COVER SHEET

Grantee Organization:

Northland Pioneer College
Navajo County Community College District
1st and Hopi Drive
Holbrook, Arizona 86025

Grant Number:

P116D990484

Project Dates:

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Project Director:

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Comprehensive Program Annual Performance Report – Discretionary Award Type

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A. Information for FIPSE

For the FIPSE Project Director, plugging away on activities on a daily routine basis, worrying if we can make it on deadline to the next task, and charting out each gradual change in terms of numbers and percentages, we sometimes lose track of what a significant institutional change can be made within a fairly short period of time. However, in preparing this final report, I had the opportunity to browse through some old before and after pictures of the project sites and I have included some photos from our first of three project sites. From the perspective of a casual viewer of distance landscapes (now that I have completed my final Project Director duties), I was struck by the great distance that has been covered in our Rural Access Project. You will see the term distance used often in this report because that’s what it was all about, overcoming severe distance barriers for rural access to higher education and providing equitable academic and student services to all despite location or population.

The Kayenta FIPSE Project site in 1999(top left), and the 200 miles long stretch of highway to the nearest College Campus(top right). Students in the learning lab (bottom left) in the new Kayenta Center Facility(bottom right).
As noted in our 1998 accreditation report by the North Central Association of Colleges (NCA), academic and student services for College center locations on rural Navajo, Hopi and Apache Native American tribal lands were not equitable to Northland’s campus locations nor were they adequate to meet community needs. FIPSE funding, in combination with College funding for construction of permanent modern facilities, during the last three years has enabled us to respond to this critical issue. Successful completion of our project has resulted in significant improvement of services at the three project sites and brought them to a comparable level to services on campus communities.

In addition to helping us to reach an important long term institutional goal, I would like to note two FIPSE assistance processes that we found most helpful. Consultation, most often via email, with our Program Officer before project start and throughout enabled us to direct activities, make modifications quickly and assess our progress effectively. Secondly, a site visit from the Program Officer during the middle of our project helped to keep institutional focus on the project and enabled the Program Officer to study specific aspects of our project in person and provide very specific advise and direction.

**B. Project Overview**

The FIPSE Project *Improving Rural Access to Higher Education* started in October 30, 1999. The main objective of the project was to address Congressional priority 8 (to establish off-campus and community-based delivery of educational services to improve rural access) as specified in the FIPSE grant proposal. Our project timeline outlined activities to be completed over a three year period in which one rural community per year without local access to college academic and student services would have the following:

1. a permanent networked-wired facility that would include a library, a distance learning interactive television classroom, and interactive audio classroom, a
networked computer lab and student service area for advisement, registration, financial aid and career counseling;

(2) local access, via distance learning, to a minimum of thirty general education transfer course offerings in a wide range of disciplines to support degree programs (as well as developmental education and special interest courses) as established in the College catalog;

(3) an effective means of communicating and consulting with College academic advisors, financial aid staff, and to conduct student service activities such as placement testing and registration via teleconferencing, telephone, email and in person;

(4) computer-based access to all College academic and student service data bases, and resources for course assignments, research and study activities.

We were successful in completing access to services listed above for three rural sites or centers in Kayenta, Polacca and Whiteriver, Arizona. All three are isolated communities located on Native American tribal lands, rural and remote and suffer a low level of post-secondary educational attainment and high unemployment. During the three-year project (1999-2002), approximately 1020 residents of these communities enrolled in college level courses, while during the three years prior to the project (1997-1999), only about 450 residents enrolled in college courses.

The primary outcomes of the project are as follows:

(1) the number of courses available to students from within their local community via distance learning increased by 90% over the number available during the Fall Semester prior to project implementation;

(2) combined average full-time student equivalency enrollment figures reported to the State after forty-fifth day of Fall Semester 2002 for the three project sites increased by 114% over figures for the base period of Fall 1999;

(3) student retention statistics for students enrolled in project sites increased by 34% over figures for the base period of Fall 1999;
use of online library research and study resources for completing class assignments increased by 94% for students attending courses at project sites; students enrolled in these sites took advantage of financial aid, academic counseling and placement testing services at an increase of 45% in Fall 2002 over data compiled before project implementation. We were able to disseminate project strategies, challenges, and best practices through the following methods:

(1) On-Site Visits: from representatives of Mohave Community College and Coconino Community College County, Arizona, Community Colleges during 2000-2001, which resulted in implementation of similar distance learning systems at their institutions; Arizona State Legislators examining the process for bringing college level courses to rural communities via distance learning methods.


(3) Publications: *Connecting Native Americans to Educational Opportunities*, Brian McLane, Project Director, article in e-learning, International Distance Learning Conference (IDLCON) Proceedings; *Leaping Across the Digital Divide*, Brian McLane, Project Director, conference paper for Follow the Path to Leadership, Chair Academy Conference Proceedings.

(4) Articles: press releases and articles in local newspapers, as well as brief listing and grant descriptions in the Community College Times and the Chronicle of Higher Education.
C. Project Purpose

Northland Pioneer College student surveys and program assessment studies from 1997-98 demonstrated a correlation between the lack of comprehensive access to institutional resources and services for off-campus learners, and low enrollment and retention. Less than 20% of students graduating from Northland in 1998 were enrolled in off-Campus locations. Prior to the FIPSE project, those residing in Kayenta, Polacca and Whiteriver had to travel long distances to the nearest Northland campus to receive academic advising, financial aid counseling and to attend college courses. College facilities in these communities consisted of modular structures typically located at community high schools. While a limited number of courses were taught on site and College staff traveled to these areas from time to time, few students enrolled. Of those who did enroll, almost 40% did not complete the semester. Community surveys indicated that the burden of driving long distances to College Campuses where most classes were held was the primary reason students either did not enroll or dropped out during the semester. Lack of effective communication/consultation with student services and instructors and limited access to library services and other support resources were also cited as problems.

Northland had been using distance learning programs on the campuses for several years and recognized that it provided students living in the campus communities with more flexibility in location and time frame for attending classes. Several students took advantage of attending a class on a campus other than the campus the Instructor was located. These students found that interaction via the distance learning television
network and communication via telephone or email enabled them to attend more courses during the semester than if they had to travel to other campuses. We felt strongly that using distance learning technology to deliver educational and institutional services to these smaller centers, as well as establishing modern facilities conducive to academic activities would eliminate the burden of traveling long distances and would thereby increase enrollment and improve retention in these areas. For example, in Fall of 1999, 236 students attended the Northland center in Whiteriver (the third-year project site) with a full-time student equivalency of 91.40. However, during Fall of 2002, after completion of the FIPSE grant activity of implementing the distance learning and student service program, as well as a modern permanent College facility, 308 students attended classes with a full-time student equivalency of 126.27. So in addition to a higher headcount on this site, students are taking more classes per semester than before the project implementation. Institutional student surveys from project sites in 2002 indicate a significant increase in satisfaction from 15% to 50% for various categories including facilities, library services, course offerings, communication with College staff and other educational factors.

While the College recognizes the overall success of the project, certain aspects of the project presented unique challenges. Any project that relies on newer educational technologies, such as distance learning is bound to face significant hurdles in developing facilities and programs that will succeed in reversing trends that have existed for several decades in rural communities. In addition to challenges in establishing community interest and support for higher education, implementation of modern networking technology in an area with an extremely limited telecommunications infrastructure presented its own concerns. Because of the extremely rural nature of the project communities, securing the bandwidth or T1 data circuits for such a network required planning and development for the construction of a new facility and implementation of telecommunication circuits approximately one year before site completion. This is quite a bit longer than the typical ninety-day process that most public telecommunication services offer.
A number of valuable lessons were learned through our FIPSE project. However, the most important observations we identified for avoiding problems fall into the following suggestions:

(1) re-conducting and re-examining surveys and studies throughout the project will insure that grant resources are being targeted most effectively;
(2) insuring that end user technology is easy to use and intuitive will help users accept, adapt to and utilize project services and resources more effectively;
(3) developing efficient and flexible ongoing technology training methods and resources is critical to keeping the project moving forward.

In establishing the plan for the Kayenta Center, surveys and studies indicated a strong need for developmental education courses to prepare students for college level work. Therefore, the rural development project initially targeted delivery of several developmental education courses via interactive television and computer network instruction. Northland scheduled both developmental education courses from Northland’s TLC (The Learning Cornerstone) and courses from the College’s general education curriculum. While low assessment testing scores from students enrolled in previous semesters from the Kayenta area, as well as a high percentage of survey responses regarding the interest and need for developmental instruction led us to anticipate high participation in such courses, this was not the case. Students successfully tested and registered for general curriculum courses in significantly higher percentages than those enrolling in developmental courses. In addition, several of those students who required remedial assistance used the co-enrollment method to take general education courses and developmental education instruction concurrently in a semester. While other factors may play a role, it does appear that initial surveys and statistics did not provide a clear indication of the type of curriculum that would be of greatest interest to students in the Kayenta area. Despite developing a series of new TLC courses for delivery to the Kayenta Center during the first two years, general education courses via distance learning remain those with highest enrollment numbers. TLC courses, while performing an
important role in serving under-prepared students, have not reached the percentage anticipated in the project objectives while the percentage of general education registration figures have increased by more than the anticipated outcome.

In addition to project modifications in the type of courses delivered via the distance learning project, end user equipment has been changed significantly from the initial specifications. Perhaps the best way to sum up these changes is in the axiom “Technology, Keep It Simple.” The touch panel used by instructors and students on the interactive television system has been modified by eliminating some screen features and simplifying others. The touch screen panel is used by the instructor on campus and students or staff in remote sites to control system aspects such as camera panning and zoom, audio volume, selecting broadcast sources including computer presentations, slide projector or VCR and other basic interactive television functions. However, a number of more advanced features were also available from the first or initial touch panel display menu. While these features including, dividing the screen into two or more conference site displays, far-end camera control, auto tracking of the conference speaker and other more sophisticated functionality proved useful at specific times, it was not used on a routine basis. Responses from user surveys indicated that the initial screen was cluttered and confusing. It was felt that simplifying the initial menu and providing a secondary menu screen for enabling the user to access more advanced features allowed instructors to concentrate more on teaching and less on interpreting system controls. Some components such as an adjoining pad for operating sources such as computers was eliminated entirely with the instructor simply using the computer keyboard and mouse instead. Although the original user interface was quite compact and provided several control functions, a semester of system operation indicated a need to scale down the opening screen to provide a simpler and more user friendly control panel.

As well as lessons learned in developing the various system components, the College found that even when working with established vendors, and in particular with public utility services in rural areas, distance learning projects require far more planning time and routine communication sessions than one might expect. In completing the Kayenta
Center, the College dealt with several entities including tribal governments, three different Telecommunications companies (TELCOs), several communication equipment vendors (both wireless and terrestrial circuit technology), and distance learning equipment manufacturers. Although urban institutions typically deal with a single TELCO, it is not uncommon in rural and expansive areas of the nation to find that several public utility services cover a single county. For example, in completing the physical network, stretching almost one hundred and ninety miles, Northland used high speed circuits from fairly large TELCOs to small rural ones. Sometimes making the last mile and a half required more planning, time and persistence than the first one hundred and eighty nine. Suffice to say, the allotted ninety day time period recommended by major TELCO’s was insufficient, and our experience suggests that in many cases, one year is more typical for the time period required to complete a T1 circuit in rural areas.

The final lesson learned described here is one that may sound familiar to all academic institutions. Recruiting and retaining staff who are skilled in technology is difficult at best. This problem becomes more evident in cases where project objectives require staff to achieve a specific level of technical expertise to meet project outcomes. The initial project timeline called for several training sessions during the first few months of the Kayenta site implementation with follow-up sessions once per semester. In addition, most sessions were scheduled at campus labs where facilities would accommodate staff from several centers instead of smaller sessions at the centers. However as in most projects, unexpected circumstances arose. Resignation of key staff who had already been trained, inability of staff to leave their center to travel to campus and other factors resulted in those staff members being unable to reach the project-stated level of proficiency in operating and supporting system components. Unfortunately, no project funding for additional training expenses had been allotted, and those expenses had to be found through other sources. Equally important, the college had planned on using staff already on board to provide such training, but some of these people had either moved on to different in-house positions or resigned by the time training sessions began. Clearly, more funding for training activities should have been planned for and identified.
D. Background and Origins

Northland Pioneer College has, since 1974, actively responded to the challenge of delivering education to a vast service area marked by poverty and high unemployment. Northland is a rural, two-year comprehensive community college providing quality, low-cost higher education for residents of Navajo and Apache Counties in Northeastern Arizona, including residents of the Navajo, Hopi and Apache Reservations. The College supports a service area of 21,000 square miles, with a population of 158,000. Almost 28% of our students are Native American. The College enrolls an average annual headcount of approximately 5000 students and an average annual full-time equivalency of 2100 students. Most courses are offered on one of the four College campuses with limited offerings at several centers and community Service Sites. The College has since 1990 used distance learning interactive television to deliver classes to and from campuses and in 1997, enhanced the system to improve quality and functionality. The College centers targeted in this grant proposal are located from 150 to almost 300 miles from the College campus where the instructor for an individual course teaches. Prior to the grant proposal, no permanent facilities with adequate academic and student service access were in place within these communities. College enrollment and retention rates were low for residents of these areas. 1990 statistics data indicated that fewer than 15% of the residents from the FIPSE project sites had completed degrees in higher education.

The College recognized that although State and bond funding for constructing permanent modern facilities within the three project community sites had been received and construction begun on these new Centers, funding for distance learning technology, program development and resources would be required. Therefore, the College submitted a grant proposal to FIPSE in 1999 to address Congressional Priority 8 (to establish off-campus and community-based delivery of educational services to improve rural access).

E. Project Description

In planning for our project, the following strategic decisions were made. The College would implement distance learning technology capable of delivering a minimum of thirty
courses per semester. These courses would consist of a wide range of general education courses that fully support Northland’s degree and transfer programs. This scope of curriculum was not available prior to the project to those on a local basis. In addition, special interest, short term and developmental education courses would also be delivered on the system. In addition to courses via interactive television, a minimum of 12 audio lecture courses and six or more Web-based courses would also be distributed electronically to project sites.

In addition to academic courses, the project would support student services including advising, financial aid counseling, registration, tutoring and other support using teleconferencing and computer-based programs to allow students from local sites to interact with staff located on campuses. Comprehensive digital library resources and other electronic formats would also be accessible.

The major goal was to provide a system that would allow students equitable access to resources and services in order to participate and succeed in higher education from within their own communities. Course offerings that would be most appropriate for degree completion were selected for transmission, and system components that were most-user friendly for those without prior experience in using technology were adopted.

In terms of scheduling the time frame for our entire three-year project, the College established an initial site for implementation, evaluation and modification before continuing to the other two sites. In our proposal, the Center in Polacca, Arizona was identified as the first or initial project site to be implemented. However a delay in completion of the new building facility and a delay in providing a T1 data circuit precipitated the decision to instead target the Northland center located on the Navajo Reservation in Kayenta, Arizona, as the first-year or pilot implementation site. In May 2000, the network infrastructure and remote classroom facilities were completed and in Fall Semester (August 2000), approximately 170 residents of the Kayenta area enrolled in traditional, inter-active video and computer based courses held in the new Northland Pioneer College facility in Kayenta, Arizona. While changing the pilot site was a significant modification to our proposed project, through careful planning we were able
to keep the activities on schedule. Anticipating potential technology implementation problems, we had specified the Kayenta site as an alternative first site. Therefore activities such as selection of equipment, scheduling implementation of the T1 data circuit, publication of staff training, promotional and information materials, acquisition of academic and student service resources, and other project activities for the back-up initial site had been conducted in year one. It should be noted that the initial method of using a land-based high-speed data circuit or T1 to connect the Center in Polacca (as the College does for all other campuses and centers) had to be modified because the local telecommunications service for the Polacca project site defaulted on the contract for installing a T1 data circuit. Therefore, we developed and implemented a wireless connection using digital radios mounted on towers between our central campus and the remote site. As of this report, the local TELCO has been unable to provide a high speed T1 data circuit form Northland’s wide area network to this area. However, the wireless system has provided stable and functional connectivity to support all project activities.

During each year (10/99 through 10/2002) of the project the College used State and bond funding to build a new permanent facility at each project site. Following construction of each facility, FIPSE funding, in addition to other grant and College monies, was used to implement distance learning technology including the following: an interactive television classroom (with components as listed in Appendix A. Project Sites Diagram); an interactive audio classroom; a networked computer lab with 25 computers; a library (primarily digital resources-based) area with 6 computers, and student service counseling office with three computers that support computer-based teleconferencing. We began with the Kayenta Center, located approximately 180 miles from Northland’s central campus in Holbook, in project year one (1999-2000), followed by the Center in Polacca, located approximately 110 miles from Northland’s central campus in Holbook in project year two (2000-2001). We completed the Whiteriver Center, located approximately 100 miles from Northland’s central campus in Holbook in project year three (2001-2002). All project activities were completed by October 2002. Networking, computer server and video bridge technology to support these sites was also implemented on the Northland Holbrook Campus. The Holbrook Campus serves as the central network hub for our
wide area network which extends to all campuses and, as a result of the FIPSE grant, to the three project sites at the northeast, northwest and south ends of our service area. One T1 data circuit for each site was also installed to provide bandwidth for transmitting video, data and telephone within the College’s WAN and for Internet access. The following sections discuss the primary resources used to complete the FIPSE grant project:

Financial Resources:

(1) approximately $80,000 per site or a total of $240,000 for the three year period in FIPSE funding for equipment (computers and printers, interactive video and audio teleconferencing equipment, network devices and other hardware components) and approximately $36,000 in College and other grant source funding for additional computers, networking devices and enhancements to technology.

(2) approximately $40,000 per project site or a total of $120,000 in FIPSE funding for contractual services including setup costs and monthly charge for the T1 data circuit; consultation and services for assistance in implementing and configuring technology and developing digital resources and services to support the project, as well as a small amount of money for consultation and assistance in project evaluation. The College contributed no funding for contractual services but as specified in the proposal, the annual cost of the T1 data circuit was taken over after the first year of the project and the College continues to pay for this. In addition, the College pays approximately $12,000 per year for maintenance and vendor support for technology at each of the three project sites.

(3) approximately $8,000 per project site or $24,000 for the entire three year period in FIPSE funding for materials and supplies including print and computer-based training materials, development and purchase of software and other digital resources to support academic and student service distance
learning programs. Through College and other grant funding approximately $30,000 in materials and supplies was also used to support the project.

(4) $7,950 in travel funding was spent on the three-year project and the College contributed an additional $6,040 in travel funding for FIPSE related training, conference and dissemination activities.

In addition to the amounts listed above, the College constructed permanent facilities at each project site at a cost of about one million dollars per building. Because of the growing increase in enrollment at the Whiteriver project site, the College is developing plans to construct additional classroom facilities at this location in 2003.

With the exception of a minor change in year two of the project budget, a transfer of $2000 from contractual services to equipment, the budget allocation of funds adequately supported the project activities as scheduled.

Human Resources:

Three staff members served as key project personnel, a Project Director and two Coordinators. All three staff members are College employees with the Project Director devoting approximately 20% of time during the three-year project and Coordinators devoting about 15% of their time to project activities. It should be noted that the expertise of the staff members enabled the College to successfully complete the project with a fairly small degree of outside consultation and no grant funding requested for salaries. The project management team, as well as other College personnel involved, were highly experienced in developing and operating distance learning and network services; developing WEB-based courses and support resources; managing digital library and research databases; and administering general networking services. Without this level of expertise, perhaps one quarter of grant funding would have been required for technical and curriculum development consultation, design and support for the project.

F. Evaluation/Project Results
Northland used a team consisting of the Project Director, the two Activity Coordinators, the Director of Institutional Research, three Academic Deans and the Director of Student Services. An outside evaluation firm was also contracted with for consultation and assistance. Registration and enrollment statistics, student and faculty surveys, library usage statistics, student service studies, and other institutional student data were used to evaluate the impact of the FIPSE project on enrollment, retention and student success in higher education using a comprehensive distance learning program. Data from Fall 1999, the semester prior to project start, served as the source for baseline data and the last semester after project completion, Fall 2002, provided summative data for comparison. In addition, Fall 2000 and Fall 2001 data was used for formative data analysis and for project modification.

The following are the results of our evaluation:

1. the number of courses available to students from within their local community via distance learning increased by 90% over the number available during the Fall Semester prior to project implementation
2. student retention for students enrolled in project sites increased by 34%;
3. use of online library research and study resources increased by 94% for students attending courses at project sites;
4. students enrolled in these sites took advantage of financial aid, academic counseling and placement testing services at an increase of 88% over data compiled before project implementation;
5. combined average full-time student equivalency enrollment figures reported to the State after forty-fifth day of Fall Semester 2002 for the three project sites increased by 114% over figures for the base period of Fall 1999.

Chart I: Full-Time Student Equivalency Enrollment Rates from Fall 1999 and Fall 2002 For FIPSE Project Sites
G. Summary and Conclusions

The primary goal of our FIPSE project was to increase access to higher education for rural residents living in communities with a low education attainment rate, high unemployment and critical poverty rates. Baseline data gathered prior to project implementation showed that fewer than 15% of residents in project site communities acquired degrees or certificates in post-secondary education. These communities had a significant number of residents who could benefit from completing degrees in higher education or acquiring special post high-school certificates and training for competing in the job market, and a large portion met requirements for receiving financial aid for college. Despite a clear benefit and availability of financial aid, the percentage of those enrolling in college level courses in these communities was far lower that the percentage from communities within or near a Northland College Campus. Surveys and community studies indicated that traveling long distances on a routine basis to succeed in acquiring higher education was the key barrier for those in rural and remote areas. Because building a facility with several traditional classrooms, recruiting comparably qualified instructors and student service staff, as well as maintaining a collection of print-based library and other research study facilities would be difficult and cost prohibitive, we proposed that implementing a distance learning and electronic access program would immediately benefit residents of these communities and provide a method for increasing access to higher education that would be sustainable after the project funded period ended. Our evaluation demonstrates that after implementation of the Rural Access
project activities, more residents are enrolling and being retained in college level courses than before the project. We feel strongly that this trend in enrollment increase will continue after the project period ending date of October 2002. In looking at site enrollment data at the close of registration for the current semester, Spring 2003, figures show a 40% increase in full-time student equivalency over Spring of 2002 for the Kayenta site; a 25% increase for the Hopi Center in Polacca; and a 16% increase for the Whiteriver full-time student equivalency for the same period.

Several other community colleges in our region have examined FIPSE project sites and are using similar technology and programs to better serve constituents. Arizona Learning Systems (a State-wide consortium of all Arizona community colleges) has adopted the basic standards and methods applied on our FIPSE project to connect all community colleges through interactive video. If the ALS or State-wide efforts toward developing a distance learning network continues this will provide students a unique opportunity to enroll in classes offered by any of the partnering institutions, no matter which college district they live in. Because each community college in the State provides varying course offerings and schedules, we feel that students across Arizona will have more effective access and a wider scope of courses to meet educational objectives.

Although the FIPSE project focused on enabling rural students to complete two-year degrees and economically acquire credit hours for transfer to a baccalaureate program within a university, the project has contributed to bringing university level programs to these rural sites as well. Northern Arizona University (NAU) offers courses at or near the project sites in Kayenta and Polacca and is currently working with the College to plan for course availability at the Whiteriver site. Northland Pioneer College and Northern Arizona University have collaborated in resource sharing activities to support students enrolled in baccalaureate and graduate level studies at each project site. NAU students share items such as computers, email and other communication technology and digital library services. In addition, we work closely with NAU technical staff to cooperate in building a more comprehensive network infrastructure in the rural project areas.
Given the factors outlined above, we feel strongly that the FIPSE project accomplishments will continue to be fully integrated into Northland’s operations and within the other State academic institutions as well. Using distance learning technology, the FIPSE Rural Access Project has built a bridge for rural America to cross over to productive self-sufficiency. Northland is committed to enhancing these programs throughout our area because we feel that nothing we can do to contribute to the well-being of rural Arizona and the nation is more important than developing effective and innovative teaching/learning programs to enable students in all locations to build better lives for themselves.