever-increasing pressure to change in a fast paced, modern environment. According to the Hopi Cultural Preservation Office (HCPO) (Leigh Kuwaniwisima personal communication), the majority of Hopi youth are not learning the Hopi language. The HCPO's concerns with cultural education stem from the fact that many Hopi school teachers are not versed in Hopi culture. Elders—Hopi's traditional teachers—are finding it more and more difficult to pass on their traditional cultural knowledge. Our proposed professional development program improves teacher quality by linking the keepers of traditional knowledge—the elders—with teachers and archaeologists resulting in a community based cultural curriculum.

There is a strong link between Native American students' motivation and curiosity when culturally relevant and active experiences are connected with curricular content. Native American students are more responsive if the curriculum is culturally based (McLean 1997). Teachers who connect classroom materials with the students' culture help engage the learner's interest and increase their achievement. Evidence gathered from a study of 40 schools nationwide indicates that students learn more effectively within a curriculum grounded at the local level rather than within a traditional educational framework (Lieberman 1998). Educators of Native American students often recognize that their students demonstrate a lack of enthusiasm for the traditional school experience (Kawagley and Barnhardt 1999); and that they respond favorably to learning at the local level. Our project is designed to provide methods and strategies of teaching social studies that are compatible with the needs of Native American students.

The Hopi Footprints: Building Better Teachers With a Community-Based Culture Curriculum project addresses these outlined needs by focusing on professional development of educators. By providing this professional development, we will achieve the vision of student achievement in the No Child Left Behind Act of 2001 (U.S. Department of Education 2002).

Intended Outcomes

The "Improving Teacher Quality" teacher enhancement program goals state that professional development should provide current content, effective instructional strategies, bridge gap between educational research and classroom application, and assist teachers in making systemic reform changes in subject learning in their classrooms. Further, the program demands that a plan for institutionalizing the project should be included. The corresponding goal of this project is to improve classroom teaching practice through intensive professional development on social studies standards including teacher action research and to sustain the work through creating a standards-based Hopi culture curriculum in CD ROM and web site formats that would document professional development sessions and classroom applications.

To achieve this goal, participants will:

- Better understand culture strands of the national and Arizona state social studies standards and how to implement them in their classrooms.

- Engage in social studies action research projects in their classrooms.
- Bridge the learning gap between traditional cultural knowledge and teaching culture by working with tribal elders, cultural specialists, and archaeologists in building classroom content.
- Begin to infuse technology in social studies education in relevant and meaningful ways with the creation and subsequent implementation of a standards-based Hopi culture curriculum CD ROM and web site.
- Participate in the development of a long-term sustained culture and community program.

Related Literature

The program design for the **Hopi Footprints: Building Better Teachers With a Community-Based Culture Curriculum** represents the current knowledge base that supports standards-based social studies education as outlined in *Expectations of Excellence: Curriculum Standards for Social Studies* (NCSS, 1994). The social studies standards are organized into ten themes (Appendix C). This proposal will specifically address the social studies themes of culture; time, continuity, and change; people, places, and environments; and individual development and identity. These standards advocate that students acquire knowledge and skills in an integrated manner. Further, *Performance-Based Curriculum for Social Studies* (1998: 78) suggests that technology be used in social studies to access information, produce products, and disseminate the results of one's efforts. Professional development for technology should thus integrate technology into the content and should enhance teachers' curriculum, learning, and assessment skills (NCREL 2000). This proposal models this learning with teachers and paraprofessionals collaborating with tribal elders, cultural specialists, and archaeologists.

Related professional literature in science education reform proposes that changing teachers' classroom instructional practices is at the heart of any reform efforts and that teachers are more likely to change these practices when their professional development experiences are connected to classroom practice, help educators learn content in new ways, provide for collaboration at multiple levels, and involve sustained support (Gess-Newsome 2001). In addition, professional development must be standards-based and take into consideration the content, pedagogy, and system in which change can occur (Bybee and Loucks-Horsely 2001). Professional development case study research conducted by WestEd Regional Educational Laboratory (WestEd 2000) emphasizes these findings in identifying principles for effective professional development. Some of the more pertinent principles include professional development that focuses on teachers, yet includes all other members of the school community; enables teachers to develop further expertise in subject content, teaching strategies, uses of technologies, and other essential elements in teaching to high standards; and is planned collaboratively by those who will participate in and facilitate that development.

This project intends to use teacher action research as a form of professional development to improve teaching social studies in classrooms and to help teachers establish expertise in curriculum development and reflective teaching. Action research has been used in various contexts for numerous years, such as for school-based curriculum development, as a professional development strategy, and in developing school policy Johnson (1993). Action research provides teachers with a methodology for investigating student and school related questions. It can also provide a systematic approach to introducing innovations in teaching and learning thus providing improvements in teaching practice (Riding, et al. 1995).

Research on effective education for American Indian and Native Alaskan and Hawaiian learners also advocate a community-based, culturally responsive approach to teacher professional development and curriculum planning and development (Cleary and Peacock 1998, Gilliland 1988, Nelson-Barber and Trumbull Estrin n.d., and Rhodes 1994). Specifically, Cajete in *Look To The Mountain: An Ecology Of Indigenous Education* (1994) advocates developing a culturally based education program founded upon traditional tribal values, orientations, and principles, while simultaneously using the most appropriate concepts, technologies, and content of modern education. As a result, several American Indian groups have or are developing their own standards for education. One such group in Alaska has published Alaska Standards for Culturally Responsive Schools with accompanying Guidelines for Preparing Culturally Responsive Teachers for Alaska's Schools (Alaska Native Knowledge Network 1999). These guidelines incorporate community cultural values in learning and offer that teachers work as partners with parents, families, and community members.

The Hopi Footprints: Building Better Teachers With a Community-Based Culture Curriculum is designed to provide methods and strategies of teaching social studies that are compatible with research on effective professional development and on culturally-responsive education for Native American students. Through the professional development design of this project, participants will have an opportunity to work with tribal elders, cultural specialists, community members, and archaeologists in implementing social studies standards.

Procedures

Participants

Project participants in year one will consist of 15 teachers and paraprofessionals from Moencopi Day School. These educators will collaborate with community members, tribal elders, tribal cultural specialists, archaeologists, and university faculty to engage in the following:

- Studying four themes in the national and state social studies standards (culture; time, continuity, and change; people, places, and environments; and individual development and identity);
- Learning about the history and traditions of Hopi culture;
- Design action research for implementing project learning into classroom applications; and
- Contribute to the development of a culturally-relevant, community-based Hopi culture curriculum for delivery in CD ROM and website formats.

Criteria for participation include interest in the program, administrative commitment to providing professional support for each team member, and commitment to all aspects of the project. Our primary local educational agency (LEA) for the project is the Hopi Cultural Preservation Office (HCPO). The Hopi Tribe through the Hopi Cultural Preservation Office strongly recommended that they be the liaison and communicators with Hopi elders and schools. They prefer to communicate directly with the schools in which they are building community outreach programs. Their concern was that the schools and villages would perceive university project staff as “another outside institution” and miss the bigger picture of a community-based project that would not only provide needed professional development in social studies, but that would connect Hopi students with current Hopi cultural projects (Leigh Kuwaniwisima personal communication). Thus, HCPO will have primary responsibility for the recruitment of the educators, community members, and tribal elders. HCPO routinely works with the Hopi schools

in their existing outreach programs and has already begun recruitment at Moencopi Day School for this project. Final recruitment will be completed upon notification of funding. Further, HCPO is committing the time of the director and Hopi Language specialist to participate in all aspects of professional development so that the project will be sustained beyond the funding period. See Appendix D for HCPO letter of commitment.

Activities

Phase I: Tribal Planning: Project staff will continue to meet with the HCPO to conduct the final recruiting of project participants, to host joint planning sessions with tribal elders, archaeologists, and cultural specialists, to confirm calendar dates for project activities, and to meet with educators at Moencopi Day School. Project staff will travel to Hopi tribal offices and schools during this phase.

Phase II: Spring Orientation: A spring orientation for project participants will be held for project participants in April or May 2003. At that time, project staff will provide an overview of project activities and begin professional development of the identified social studies strands.

Phase III: Summer Institute: An intensive five-day summer institute for one credit hour will be held on the Hopi reservation for the project participants. The focus of the institute will be on learning Hopi culture and traditions, making connections to the national and state social studies standards, and developing action research plans for classroom implementation.

Phase IV: School Site Visits and Follow-Up Professional Development Sessions: Beginning in September 2003, project staff will dedicate time to school site visits with one visit per educator per semester for a minimum of 2.5 hours per visit. The purpose of the site visits is to continue professional development by integrating and implementing project innovations and making other curriculum connections. In addition, the project will offer 4 follow-up Saturday sessions at Hopi to extend the learning from the summer institute and to provide opportunities for all project participants to share and reflect upon their teaching and the implementation of Hopi culture in classrooms.

On-Going Phase: Hopi Culture Curriculum Development: Beginning in Phase I, project staff will document every aspect of professional development with project participants and tribal and community members. A CD ROM will be produced for Hopi educators with this documentation as well as Hopi cultural classroom lessons that were found to be effective in action research projects.

Contact Time

Project participants will earn 1 graduate credit hour for 5 days (35 hours) of summer professional development and further engage in a minimum of 33 hours of direct-contact professional development through two intensive school site visits throughout the academic year (5 hours), and four follow-up Saturdays (28 hours). This represents a total of 68 hours of contact time per project participant.

Roles of Project Personnel

Several key project personnel are needed to coordinate, plan, and deliver the professional development services described in this proposal. Their roles are outlined below.

George Gumerman IV, Principal Investigator, is responsible for overall management of the project and coordination of the design, implementation and dissemination of all program components. Gumerman has a distinguished record of archaeological research and applying this research to broader societal concerns, including improving student's math, science, social

studies, and technology skills. As a professor, Gumerman has been instrumental in innovative curriculum development within the department and the broader university community.

Joëlle Clark, Project Manager, will provide professional development and will assist in overall project design, implementation, and evaluation. As such, she will assist teachers in their action research and help combine collective information into a curriculum plan for CD ROM and website production. Clark is a Science Education Coordinator at the Science and Mathematics Learning Center, NAU. As such, she has extensive experience in teacher professional development, in developing and implementing archaeology curricular supplements and in facilitating science, mathematics, and technology education projects.

Leigh Kuwanwisiwma, Hopi Cultural Coordinator, will provide overall coordination of the cultural specialists and oversight and supervision of the cultural content of the project. As the Director of the Hopi Cultural Preservation Office for the Hopi Tribe he will coordinate the tribal elders known as the Cultural Resource Advisory Team (CRAT) and other Hopi Cultural Preservation Office staff in the development. He will also serve as the primary liaison with Moencopi Day School.

Marvin Lalo, Hopi Cultural Specialist, will assist in developing the cultural content of the project and subsequent curriculum. As coordinator of the Hopi Language Curriculum, he will also assist in any culture and language components of the project.

Linda Neff, Technology Coordinator, will provide assistance on instructional, website, and CD-ROM design, production, and technical support. She has experience as a team lead in all phases of instructional technology use, from conceptualizing to the actual design of appropriate distance learning applications and the development of interactive, multimedia curriculum delivered at both the university and K-12 level environments.

Instructional Methods and Materials including Technology

Instructional methods include modeling experiential learning, collaborative learning, and hands-on/minds-on activities associated with learning Hopi culture. In addition participants will be asked to provide individual reflections on learning and to participate in class discussions and planning. Participants will be required to develop action research plans to investigate the effect that learning about Hopi culture has with their students. All these activities will be conducted within the framework of meeting national social studies standards. Technology is integral to learning and implementing this project. Digital documentation will occur during every project phase. Participants will be asked to provide digital copies of their Hopi cultural lessons to project staff. These will all be compiled into a CD ROM and website for continued access and sustainability of the learning from the project. Importantly, project staff will continually encourage regular and frequent communication with project participants as they conduct their action research projects and as they implement their professional learning with students.

Collaboration

Our extensive project partnerships provide us with the capability and resources to develop pedagogically sound strategies for increasing teacher quality in a learner-centered environment. Our primary partners include the Hopi Tribe/Hopi Cultural Preservation Office (HCPO), Moencopi Day School, and the Village of Moencopi. Both NAU and HCPO have been jointly and collaboratively planning the project since April 2002. At that time, the principal investigator, project manager, and HCPO director met to develop a prospectus entitled “Teaching With Archaeology: New Perspectives on Science and Culture with Native American Educators”. Since then, they have garnered seed money for the project from the Society for American Archaeology

(SAA) and the Phoenix Area Office of the Bureau of Reclamation. This money is being used as cost share for this proposal. At NAU, the project is a result of interdepartmental collaboration between the Department of Anthropology, the Science and Mathematics Learning Center, and the Institute for Future Work Force Development. We are also working with Electronic Media students from the School of Communications who will perform videotaping, editing, and computer programming. Importantly, the CD-ROM and web site represents a far-reaching collaboration that increases teacher quality in an underserved region of the state—the Hopi reservation.

As stated earlier, the LEA for the project, the HCPO, was directly involved in proposal planning beginning in the Spring 2002 and will be further collaborating, planning, and participating in all project activities (Appendix D). Three face-to-face meetings and numerous telephone planning sessions resulted in defining the needs and outcomes for this project. The LEA is committed to the project goals as they help address needs specific for their tribes and schools. As Hopi cultural coordinator, the HCPO will provide key cultural curriculum resources and direction using their cultural expertise and administrative experience. The office will coordinate the Cultural Resource Advisory Team elders (CRAT) and cultural specialists in curriculum development. The Hopilauayi (Hopi Language) Program will contribute to the project by resource sharing (Hopi language curriculum) and staff participation. The HCPO will also coordinate with Moencopi Village and Moencopi Day School to recruit village members, teachers and paraprofessionals.

Evaluation

The purpose of the project evaluation is to find out the extent to which participants achieved the project's intended outcomes. Both quantitative and qualitative measurements will be used in the project's evaluation. Table 1 below correlates the project's intended outcomes with project activities, timeline, and evaluation methods. From the total data collected, a summative evaluation will be compiled.

Table 1

| Intended Outcomes | Project Activities | Project Timeline | Evaluation Plan |
|--|--|--|--|
| Better understand culture strands of the national and Arizona state social studies standards and how to implement them in their classrooms | Spring Orientation Summer Institute 4 Follow-Up Saturday Sessions | April 2003 July 2003 September 2003 – February 2004 | <ul style="list-style-type: none"> • Professional development session formative evaluations to monitor the effectiveness of the spring orientation, summer institute and follow-up sessions • Participant reflective journals to record changes in content understanding, instructional practice, and barriers and struggles • Participant interviews |
| Engage in social studies action research projects in their classrooms | School site visits & follow-up sessions | September 2003 – February 2004 | <ul style="list-style-type: none"> • Project staff will document site visits, recording project-related activities and results • Participants will provide |

| Intended Outcomes | Project Activities | Project Timeline | Evaluation Plan |
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| | | | written results of their action research projects. |
| Bridge the learning gap between traditional cultural knowledge and teaching culture by collaborating with tribal elders, cultural specialists, and archaeologists in building classroom content | Spring Orientation Summer Institute School site visits & follow-up sessions On-going - Hopi culture curriculum development | April 2003 – February 2004 | <ul style="list-style-type: none"> • Participant focus group interviews and interviews with tribal elders, cultural specialists, and archaeologists on the effectiveness of a collaborative approach in teaching culture through the application of traditional and modern methods |
| Begin to infuse technology in social studies education in relevant and meaningful ways with the creation and subsequent implementation of a standards-based Hopi culture curriculum CD ROM and web site | On-going - Hopi culture curriculum development | April 2003 – February 2004 | <ul style="list-style-type: none"> • Document use of telecommunications for continued participant / project staff communication. • Participant evaluation of year one production of CD ROM and website |
| Participate in the development of a long-term sustained culture and community program | Spring Orientation Summer Institute On-going - Hopi culture curriculum development | April 2003 – February 2004 | Participant focus group interviews and interviews with tribal elders, cultural specialists, and archaeologists on the extent to which they believe their efforts have contributed to this intended outcome. |

Dissemination

The results of the **Hopi Footprints: Building Better Teachers With a Community-Based Culture Curriculum** will be disseminated through local and professional levels including: the development of a project CD ROM and website to be shared with educators and community members in other Hopi villages. Efforts will be made to provide community presentations of the work of the project for the village of Moencopi, the Hopi Tribe, and the local school board. At a professional level, project and HCPO staff and project participants will provide presentations at national and regional conferences such as the Society for American Archaeology (April 2004) and the local affiliation for the National Council for Social Studies. Article submissions will also be provided for the “Hopi Tutuveni”, “NAU Today” and “Arizona Daily Sun” about the work and progress of the project.

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web/WestEd.org/online_pubs/modelIIPD/welcome/shtml

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Professional Preparation:

Northern Arizona University
Northern Arizona University

Natural Resources Interpretation
Anthropology

BS 1985
MA 1990

Post Degree Professional Preparation:

- Using the School Portfolio for School Improvement, Victoria Bernhardt, Ph.D. (2002)
- Using Data Getting Results Professional Development Seminar (2001)
- Adaptive School: Developing Collaborative Groups - Four Hats Leadership Institute (2000)
- WestEd Eisenhower Regional Consortium Annual Conference (1997, 2000)
- GLOBE Franchise Training and Facilitation (1999)
- GEMS (Great Explorations in Math and Science) Associate I & II(1996 & 1999)
- Classroom Observation Team for Evaluation of Phoenix Urban Systemic Initiative (1997)
- FOSS (Full Option Science System) Leadership Institute (1997)
- Facilitating Systemic Change in Science and Mathematics Education Professional Development (1997)
- Professional Development for Alternative Assessment (1997)
- Project Archaeology: Intrigue of the Past Facilitator (1996)

Current Employment

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| 1994 - Present | Northern Arizona University Science and Mathematics Learning Center: Science Education Coordinator <u>Specific Expertise and Experience in:</u> Informal Science Education Program and Professional Development; Science Education; Professional Development for K-12 Educators; The GLOBE Program; GEMS (Great Explorations in Math and Science); FOSS (full Option Science System); Archaeology Education; Environmental Education; Curriculum Development; Systemic Change in Schools; and Standards-Based Education |
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Appointments, Merit Awards, and Professional Memberships

- Memberships** National Science Teachers Association, Association for the Education of Teachers in Science, Arizona Science Teachers Association, Association for Supervision and Curriculum Development, National Council for Social Studies, Arizona Archaeological Council, and the Society for American Archaeology
- 1999 – Present Co-Founder and member of the Resource Education Network of Northern Arizona whose mission is to promote and encourage communication and cooperation among individuals, organizations, and agencies to improve and expand resource education in Northern Arizona.
- 1991 - Present Public Education Committee, Society for American Archaeology - Chair, Electronic Communications Subcommittee (1996-1999) and Native American Education Subcommittee (200-present)
- 1987 - Present. Arizona Archaeological Council, Executive Committee (1997-1999), Archaeology for Educators Committee, Chair (1995-1997).
- 1995 Arizona Association for Learning In and About the Environment. Recognition Award for Environmental Education Efforts.
- 1991-1995 Environmental Education Advisory Committee, Arizona State Parks Board. Chair 1991-1993.

Grant Awards

- 2002 Tombstone Standards-Based Science Curriculum and Professional Development. Arizona Board of Regents. Higher Education Eisenhower Program
- 2001 GLOBE-NAN III [Global Learning & Observations to Benefit the Environment: Native American Network], Arizona Board of Regents Higher Education Eisenhower Program.
Science In Our Parks Dissemination Grant, National Park Service.
Hubbell Trading Post Education Project, National Park Service.
- 2000 GLOBE-NAN II, Arizona Board of Regents Higher Education Eisenhower Program.

- GLOBE/CP-LUHNA, Tides Foundation. Teacher Enhancement Project.
- 1999 GLOBE-NAN, Arizona Board of Regents Higher Education Eisenhower Program.
- 1998 Connecting Our Land and Cultures Conference, National Park Service.
- 1997 Central Arizona Math and Science Project III (CAMS III), Arizona Board of Regents Higher Education Eisenhower Program.
- 1996 Science In Our Parks: Flagstaff Areas National Park Service. Parks As Classrooms
- 1994-1996 Science In Our Parks: Petrified Forest National Park. Petrified Forest Museum Association.
- 1992-2001 Elden Pueblo Archaeological Project. City of Flagstaff.
- 1989 Archaeology Plus History: Insights on the Impact of European Colonization on Navajo and Hopi Cultures. Arizona Humanities Council and Northern Arizona University.

Publications, Papers, and Presentations

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