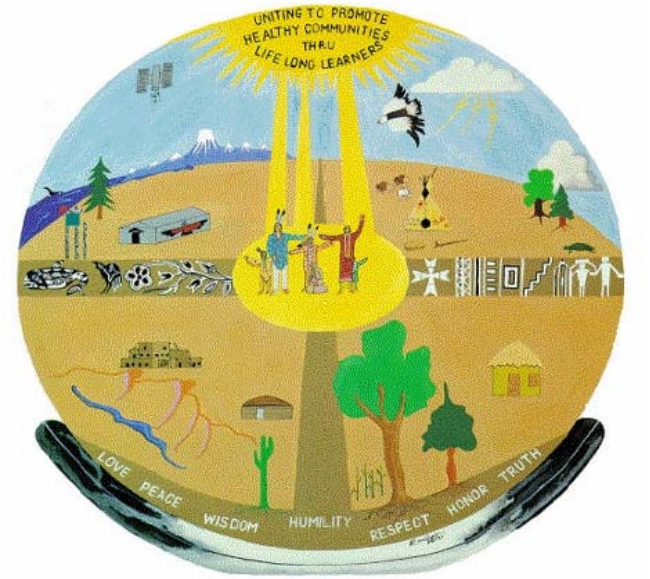
United States Department of the Interior
Bureau of Indian Affairs

INDIAN EDUCATION TECHNOLOGY PLAN

2004 – 2009



"BUILDING EXEMPLARY SCHOOLS FOR TOMORROW"

May 25, 2005

Purpose

The purpose of this Technology Plan is to address the issues associated with maintaining a strong and effective education program within Indian Country. Given the variety of education approaches coupled with divergent tools and the new demands placed on the infrastructure necessary to positively impact the children of Indian Country, the Bureau of Indian Affairs, Office of Indian Education Programs (BIA/OIEP) and the Indian Affairs, Office of the Chief Information Officer (OCIO) combined efforts to develop this plan. The Indian Education Technology Plan focuses on implementing a common technology platform utilizing a broad range of data and voice network technologies that are capable of supporting the educational technology initiatives associated with Indian Country. This plan will adhere to the standards set forth by Indian Affairs (IA) and utilize technologies contained in the IA Technical Reference Model (TRM).

The OIEP recognizes that the proper alignment of key IT infrastructure technologies is critical to the success of the program. As a result, the OIEP supports the deployment of underlying technologies, policies, and procedures as indicated. The scope and breadth of these technologies include an immediate need for data with voice and video capabilities along with other educational techniques building on this foundation.

This document articulates a strategy to support the educational goals of the OIEP through the alignment of an executable technology plan incorporating state-of-the-art technology and employing the best available practices. This technology plan is aligned with the OIEP's educational vision and goals to ensure that the technologies support student and faculty needs, as well as permit and encourage student development in the use of these technologies. Given the dynamics of the educational environment and the ever-changing needs of the Native American communities, this Technology Plan will be reviewed and updated on an annual basis.

Compliance Matrix

Component	Reference (Section)
Clear goals and a realistic strategy for using telecommunications and information technology	5 Strategies - Page 11
A professional development strategy to ensure that staff know how to use these new technologies	8 Professional Development - Page 28
An assessment of the telecommunication services, hardware, software and other services that will be needed	9 Technology Infrastructure – Page 31
A sufficient budget to acquire and support the non-discounted elements of the plan: the hardware, software, professional development, and other services that will be needed to implement the strategy	11 Budget - Page 56
An evaluation process that enables the school or library to monitor progress toward the specified goals	12 Monitoring and Evaluation - Page 58

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1 INTRODUCTION

1.1 Executive Summary

The Bureau of Indian Affairs, Office of Indian Education Programs (BIA/OIEP) in conjunction with the Office of the Chief Information Officer, Indian Affairs (OCIO-IA) is pleased to submit a technology plan that defines a strategy to provide for the appropriate use of technology to meet the needs of Indian Country education and satisfy the requirements for No Child Left Behind and the Individuals with Disabilities Education Act. The Office of Indian Education Programs (OIEP) is located within the Office of the Assistant Secretary-Indian Affairs, Bureau of Indian Affairs (BIA), U.S. Department of the Interior. The OIEP has oversight of 184 BIA funded sites and acts as an advocate for American Indian and Alaska Native children enrolled in various public school systems throughout the United States. BIA funded sites include elementary and secondary schools, dormitory programs, and two postsecondary colleges serving 238 different tribes in 23 states. OIEP also provides support for 25 tribally controlled community colleges. The BIA school system was established as a result of treaty provisions that were implemented to address the educational needs of Indian children and tribal communities.

Although the primary public responsibility for education is reserved respectively to the states and local school systems, the education of Indian children is an exception. Federal laws, treaties, and court decisions mandate the education of Indian children as a Federal responsibility.

Presently, the BIA school system serves over 47,000 elementary and secondary American Indian students. Approximately 11,500 of these students reside in dormitories at these schools. Of the 184 sites, 14 are housing facilities made available to Indian children who attend public schools, therefore there are actually 170 academic school programs funded by the BIA, many of which offer residential programs.

Sixty percent of the BIA schools have 250 or fewer students. Of the 170 schools, 130 are elementary schools only. All of the schools are empowered through the Bureau's policy of local control based upon the federal government's policy of Indian self-determination. Bureau-funded schools are Local Educational Agencies (LEA's) for federal program purposes; all have school-wide Title I programs.

Over the past ten years, the number of tribally operated schools has surpassed the number of BIA-operated facilities. In 2004, 122 of the 184 BIA funded sites fell under tribal control through various grants and contracts. This change is a healthy indicator of empowerment and involvement on the part of tribal communities in the education of their children. In addition to maintaining its educational commitment to Indian tribes, the United States Congress has supported tribes operating their own programs. The enactment of PL93-638 and PL100-297 has facilitated a significant positive impact in the transfer of the operation of Federal schools to tribes and Tribal School Boards. The trend towards tribal control of education will continue in the years ahead.

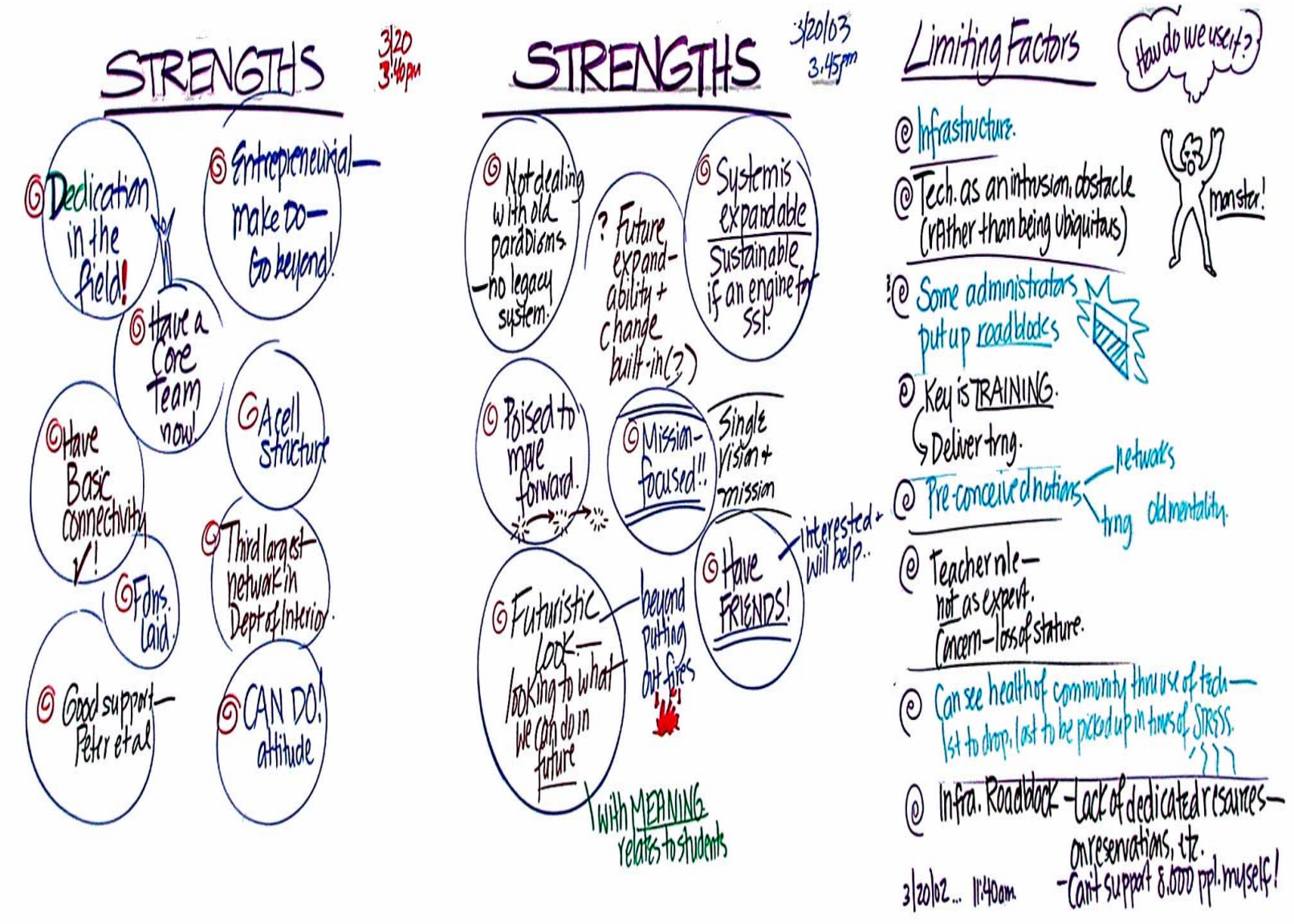
1.2 Legislation

Three major legislative actions helped frame the present structure and mission of the Bureau of Indian Affairs (BIA) since its initial creation under the Snyder Act of 1921. The Indian Reorganization Act of 1934 introduced the teaching of Indian history and culture into BIA schools. A second major legislative action was the Indian Self-Determination and Education Act of 1975 (Public Law 93-638). This legislation gave authority to the tribes to contract with the BIA in the operation of schools, and to determine education programs for their children. The Education Amendments Act of 1978 (Public Law 95-561) and further technical amendments (Public Law 98-511, 99-89, and 100-297) mandated major changes in BIA funded schools. These amendments empowered Indian school boards, established direct funding of schools, and provided for local hiring of teachers and staff.

In 2001, the No Child Left Behind Act (Public Law 107-110) amended several Indian education laws. It updated the requirements in PL 95-561 and PL 100-297 relative to student achievement and school improvement. It also imposed the requirement that all BIA funded schools obtain and maintain accreditation status within their respective states. Regulations to implement the law were issued by the Department of the Interior in April, 2005.

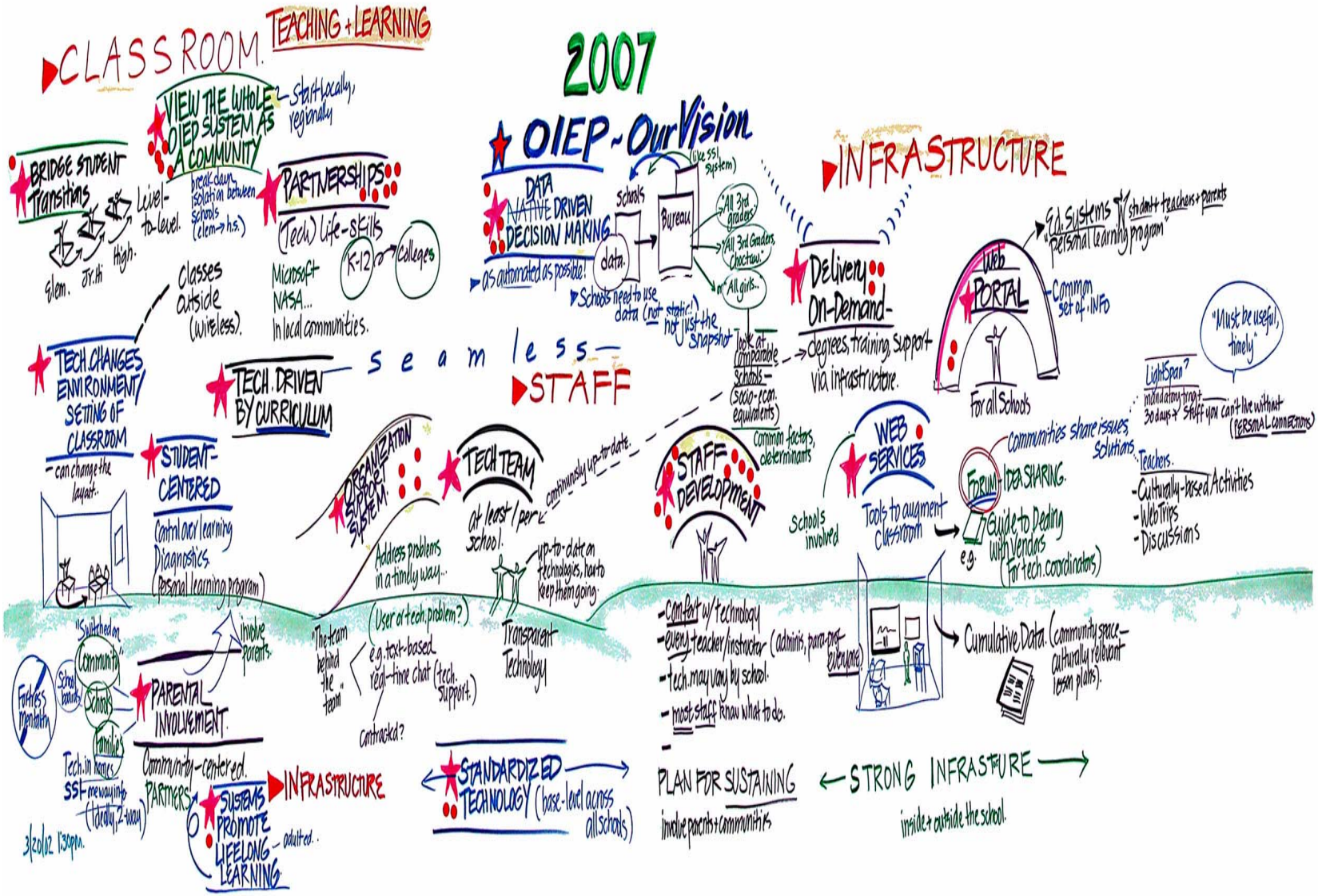
1.3 Background

The OIEP provides technical assistance to and has oversight for 184 BIA funded sites in 23 States. These sites include some of the most challenging conditions of rural isolation coupled with a lack of financial resources. In January 2002, a group of 100 educators were given the task to examine the progress that the Bureau of Indian Affairs, Office of Indian Education Programs (BIA/OIEP) had made in reaching its technology goals. During their initial evaluation, this Technology Task Group identified strengths and limiting factors in the existing approach.


STRENGTHS
3/20 3:40pm
Dedication in the field!
Entrepreneurial— make do— Go beyond!
Have a Core Team now!
A cell structure
Have Basic connectivity V!
Third largest network in Dept of Interior.
Fdns. Laid.
Good support— Peter et al
CAN DO! attitude
STRENGTHS
3/20/03 3:45pm
Not dealing with old paradigms —no legacy system.
? Future expandability + change built-in(?)
System is expandable Sustainable if an engine for SSI.
Poised to move forward.
Mission-focused!!
Single vision + mission
Have FRIENDS!
interested + will help..
Futuristic look— looking to what we can do in future
beyond putting out fires
with MEANING relates to students
Limiting Factors
How do we use it?
Infrastructure.
Tech. as an intrusion, obstacle (rather than being ubiquitous)
monster!
Some administrators put up roadblocks
Key is TRAINING.
Deliver trng.
Pre-conceived notions
networks
trng
old mentality.
Teacher role— not as expert. Concern— loss of stature.
Can see health of community thru use of tech— 1st to drop, last to be picked up in times of STRESS.
Infra. Roadblock— Lack of dedicated resources— on reservations, etc. —Can't support 8,000 ppl. myself!
3/20/02... 11:40am

As a result of the Task Group study, it became clear that the OIEP had exhibited many strengths on which to build. The Task Group recognized that there are people in the field as well as in Central Office who demonstrate exceptional "can do" entrepreneurial abilities to make significant progress in combining technology and education. The Task Force recognized OIEP's significant accomplishment of connecting every classroom in every school.

The Task Group also identified some of the important challenges that have the potential to limit future expansion of technology in BIA schools. Limiting factors identified by the Task Group included the need for administrative support, the paucity of dedicated resources (such as trained network administrators), the scarcity of trained teachers, and the existence of some resistance to full integration of technology into the curriculum. The Group went on to develop a clear vision of the future of technology in BIA funded schools.


CLASSROOM
TEACHING + LEARNING
2007
OIEP - Our Vision
INFRASTRUCTURE
VIEW THE WHOLE DIED SUSTEM AS A COMMUNITY
Start locally, regionally
BRIDGE STUDENT Transitions
level-to-level.
elem.
Jr. hi
high.
break down isolation between schools (elem→h.s.)
PARTNERSHIPS
(Tech) Life-skills
Microsoft NASA...
In local communities.
K-12
Colleges
DATA DRIVEN DECISION MAKING
as authorized as possible!
Schools need to use data (not static!) not just the snapshot
data.
Schools
Bureau
(like SSI system)
"All 3rd grades"
"All 3rd Graders, Chechnya"
"All girls.."
Look at comparable Schools - (socio-econ. equivalents)
Common factors, determinants
Delivery On-Demand-
degrees, training, support via infrastructure.
Web PORTAL
For all Schools
Common set of INFO
GIA Systems "personal learning program"
student + teachers + parents
"Must be useful, timely"
LightSpan?
individualized program
30 days + staff up can't live without
(PERSONAL connections)
TECH CHANGES ENVIRONMENT/ SETTING OF CLASSROOM
- can change the layout..
Classes outside (wireless).
TECH. DRIVEN BY CURRICULUM
seamless
STAFF
STUDENT-CENTERED
Content/learning
Diagnostics.
(personal learning program)
ORGANIZATION SUPPORT SYSTEM.
Address problems in a timely way..
TECH TEAM
at least 1 per school.
continuously up-to-date.
up-to-date on technologies, hard to keep them going.
Transparent Technology
STAFF DEVELOPMENT
WEB SERVICES
Tools to augment classroom
Schools involved
Communities share issues, solutions.
Forum
IDEA SHARING.
Guide to Dealing with Vendors (for tech. coordinators)
e.g.
Teachers.
-Culturally-based Activities
-Web Trips
-Discussions
"Switched on Community"
Schools
Families
Tech. in homes
SSI - me waving (literally, 2-way)
3/20/02 1:30pm.
Funders (members)
School boards
PARENTAL INVOLVEMENT
Community-centered.
PARTNERS
involve parents.
"The team behind the team"
(User or tech. problem?)
e.g. text-based req.-time chat (tech. support.)
Contracted?
-Comfort w/ technology
-Every teacher/instructor (admins, para-pros, librarians)
-tech. may vary by school.
-most staff know what to do.
Cumulative Data. (community specific - culturally relevant assessments).
INFRASTRUCTURE
SYSTEMS PROMOTE LIFELONG LEARNING - adapted..
STANDARDIZED TECHNOLOGY (base-level across all schools)
PLAN FOR SUSTAINING
involve parents + communities
STRONG INFRASTRUCTURE
inside + outside the school.

What came out of this study was a vision outlining the key themes and ideas that would be incorporated into the Master Technology Plan. The Task Group envisioned that OIEP would continue to create and maintain a strong infrastructure platform that would support the tribal school community. They envisioned a web portal that would provide real-time information, instructional strategies, and online professional development for teachers, administrators, and other education professionals. That same web portal would provide online instruction and communication tools to enhance learning opportunities for students. A consensus of essential educational beliefs established a foundation for an overall plan. These include the following:

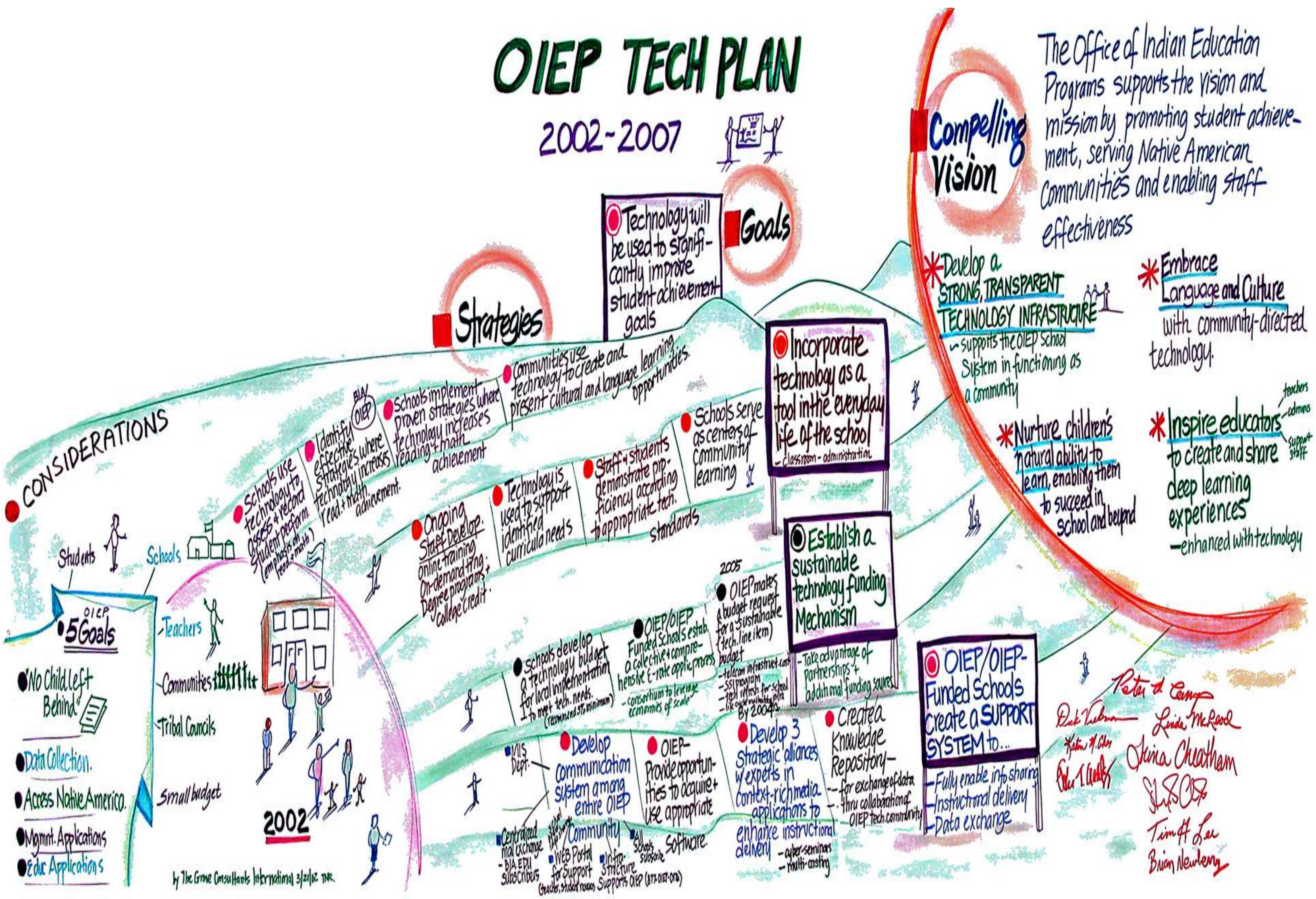
- The Task Group recognized that technology has the capacity to stimulate children's natural ability to learn and that technology should build on that perception. With this in mind, it was determined that the curriculum should dictate what technology will be employed rather than letting the available technology determine the curriculum.

- The Task Group recognized that family and community are two of the most important core values of the Native American communities served by the BIA. Technology should serve communities and support the preservation and teaching of native languages so that native communities remain vibrant.

- The Task Group envisioned schools using technology to assist communities through community based education models such as students employing global positioning satellite systems to track river life or to study the environmental impact of roads.

- The Task Group envisioned that technology could empower and inspire educators to create new and exciting learning environments. Such environments would enable teachers to access data from a range of sources to create dynamic new methods to facilitate learning so that students can master increasingly difficult and complex challenges.

Based on these findings, the Task Group worked with representatives from the BIA Central Office to develop the following model. This plan outlines OIEP's technology vision.


OIEP TECH PLAN
2002-2007
Compelling Vision
The Office of Indian Education Programs supports the vision and mission by promoting student achievement, serving Native American Communities and enabling staff effectiveness
Develop a STRONG, TRANSPARENT TECHNOLOGY INFRASTRUCTURE — supports the OIEP School System in functioning as a community
Embrace Language and Culture with community-directed technology.
Nurture children's natural ability to learn, enabling them to succeed in school and beyond
Inspire educators to create and share deep learning experiences —enhanced with technology
teachers
admins
support staff
Goals
Technology will be used to significantly improve student achievement goals
Strategies
Incorporate technology as a tool in the everyday life of the school
- classroom - administration
Establish a sustainable technology funding Mechanism
OIEP/OIEP-Funded Schools Create a SUPPORT SYSTEM to...
-Fully enable info sharing
-Instructional delivery
-Data exchange
CONSIDERATIONS
Students
Schools
Teachers
Communities
Tribal Councils
Small budget
OIEP 5 Goals
No Child Left Behind
Data Collection.
Access Native America.
Mgmt. Applications
Educ Applications
2002
2005
Schools use technology to assess + record student perform. (emphasis on read + math)
Identify effective strategies where technology increases read + math achievement.
BIA OIEP
Schools implement proven strategies where technology increases reading + math achievement
Communities use technology to create and present cultural and language learning opportunities.
Ongoing Staff Develop. online training On-demand trng. Degree programs + college credit.
Technology is used to support identified curricula needs
Staff + students demonstrate proficiency according to appropriate tech. standards
Schools serve as centers of community learning
Schools develop a technology budget for local implementation to meet tech. needs.
OIEP/OIEP Funded Schools estab. a collective + comprehensive E-rate applic. process
- consortium to leverage economies of scale
OIEP makes a budget request for a sustainable tech. line item)
-Take advantage of partnerships + additional funding sources
MIS Dept.
Develop communication system among entire OIEP Community
OIEP- Provide opportunities to acquire + use appropriate Software.
Develop 3 strategic alliances w/ experts in context-rich media applications to enhance instructional delivery
- cyber-seminars
- multi-casting
Create a Knowledge Repository— for exchange of data thru collaboration of OIEP tech. community
WEB Portal for Support
Infrastructure Supports OIEP
by The Grove Consultants International

The outcome of the study and the result of this model serve to support the OIEP vision and mission to assist Native American communities, promote student achievement, and enhance the effectiveness of education professionals. Key tenets include:

- developing a strong yet transparent technology infrastructure to support the BIA school community;
- nurturing each child's natural ability to learn thereby enabling them to succeed in school and beyond;
- embracing native language and culture within the community; and,
- inspiring education professionals to create and share a meaningful learning experience enhanced through technology.

1.4 Plan Duration

Last Updated 05/25/2005

Plan status	Approved
Years Included in the Plan	2004 – 2009
Years Approved for the Plan	2002 – 2007

Signed by: U.S. Department of Education

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Name and Date: Jenelle Leonard, June 9, 2005

2 DEFINITIONS

The term "school," unless otherwise specified, is meant to encompass day schools, cooperative schools, grant/contract schools, peripheral dormitories, boarding, and off reservation boarding schools. For the purpose of this document, a school is an educational or residential center operated by or under contract with the BIA offering

services to Indian students under the authority of a local school board and the direction of a local school supervisor. A school may be located on more than one physical site.

Day Schools

A day school is a tribally or BIA operated school that conducts classes during the day but does not offer residential facilities to its students.

Grant/Contract Schools

A grant or contract school is a tribally operated school (other than a public school) that is funded through a grant or contract agreement with the BIA.

Peripheral Dormitories

The BIA operates one peripheral dormitory (Blackfeet Dormitory) and funds 13 peripheral dormitories that are tribally operated. Peripheral dormitories provide a residential program only for those students attending public schools.

Boarding Schools

The BIA funded 67 residential programs servicing students in 53 boarding schools. Boarding schools provide both academic and residential programs.

Off-reservation Boarding Schools

There are four off-reservation boarding schools operated by the BIA. Three of these schools are residential instructional high schools, and one includes grades 4-12. These facilities are available to students who need full time housing.

3 STAKEHOLDERS

The Bureau of Indian Affairs (BIA) Office of Indian Education Programs (OIEP) is responsible for administering the only national education system for American Indian children and adults. School programs provide for the education of 47,000 Indian students attending federally funded elementary and secondary schools. OIEP operates two colleges and funds an additional 25 colleges that are operated by tribes and tribal organizations. OIEP operates out of central offices in Washington, D.C. and Albuquerque, New Mexico. The 23 field offices operate from various locations throughout the United States. Together, a dedicated support staff fulfills it mission "to provide quality education for lifelong learning."

4 TECHNOLOGY INITIATIVES

The Office of Indian Education Programs shares the vision for all tribal populations of *"Uniting to promote healthy communities through life long learning."*

4.1 Technology Vision

The OIEP has a vision to provide the best possible technology to support student achievement, staff effectiveness, and to strengthen Native American communities in the following ways:

- Technology will be used to significantly improve student achievement goals.
- Technology will be incorporated as a tool into the everyday life of the school.
- A sustainable technology funding mechanism will be developed to support students, teachers, and administrators.
- A support system will be established to fully enable information sharing, instructional delivery, and data exchange.

4.2 Technology Mission

Our mission is *"To provide quality education opportunities from early childhood through life in accordance with Tribes' needs for cultural and economic well being in keeping with the wide diversity of Indian Tribes and Alaska Native villages as distinct cultural and governmental entities."*

The purpose of the Indian Education Technology Plan is to support the vision and mission by promoting student achievement, serving Native American communities, and enabling staff effectiveness. Key tenets of this are:

- to develop a strong yet transparent technology infrastructure;
- to support the BIA/OIEP school community;
- to nurture children's natural ability to learn, enabling them to succeed in school and beyond
- to embrace native language and culture within the community; and,
- to inspire educators (teachers, administrators, and support staff) to create and share a meaningful learning experience, enhanced by technology

4.3 Technology Goals

The primary goal of this program is to provide the best quality education for all the American Indian and Alaska native students served by the BIA and to provide national leadership in the field of Indian Education.

In an effort to affect excellence in education, the OIEP is working to develop supporting technology to provide an advanced educational platform in all BIA schools. The most important areas being addressed include professional development for teachers and the integration of technology goals within the existing curriculum. By design, teachers and administrative personnel play a critical role in the implementation of these technologies. Involvement at the local level is emphasized in order to establish ownership and to communicate a clear understanding of the utility and potential benefit to the teaching curriculum.

The overall OIEP Education Goals are:

- Technology will be used to significantly improve student achievement.

- Technology will be incorporated into the daily operation of schools to improve the facilities and assist students and administrators.

- To establish a sustainable technology funding mechanism.

- BIA funded schools will create and sustain a support system to:
  - fully enable information sharing
  - provide for instructional delivery
  - facilitate data exchange

5 STRATEGIES

- Technology will be used to significantly improve student achievement goals by:

  a. using technology to assess and record student performance (with emphasis on reading and math)
  b. identifying effective strategies to use technology to increase reading and math achievement
  c. implementing proven strategies where technology increases reading and math achievement
  d. using technology to create and present cultural and language learning opportunities
  e. using assistive technologies to promote achievement for students with disabilities as well as others as needed.

- Technology will be incorporated into the daily operation of schools to improve the facilities and provide the necessary tools for teachers and administrators to meet education goals. This will be accomplished through:

  a. continuous staff development to include online training, degree programs, on-demand training, and college credit
  b. using technology to support identified curricula needs
  c. schools serving as centers of community learning
  d. awareness and use of assistive technologies for instruction by the staff.

- OIEP will establish a sustainable technology funding mechanism. The schools will be able to take advantage of various business partnerships and utilize additional funding sources by:
  a. addressing the need for assistive technologies within the schools
  b. developing a technology budget for local implementation to meet technology needs for each school (OIEP recommends a minimum budget of 5% of the total school budget)
  c. establishing a collective and comprehensive e-Rate application process. A consortium application creates leverage and increases economies of scale.
  d. requesting a technology budget line item, including:
     - telecommunication infrastructure costs
     - student statistics program management software
     - a systemic technology refresh process for the classrooms and administrative processes of the schools (life cycle methodology).

- OIEP will assist BIA funded schools in the development of a life cycle support system to fully enable information sharing among students, faculty, and administrators, to address electronic instructional delivery, and to facilitate data exchange while keeping the privacy of data protected.

- OIEP will develop enhanced electronic communication systems to centralize and improve e-mail exchange among all schools (BIA.edu subscribers). Enhancements will be made to the Web portal for education support and help desk support will be addressed. The OIEP will deliver all information to local school boards.

- OIEP will promote and support the use of State-of-the-art learning tools such as cyber seminars and multicasting in order to allow the school systems to build strategic alliances with experts in context-rich media applications in order to improve instructional delivery. A knowledge repository will be created for historical reference, the exchange of data, and to support the tracking of student achievement over time.

6 PROGRAMS AND INITIATIVES

The majority of funding for OIEP is provided through the Department of the Interior's annual appropriation. OIEP also receives funding from the U.S. Department of Education (ED) as well as other sources. OIEP distributes the majority of appropriated funds to schools under the Indian School Equalization Program (ISEP) which provides direct funding for the instruction and residential care of Indian children. In budget fiscal year 2004, OIEP utilized approximately $931 million in appropriated funds that had been received from the combined sources. Of the $931 million, $535 million was directed to the education field offices and to the schools. Approximately $100 million remained within the OIEP Central Office where it was utilized to manage OIEP school programs and initiatives.

OIEP's long-term strategies for improving student academic achievement include using technology to assess and record student performance (with emphasis on reading and math). Specific initiatives include:

6.1 Native American Student Information System (NASIS)

OIEP is planning, organizing, and executing directed information technology projects in support of the BIA School Statistics Initiative (SSI) program. It has been determined that due to infrastructure and internal support limitations, a centralized solution operated by a web base application service provider is the most efficient and expeditious approach to meeting the mandates of Public Law 107-110. NASIS will allow access to viable information on student achievements and help a school to view their achievements over time.

6.2 Wireless-Reading First

BIA was awarded $30.4 million dollars for six years of funding (2003 – 2009) under the U.S. Department of Education's Reading First program. Reading First is the cornerstone piece of legislation included in the No Child Left Behind Act of 2001 and has the goal of supporting schools with implementation of scientifically researched reading instruction and assessment in grades kindergarten through third to ensure that all children read proficiently by the end of third grade. Currently, the OIEP is funding 24 schools as Reading First schools in 11 different States: Maine, Minnesota, Wisconsin, Michigan, Idaho, North Dakota, South Dakota, New Mexico, Arizona, Utah, and Washington.

Preventing or remediating reading failure within the schools requires an on-going process of monitoring the progress of student achievement at frequent intervals. Technology plays a significant role in this area. The BIA contracted with Wireless Generation Inc., an education technology firm that takes commonly used paper-based early reading assessments and makes them easier to administer by moving them to handheld devices that are Internet enabled. By putting these paper-based assessments on its mClass software platform, Wireless Generation has been able to dramatically streamline the assessment process.

The 24 Reading First schools are using this wireless technology to synchronize data in a secure website environment with instantaneous assessment and reporting results. The Reading First program purchased personal digital assistants and had them installed with the necessary software to administer the required assessments. In addition, desktop computers in the 24 Reading First schools had software installed to allow for synchronization of the assessment data. The software reduces time-consuming paperwork and manual calculations thus reducing human error. Teachers are able to administer the required assessments, receive the results instantaneously, and are then able to make immediate adjustments to students' reading instruction in order to ensure that all children are reading proficiently at every grade level.

6.3 Online Assessments

The OIEP encourages the use of online assessments to provide immediate feedback on student progress toward meeting education standards. Applicants to the competitive Title II D, Enhancing Education Through Technology grants and the Title IV, 21st Century Grants were encouraged to use online assessment as a means of evaluating the progress of students in their schools. Currently 49 BIA-funded schools use the Edutest Online Assessment to supplement their instruction so that students can master their standards. Other BIA schools have chosen other assessment systems, such as the online system provided by Northwest, a company focused on formative assessment.

6.4 School-Wide Information System (SWIS)

The School-Wide Information System (SWIS) is a web-based system designed to help education professionals use available data to design individual as well as school-wide student interventions. The three primary elements of SWIS are:

- an efficient system for gathering information,
- a web-based computer application for data entry and reporting, and
- a practical process for using information for decision making.

These three elements give school personnel the capability to evaluate individual student behavior, the behavior of groups of students, behaviors occuring in specific settings, and behaviors occuring during specific time periods of the school day. SWIS reports indicate times and/or locations prone to elicit problem behaviors allowing teachers and administrators to shape school-wide environments to maximize students' academic and social achievements.

6.5 Enhancing Education through Technology program (E2T2)

The Enhancing Education through Technology program (E2T2) was created out of the reauthorized Elementary and Secondary Education Act (commonly known as the No Child Left Behind Act). E2T2 combines the Technology Literacy Challenge Fund and the Technology Innovative Challenge Grant Program into a single state formula grant program. E2T2 authorizes funding for the development of infrastructure and data systems to provide a method of accountability and to track student progress. The primary goal of the E2T2 program is to improve student academic achievement through the use of technology in schools. The intent is to assist every student in crossing the digital divide by ensuring that every student is technologically literate by the end of eighth grade. The objective is to encourage the effective integration of technology through teacher training and curriculum development and to establish successful research-based instructional methods.

OIEP receives a grant from the U.S. Department of Education for use in administering the E2T2 program. OIEP directs up to 5 percent of the funds to state level programs. One-half of 95 percent goes to eligible Local Educational Agencies (LEA's) and the remaining half is offered to eligible local entities on a competitive basis. The OIEP E2T2 plan for 2002-2007 summarizing the 15 questions is attached as an appendix to this document.

6.6 Adult Education

The Adult Education program is designed to improve educational opportunities for adult American Indians/Alaska Natives who lack the level of literacy skills for productive employment. The Adult Education program also expands and improves existing programs for delivering adult education services, such as the GED programs and Adult Basic Education courses, including delivery of these services to educationally disadvantaged American Indian/Alaska Native adults.

The OIEP contracts with individual tribes to administer the adult education program. If a tribe is not offering an adult education program, interested individuals will be referred to the nearest BIA field office for assistance.

6.7 Indian School Equalization Program (ISEP)

The Indian School Equalization Program (ISEP) provides a base of financial support for each school program. Schools that provide residential and instructional programs receive ISEP money each year. Students who are identified as gifted and talented, or who have bilingual education needs, as well as students who need an Intense Residential Guidance program receive special funds for these purposes.

6.8 Residential

Schools that have residential programs also provide tutoring, counseling, and structured activities, in a well-balanced environment designed to enhance student educational experiences while living in a dormitory setting.

6.9 Elementary and Secondary Education Act (ESEA)

The Elementary and Secondary Education Act, recently reauthorized in January 2002 as the No Child Left Behind Act (NCLB) offers financial assistance to schools to be used for faculty and student development. The goal is to prepare and retain highly qualified teachers and to develop high academic standards while allowing for flexibility in the use of these funds. The schools are subsequently held accountable for improving student academic achievement.

6.10 Individuals with Disabilities Act (IDEA)

The Individuals with Disabilities Act provides funds to support schools in meeting the needs of students with disabilities through a "free, appropriate public education" in the "least restrictive environment." The Eligibility Document (available on-line in pdf format) describes the special education services offered by the BIA. The Coordinated Service Plan outlines OIEP's strategy to coordinate services with other agencies such as the Indian Health Service and other social service providers.

6.11 Web-based Teaching, Distance Learning, and E-mail

Web-based Teaching

Education, it is often said, is one profession that has undergone virtually no changes in technique for the last 150 years at least. Web-based teaching and distance learning have the potential to change the pedagogical domain. Technology has played an important role in transforming business and work practices. In fact, technology is the prime driver behind the transformation of our socioeconomic infrastructure from the industrial age

into the post-industrial era of today, just as it was the prime driver in transforming our agrarian society into an industrial society.

Technology encompasses the tools and strategies for solving problems, using information, increasing productivity and enhancing personal growth. Knowledge and skills that were unheard of a decade ago, such as using databases to locate material in public libraries, communicating through global networks, and understanding how to access information stored electronically, are critical for today's citizens. Technology goes beyond computers into complex technological advances such as genetic engineering; mechanical and construction equipment; and tools; and the production, preparation and disposal of food. It also includes everyday applications such as the design of athletic shoes, space age fabrics, entertainment centers and smoke detectors.

Technology needs to be understood by its prospective users so that it can be used effectively. Usually technology is discussed according to one of its subcategories, such as medical technology, electronic technology and information technology.

Information technology differs from other subcategories of technology. Not only does information technology need to be understood but its prospective users also need to comprehend how to incorporate it into work processes and education processes. Workplace examples of how information technology can be used to make processes more effective and productive are found in electronic commerce and Internet-based applications. Similar processes in education are just now emerging. Because education deals with the processing of information by human subjects, technology that relates to and interacts with information is of vital concern to educators.

The requirements for training and literacy in computer technology are deceivingly simple on one level: people who plan to work with computer technology need to be literate about computers and electronics just as budding electricians or electrical engineers need to be literate about power plants and electricity. This is the model that people tend to gravitate toward when discussing computer literacy. Unfortunately this leads them to believe that computer technology differs only in some degree from other technology. Such a conclusion is false -- computer technology differs in kind from traditional technologies because of its use in managing information. Because of this connection, computer technology, as information technology, changes the way we learn, the way we communicate and the way we work.

Information technology, however, differs from the other subject areas (including technology in general) in that it can also improve the way students learn, and it can help students meet academic standards in those other fields. In this respect, technology is a means to an end. An example would be using computers in the classroom to facilitate the instruction of mathematical concepts. From this point of view, technology serves as a tool. Web-based teaching and distance learning are methods of delivery in our largely rural community. The Internet, a non-proprietary delivery system, is advancing the creation and delivery of engaging e-learning tools that transcend typical time and space barriers. Web-based teaching and distance learning can effectively supplement and

transform a group of learners in achieving a common learning goal. Web-based teaching and distance learning can assist in the move from a classroom-centric delivery of instruction to a learner-centric model, in which students assume greater responsibility for learning facts, procedures and complex skills along with teamwork skills. In concert with the paradigmatic shift in student learning the web can make training available at school, at home or wherever there is an open mind, as not all students learn the same way. Some students are visual learners, some auditory, some both, some neither. Interactive web-based tools include a variety of learning modalities to motivate students and support diverse learning styles.

Web-based teaching and distance learning enables teachers to:

- Engage students with fun and exciting real-world learning situations.
- Address national and state standards relative to language based literacy as well as technological literacy.
- Participate in international projects in a variety of subject areas.
- Foster cultural awareness through connections to an international community.
- Foster cultural awareness through connections within their own learning and teaching communities.
- Discover a living vocabulary resource for foreign language instruction.
- Track student progress and ensure internet safety with the use of appropriate filters and e-mail monitoring.
- Heighten communications between parents and teachers by giving parents more convenient access to educators.
- Facilitate on-going communication with parents about student progress.
- Post homework assignments, notices, and other information for students.
- Connect with other educators to share resources and ideas.
- Focus on teaching with technology rather than time-consuming administrative tasks.
- Reduce the "digital divide" by offering access to technology to students without home-based access.

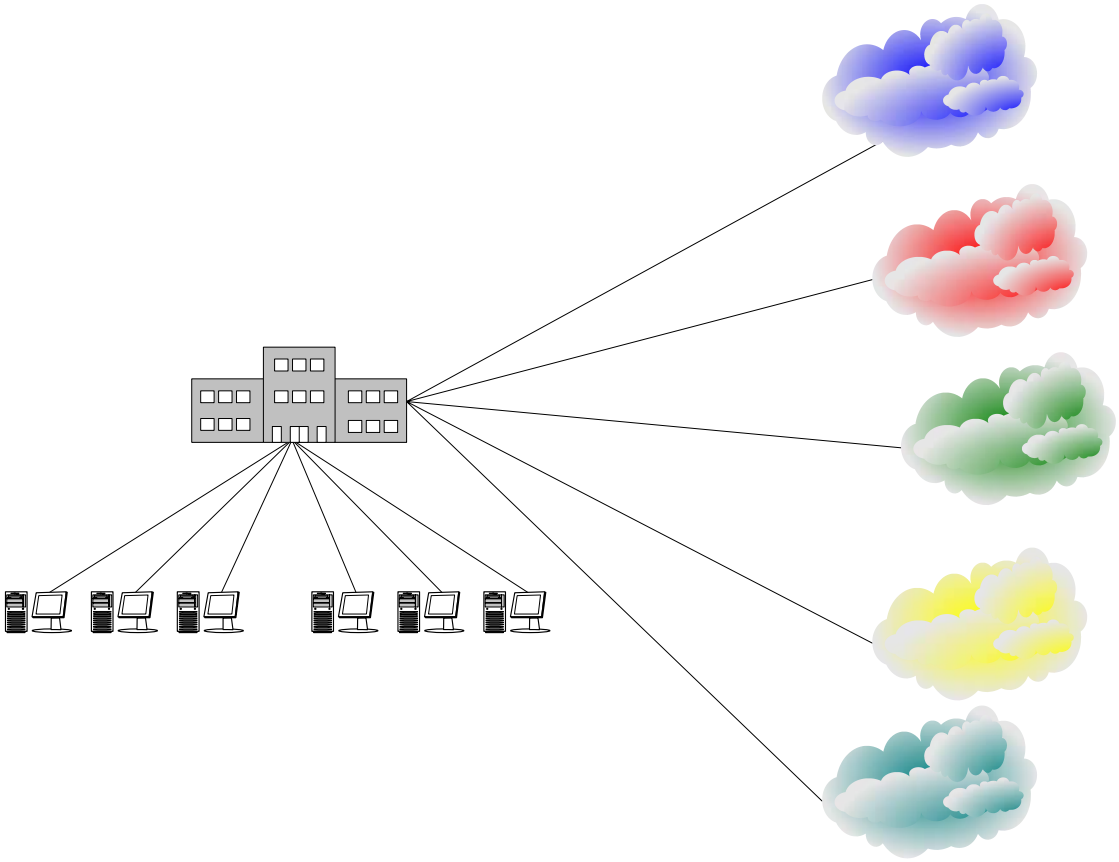
Web-based teaching and distance learning enables parents to:

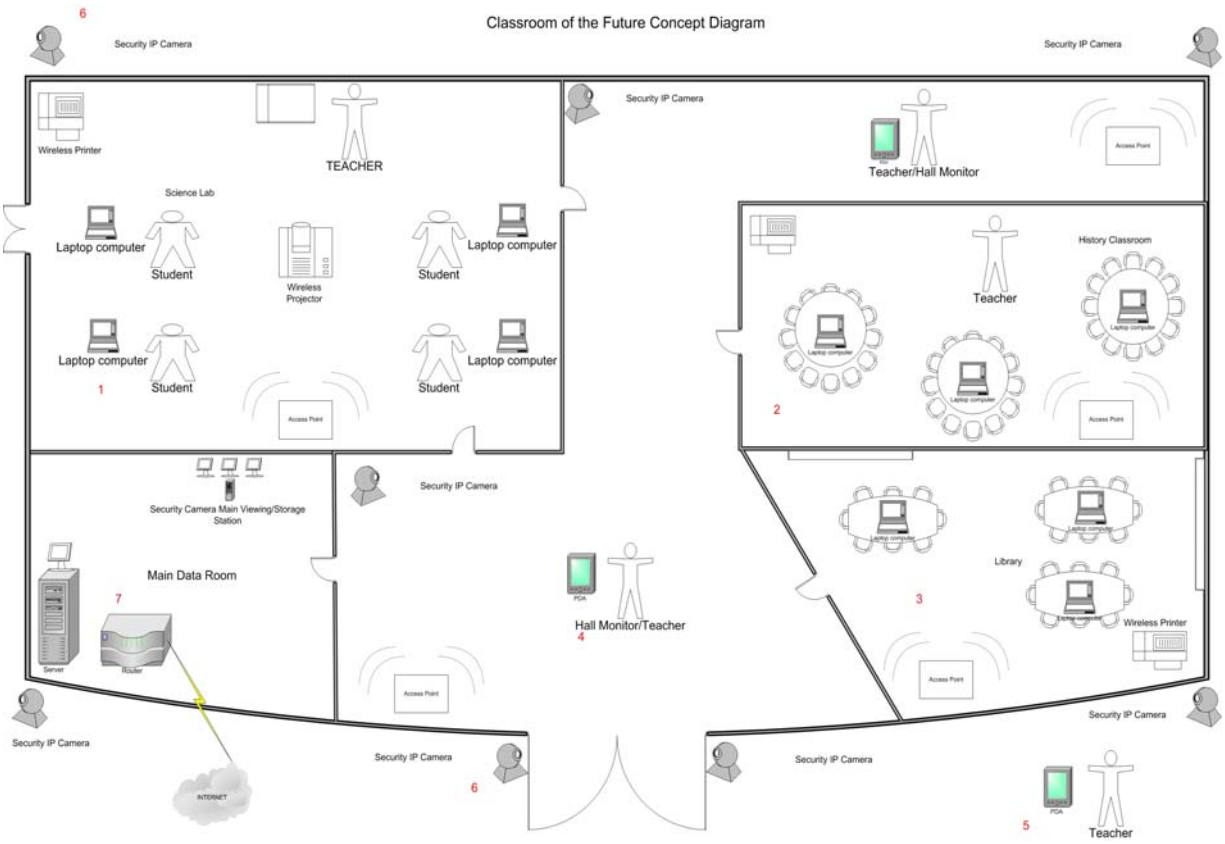
- Communicate with teachers about student progress at any time.
- Have confidence that students are engaged in appropriate computer activities under adult supervision.
- Reinforce classroom learning with access to the same tools at home.
- Maintain a dialogue with school staff and other parents to increase involvement in and awareness of school activities.
- Experience multilingual communications that facilitate the sharing of information.
- Understand the World Wide Web environment and increase their awareness with regard to the opportunities it makes available to them and their children.

Web-based teaching and distance learning enables students to:

- Obtain a safe and appropriate introduction to e-mail and technology.

- Increase motivation through self-directed and collaborative learning.
- Improve literacy with writing activities geared to authentic audiences.
- Gain comfort with the tools and skills essential for success in today's work environment.
- Facilitate ESL and foreign language learning.
- Cultivate knowledge and cultural understanding through real-world e-mail exchanges.
- Increased access to technology, providing new opportunities for students without home-based access.
- Engage in "anywhere, anytime learning" with access from school, library, and home.





Distance Learning

Universal and synonymous education and training opportunities must be made available to all students regardless of their distance from the source. In order to make distance learning a larger component of the OIEP learning environment, a number of basic components are necessary. To enable connectivity, the standard must include the International Telecommunications Union- Telecommunications (ITU-T) which enables a variety of vendors to operate their equipment as necessary. Parts of the ITU-T standard include (1) clients (endpoints), (2) servers (multipoint control units), (3) gateways (H.320 to H.323), and (4) management (gatekeepers). A key component of videoconferencing for distance learning involves the ability to compress and decompress data. In order to accomplish this, certain equipment is necessary. Necessary inventory includes:

- Cameras, microphones, speakers, and displays.
- Networks (varied and appropriate to the local requirements)
- H.320 switched digital networks:
    - T1, E1, PRI
    - Switched 56, BRI
    - Dedicated vs. switched
    - IMUXing and BONDING

- H.323 / H.324 packet based networks
    - IP and ATM
    - Intranet vs. Internet
    - LAN vs. WAN (bandwidth)
    - Security and firewalls
- H.323 hardware components
    - Endpoints (terminals)
    - H.323 gatekeeper
    - H.323 / H.320 / H.324
    - H.323 MCU / H.324 MCU
- Video (NTSC vs. PAL)
    - Cameras
        - tracking vs. locating
        - presets
    - Document cameras
    - PCs
        - Native resolution and motion (up to XGA)
        - Video scan converters: takes 1024 x 768 to NTSC (525 lines) to CIF 352 x 288 (about 1/3 the resolution)
    - Electronic whiteboards
    - Monitors and projectors
- Audio
    - Microphones
    - Mixers
    - VCRs
    - CD players
    - PC output
    - Speakers
    - Automatic gain control (AGC)
    - Automatic noise control (ANS)
    - Echo cancellation (IDEC)

The primary benefit of distance learning is the global availability of resources in a real-time mode creating increased interaction between work groups and individual students.

Distance learning applications provide a scalable, adaptable, and expandable curriculum by facilitating access to enrichment opportunities such as honors courses and foreign languages. This is of particular benefit to schools in remote locations. In addition, students have access to tutors and mentors who can provide personal attention and enrich their academic experience.

E-Mail

In order to continue the integration of technology into the classroom, OIEP plans to move toward a web-based e-mail system. This could easily be accomplished if schools are connected to the Internet. Once an Internet browser is installed, they can be up and running. The web-based e-mail solution using the bia.edu domain can offer a multilingual environment, making it an ideal tool for communicating within a multi-cultural school community and assisting in second language learning.

Web-based e-mail will be tailored to meet the unique needs of the schools. Routine management and optional offload account management will be performed from a central location to assist in the management of local accounts and to reduce workload at the school level.

Specific needs of the web-based e-mail platform include development of a classroom profile system that can be used by teachers to describe their class and share that information with the global network within DOI.

The proposed e-mail solution will serve three primary types of users. A web-based system would provide built-in e-mail content monitoring, e-mail attachment monitoring, virus protection and spam control, all integral components of a safe online communications system. User type determines the level of administrative privileges granted:

- Users (i.e., students) can change their own passwords and access the school's subscription via their education desktop interface.

- Teachers can change their own passwords, student passwords, and access the school's subscription via the education desktop.

- Subscription Administrators have access to the Subscription Administration and Portal Designer tools as well as access to the school's subscription via the education desktop.

Additional value and functionality:

- It will provide built-in and flexible e-mail access settings that limit incoming and outgoing e-mail messages to chosen spheres: classroom, school, district, and a worldwide community for classroom partnering opportunities. Alternatively, e-mail access must afford the opportunity to be left unrestricted to the entire Internet.

- It will provide e-mail access restrictions in combination with monitored and filtered e-mail.

- It will provide a secure community that restricts outside viewing of personal, school, and administrative information.

- It will provide Spam and Virus protection for incoming and outgoing e-mail.

- It will cover Compliance with the Standards of Children's Online Privacy Protection Act (COPPA) regulations.

- It will help address the need for technology protection measures for filtering and "educator" monitoring per CIPA requirements.

- It will provide up to 9,000 Teaching/Administrative accounts that will support IMAP4 email transmission and receipt

It will provide up to 50,000 student accounts that will support IMAP4 email transmission and receipt, support POP3 email transmission and receipt, and support HTTPS.

6.12 Digital Council Fire

OIEP's customized portal, the Digital Council Fire, offers culturally relevant internet resources such as web-based trips, thematic units, lesson plans, and student publishing as well as numerous resources for teachers, students, and parents. This website is made available to all schools in the BIA system and is used in public schools that serve American Indian Children. The website was developed collaboratively with the Lightspan partnership, the Center for Education Technology in Indian America (a division of the Laguna Department of Education), and OIEP. The site also provides access to teaching resources and lesson plans tied to state standards.

6.13 Virtual Museums

BIA schools are engaged in innovative virtual projects through a partnership with the National Museum of the American Indian. These projects serve to engage tribal communities by bringing school aged children together with tribal elders to share their wisdom, rich history, and culture with the world at large via the Internet. Students use digital photography and presentation tools to exhibit artifacts and share stories as they have been passed down through the generations.

6.14 Reading Initiatives

Reading First initiatives support the goal to have all children reading independently by the completion of the third grade. OIEP is working with a group of 64 teachers who are actively engaged in improving instructional strategies for reading. They meet three times during the year to dialogue, review literature, and receive training on scientifically researched strategies to improve student achievement in reading. Technical assistance and training is also provided by the Center for Language in Learning.

Additional initiatives have provided over 22,000 books for parent educators to use during home visits with families participating in the FACE program. A new book is given to

each family at the completion of the home visit. The purpose is to promote parent/child reading at home as well to actively engage parents in their children's learning experiences.

6.15 Recognition for Leadership

Every year, in conjunction with the annual National Indian School Board Association, the OIEP hosts an awards ceremony to acknowledge the outstanding contributions and personal commitment of selected individuals who have dedicated themselves to Indian children, schools and their communities. Awards are given in eight categories: Parent Educator, Counselor, Early Childhood Teacher, Elementary Teacher, High School Teacher, Elementary Principal, High School Principal, and Education Line Officer. Three individuals who are voted "Teachers of the Year" are granted scholarships to obtain certification from the National Board for Professional Teaching Standards.

7 INSTRUCTIONAL TECHNOLOGY STANDARDS

The business community is looking for highly trained individuals who are technology literate and are able to think analytically. The business world is a dynamic environment where the workforce must adapt quickly to constantly changing technology. Indian schools must prepare their children to be creative and innovative, to be able to gather, retrieve, store, analyze, synthesize, and present information that drives business and the economy. Therefore, technology is an integral component of academic adequacy standards, both as a means to achieving those standards and as a part of those same standards.

OIEP will meet the Consolidated Application for Title II, Part D requirement to provide goals, performance objectives, indicators, and data sources to assess the effectiveness of improving access to and the use of educational technology by teachers and students in support of academic achievement. Establishment of benchmarks and performance goals for each of OIEP's Technology Goals will be accomplished by:

a. conducting an onsite assessment of the technology available at each school by December 30, 2006
b. monitoring school Internet traffic over the Educational Native America Network 2 (ENAN2) each quarter.
c. monitoring classroom use of the OIEP/ Digital Council Fire each quarter.
d. administering ISTE NETS Survey on a yearly basis
e. conducting a survey to determine student mastery of International Society of Technology in Education (ISTE) National Education Technology Standards (NETS) at Grades 2, 5, 8 and 12

For specific goals, indicators, evidence sources, timelines, and data collection methods, please refer to the following tables.

Goal 1. Technology will be used to significantly improve student achievement.

Performance Objective	Evidence Source	Timeline	Data Collection Method
By 2013-2014, 100% of the students will be proficient or advanced in language arts as determined by the BIA's multiple measures	State Assessments In 2003-04, 52.3% of students in BIA-funded schools were proficient or advanced in Language Arts.	Yearly beginning in 2001-02	Online Annual Report
By 2013-2014, 100% of the students will be proficient or advanced in Mathematics as determined by the BIA's multiple measures.	State Assessments In 2003-04, 54.6% of students in BIA-funded schools were proficient or advanced in Math	Yearly beginning in 2001-02	Online Annual Report
By 2007-2008, 100% of students will meet or exceed State or ISTE NETS grade level instructional standards for student literacy in technology.	Student Portfolios and Work Products In 2003-04, 33% of students met or exceeded State standards for student literacy in technology.	Baseline in Spring of 2003	Online Annual Report

Goal 2: Incorporate technology in the daily operation of schools.

Performance Objective	Evidence Source	Timeline	Data Collection Method
Teacher, student and administrator use of Education Native American Network (ENAN2), the OIEP network that connects all 184 schools to the Internet will increase by 25% each year until 2013-2014.	Router traffic monitor	Ongoing	Reported by OIEP Information Resource Management
Teacher and Student use of the OIEP/ Council Fire Website will increase from 2500 teachers in the 2002-03 school years by 25% each year until 2013-2014.	Traffic Report	Beginning September, 2002	Reported to OIEP by Light span
By 2006-07 100% of teachers will be qualified to use technology for instruction.	Snapshot Survey In 2003-04 58 % of teachers were qualified to use technology for instruction.	Each Spring beginning in 2003	Teacher survey administered and reported to OIEP by SEDL

Goal 3 Establish a sustainable funding mechanism to address technology life cycle management.

Performance Objective	Evidence Source	Timeline	Data Collection Method
The ratio of the number of computers that are 4 years old and newer to the number of students in the school will increase to 1:3 by 2005-06	Baseline Survey Yearly Monitoring using online tools provided by NXTRA, Inc	To be completed each year by 12/30.	Conducted onsite by NXTRA, Inc. 11/02 Yearly Monitoring using online tools provided by NXTRA, Inc.

Goal 4 Create a support system to fully enable information sharing, provide instructional delivery, and promote data exchange.

Performance Objective	Evidence Source	Timeline	Data Collection Method
Increase the number of online data collection efforts from two in 2003-04 to all Bureau of Indian Affairs mandated education reports by 2007	Number of reports	By 2008	Online inventory of required reports

Each year OIEP gathers information on progress toward meeting objectives for its online Annual Report. The Bureau collects information on student progress in meeting either the BIA Student Technology Standards or the technology standards of the State where the school is located (BIA operates schools in 23 different States).

At the national level, BIA has adopted the technology standards of the International Society of Technology in Education (ISTE). BIA schools may follow either the ISTE standards or the standards of the State where they are located.

The ISTE Technology Standards fall under six broad categories:

1. Basic operations and concepts: Students must be proficient in the use of technology and be able to exhibit a thorough understanding of the nature and operation of technology systems. In order to demonstrate this, students must be able to:
    - Use input devices (e.g., mouse, keyboard, remote control) and output devices (e.g., monitor, printer) to successfully operate computers, VCRs, audiotapes, and other technologies. (ISTE Standard 1)
    - Use a variety of media and technology resources for directed and independent learning activities. (ISTE Standards 1 and 3)
    - Communicate about technology using developmentally appropriate and accurate terminology. (ISTE Standard 1)
    - Use developmentally appropriate multimedia resources (e.g., interactive books, educational software, elementary multimedia encyclopedias) to support learning. (ISTE Standard 1)
    - Gather information and communicate with others using telecommunications with support from teachers, family members, or student partners.
2. Social, ethical, and human issues: Students need to understand the ethical, cultural, and societal issues related to technology. In order to demonstrate this, students must:
    - practice responsible use of technology systems, information, and software.

- develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
- work cooperatively and collaboratively with peers, family members, and others when using technology in the classroom. (ISTE Standard 2)
- demonstrate positive social and ethical behaviors when using technology. (ISTE Standard 2)
- practice responsible use of technology systems and software.

3. Technology productivity tools: Students use technology tools to enhance learning, increase productivity, and promote creativity. For example, students can:
   - Use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.
   - Use a variety of media and technology resources for directed and independent learning activities. (ISTE Standards 1 and 3)
   - Create developmentally appropriate multimedia products with support from teachers, family members, or student partners. (ISTE Standard 3)
   - Use technology resources (e.g., puzzles, logical thinking programs, writing tools, and digital cameras, drawing tools) for problem solving, communication, and illustration of thoughts, ideas, and stories.
4. Technology communications tools: Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences. For example, students can:
   - Use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
   - Use technology resources (e.g., puzzles, logical thinking programs, writing tools, and digital cameras, drawing tools) for problem solving, communication, and illustration of thoughts, ideas, and stories.
5. Technology research tools: Students use technology to locate, evaluate, and collect information from a variety of sources. For example:
   - Students use technology tools to process data and report results.
   - Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.
6. Technology problem-solving and decision-making tools: Students use technology resources for solving problems and making decisions.
   - Students use technology resources (e.g., puzzles, logical thinking programs, writing tools, digital cameras, and drawing tools) for problem solving, communication, and informed decisions.

- Students employ technology in the development of strategies for solving problems in the real world and illustration of thoughts, ideas, and stories. (ISTE Standards 3, 4, 5 and 6)

Progress in meeting these standards is measured each year using the State Assessment Standards or through other measures as prescribed by the State where the school is located. The number of students meeting the standards is reported annually.

In addition, the OIEP requests that the schools report the results of a teacher survey that provides an indication of their level of technology proficiency. The survey covers 14 areas of technology competency including such topics as the teacher's understanding of basic computer use, file management, word processing, spreadsheet, database, graphics, e-mail, research/information-searching, desktop publishing, video production, technology presentations, internet, responsible use/ethics, and technology integration. (See Attachments)

Finally, every three years each BIA funded school is visited as part of OIEP's Continuous Improvement Monitoring Process. All aspects of each school's programs are reviewed by a team of outside experts coordinated by the Mountain Plains Resource Center, University of Utah. Included in the review is the school's use of technology.

8 PROFESSIONAL DEVELOPMENT

The most important success factor for student learning is teacher quality. Professional development is the key for increasing teacher quality and the transformational use of technology. A professional development process has been instituted to ensure that technology is used effectively to create new opportunities for learning and to promote student achievement. Through professional development, educators have become proficient at integrating educational technology into curriculum, aligning it with student learning goals/ standards, and using educational technology as a tool for engaged learning projects.

Professional development for educational technology is viewed to be a critical and integrated part of local school technology plans. Professional development programs for teachers are:

- Ongoing
- Tied to curriculum standards
- Designed with built-in evaluation, and
- Sustained by adequate financial and staff support.

The professional development program includes educational components such as

- Hands-on technology use
- A variety of learning experiences
- Curriculum-specific applications
- New roles for students and teachers, and
- Collaborative learning.

The continuum of progress from entry to adaptation, to transformation with regard to the essential condition of Professional Development Programs is critical to the success of using Technology for education.

Progress in the following three broad indicators of success is measured:

- Professional Development Content,
- Professional Development Process, and
- The Sustainability of the Professional Education Development Program.

Professional development is essential to improving the learning experiences and outcomes of students. As a learning community, the BIA/OIEP provides the appropriate support for teachers and the school community to continually develop their knowledge and skills through a comprehensive professional development program. Training in the use and academic integration of technology is crucial to the success of any technology plan. It is not enough for a school to equip the faculty and staff with technology.

The Center for School Improvement (CSI) is the State Education Agency responsible for providing technical assistance and guidance in all areas of school improvement and school reform. Professional development is a critical element of school improvement and school reform. Several funding sources mandate professional development activities that must be implemented at both the State and local school levels.

As part of each school's Consolidated School Reform Plan (CSRP), every school program must include a professional development plan that is based upon funding mandates and school needs. The CSRP is the roadmap that ensures a coordinated, integrated approach to school improvement and student achievement. All professional development programs must be high quality, continuous, and aligned to established school goals. The National Staff Development Council promotes professional development as *"an ongoing systemic process that is dynamic and brings significant, accountable goal directed change for all stakeholders resulting in increased achievement for learners."*

Professional development is an "ongoing process" rather than an "event." It is the critical connection between teacher and student learning. What teachers know and can do effects what students know and can do. Professional development opportunities include:

8.1 Training and Technical Assistance with State Universities and Tribal Colleges

Through a competitive Request for Proposal (RFP) process, OIEP awarded thirteen contracts to five Tribal Colleges and eight State Universities to develop and deliver on-going professional development programs for OIEP personnel who work with students with special education needs. The goals of this initiative are to: (1) increase the number of State certified special education teachers in BIA funded schools; (2) increase the number of paraprofessionals with an AA degree in early childhood, special education, or general education in BIA funded schools; (3) provide training and technical assistance opportunities on topics related directly to serving students with disabilities and their families; and, (4) to provide on-going training and technical assistance to BIA funded schools identified in corrective action. Information regarding assistive technology use for

students with disabilities has been addressed via this venue. Continuations of the contracts are based upon availability of funds and successful performance of the project. The use of technology is a major element in the delivery of services. The majority of these contractors offer services on-site, via satellite consultation, or through distance learning.

8.2 Grow Your Own (GYO) Professional Development Program

Funded by Part B of the Individuals with Disabilities Education Act of 1997 (IDEA) from the U.S. Department of Education, Office of Special Education and Rehabilitative Services.

The GYO program provides funding opportunities for post secondary education to all staff of all BIA funded schools. The intent of the GYO Program is to improve services to students with disabilities/special education needs through the efforts of "highly qualified" personnel (professionals and paraprofessionals), including teachers, teacher assistants, and ancillary providers. Several participants have included technology as part of their official program of study. Based upon the needs of the school, GYO participants have declared technology education as their major field of study.

8.3 Project IDEAS

The intent of the Initiative for the Development and Enhancement of Administrators and Staff (Project IDEAS) is to improve services to special education students through the efforts of highly qualified personnel. Project IDEAS funds are used for the sole purpose of providing professional development activities for school personnel who work with special needs students. In some cases, technology is indicated as part of the training requirement, i.e. Assistive Technology, DIBELS, ASSIST (a computerized special education program to assist with the development of Individualized Education Programs for students).

8.4 Annual Access Native America Technology Conference (ANA)

Since 1997, the Access Native America Technology Conference has brought together educators, technology experts, and administrators from the 184 BIA funded schools, providing a forum for the exchange of ideas and to encourage education professionals to reach beyond the local community in order to gain new insight and learn innovative ways to integrate technology into their school programs. A primary focus of these meetings is to introduce the latest technology and demonstrate how it can enhance learning. Educational technology applications deepen student and teacher engagement and heighten student achievement by providing access to an unlimited variety of information. In 2005, the conference will focus on three areas:

- Leave No Teacher Behind: Hands-on sessions will guide teachers in transforming current classroom practices to being technology rich, thereby motivating students and improving instruction.

- Leave No School Behind: Workshops that focus on emerging technologies and school success stories provide a standard to measure your school's level of technological integration. Get ideas to take back to your campus immediately and ensure that you comply with bureau and federal security and child protection policies.

- Leave No Administrator Behind: Workshops will focus on building administrative support for school technology. Administrators will learn to be technology leaders through sessions designed to teach them how to evaluate technology programs, how to obtain funding, and how to use data for accountability purposes.

8.5 Digital Council Fire

Twenty-one training sessions on how to use the Digital Council Fire Web Site have been conducted regionally at locations near the schools. Teachers are shown how to access and use the site to improve classroom practices. Along with these sessions, the contractor provides interactive professional development training using the Webex.

9 TECHNOLOGY INFRASTRUCTURE

The Office of Indian Education Programs is constantly seeking resources and funding to build the capacity of schools to support the technological needs in their remote areas, in a world where access to information is vital to the success of every student, teacher and administrator. OIEP and its schools are actively working to deliver a quality education to the students in Indian Country.

The journey began in 1987 when OIEP established the first electronic bulletin board system in the United States devoted to American Indian schools. The Educational Native American Network (ENAN) bulletin board was used by principals, teachers and students who shared information, conducted research, and took online classes.

Along the way and with some bumps in the road, OIEP was able to reach its goal of having all schools able to access the information super highway in August, 2001. ENAN 2 now connects all 184 schools to each other and the world over a high speed network using both satellite and T-1 technologies.

The work is far from over as OIEP works to provide the best possible technologies to support student academic achievement, to provide professional development for teaching staff, and to strengthen American Indian communities.

The OIEP has recently validated its new Technology Plan to guide the efforts to provide technology services to students, teacher and administrators. The new technology plan offers a vision of a transparent infrastructure to that will nurture children's natural ability to learn, inspire educators to create deep learning experiences, and inspire communities to embrace their language and culture.

The technology plan outlines four goals for the technology available in the OIEP system:

- Technology will be used to significantly improve student achievement goals.
- Technology will be incorporated as a tool into the everyday life of the school
- A sustainable technology funding mechanism will be developed to support students, teacher and administrators
- A support system will be established to fully enable information sharing, instructional delivery and data exchange

9.1 Current Infrastructure Environment

- A network management system implemented by the OCIO IT staff is used for the management of the data network.
- The BIA/OIEP network is standardized on Cisco data networking equipment. It utilizes a centralized FTS-2002 service provided by MCI. The design of school data network is based on the discovery node requirements, plus 20% for projected growth within the schools.
- The OIEP currently has a CiscoWorks2000 NMS system at the primary and backup Network Operations Center (NOC).
- OIEP currently has a small NOC in Corbin, Virginia for remote monitoring; this site will remain the primary NOC site with Albuquerque, New Mexico being the backup NOC site.
- OIEP line officers are currently integrated into OIEP network (they are physically located at OIEP Agency/Administrative Offices) but will need to be completely migrated to OIEP Educational Network. Dynamic, ongoing legal action continues to slow the migration and stabilization of the OIEP network.
- School software and educational tools are selected independently, based on the specific needs of individual schools, classrooms and students.

9.2 Technology Guidelines

All programs and agencies within the Department of the Interior (DOI) must adhere to the guidelines set forth in the Federal Enterprise Architecture (FEA) The FEA is a business-based framework constructed as a collection of interrelated "reference models" that will facilitate cross-agency analysis, and the identification of duplicative investments, gaps, and opportunities for collaboration among Federal agencies. The Reference Models act as a Target Architecture for which each agency will align. OMB and agencies will use the FEA for describing and analyzing information technology (IT) and other capital investments, and to improve Federal government service to the citizen. It includes a strong focus on delivering services to the citizen along with government- to-government process and information exchanges along with consolidating and integrating the services along lines of business.

The FEA is being constructed through a collection of interrelated "reference models" designed to facilitate cross-agency analysis and the identification of duplicative investments, gaps, and opportunities for collaboration within and across Federal Agencies. These models are defined as:

- Performance Reference Model (PRM)
- Business Reference Model (BRM)
- Service Component Reference Model (SRM)
- Data Reference Model (DRM)
- Technical Reference Model (TRM)

The technology plan adheres to the BIA's TRM. The TRM is a component driven, technical framework used to identify the standards, specifications, and technologies that support and enable the delivery of service components and capabilities. The BIA TRM will be applied to all BIA information systems and information technology applications at all BIA organizational levels and environments. The BIA TRM provides guidelines for developing technical and system architectures that satisfy requirements across the enterprise and all missions, promotes interoperability, reuse, and open systems and is a tool for acquiring and deploying technologies. The BIA TRM guides the selection of interfaces, services and products in support of the BIA enterprise architecture. The scope of the BIA TRM is broad enough to assist in addressing a wide range of problems and system configurations. More specifically, the BIA TRM will:

- Establish and communicate a comprehensive set of approved standards and industry best practices, consistently applied across the BIA enterprise.
- Promote vendor independence through the use of standards based products and interchangeable components.
- Improve operational productivity through the use of consistent interfaces.
- Improve interoperability, system reuse, and information sharing across business units and domains.
- Improve compliance with security requirements.
- Improve scalability.
- Improve and facilitate the procurement process.
- Spend, more wisely, the available investment funds or budget.

Use of the BIA TRM will ensure that approved technologies, products, vendors, solutions, and standards are applied to all technology projects. As new technologies emerge, these components will be integrated, when appropriate, into the BIA TRM. Older or disused technologies will be 'sunsetted' and retired. Thereby, the BIA TRM is an evolutionary, and not static, repository and information resource.

Certain design assumptions have been made for the infrastructure to support Indian Country education. These assumptions will adhere to BIA policies, procedures, enterprise architecture, and reference models. The following are some of the assumptions and areas to be addressed by the plan. Some of the areas are as follows:

- Manageability – A centralized network management capability from the OIEP Network Operations Centers to maximize OIEP staff productivity with the ability for localized access by school or campus technicians to help facilitate problem resolution and avoidance.
- Convergence – Capability of LAN/WAN Data, Video, and Voice applications and systems convergence capabilities.

- Networking - TCP/IP based networking – A network based upon the globally accepted network protocol standard-TCP/IP. Most large, global networks including the Internet use IP protocols and its management and transport services. Convergence services layer well on TCP/IP.
- Standardization - Standardize on a single vendor, to the extent possible, for both data and voice equipment.

Some of the assumptions are as follows:

- CISCO or CISCO compatible was chosen for the data networking equipment -The OIEP has already begun to deploy CISCO equipment. An initial vendor assessment established that CISCO is the “Best-in-Class” solutions provider for the LAN/WAN convergence requirements.
- Nortel or Nortel compatible was chosen for the voice systems equipment. Traditionally, voice equipment procurement and maintenance fell under the responsibility of the local schools. Utilizing that strategy, a variety of equipment was deployed with little inter-networking capabilities. After initial vendor assessment, Nortel Networks was selected as the “Best-in-Class” voice equipment provider.
- Consistent architecture design – use a global network architecture design based upon a minimal number of site models. This modeling approach reduces the number of equipment variables that facilitates implementation, reduces the staff learning curve, and ongoing support.
- Re-deploy or upgrade existing equipment wherever possible. Any existing Voice and Data equipment would be reused if the systems were capable of supporting the level of services and integration required for the educational programs.
- Growth projection – The network was designed to accommodate increases in growth.
- Wiring and cabling – Designs assumed that all schools currently are wired and meet or exceed industry wiring standards for copper or single or multi-mode fiber (EIA/TIA).

9.3 Education Network Design

The Educational Native American Network -2 (ENAN 2, a.k.a. EDNET) is the logical interconnection of all the Office of Indian Education Programs (OIEP) data networks over MCI’s commercial network. The ENAN 2 is at the center of the OIEP’s schools access to electronic information that is absolutely critical to supporting and aiding student performance. The establishment of ENAN 2 utilizes a commercially available, competitively procured source for networking services. There are over 195 locations that require different levels of network support and management in terms of providing connectivity to OIEP-wide administrative systems, educational content delivery systems, educational collaboration systems, and specialized programmatic systems that create unique education-centric perspectives. These systems will have an ability to scale upward or downward depending on the demand for information. The three Star-Hub design of the ENAN 2 provides the OIEP network with designated information hub points. The "hand-off" of information at these locations ensures logical connectivity between ENAN 2

Hubs, and establishes the baseline infrastructure for OIEP's Intranet and Extranet architecture. This architecture likewise enables the ENAN 2 to connect to intra-departmental administrative systems at these hub points through the National Business Center (NBC). The service offerings provide a comprehensive offering of many different high-speed services. This method of logical and physical separation permits OIEP to implement a responsive security system for each hub network. The flexibility in this network design provides a network security architecture that can be deployed without compromising performance objectives. The network design establishes a principle of "regional ownership responsibility" for the protection of information maintained within the star-hub networks. It is through the ENAN 2 design that OIEP will have the option of acquiring management services or integration of commercial contractors and government resources to maintain complex IT networks necessary for achieving educational goals. OIEP has the option to determine when and where these resources will be needed.

The ENAN 2 network was procured through the General Services Administration's (GSA) Federal Technology Service (FTS) 2002 Contract, a Government Wide Administrative Contract (GWAC) that has a Firm-Fixed Price (FFP). The contract was competitively awarded and is a mandatory contract for the Department of Interior, Bureau of Indian Affairs. All competition for services, including Requests for Information (RFI), Requests for Proposals (RFP), evaluations, etc., was performed on behalf of the entire Federal government by the GSA. The second contract for the BIA OIEP NOC is a GSA FEDSIM FAST Contract (Firm-Fixed Price). The contracts are related in the fact that the FTS 2001 provides connectivity; the NOC contract manages the connectivity. Both contracts are pre-competed and available through the GSA FAST Master Contract.

9.4 Network Design Architecture

The data network utilizes the following:

- Layer 2/3 Switching - Implementing a switched Local Area Network (LAN) strategy will optimize LAN performance by eliminating network resource contention and provide optimal bandwidth between network resources and the workstation.
- Virtual Local Area Network (VLAN) - Implementing a VLAN strategy will optimize network performance by eliminating unnecessary traffic such as broadcasts not destined for users within a group VLAN. VLANs will allow for the segregation and aggregation specific traffic flows such as classroom broadcasting of educational content directed to specific classrooms or students.
- Local Area Network/Wide Area Network (LAN/WAN) Quality of Service (QoS) strategy to control and manage network services for applications that are network bandwidth or delay sensitive. A QoS strategy provides optimum bandwidth use for multimedia applications, e.g.: Voice Over Internet Protocol (VoIP).
- Global Domain Naming System (DNS) - A global DNS strategy across the OIEP educational network provides uniform and consistent network resource identification for monitoring and maintenance, and troubleshooting.
- Global Dynamic Host Configuration Protocol (DHCP) and Network Address Translation (NAT) strategies which will develop and deploy the OIEP educational network DHCP and NAT services.

- Deploy Backup Power protection – Provision all MDF and IDF equipment closets with UPS systems to minimize network downtime and equipment damage.

9.5 Application Architecture

OIEP has begun using the Application Service Provider (ASP) model to deliver application programs to schools on a subscription basis where financially viable. Typically, host applications are run from the data center and are delivered to the schools via the Internet. The ASP model allows software programs already purchased by the school to integrate the new software hosted elsewhere into a uniform subscription for students and teachers to use for instructional purposes. Benefits of using this approach include:

- Speed of implementation. The equipment, software programs, and expertise are in place to provide quick and scalable access to technology.
- Operational freedom and improved ability to focus on enhancing teaching and learning rather than troubleshooting IT concerns. ASP can provide routine technical maintenance and software upgrades which is important for our decentralized rural community of schools.
- Greater equality for accessing programs by utilizing the Internet as the delivery system. Bridges the gap between "have" and "have-not." Students and teachers have access to the same programs.
- Continuous access to programs. Expands learning beyond school walls and after school hours by providing 24-hours a day, 7-days a week access to programs using the Internet from school and from home.
- Financial flexibility. The ASP model has the potential to reduce fixed costs and lowers overall expenditures for hardware, software, and management thus providing greater predictability of IT costs.
- Allows schools to select specific instructional programs to be delivered "per user," thus allowing more focused and customized instructional solutions for every student and teacher.
- Reduces total cost. Estimated cost savings using an ASP versus a traditional LAN in a school environment is anywhere from 30-70%.

The OIEP application of the ASP model provides integrated on-line tools in a protected environment. Easy to use applications include e-mail, discussion boards, file sharing, and custom home pages designed specifically for the schools. Through the integrated e-mail solution, educators can easily monitor and control student e-mail activities. Also, all incoming and outgoing e-mail attachments and shared files are checked for viruses.

Benefits for IT Staff

- Meets federal regulations, including COPPA and CIPA.
- Reduces cost. No new hardware, software, or servers need to be purchased. No hosting or maintenance expenses apply.
- Easy to set up and manage.

Benefits for Teachers

- Addresses national and state standards for literacy and technology.
- Provides a direct connection to students for posting assignments and announcements.
- Focuses on teaching with technology rather than time-consuming administrative tasks.

Benefits for Students

- Provides a safe introduction to e-mail and technology.
- Improves literacy with writing activities geared to authentic audiences.
- Engages in "anywhere, anytime" learning with access from school, library, and home.

9.6 Data Design Criteria

The following data design criteria guidelines were used:

- Hub and Spoke design – The Intranet backbone is comprised of the three existing land-based Regional Hubs. Connections to OIEP funded schools were accomplished in a "Hub and Spoke" configuration.
- The tactical focus is to concentrate on OIEP schools and campuses that will connect to one of the three land-based Regional Hubs.
- A Network Management System currently being implemented by the OCIO IT Staff is used for the management of the data network.

Three models were developed for all schools and campuses: small schools, medium schools, and large schools.

Small Site – Sites classified with 1-MDF and 0-2 IDFs, or 24-96 nodes:

- Cisco Catalyst 3550 layer 2/3 modular switch in the MDF as the core switch.
- Cisco Catalyst 2950 in the IDFs for end-user devices.
- Cisco Catalyst Fiber aggregation switch for additional IDF connections beyond the two integrated gigabit ports.
- Cisco 3620 router for QoS, VoIP and for future connectivity requirements.

Medium Site - Sites consisting of 1-MDF and 3-7 IDFs, or 97-240 nodes:

- Cisco Catalyst 3550 layer 2/3 modular switch in the MDF as the core switch.
- Cisco Catalyst 2950 in the IDFs for end-user devices.
- Cisco Catalyst 3550-12G or a Cisco Catalyst 4000 series switch when exceeding the port capability of 3550-12G.
- Cisco 3640 router to provide expandability for future connectivity requirement and VoIP QoS requirements.

Large Site/Campus - A large campus is classified as a site having 1-MDF and 8 plus IDFs, 241 plus nodes:

- Cisco Catalyst 4000 layer 2/3 switches in the MDF as the core switch.
- Cisco Catalyst 4000 gigabit port card for IDF support.
- Cisco Catalyst 4000 series network card(s) for local user devices and Servers.
- Cisco Catalyst 2950 in the IDFs for end-user devices.
- Cisco 3640 router to provide expandability for future connectivity requirement and VoIP QoS requirements.

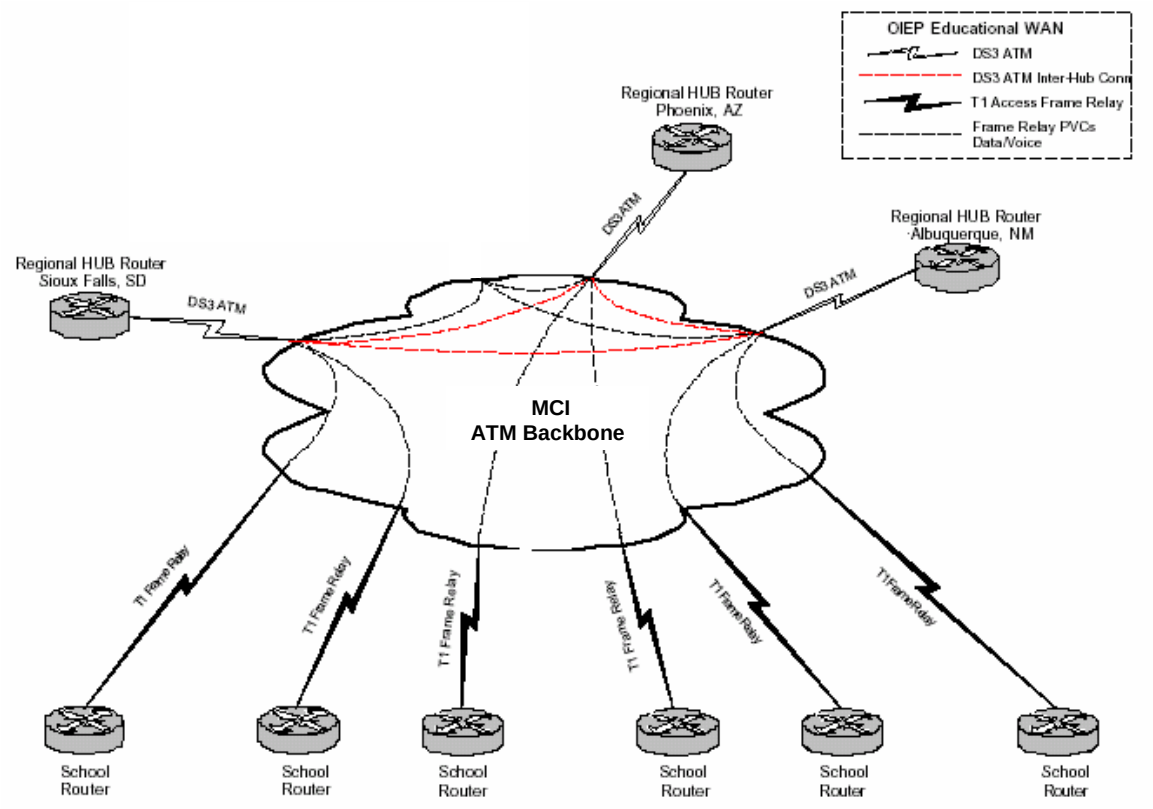
9.7 Data Network Requirements

The recommended OIEP Educational Network data network design is to provide a consistent technology plan that can be implemented across all of the OIEP funded schools, considering future growth, network management, and possible expansions to include affiliate schools. The OIEP Educational Network data network design will be hierarchical, facilitating easy maintenance and expandability as detailed in the following sections.

The OIEP network is currently standardized on Cisco data networking equipment. It utilizes a centralized FTS-2002 service provided by MCI. The design of school data network is based on the discovery node requirements.

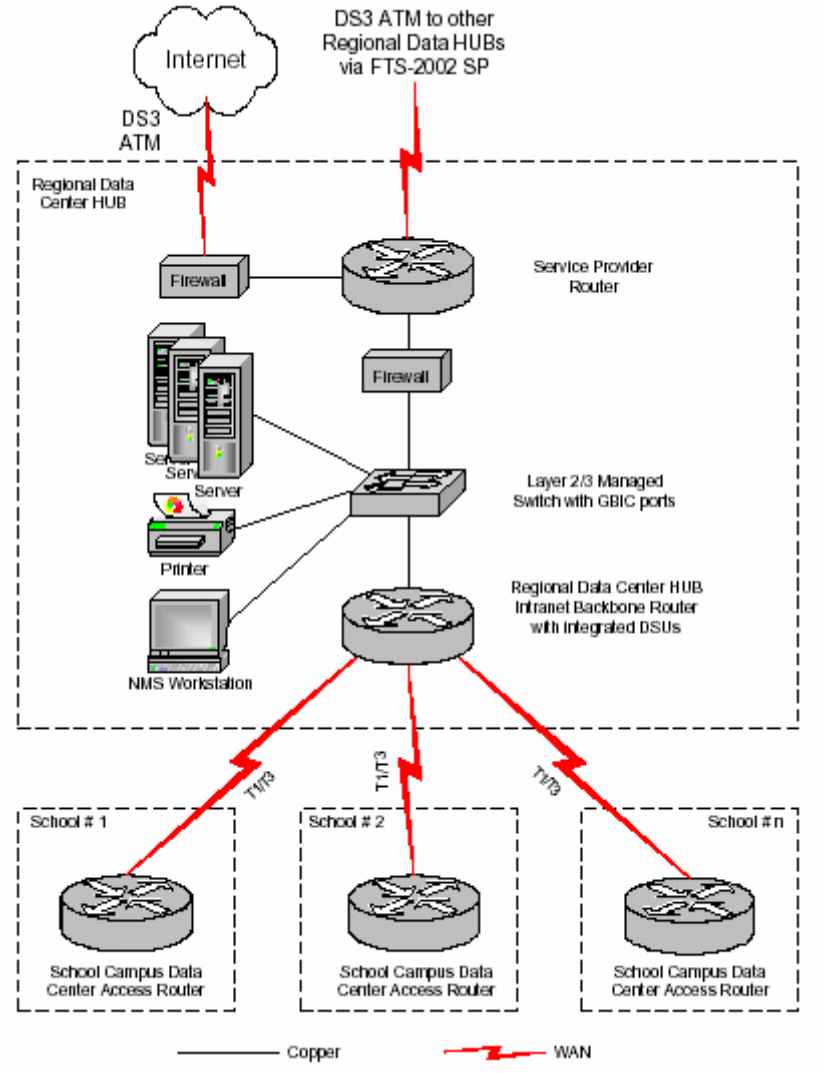
Among the key data network requirements are:

- Intranet – within OIEP Educational Network
- Internet – access to the Internet via OIEP Educational Network by individual schools
- Administrative applications – local and remote to OIEP Educational Network hubs
- Web servers – localized web hosting server capability to the individual school level
- Data communications – Intranet/Internet
- Voice over Internet Protocol (VoIP) WAN capability (Frame Relay/ATM)
- Video Streaming – On-Demand video streaming for CBT instruction
- Video over IP Streaming LAN/WAN capability
- Video Classroom – Video over IP for Distance Learning classroom instruction
- Video over IP Multi-Zone WAN capability (Frame Relay/ATM)
- Video Conferencing – Video over IP conferencing for inter school and BIA/OIEP offices
- Video over IP Multi-Zone WAN capability (Frame Relay/ATM)
- Future reservation ISP capability provided by local colleges



High Level WAN Data Network Diagram

Sample Regional Data Network HUB Configuration:



9.8 BIA School Campus Network Design

Each school campus data center (MDF) will connect to the Educational Native American Network (ENAN) via FTS 2002 facilities. Wide Area Network (WAN) connection quantity and speed will be determined by school size. The MDF requires a Layer 2/3 switch with local 10/100 Mbps Ethernet LAN node connections (provided via Layer 2 stackable switches), and wiring closet (IDF) trunk connections (interface dependent on campus wiring used). Hardware and software redundancy will be provided as required.

VLANs will be utilized, i.e. Admin VLAN, Staff VLAN, Teacher VLAN, Student VLAN, Class VLAN, Maintenance VLAN, etc. The VoIP via LAN connection to Nortel ITG equipment will be utilized for connectivity within ENAN, i.e. school to school, school to OIEP Line Officers, etc. Similarly, video conferencing and video streaming over IP via 10/100 Mbps Ethernet LAN connection to Cisco IP/VC video conferencing equipment will be utilized for connectivity within ENAN, i.e. intra-school and inter-school, etc. The service provider facility will show both with and without redundancy.

All data network systems will be provisioned with sufficiently sized UPS backup power in case of commercial power loss.

A typical UPS configuration is provided below as a guide:

- Rack mounted UPS, sized appropriately for designed and provisioned equipment.
- Use of existing UPS equipment, if available, should be considered.

Considerations for constructing relay racks:

- Used to mount school campus data center (MDF) provisioned equipment.
- Use of existing rack equipment, if available, should be considered.

All school campus wiring closets (IDFs) connect via fiber at 1 Gbps Ethernet or via CAT 5/5e/6/6e cables at 100 Mbps Ethernet using switch trunk port(s) at the wiring closet (IDF) switch to the school campus data center (MDF) switch trunk port(s).

- Layer 2 10/100 Ethernet modular stacking switches, quantity and sizing will be based on number of local workstation connection requirements.
- Redundant 10/100 Mbps and/or 1 Gbps Ethernet trunk ports for connectivity to campus data center (MDF), interface dependant on school campus wiring.
- Appropriate stacking modules and cabling.

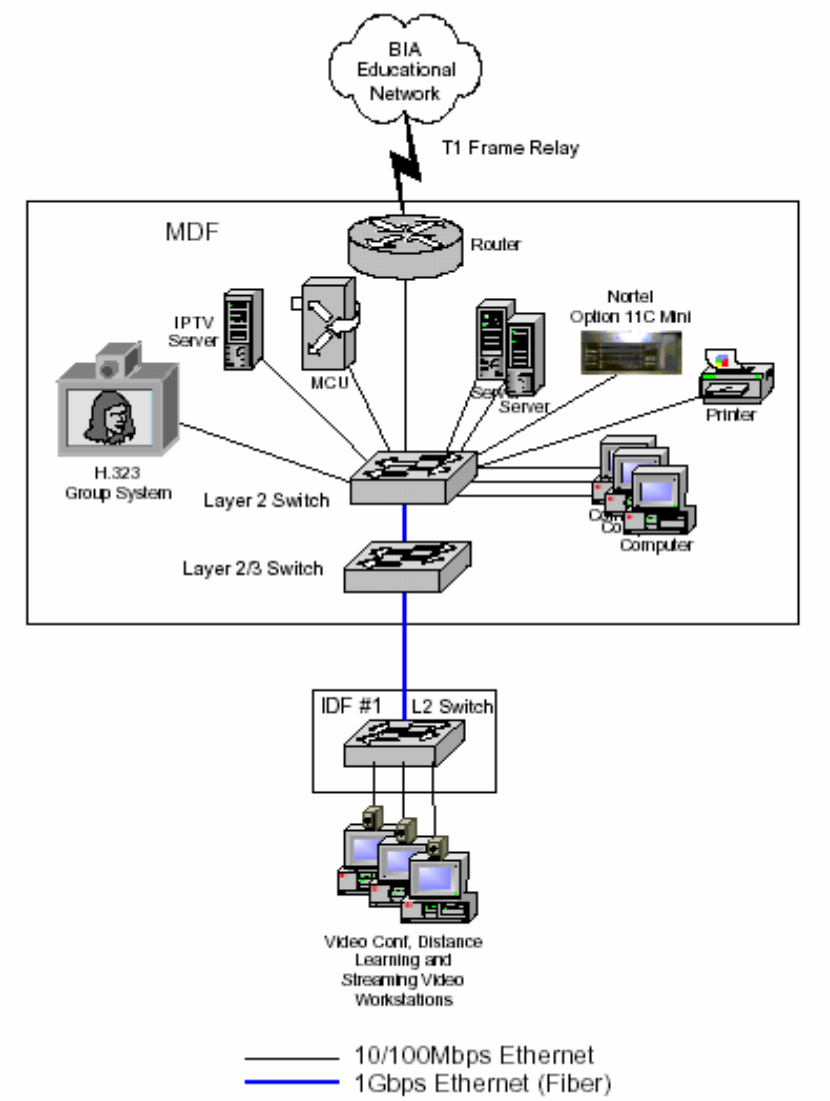
The following are UPS guidelines:

- Rack mounted UPS, sized appropriately for designed and provisioned equipment.
- Use of existing UPS equipment, if available, should be considered.

Wiring closet (IDF) wall mounted rack enclosure:

- Used to mount school campus wiring closet (IDF) provisioned equipment
- Use of existing rack equipment, if available, should be considered.

Sample small school campus data topology diagram:



The school campus network design is structured through the following patterns:

- Small campus – 1-campus data center (MDF) and 0-2 wiring closets (IDFs), 24-96 Nodes.
- Medium campus – 1-campus data center (MDF) and 3-7 wiring closets (IDFs), 97-240 Nodes.
- Large campus – 1-campus data center (MDF) and 8 plus wiring closets (IDFs), 241 plus Nodes.

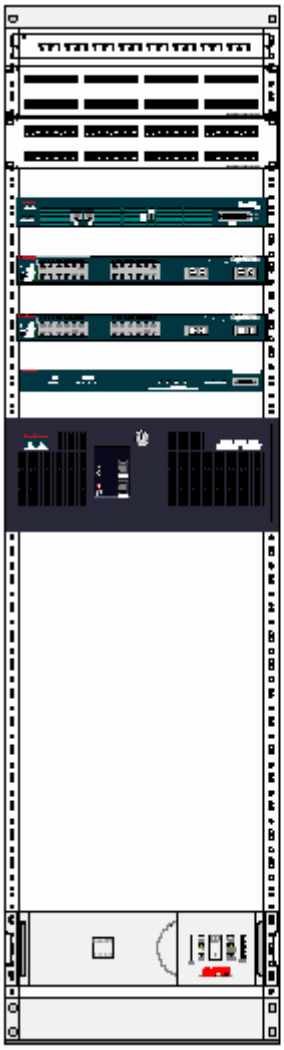
The school campus data center (MDF) will be collocated with the voice network equipment as outlined in the Voice Network Design Criteria.

The choice of location for the school data center (MDF) is in the following order:

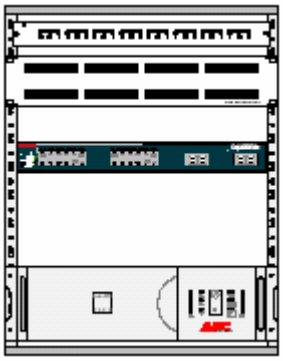
- School campus administration building or office.
- Largest K-12 school building or office.

Please note that actual placement is determined by existing or planed service provider facilities, or data network equipment.

Sample small school campus data center physical diagram:

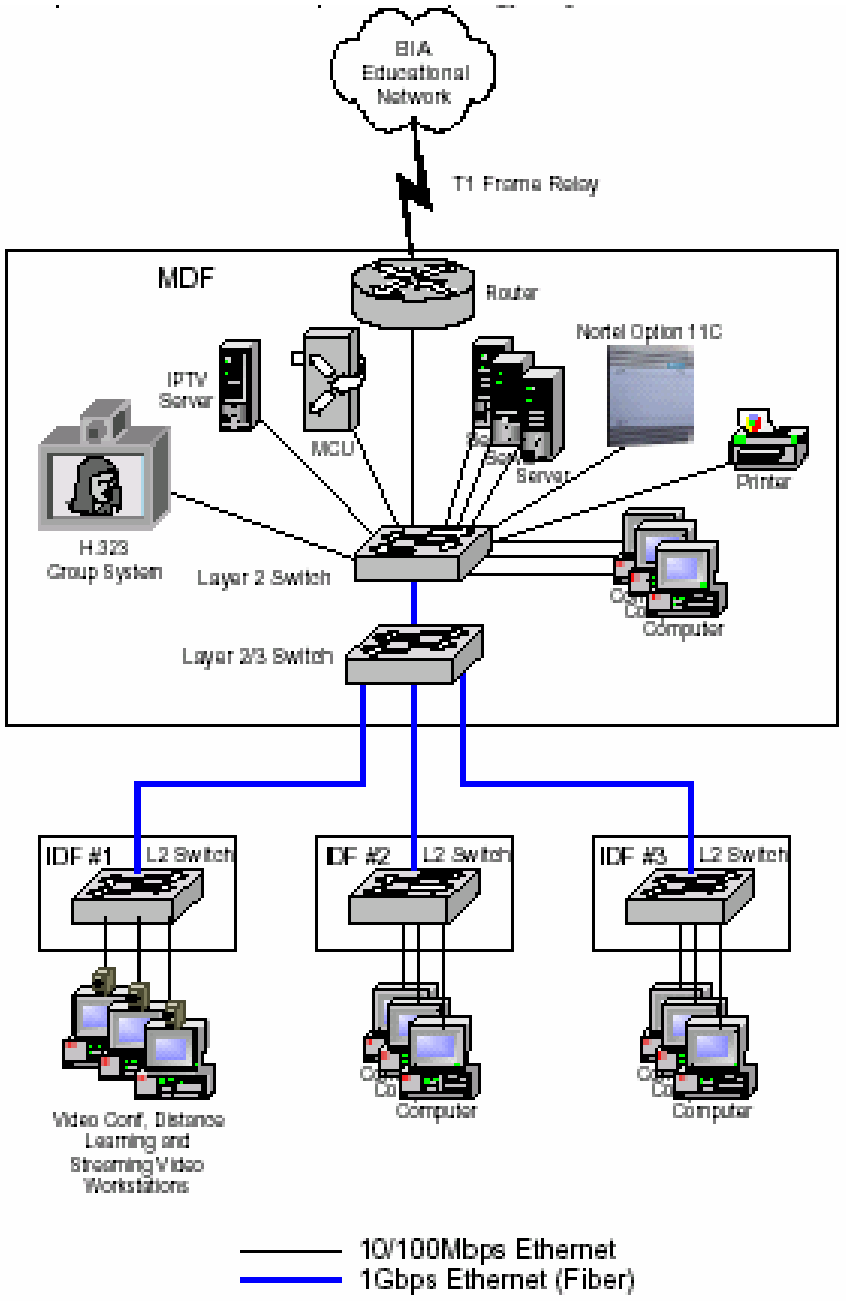


Sample small school campus wiring closet (IDF) physical:

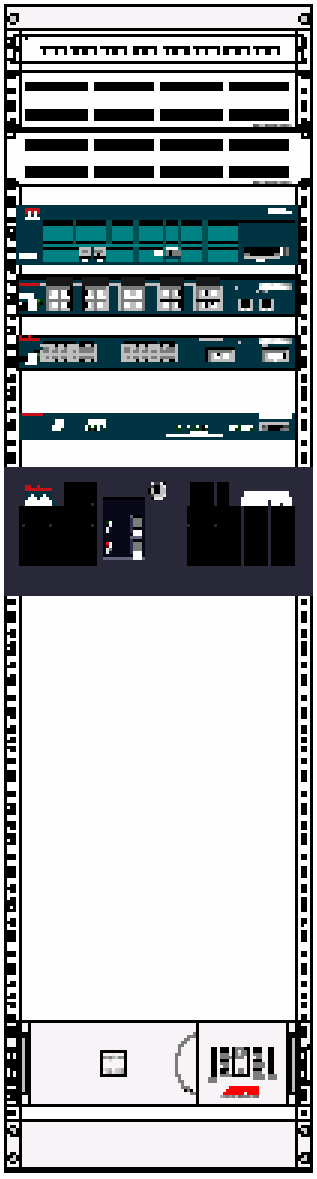


Medium school campus design template:

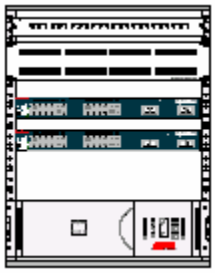
Medium campus – 1 campus data center (MDF) and 3-7 wiring closets (IDFs), 97-240 nodes.



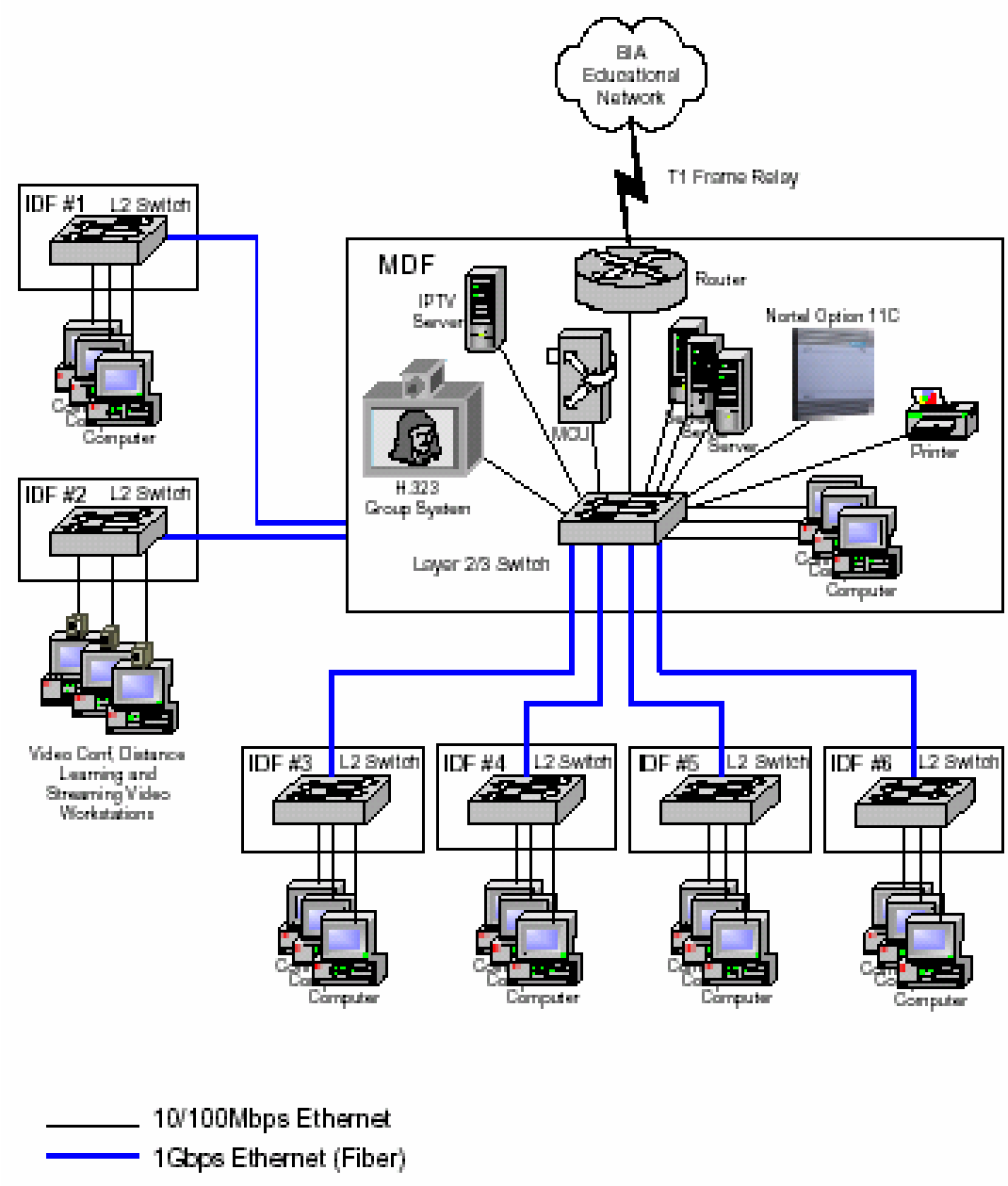
Sample medium school campus data center physical diagram:



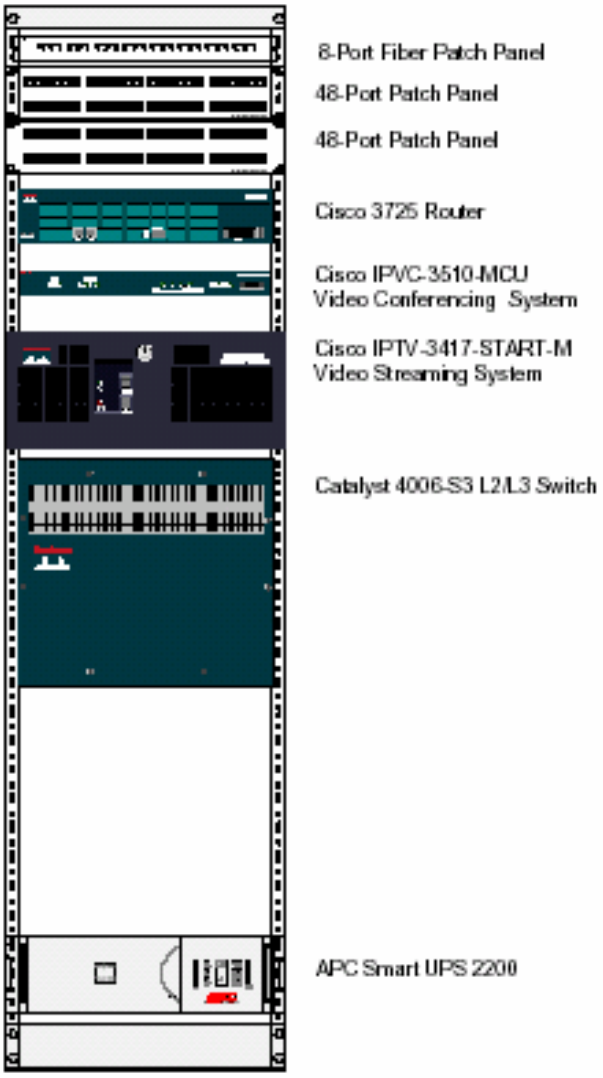
Sample medium school campus wiring closet (IDF) physical diagram:



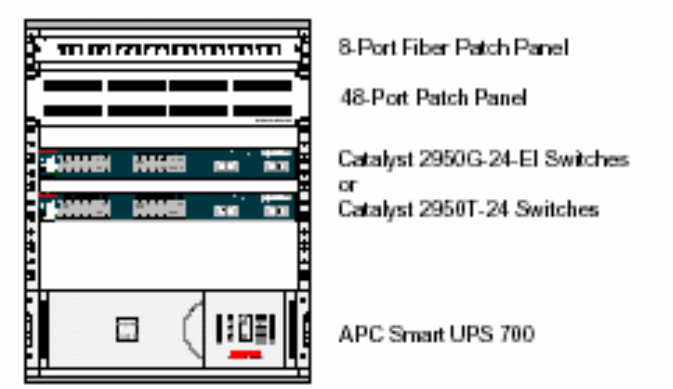
Sample large school campus data center configuration:



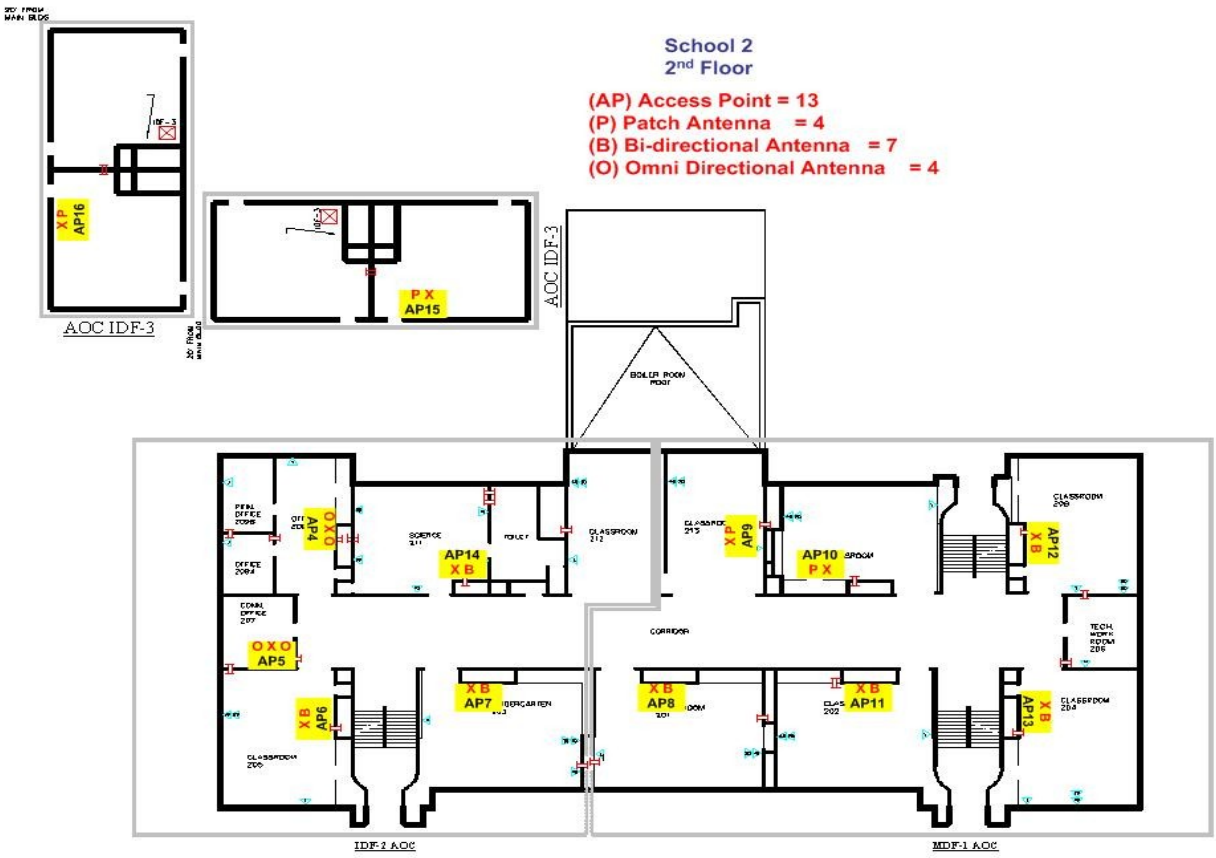
Sample large school campus data center physical diagram:

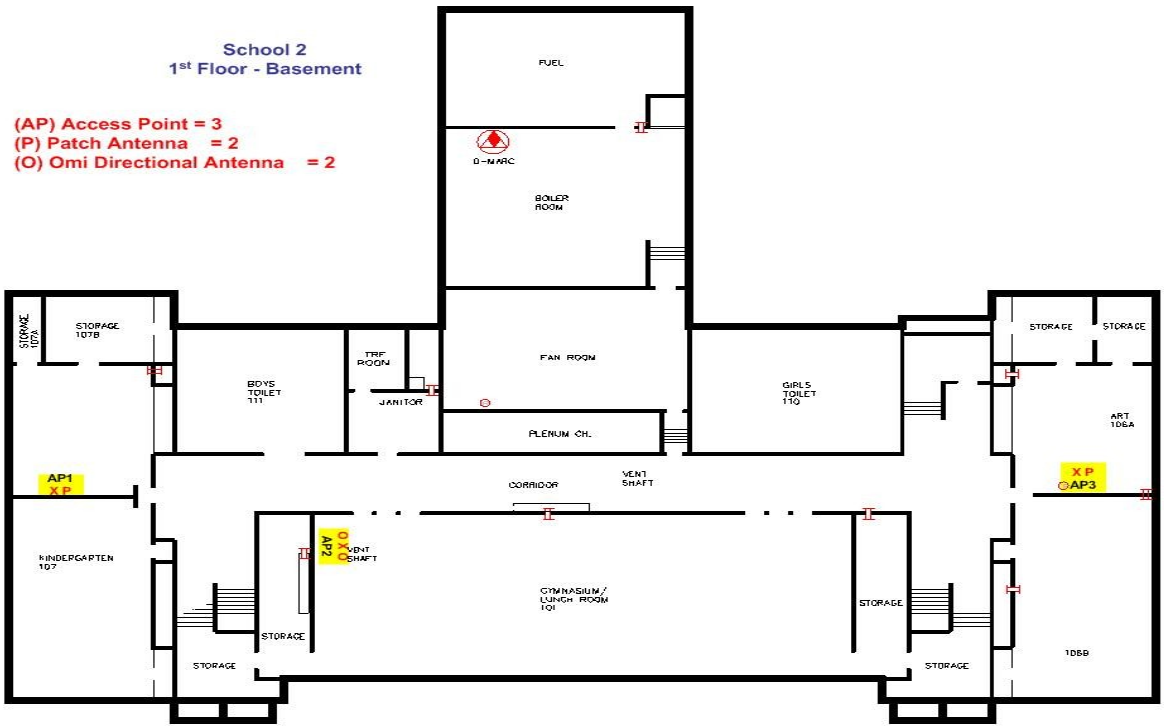


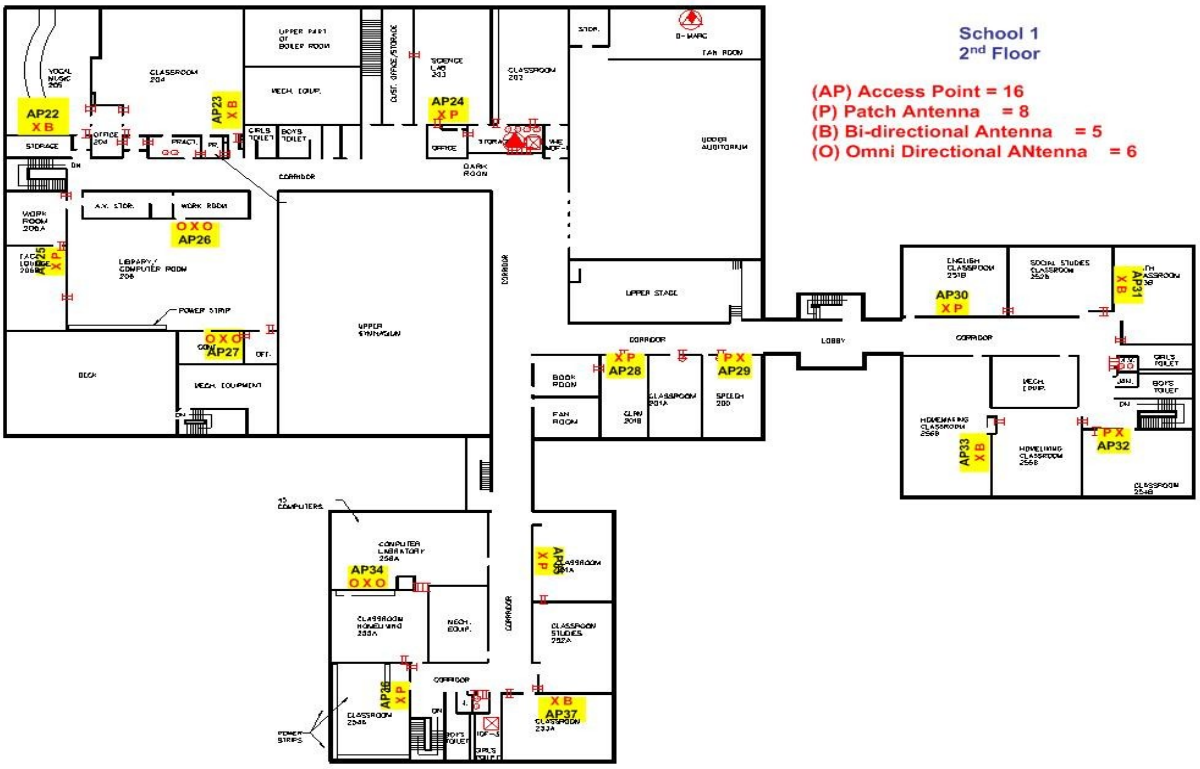
Sample large school campus wiring closet (IDF) physical diagram:

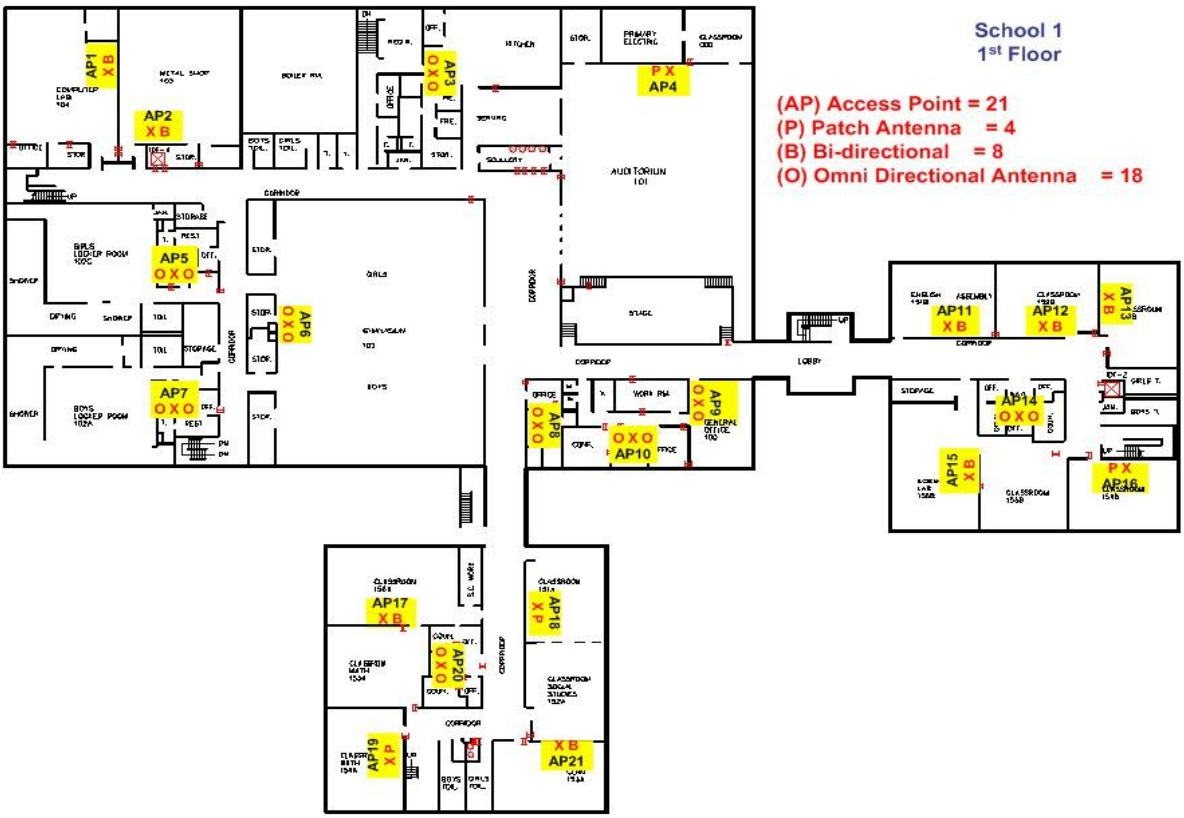


Sample classroom diagrams:


School 2
2nd Floor
(AP) Access Point = 13
(P) Patch Antenna = 4
(B) Bi-directional Antenna = 7
(O) Omni Directional Antenna = 4
AOC IDF-3
AOC IDF-3
P X
AP15
X P
AP16
BOILER ROOM
AP14
X B
AP10
P X
AP12
X B
AP9
X P
AP7
X B
AP8
X B
AP11
X B
AP13
X B
AP6
O X O
AP5
IDF-2 AOC
MDF-1 AOC


School 2
1st Floor - Basement
(AP) Access Point = 3
(P) Patch Antenna = 2
(O) Omi Directional Antenna = 2
FUEL
BOILER ROOM
FAN ROOM
PLENUM CH.
VENT SHAFT
CORRIDOR
BOYS TOILET 111
GIRLS TOILET 110
JANITOR
TRF ROOM
STORAGE 107B
STORAGE
STORAGE
STORAGE
STORAGE
STORAGE
ART 106A
106B
KINDERGARTEN 107
GYMNASIUM / LUNCH ROOM 101
AP1
X P
AP2
O
AP3
X P


School 1
2nd Floor
(AP) Access Point = 16
(P) Patch Antenna = 8
(B) Bi-directional Antenna = 5
(O) Omni Directional ANtenna = 6
AP22 XB
AP23 XB
AP24 XP
AP26 OXO
AP27 OXO
AP28 XP
AP29 PX
AP30 XP
AP31 XB
AP32 PX
AP33 XB
AP34 OXO
AP35 PX
AP36 XP
AP37 XB


School 1
1st Floor
(AP) Access Point = 21
(P) Patch Antenna = 4
(B) Bi-directional = 8
(O) Omni Directional Antenna = 18
AP1 XB
AP2 XB
AP3 OXO
AP4 PX
AP5 OXO
AP6 OXO
AP7 OXO
AP8 OXO
AP9 OXO
AP10 OXO
AP11 XB
AP12 XB
AP13 XB
AP14 OXO
AP15 XB
AP16 PX
AP17 XB
AP18 PX
AP19 XP
AP20 OXO
AP21 XB

9.9 Voice Requirements

The OIEP does not currently have an enterprise-wide voice network, coordinated dial-plan or standardized voice equipment across Indian Country schools. However, efforts are currently underway to offer platform solutions to schools. Small islands of diversified phone and key systems are networked based on the platform standard OIEP defined. This decision will enhance the schools productivity, ability to communicate, and to gain cost efficiencies in the future. The OIEP, under the guidance of the OCIO, is now tactically positioned to implement a voice architecture that will fully support their impending educational programs.

The following major requirements have been identified:

- Bandwidth Consolidation - The Integration of Voice and Data through VoIP services to utilize Wide Area circuits more efficiently and cost-effectively.
- 7 Digit Dialing - To enhance the ability of the individual schools to communicate across the entire network, a 7-digit dialing capability was identified. A user would have the ability to dial a 3 digit school "access code" plus the person's extension.
- System Management - A Network Management System will be installed and will be utilized by the OIEP as well as the local Native American technician to manage the voice systems for:
  - Adds, moves, and changes of telephones
  - Perform maintenance
  - Perform Traffic reporting
  - Call Detail Recording reporting

9.10 Voice Network Architecture

Migration to digital telephone systems for the schools continues. This approach permits guaranteed bandwidth within the school as well as provides 99.99% reliability. The systems have the ability to deploy IP telephones and clients and their associated gateways as required.

As change over occurs, each school will be connected utilizing VoIP gateways. The local schools within a defined geographic area will be connected via a "voice" data backbone in a hub and spoke arrangement. These Voice Hub Routers are connected via point-to-point circuits providing the optimal Quality of Service (QoS) by controlling packet loss, delay, and jitter. The goal is that each OIEP School will be able to communicate via the WAN frame relay network. The user will be able to dial an abbreviated Coordinated Dialing Plan (CDP) number (7 digits) to any other school. The new voice network will either translate the dialed digits into an IP address or convert it to a public number if the data network is unavailable or congested. If a user dials the Public Switched Telephone Network (PSTN) telephone number, the new network will recognize the number dialed and automatically redirect the call over the private network as stated above.

Voice mail services will be centralized where it makes sense from a time zone, distance, and cost perspective. Multiple schools may share a voice mail server and be connected to it via the wide area network. Message waiting indication will be provided to all users of

the system either by lighting their message key, an audible sound on their telephone, or by out dialing to a pager. Messages can be networked (composed or transferred) to any voice mail user on the new OIEP voice network.

9.11 Wireless Network Architecture and Security

Wireless infrastructure must be robust enough to allow each wireless device to "see" and thus be able to link to a minimum of five (preferably six) portals or wireless transceivers at any location within the buildings. Multiple portals or transceivers need to be able to be deployed in defined areas with no channel conflict experienced. There must be a clear, concise migration path from 802.11b to 802.11a and g with the capability to upgrade to 54 MB speed and beyond without a "forklift" upgrade to the originally deployed infrastructure. All infrastructure components must be able to function at both 2.4 GHz and 5 GHz frequencies simultaneously to insure complete, low-cost migration to faster speeds. Implementation must include the use of a true dual-band, single port antenna architecture, with simultaneous coverage at 2.4 GHz and 5 GHz. The infrastructure must show significant prowess in RF engineering and illustrate the capability and experience to control RF signal propagation to accommodate an increase in device and user population through bandwidth aggregation in defined areas. The entire wireless infrastructure must include the functionality of rogue AP detection and eradication and must include the capability for intrusion detection in all coverage areas.

Wireless LANS (WLAN) provide untethered network communication to students, giving the flexibility of mobility coupled with high throughput. The primary benefit to the education community is user mobility, rapid installations, flexibility and scalability. Because of these inherent features and associated benefits, a significant number of WLAN deployments started taking place before enterprise-class security could be built within the standard. Because BIA schools are government organizations stringent security requirements are required. Therefore, constraints about what type of wireless devices can be used and the locations where they can be used are in place. An insecure wireless network can open up loopholes in any organizations IT infrastructure. WLAN security for the schools must be treated as a subset of the IT security systems.

9.12 Maintenance and Support

Maintenance and support of the systems necessary to manage and run a healthy education program with the diverse, rural population of Indian Country demands a fluid, dynamic process in which proposed and ongoing projects must be continually monitored throughout their life cycle. The education technology portfolio is largely populated with legacy systems under local school control. NCLBA and other legislation requires OIEP in its role as the SEA to layer external Federal mandates over existing legacy systems and either incorporate the new initiatives or produce defensible rebuttals very quickly. Successful investments and those that are terminated or delayed are evaluated both to assess the impact on future proposals and to benefit from any lessons learned. Phase one of the support process requires that each investment receive the appropriate level of managerial review and that coordination and accountability exist, however, the day-to-

day pressure to be responsive to students ultimate needs drives individual schools, staff and teachers and in turn the OIEP/OCIO to short circuit the process.

During 2004 the OCIO worked through the impacts of reorganization and effectively created a staffing matrix where communications could readily flow. Each region and program area within the BIA (OIEP) had previously had separate information technology support organizations. During the last year, the OCIO has worked steadily to consolidate program support and develop economies of scale by eliminating redundancies and enhancing technologies. The OCIO has been able to eliminate redundant costs, such as overlapping vendor contracts and duplication in organizational activities leading to improved Indian Affairs business processes.

The OIEP/OCIO continue working to install a strong process that can be followed so that approval of request by individual schools, if granted, become an approval of concept, indicating that the agency or school office has done the preparatory work necessary to fully justify the investment, and has the mechanisms in place to manage the new investment through acquisition, development, implementation and into operations to the real focus which is educating the students. As a result of the reorganization of October 2003 the following chart represents suggested responsibilities for both the CIO and OIEP staff in their quest to help the students. At this point in the process the investment in support and maintenance continue realign and compete for funding through the agency budget process.

9.13 Ensuring Quality Tech Support in Schools

Technology has not yet fully established itself in the school setting, as it has in many business sectors. When the network goes down in a school, the administrators, teachers, and students just wait until it comes back up. Any information lost may not be restored. In the instructional setting, preparing for an outage may mean that teachers file printouts as backup materials. The same outage in the business world can cost hundreds of thousands of dollars in lost sales; lost instructional time has not been valued in the same way. Yet, as schools rely more and more on the use of technology (both administratively and instructionally), the loss of time and information is increasingly understood to be expensive and disruptive to the learning process. Maintenance and backup systems are therefore beginning to be recognized as important throughout the school setting.

Unfortunately, schools have a long way to go. As a point of comparison, large companies strive to have at least one professional computer support person for every 50 computers (laptops or PCs) in use. Few, if any, schools enjoy a ratio this low. With the many other demands for hiring in most school systems, it's no surprise that administrators cannot focus on improving technology support departments-especially if this would come at the expense of hiring teachers to provide additional educational options or reduce class sizes.

Nevertheless, for technology to reach its potential in K-12 education, technology experts-not just technophiles-must be intimately involved in using a school's precious technology dollars to match the school's mission and serve its unique student body.

Achieving these goals starts with a firm commitment to quality in technical staff. This can be achieved in four ways:

1. Administrators should recognize that technology experts must be able to focus on their roles full time.
2. These individuals must have an understanding of the educational process, as well as computer technology.
3. Schools must budget realistically not only to purchase technology, but also to maintain and upgrade it on a regular basis so that it can be used by students and teachers.
4. Tech staff must be committed to making themselves key members of the school's planning process, not just crisis managers who keep the machines running.

In recognition of the need for more technical support for the schools, the IA/BIA reorganization of October 2003 placed responsibility for defining and developing technology architecture to support education within the OCIO. Definition of support requirements has begun (see the chart above in 6.8).

9.14 Defining Maintenance and Support

Maintenance means those preventive, diagnostic, updating, replacement, and repair procedures that a school has in place. Maintenance can be provided either by persons who are part of the school system or through an outsourced contract. It includes documenting trends and patterns in the use of applications or equipment.

As schools commit more funds to the purchase of technology, they must also look at the support needed by the end users of these purchases. Most school systems have designated an office of technology support, but rarely do tech support personnel work directly with school staff. Usually, the only times tech support visits a school is when there is a major infrastructure malfunction or new equipment is being installed. Even more rarely can central-office technology support personnel be of assistance in educating users, say, on how a software package works.

The majority of support personnel time is focused on acquiring, installing, and maintaining hardware and the technology infrastructure. The ratio of end users (or computers) to professional support personnel is generally very high. As schools record the levels of support staffing and maintenance incidents, they can work to determine acceptable support ratios.

Much support for instructional staff comes from volunteer or part-time technology coordinators, working on donated time or in addition to other instructional obligations. Help desks are still a relative rarity. Use of students in these roles is not uncommon.

10 TECHNOLOGY SECURITY

10.1 Network/Computer Security

The OIEP network is a valuable resource that is freely available to all pupils and staff from most computers situated throughout the schools. Due to the wide variety of uses by a great many users, a number of precautions have to be taken to help ensure that the system is kept available and in full working order:

- Supervised Use
- User Access
- File Security
- Software Inventory
- Access to Software
- Access to Printers
- Hardware Security
- Electrical Safety Standards
- Fire Precautions
- Internet Security

10.2 Acceptable Use Policy

The development of an Acceptable Use Policy is required for individual school technology plans, and will be kept on file at each school. With the current push for computer technology in the classroom, many educators and parents fear dangers that the uncensored Internet might hold for children: inappropriate or obscene words and images; violence; and people who pose an online threat. One strategy that BIA/OIEP will use to defuse such dangers is a student Acceptable Use Policy, or AUP, for the Internet.

All BIA/OIEP Acceptable Use Policies will contain the six key elements: (1) a preamble, (2) a definition section, (3) a policy statement, (4) an acceptable uses section, (5) an unacceptable uses section, and (6) a violations/sanctions section.

10.3 Internet Safety Policy

The development of an Internet Safety Policy will be required for individual school technology plans. The Children's Internet Protection Act mandates that schools and libraries receiving e-Rate monies have in place a policy of Internet safety for minors that include the operation of a technology protection measure with respect to any of its computers with Internet access that protects against access through such computers to visual depictions that are obscene, pornographic in nature, or harmful to minors. Schools are responsible for creating, maintaining and enforcing the operation of a technology protection measure during any use of computers by minors.

OIEP has provided for blanket CIPA protection on the OEIP network (ENAN 2). ENAN 2 is a wide area network that connects Bureau Funded Schools to each other and the Internet. The Internet connections reside at three Hub locations: Albuquerque, New Mexico, Phoenix, Arizona, and Sioux Falls, South Dakota. At each of these hubs, the BIA has installed CIPA Compliant content filters. These filters are Cisco Websense devices which protect the users of the network from inappropriate content. Each school connected to the ENAN 2 is protected by a general filter as well as individual filters applied according to their local standards (based on the age and other factors of the students.) The Websense filtering system is operated, managed, and monitored by the network operations center located in Fredericksburg, Virginia. Records from the system can be obtained from the service center. This system provides for blanket CIPA requirements coverage for all Schools using the OIEP network.

11 BUDGET

The Director, OIEP is located in Washington, D.C. Central Office operations are split between Albuquerque and Washington, D.C. The Deputy Director for School Operations (Albuquerque) provides oversight to the two BIA operated colleges and to 23 Education Line Offices (the field offices). The Education Line Offices supervise principals at BIA-operated schools and represent OIEP in its dealings with the schools operated by tribes or tribal organizations under contracts or grants with BIA.

The Office of Indian Education Programs (OIEP) budget covers elementary and secondary education and residential programs for Indian students not served by public and sectarian schools; residential care for some Indian students attending public schools; and special services to meet the needs of Indian students in such areas as early childhood development, bilingual education, post-secondary education, and adult education. Funding is also provided by the U.S. Department of Education (ED) under the Elementary and Secondary Education Act (as amended by the No Child Left Behind Act) and the Individuals with Disabilities Education Act. These funds are administered by OIEP as a State Education Agency under an agreement with ED. As a State Education Agency, OIEP is responsible for ensuring that all ED program and funding requirements for Indian education are achieved.

11.1 Strategies for Financing Technology

Management of change has become the trademark of technical project management and the focus of the development of a master technology plan for a program. The technical approach must consider short-term as well as long-term business, education, and adjunct technical requirements. Building and rebuilding the information infrastructure serves to sustain and enhance student and staff development. Student achievement is reviewed to determine whether stated goals are being met and if successful activities can be adopted by other schools throughout Indian Country. With proper layering of the education information architecture, the most concrete portions of the system may change (e.g., specific vendors, products, applications, data), while more abstract layers of the education infrastructure remain stable (e.g., the types of services delivered centrally, the selected standards). The growth and expansion of technology will force OIEP to continually adapt to changes by redefining the program.

The OEIP participates in the Universal Service Fund for Schools and Libraries, commonly known as "e-Rate." The e-Rate program provides public and private schools and libraries access to affordable telecommunications and advanced technologies. Discounts are based on the number of students eligible for the National Free Lunch Program. Schools and libraries in low income areas and rural areas qualify for the largest discounts. The discounts are paid directly to the companies that provide the technology services. Each year, OIEP submits a consortium application requesting funds to cover connection fees for satellite services or T-1 lines to connect participating schools to the Internet giving them access to the Educational Native American Network (ENAN 2). Schools are eligible to apply for e-Rate discounts on their own for telephone and other communications services.

11.2 Maintenance and Construction

Program Element	*Units*	*2004 Actual*	*2005 Enacted*	*2006 Budget Request*
Replacement School Construction	($000)	139,612	105,550	43,494
	FTE	*0*	*0*	*0*
Tribal School Construction Demonstration Program	($000)	5,926	12,253	0
	FTE	*0*	*0*	*0*
Education Facilities Improvement and Repair	($000)	146,335	142,531	128,381
	FTE	*242*	*242*	*242*

Subactivities	*Units*	*2004 Actual*	*2005 Enacted*	*2006 Budget Request*
Elementary & Secondary (Forward funded)	$(000)	452,874	449,721	454,725
	FTEs	*2,349*	*2,261*	*2,255*
Other Elementary and Secondary	$(000)	77,557	76,218	68,182
	FTEs	*322*	*322*	*322*
ISEP	$(000)	350,578	349,218	357,482
	FTEs	*2,165*	*2,077*	*2,077*
Administration Cost Grants	$(000)	48,576	45,704	45,218

The BIA has developed a 5-year Deferred Maintenance and Construction Plan. The plan places projects in order of priority with a primary focus on health, safety, and critical resource protection.

The Replacement School Construction program provides architectural and engineering services for major renovation or replacement of facilities. BIA uses the Facilities Condition Index (FCI) to determine when facility replacement becomes more cost-effective than continued repair. The FCI also provides a baseline from which the BIA will measure and track the condition of facilities.

The Education Facilities Improvement and Repair program is primarily focused on addressing health, safety, code, and standard deficiency issues in BIA facilities. Base programs include repair and renovation construction, roof repair and replacement, temporary classroom acquisitions, demolition, and routine maintenance.

11.3 Applying for Program Funds

Before receiving E2T2 funds, a school or eligible partner must have a long-range Education Technology Plan (Ed Tech) that meets state and local requirements. The applicant may use an existing or modified technology plan to comply with requirements of the Ed Tech legislation. As appropriate, a Local Education Agency may seek a waiver of this requirement in order to receive funds to develop the plan.

Approximately 50% of OIEP appropriated funds are made available to all schools through their Consolidated School Reform Plan. The remaining 50% is made available through a competitive grant process.

Awards range from $5,000 to $50,000 for applications from a single school and up to $20,000 maximum for partnership projects. The scope and size of the project and the number of students served will be the deciding factor in determining the size of the competitive awards.

Projects are funded for up to three years. Each year, the award will be re-evaluated and a decision for continuance will be made based on the grantee's satisfactory progress in meeting its goals and meeting adequate yearly progress requirements under Title I.

12 MONITORING AND EVALUATION

The OIEP meets the Consolidated Application for Title II, Part D requirement to provide goals, performance objectives, indicators, and data sources to assess the effectiveness of improving access to and the use of educational technology by teachers and students in support of academic achievement. The plan includes action steps that will indicate whether each of the goals is being met in the specified manner. Because the BIA Indian Education Technology Plan is a dynamic blueprint for systemic change, we must review, refine, revise, and rewrite it as necessary to keep it viable. Performing scheduled reviews and making adjustments to the plan will ensure that the latest technology is utilized to enhance the education process.

Considering the rate at which new technologies (fiber optics, virtual reality, artificial intelligence, etc.) are being developed, the need to address a host of issues relative to technology development and cost becomes critical to program success. The development of new knowledge about the learning process suggests that we examine the goals and objectives of the plan in a manner designed to include these new understandings. It is imperative, therefore, that we consider how we learn, what structures promote learning, and what technologies are available to enhance the learning process.

12.1 Evaluation Process

In order to effectively monitor progress and respond to new developments and opportunities, mid-course corrections are necessary. The evaluation process will be continuous and will be conducted by a technology planning committee. The committee will be comprised of members representing the regular classrooms, the library, the technology program, parents, and the administration. The committee will meet twice during the school year to address the following issues:

- Have any technological developments emerged that could improve the educational program?
- In consideration of the accomplishments by the school and in response to new technologies, should the list of identified needs be revised?
- Based on the current state of technology, are the goals and strategies specified by the plan still appropriate?
- What other factors should be considered as a part of the plan review and updating process?

As part of the ongoing monitoring and evaluation process and to perform interim adjustments, the committee will seek answers to the following questions:

- Has the technology plan been successful in meeting the needs of the school?
- What has been the degree of success relative to each specific goal?
- What interim programmatic changes are needed in response to unmet goals?
- What interim programmatic changes are needed in response to new technologies?
- What barriers to success have been encountered?

APPENDIX 1

ENHANCING EDUCATION THROUGH TECHNOLOGY

2002 – 2007

Office of Indian Education Programs
Enhancing Education Through Technology Plan
2002 – 2007

OIEP's Vision

The Office of Indian Education Programs (OIEP) shares its vision for all Tribal populations of *"Uniting to promote healthy communities through life long learning."*

OIEP' Mission

Our mission is *"To provide quality education opportunities from early childhood through life in accordance with Tribes' needs for cultural and economic well being in keeping with the wide diversity of Indian Tribes and Alaska Native villages as distinct cultural and governmental entities."*

Background

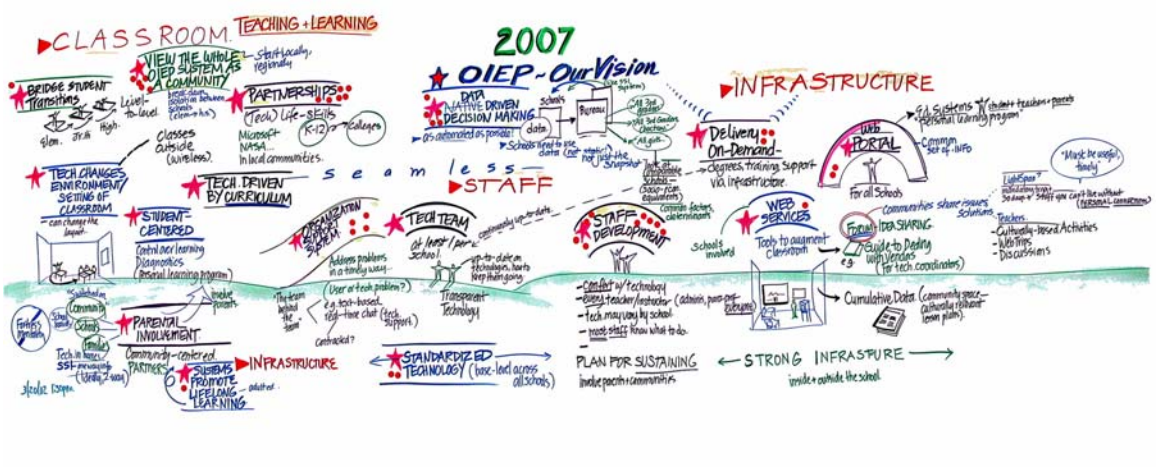
The Enhancing Education Through Technology (E2T2) Plan has been used to guide technology efforts since the plan was first developed in 2002. The vision, the goals and the recommended strategies have been used to guide OIEP's efforts to meet the technology requirements of the No Child Left Behind Act (NCLB), including Title IID Enhancing Education Through Technology and other title programs, the Individuals with Disabilities Education Act, and other technology programs such as e-Rate.

The OIEP provides technical assistance to and has oversight for 184 BIA funded sites in 23 States. These sites include some of the most challenging conditions of rural isolation coupled with a lack of financial resources. In January 2002, a group of 100 educators were given the task to examine the progress that the Bureau of Indian Affairs, Office of Indian Education Programs (BIA/OIEP) had made in reaching its technology goals. During their initial evaluation, this Technology Task Group identified strengths and limiting factors in the existing approach.

As a result of the Task Group study, it became clear that the BIA/OIEP had exhibited many strengths on which to build. The Task Group recognized that there were people in

the field as well as in the Central Office who demonstrated exceptional "can do" entrepreneurial abilities to make significant progress in combining technology and education. The Task Force recognized OIEP's significant accomplishment of connecting every classroom in every school.

The Task Group also identified some of the important challenges that have the potential to limit future expansion of technology in BIA funded schools. Limiting factors identified by the Task Group included the need for administrative support, the scarcity of dedicated resources (such as trained network administrators), the lack of properly trained teachers, and some resistance to the full integration of technology into the curriculum. The Group went on to develop a clear vision of how future technology should evolve in the schools.



What came out of this study was a vision outlining the key themes and ideas that were to become part of the Master Technology Plan. The Task Group envisioned that OIEP would continue to create and support a strong infrastructure platform that would support the tribal school community. They envisioned a web portal that would provide realtime information, instructional strategies, and online professional development to teachers, administrators, and other school staff. That same web portal would provide online instruction and communication tools to students for enhanced learning. A consensus of essential educational beliefs established a foundation for an overall plan. These include the following:

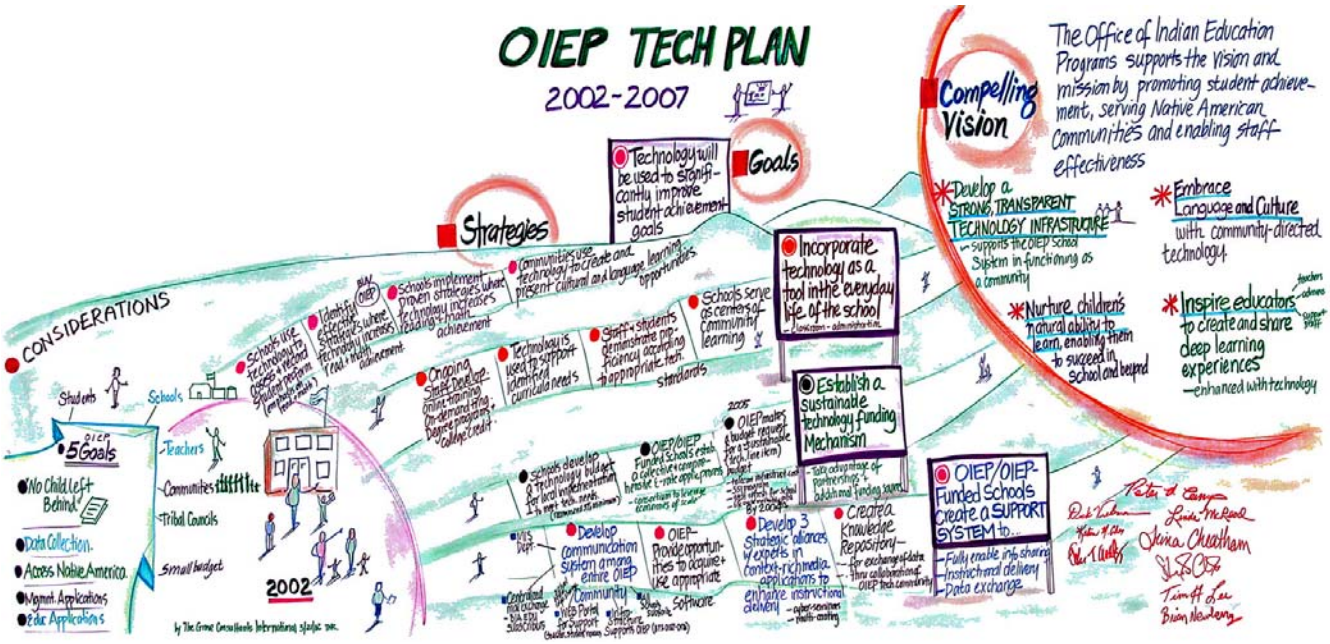
- The Task Group recognized that technology has the capacity to nurture children's natural ability to learn and that technology should build on that strength. With this in mind, it was determined that the curriculum should dictate what technology will be employed rather than letting the available technology determine the curriculum.

- The Task Group recognized that family and community are two of the most important core values of the Native American communities served by OIEP. Technology should serve communities and support the preservation and teaching of native languages so that native communities remain vibrant.

- The Task Group envisioned schools using technology to assist communities through community based education models such as students employing global positioning satellite systems to track river life or to study the environmental impact of roads.

- The Task Group envisioned that technology could empower and inspire educators to create new and exciting learning environments. Such environments would enable teachers to access data from a range of sources to create dynamic new methods to facilitate learning so that students can master increasingly difficult and complex challenges.

Based on these findings, the Task Group worked with representatives from the BIA Central Office to develop the following model. This plan outlines OIEP's technology vision.



The outcome of the study and the result of this model serve to support the OIEP vision and mission to assist Native American communities, promote student achievement, and enhance the effectiveness of education professionals. Key tenets include:

- developing a strong yet transparent technology infrastructure to support the BIA school community;
- nurturing each child's natural ability to learn thereby enabling them to succeed in school and beyond;
- embracing native language and culture within the community; and,
- inspiring educators (teachers, administrators, and support staff) to create and share a meaningful learning experience enhanced through technology.

Goals

Technology in the classroom creates an environment that facilitates significant improvement in student achievement. Specifically, the OIEP Enhancing Education Through Technology Plan supports the use of technology in the daily operation of schools to improve the facilities and provide the necessary tools for teachers and administrators to meet education goals. The OIEP will establish a sustainable technology funding mechanism to support BIA schools and will create and maintain a system to enable information sharing, provide for instructional delivery, and facilitate data exchange.

Strategies to Implement OIEP Goals

1. Technology will be used to significantly improve student achievement goals by:

    a. using technology to assess and record student performance (with emphasis on reading and math)
    b. identifying effective strategies to use technology to increase reading and math achievement
    c. implementing proven strategies where technology increases reading and math achievement
    d. using technology to create and present cultural and language learning opportunities
    e. using assistive technologies to promote achievement for students with disabilities as well as others as needed.

2. Technology will be incorporated into the daily operation of schools to improve the facilities and provide the necessary tools for teachers and administrators to meet education goals. This will be accomplished through:
    a. continuous staff development to include online training, degree programs, on-demand training, and college credit
    b. using technology to support identified curricula needs
    c. schools serving as centers of community learning
    d. awareness and use of assistive technologies for instruction by the staff.

3. OIEP will establish a sustainable technology funding mechanism. The schools will be able to take advantage of various business partnerships and utilize additional funding sources by:

    a. addressing the need for assistive technologies within the schools
    b. developing a technology budget for local implementation to meet technology needs for each school (OIEP recommends a minimum budget of 5% of the total school budget)
    c. establishing a collective and comprehensive e-Rate application process. A consortium application creates leverage and increases economies of scale.
    d. requesting a technology budget line item, including:
        - telecommunication infrastructure costs

- student statistics program management software
- a systemic technology refresh process for the classrooms and administrative processes of the schools (life cycle methodology).

4. OIEP will assist BIA funded schools in the development of a life cycle support system to fully enable information sharing among students, faculty, and administrators, to address electronic instructional delivery, and to facilitate data exchange while keeping the privacy of data protected.

5. OIEP will develop enhanced electronic communication systems to centralize and improve e-mail exchange among all schools (BIA.edu subscribers). Enhancements will be made to the Web portal for education support and help desk support will be addressed. The OIEP will deliver all information to local school boards.

6. OIEP will promote and support the use of State-of-the-art learning tools such as cyber seminars and multicasting in order to allow the school systems to build strategic alliances with experts in context-rich media applications in order to improve instructional delivery. A knowledge repository will be created for historical reference, the exchange of data, and to support the tracking of student achievement over time.

OIEP Plan to Meet the Statutory Requirements of the No Child Left Behind Act (NCLB), Title II D, Enhancing Education Through Technology

The following paragraphs address the 15 statutory requirements (in italics) of the No Child Left Behind Act, Title II D:

(1) ***Outline long-term strategies for improving student academic achievement, including technology literacy, through the effective use of technology in classrooms including through improving the capacity of teachers to integrate technology effectively into curricula and instruction.***

a. Schools use technology to assess and record student performance (with emphasis on reading and math). Specific initiatives include:

Native American Student Information System (NASIS)
OIEP is planning, organizing, and executing directed information technology projects in support of the BIA School Statistics Initiative (SSI) program. It has been determined that due to infrastructure and internal support limitations, a centralized solution operated by a web base application service provider is the most efficient and expeditious approach to meeting the mandates of Public Law 107-110. NASIS will allow access to viable information on student achievements and help a school to view their achievements over time.

Wireless-Reading First

BIA was awarded $30.4 million dollars for six years of funding (2003 – 2009) under the U.S. Department of Education's Reading First program. Reading First is the cornerstone piece of legislation included in the No Child Left Behind Act of 2001 and has the goal of supporting schools with implementation of scientifically researched reading instruction and assessment in grades kindergarten through third to ensure that all children read proficiently by the end of third grade. Currently, the OIEP is funding 24 schools as Reading First schools in 11 different States: Maine, Minnesota, Wisconsin, Michigan, Idaho, North Dakota, South Dakota, New Mexico, Arizona, Utah, and Washington.

Preventing or remediating reading failure within the schools requires an on-going process of monitoring the progress of student achievement at frequent intervals. Technology plays a significant role in this area. The BIA contracted with Wireless Generation Inc., an education technology firm that takes commonly used paper-based early reading assessments and makes them easier to administer by moving them to handheld devices that are Internet enabled. By putting these paper-based assessments on its mClass software platform, Wireless Generation has been able to dramatically streamline the assessment process.

The 24 Reading First schools are using this wireless technology to synchronize data in a secure website environment with instantaneous assessment and reporting results. The Reading First program purchased personal digital assistants and had them installed with the necessary software to administer the required assessments. In addition, desktop computers in the 24 Reading First schools had software installed to allow for synchronization of the assessment data. The software reduces time-consuming paperwork and manual calculations thus reducing human error. Teachers are able to administer the required assessments, receive the results instantaneously, and are then able to make immediate adjustments to students' reading instruction in order to ensure that all children are reading proficiently at every grade level.

Online Assessments

The OIEP encourages the use of online assessments to provide immediate feedback on student progress toward meeting education standards. Applicants to the competitive Title II D, Enhancing Education Through Technology grants and the Title IV, 21st Century Grants were encouraged to use online assessment as a means of evaluating the progress of students in their schools. Currently 49 BIA-funded schools use the Edutest Online Assessment to supplement their instruction so that students can master their standards. Other BIA schools have chosen other assessment systems, such as the online system provided by Northwest, a company focused on formative assessment.

The School-Wide Information System (SWIS)

The School-Wide Information System (SWIS) is a web-based system designed to help education professionals use available data to design individual as well as school-wide student interventions. The three primary elements of SWIS are:

- an efficient system for gathering information,
- a web-based computer application for data entry and reporting, and
- a practical process for using information for decision making.

These three elements give school personnel the capability to evaluate individual student behavior, the behavior of groups of students, behaviors occuring in specific settings, and behaviors occuring during specific time periods of the school day. SWIS reports indicate times and/or locations prone to elicit problem behaviors allowing teachers and administrators to shape school-wide environments to maximize students' academic and social achievements.

b. Identify effective strategies where technology increases reading and math achievement.

Access Native America Technology Conference

OIEP encourages the use of technology to increase reading and math achievement in all schools: The Annual Access Native America Technology Conference introduces education professionals to innovative technology through technical demonstrations, vender presentations, and informational workshops. Presentations cover broad uses of technologies including computers, scientific calculators, probes, and global positioning satellite systems. The purpose is to educate teachers and administrators in the use of real world technology to accomplish real world tasks. In addition to these systems, schools are introduced to the wide range of technology programs, such as “Plato Learning” and “Accelerated Reader and Math.”

OIEP Digital Council Fire

OIEP’s customized portal, the Digital Council Fire offers culturally relevant internet resources such as web-based trips, thematic units, lesson plans, and student publishing as well as numerous resources for teachers, students and parents. This website is made available to all schools in the BIA system and is used in public schools that serve American Indian Children. The website was developed collaboratively with the Lightspan partnership, the Center for Education Technology in Indian America (a division of the Laguna Department of Education), and OIEP. The site also provides access to teaching resources and lesson plans tied to State standards.

c. Communities use technology to create and present cultural, language, and learning opportunities.

Virtual Museums

Through a partnership with the National Museum of the American Indian, BIA schools are engaged in virtual projects. These projects serve to engage tribal communities by bringing school aged children together with tribal elders to share their wisdom, rich history, and culture with the world at large via the Internet. Students use digital photography and presentation tools to exhibit artifacts and share stories as they have been passed down through the generations.

(2) Provide a description of the State educational agency's goals for using advanced technology to improve student academic achievement, and how those goals are aligned with challenging State academic content and student academic achievement standards.

OIEP will meet the Consolidated Application for Title II, Part D requirement to provide goals, performance objectives, indicators, and data sources to assess the effectiveness of improving access to and the use of educational technology by teachers and students in support of academic achievement. Establishment of benchmarks and performance goals for each of OIEP's Technology Goals will be accomplished by:

a. conducting an onsite assessment of the technology available at each school by December 30, 2006
b. monitoring school Internet traffic over the Educational Native America Network 2 (ENAN2) each quarter.
c. monitoring classroom use of the OIEP/ Digital Council Fire each quarter.
d. administering ISTE NETS Survey on a yearly basis
e. conducting a survey to determine student mastery of International Society of Technology in Education (ISTE) National Education Technology Standards (NETS) at Grades 2, 5, 8 and 12

For specific goals, indicators, evidence sources, timelines, and data collection methods, please refer to the following tables.

Goal 1. Technology will be used to significantly improve student achievement.

Performance Objective	Evidence Source	Timeline	Data Collection Method
By 2013-2014, 100% of the students will be proficient or advanced in language arts as determined by the BIA's multiple measures	**State Assessments In 2003-04, 52.3% % of students in BIA-funded schools were proficient or advanced in Language Arts.**	**Yearly beginning in 2001-02**	**Online Annual Report**
By 2013-2014, 100% of the students will be proficient or advanced in Mathematics as	**State Assessments In 2003-04, 54.6% % of students in BIA-funded schools were proficient or advanced in Math**	**Yearly beginning in 2001-02**	**Online Annual Report**

determined by the BIA's multiple measures.			
By 2007-2008, 100% of students will meet or exceed State or ISTE NETS grade level instructional standards for student literacy in technology.	**Student Portfolios and Work Products** **In 2003-04, 33%of students met or exceeded State standards for student literacy in technology.**	**Baseline in Spring of 2003**	**Online Annual Report**

Goal 2: Incorporate technology in the daily operation of schools.

Performance Objective	Evidence Source	Timeline	Data Collection Method
Teacher, student and administrator use of Education Native American Network (ENAN2), the OIEP network that connects all 184 schools to the Internet will increase by 25% each year until 2013-2014.	**Router traffic monitor**	**Ongoing**	**Reported by OIEP Information Resource Management**
Teacher and Student use of the OIEP/ Council Fire Website will increase from 2500 teachers in the 2002-03 school years by 25% each year until 2013-2014.	**Traffic Report**	**Beginning September, 2002**	**Reported to OIEP by Light span**
By 2006-07 100% of teachers will be qualified to use technology for instruction.	**Snapshot Survey (www.southcentralrtec.org)** **In 2003-04 58 % of teachers were qualified to use technology for instruction.**	**Each Spring beginning in 2003**	**Teacher survey administered and reported to OIEP by SEDL**

Goal 3 Establish a sustainable funding mechanism to address technology life cycle management.

Performance Objective	Evidence Source	Timeline	Data Collection Method
The ratio of the number of computers that are 4 years old and newer to the number of students in the school will increase from __;__ to 1:3 by 2005-06	**Baseline Survey** **Yearly Monitoring using online tools provided by NXTRA, Inc**	**To be completed each year by 12/30.**	**Conducted onsite by NXTRA, Inc. 11/02** **Yearly Monitoring using online tools provided by NXTRA, Inc.**

Goal 4 Create a support system to fully enable information sharing, provide instructional delivery, and promote data exchange.

Performance Objective	Evidence Source	Timeline	Data Collection Method
Increase the number of online data collection efforts from two in 2003-04 to all Bureau of Indian Affairs mandated education reports by 2007	**Number of reports**	**By 2008**	**Online inventory of required reports**

(3) Provide a description of how the State educational agency will take steps to ensure that all students and teachers in the State, particularly students and teachers in districts served by high-need local educational agencies, have increased access to technology.

Since the mid 1980's, the OIEP has been an innovator of education technology in the BIA schools. The Educational Native American Network (ENAN) was the first Native American Education Electronic Bulletin Board that connected all schools through a toll free dial-up service. Beginning in 1997, a program called Access Native America, began connecting all BIA schools and classrooms to the Internet over the Education Native American Network (ENAN). ENAN2 now connects all BIA funded schools and continues to be supported by the Deputy Assistant Secretary, Information Resources Management (DAS-IRM), Chief Information Officer, Indian Affairs (OCIO-IA).

The OCIO-IA supports the network management system implemented to support ENAN2.

- The ENAN2 network is standardized on Cisco data networking equipment utilizing a centralized FTS-2002 service provided by Ultra Technologies. The design of the school data network is based on the discovery node requirements, plus annual projected growth within the schools.
- The CiscoWorks2000 NMS system serves as the primary and backup Network Operations Center (NOC).
- The primary Network Operations Center (NOC) is located in Woodbridge, Virginia. The backup site is located in Albuquerque, New Mexico.
- OIEP line officers are currently integrated into the OIEP network (they are physically located at OIEP Agency/Administrative Offices, nationwide) but need to be completely migrated to the OIEP Educational Network. Ongoing legal action continues to slow the migration and stabilization of the network.
- School software and additional educational tools are selected independently, based on the specific needs of individual schools, classrooms, and students.

In addition, OIEP continues to encourage the use of technology through competitive and formula grants programs. Schools use technology applications across all programs to meet the requirements of the individual programs.

(4) ***Provide a description of the process and accountability measures that the State educational agency will use to evaluate the extent to which activities funded under this subpart are effective in integrating technology into curricula and instruction.***

Each year OIEP gathers information on progress toward meeting objectives for its online Annual Report. The Bureau collects information on student progress in meeting either the BIA Student Technology Standards or the technology standards of the State where the school located (BIA operates schools in 23 different States).

At the national level, BIA has adopted the technology standards of the International Society of Technology in Education (ISTE). BIA schools may follow either the ISTE standards or the standards of the State where they are located.

The ISTE Technology Standards fall under six broad categories:

1. **Basic operations and concepts**: Students must be proficient in the use of technology and be able to exhibit a thorough understanding of the nature and operation of technology systems. In order to demonstrate this, students must be able to:

    - Use input devices (e.g., mouse, keyboard, remote control) and output devices (e.g., monitor, printer) to successfully operate computers, VCRs, audiotapes, and other technologies. (ISTE Standard 1)

    - Use a variety of media and technology resources for directed and independent learning activities. (ISTE Standards 1 and 3)

    - Communicate about technology using developmentally appropriate and accurate terminology. (ISTE Standard 1)

- Use developmentally appropriate multimedia resources (e.g., interactive books, educational software, elementary multimedia encyclopedias) to support learning. (ISTE Standard 1)
- Gather information and communicate with others using telecommunications with support from teachers, family members, or student partners.

2. **Social, ethical, and human issues**: Students need to understand the ethical, cultural, and societal issues related to technology. In order to demonstrate this, students must:
   - practice responsible use of technology systems, information, and software.
   - develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
   - work cooperatively and collaboratively with peers, family members, and others when using technology in the classroom. (ISTE Standard 2)
   - demonstrate positive social and ethical behaviors when using technology. (ISTE Standard 2)
   - practice responsible use of technology systems and software.
3. **Technology productivity tools:** Students use technology tools to enhance learning, increase productivity, and promote creativity. For example, students can:
   - Use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.
   - Use a variety of media and technology resources for directed and independent learning activities. (ISTE Standards 1 and 3)
   - Create developmentally appropriate multimedia products with support from teachers, family members, or student partners. (ISTE Standard 3)
   - Use technology resources (e.g., puzzles, logical thinking programs, writing tools, and digital cameras, drawing tools) for problem solving, communication, and illustration of thoughts, ideas, and stories.
4. **Technology communications tools:** Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences. For example, students can:
   - Use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
   - Use technology resources (e.g., puzzles, logical thinking programs, writing tools, and digital cameras, drawing tools) for problem solving, communication, and illustration of thoughts, ideas, and stories.
5. **Technology research tools:** Students use technology to locate, evaluate, and collect information from a variety of sources. For example:

- Students use technology tools to process data and report results.
- Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.

6. **Technology problem-solving and decision-making tools**: Students use technology resources for solving problems and making decisions.
   - Students use technology resources (e.g., puzzles, logical thinking programs, writing tools, digital cameras, and drawing tools) for problem solving, communication, and informed decisions.
   - Students employ technology in the development of strategies for solving problems in the real world and illustration of thoughts, ideas, and stories. (ISTE Standards 3, 4, 5 and 6)

Progress in meeting these standards is measured each year using the State assessment standards or through other measures as prescribed by the State where the school is located. The number of students meeting the standards is reported annually.

In addition, the OIEP requests that the schools report the results of a teacher survey that provides an indication of their level of technology proficiency. The survey covers 14 areas of technology competency including such topics as the teacher's understanding of basic computer use, file management, word processing, spreadsheet, database, graphics, e-mail, research/information-searching, desktop publishing, video production, technology presentations, internet, responsible use/ethics, and technology integration. (See Attachments)

Finally, every three years each BIA funded school is visited as part of OIEP's Continuous Improvement Monitoring Process. All aspects of each school's programs are reviewed by a team of outside experts coordinated by the Mountain Plains Resource Center, University of Utah. Included in the review is the school's use of technology.

(5) ***Provide a description of how the State educational agency will encourage the development and utilization of innovative strategies for the delivery of specialized or rigorous academic courses and curricula through the use of technology, including distance learning technologies, particularly for those areas of the State that would not otherwise have access to such courses and curricula due to geographical isolation or insufficient resources.***

The BIA technology architecture is designed to facilitate present and future distance learning opportunities. The Educational Native American Network provides a consistent technology plan that can be implemented across all of the BIA funded schools, taking into consideration future growth, network management, and possible expansions to include affiliate schools. The network is currently standardized on Cisco data networking equipment. It utilizes a centralized FTS-2002 service provided by Ultra Technologies Inc. The design of the school data network is based on discovery node requirements.

Among the key data network requirements are:

- Intranet – within the Educational Native American Network (ENAN)
- Internet – access to the Internet via ENAN by individual schools
- Administrative applications – local and remote connections to ENAN hubs
- Web servers – localized web hosting server capability to the individual school level
- Data communications – Intranet/Internet
- Voice over Internet Protocol (VoIP) WAN capability (Frame Relay/ATM)
- Video Streaming – On-Demand video streaming for CBT instruction
- Video over IP Streaming LAN/WAN capability
- Video Classroom – Video over IP for Distance Learning classroom instruction
- Video over IP Multi-Zone WAN capability (Frame Relay/ATM)
- Video Conferencing – Video over IP conferencing for inter-school and BIA/OIEP offices
- Video over IP Multi-Zone WAN capability (Frame Relay/ATM)
- Future reservation ISP capability provided by local colleges

Schools are encouraged whenever possible to maximize their network capacity to fully utilize innovative strategies for the delivery of specialized or rigorous academic courses and curricula with technology, including distance-learning technologies. With schools in 23 States working to meet their respective State requirements, the OIEP is unable to offer such courses, however schools are encouraged to use any available resources to develop and share information along these lines.

(6) ***Provide assurance that financial assistance provided under this subpart will supplement, and not supplant, State and local funds.***

BIA is funded through Congressional appropriations whereby a variety of programs support the acquisition of technology for education. In the past, the BIA has not been allowed to request specific funds for school technology, however budget guidelines have changed and the process has begun whereby the agency is permitted to request a specific budget line item for education technology. Budget line item development is a long-term process. To assist in moving this process forward in 2003, the Office of the CIO was given the responsibility to assist with the development and life-cycle maintenance of OIEP's technology initiatives. Funding received under Title II D for technology is used as a further source of technology funding. In addition, schools have access to funds from other sources for use in supporting other technology initiatives.

(7) ***Provide a description of how the plan incorporates teacher education, professional development, and curriculum development, and how the State educational agency will work to ensure that teachers and principals in a State receiving funds under this part are technologically literate.***

The Center for School Improvement (CSI) is the State Education Agency responsible for providing technical assistance and guidance in all areas of school improvement and school reform. Professional development is a critical element of school improvement and school reform. Several funding sources mandate professional development activities that must be implemented at both the State and local school levels.

As part of each school's Consolidated School Reform Plan (CSRP), every school program must include a professional development plan that is based upon funding mandates and school needs. The CSRP is the roadmap that ensures a coordinated, integrated approach to school improvement and student achievement. All professional development programs must be high quality, continuous, and aligned to established school goals. The National Staff Development Council promotes professional development as *"an ongoing systemic process that is dynamic and brings significant, accountable goal directed change for all stakeholders resulting in increased achievement for learners."*

Professional development is an "ongoing process" rather than an "event." It is the critical connection between teacher and student learning. What teachers know and can do effects what students know and can do. Professional development opportunities include:

Training and Technical Assistance with State Universities and Tribal Colleges
Through a competitive Request for Proposal (RFP) process, OIEP awarded thirteen contracts to five Tribal Colleges and eight State Universities to develop and deliver on-going professional development programs for OIEP personnel who work with students with special education needs. The goals of this initiative are to: (1) increase the number of State certified special education teachers in BIA funded schools; (2) increase the number of paraprofessionals with an AA degree in early childhood, special education, or general education in BIA funded schools; (3) provide training and technical assistance opportunities on topics related directly to serving students with disabilities and their families; and, (4) to provide on-going training and technical assistance to BIA funded schools identified in corrective action. Information regarding assistive technology use for students with disabilities has been addressed via this venue. Continuations of the contracts are based upon availability of funds and successful performance of the project. The use of technology is a major element in the delivery of services. The majority of these contractors offer services on-site, via satellite consultation, or through distance learning.

Grow Your Own (GYO) Professional Development Program
Funded by Part B of the Individuals with Disabilities Education Act of 1997 (IDEA) from the U.S. Department of Education, Office of Special Education and Rehabilitative Services.

The GYO program provides funding opportunities for post secondary education to all staff of all BIA funded schools. The intent of the GYO Program is to improve services to students with disabilities/special education needs through the efforts of "highly qualified" personnel (professionals and paraprofessionals), including teachers, teacher assistants, and ancillary providers. Several participants have included technology as part of their official program of study. Based upon the needs of the school, GYO participants have declared technology education as their major field of study.

Project IDEAS: Initiative for the Development and Enhancement of BIA-OIEP Administrators and Staff

The intent of Project IDEAS is to improve services to special education students through the efforts of highly qualified personnel. Using an Agency Training Plan, Project IDEAS funds are used for the sole purpose of providing professional development training activities for school personnel who work with special needs students. In some cases, technology is indicated as part of the training requirement, i.e. Assistive Technology, DIBELS, ASSIST (a computerized special education program to assist with the development of Individualized Education Programs for students).

Annual Access Native America Technology Conference
Since 1997, the Access Native America Technology Conference has brought together educators, technology experts, and administrators from the 184 BIA funded schools, providing a forum for the exchange of ideas and to encourage education professionals to reach beyond the local community in order to gain new insight and learn innovative ways to integrate technology into their school programs. A primary focus of these meetings is to introduce the latest technology and demonstrate how it can enhance learning. Educational technology applications deepen student and teacher engagement and heighten student achievement by providing access to an unlimited variety of information. In 2005, the conference will focus on three areas:

- **Leave No Teacher Behind**: Hands-on sessions will guide teachers in transforming current classroom practices to being technology rich, thereby motivating students and improving instruction.

- **Leave No School Behind**: Workshops that focus on emerging technologies and school success stories provide a standard to measure your school's level of technological integration. Get ideas to take back to your campus immediately and ensure that you comply with bureau and federal security and child protection policies.

- **Leave No Administrator Behind**: Workshops will focus on building administrative support for school technology. Administrators will learn to be technology leaders through sessions designed to teach them how to evaluate technology programs, how to obtain funding, and how to use data for accountability purposes.

OIEP Digital Council Fire:
Twenty-one training sessions on how to use the Digital Council Fire Web Site have been conducted regionally at locations near the schools. Teachers are taught how to access and use the site to improve classroom practices. Along with these sessions, the contractor provides interactive professional development training using the Webex.

(8) ***Provide a description of—***

(A) how the State educational agency will provide technical assistance to applicants under section 2414, especially to those applicants serving the highest numbers or percentages of children in poverty or with the greatest need for technical assistance; and

(B) the capacity of the State educational agency to provide such assistance.

In October 2002, OIEP invited school officials to Albuquerque, New Mexico for a grant application workshop. A professional grant writer provided guidance on how to write successful grant applications and presented opportunities to join with other schools to form consortia. Information presented at the workshop was posted to OIEP's website, http://www.oiep.bia.edu. Multi-year grant awards were made in January of 2003.

OIEP will continue to follow existing procedures to provide technical assistance to schools as they prepare competitive grant applications for future awards. As each year's budget is approved, OIEP will issue requests for proposals (RFPs) based on the level of funds made available each given budget year.

(9) ***Provide a description of technology resources and systems that the State will provide for the purpose of establishing best practices that can be widely replicated by State educational agencies and local educational agencies in the State and in other States.***

OIEP disseminates best practices through a variety of means. The website, http://enan.bia.edu has become the primary means of communication to and between the schools. The site serves as an intranet and e-mail system for the BIA school system. Schools can utilize the site to access information on best practices in technology, to learn about upcoming events, and as a link to other technology sites. A technology group section is available whereby schools can share information on promising and successful practices and applications. Promising practices are prominently shared throughout the system using e-mail announcements.

(10) ***Provide a description of the State's long-term strategies for financing technology to ensure that all students, teachers, and classrooms have access to technology.***

OIEP has long recognized the need to establish a sustainable technology funding mechanism and to take advantage of partnerships and additional funding sources available to the academic community. The primary source of funding is through Congressional appropriations. However, the OIEP also pursues outside resources and attempts to establish partnerships to fund education activities.

In order to assure that schools have sufficient technology funding available to support and sustain the dramatic changes in educational and societal uses of information technologies, the BIA recommends that schools budget a minimum of five percent of their total school budget for technology related needs. Each school is required to have evidence of sufficient funds for technology in their individual school technology plans. Appropriate funding of technology is a key component reviewed by the Office of the CIO before approval is granted for a school's individual technology plan.

BIA schools are encouraged to participate in a collective e-Rate application in order to leverage economies of scale. The Chief Information Officer has established an e-Rate Office to assist schools in applying for e-Rate funds.

OIEP is in the process of establishing a budget line-item for a sustainable education technology fund to cover telecommunications infrastructure and cyclic upgrades of school technology systems.

OIEP is in compliance with the Individuals with Disabilities Education Act ensuring equal and appropriate access for all students. If a student's Individual Education Plan (IEP) calls for additional assistive technologies, specialized equipment will be purchased to meet their needs. Funds used for the acquisition of technologies for students with IEPs or 504 plans are identified in the special education portion of the Consolidated School Reform Plan (CSRP) narrative and budget.

(11) ***Provide a description of the State's strategies for using technology to increase parental involvement.***

Parental and community involvement is a key element of OIEP's technology vision. Tribal communities need to maintain a connection to the Internet and other communities.

BIA provides an increasing array of online services for parents including:

Digital Council Fire
Parents are provided the opportunity to view their children's class schedules and school calendars via the Digital Council Fire website. Through this site, they are provided with resources to help them work with their children at home. Resources include activities that parents can do together with their children, such as web trips, flashcards, and instructional activities that support student mastery of State standards.

Online Report Cards
School Report Cards are posted on the http://www.oiep.bia.edu so that parents can see how their child's school is meeting the requirements of No Child Left Behind and how their school compares to other BIA funded schools.

Family And Child Education Program (FACE)
The nationally recognized FACE program and the Baby FACE Program provide opportunities for parents to use the computer at the school for adult education classes including computer literacy classes.

Native American Student Information System
The Native American Student Information System is expected to be made available to all BIA funded schools by July 2006. It will give parents access to their children's student records over the Internet.

Take Home Computer
Many schools have established programs for students to take computers home for a set period of time. Schools provide training to parents on the operation of the computers before they are allowed to take them home.

Achieve Now
Almost half of the BIA funded schools participate in Plato Learning's *Achieve Now* program. Students take home Sony Play Stations and Discs with learning activities that support instruction in their classrooms.

ENAN2
The "Resources" section on ENAN2 (http://enan.bia.edu) provides materials and links for parents and teachers to use in order to facilitate parental involvement. Resources include information on recognized parental involvement programs, such as I *CARE,* an Early Childhood Development Guide, information on parental involvement requirements of NCLB and IDEAS, and links to parent sites.

(12) ***Provide a description of how the State educational agency will ensure that each subgrant awarded under section 2412(a)(2)(B) is of sufficient size and duration, and that the program funded by the subgrant is of sufficient scope and quality, to carry out the purposes of this part effectively.***

OIEP implements the law, as required, insuring that the program meets the accountability measures, and enables students to reach challenging OIEP and State academic standards. The information below describes how OIEP operates the program.

What are the goals of the program?

The primary goal of the program is to improve student academic achievement using technology in elementary and secondary schools. It is also designed to assist every student – regardless of race, ethnicity, income, geographical location, or disability – in becoming technologically literate by the end of eighth grade. Through encouraging the effective integration of technology resources and systems with professional development and curriculum development the promotion of research-based instructional methods can be widely replicated.

How much money is available for the Program?

The Office of Indian Education Programs receives approximately $5 million for the program. Of this amount $2.5 million is distributed to schools to be included in their Consolidated School Reform Plan. The remainder ($2.5 million) is made available through a competitive grant process as required by the legislation. Competitive awards will range from $5,000 to $50,000 for applications from a single school, and up to $200,000 maximum for partnership projects. Competitive Projects are to be funded for up to three years.

How do schools/ eligible partners apply for the funds?

Each school must have a current long-range strategic educational technology plan that is consistent with the objectives of the OIEP technology plan and that addresses the

statutory local plan requirements. All OIEP schools will receive Education Technology funds as part of their Consolidated School Reform Plan application. They do not need to submit a separate application but they must attach their approved plan to their Consolidated School Reform Plan. (*Note: These can be the same Technology Plans that are approved through OIEP's e-Rate Technology Plan approval process).*

Schools or eligible partner organizations wishing to receive funding under the competitive portion of the program **will need to apply separately** for the competitive funds.

What criteria will the Bureau use to govern the distribution of funds?

Funds must go to an eligible entity

A "high-need Local Educational Agency (LEA)" serves one or more schools identified for improvement or corrective action under section 1116 of the ESEA, or has a substantial need for assistance in acquiring and using technology.

An "eligible local partnership" is a partnership that includes at least one high-need LEA *and* at least one of the following –

- An LEA that can demonstrate that teachers in its schools are effectively integrating technology and proven teaching practices into instruction, based on a review of relevant research, and that the integration results in improvement in classroom instruction and in helping students meet challenging academic standards.
- An institution of higher education that is in full compliance with the reporting requirements of section 207(f) of the Higher Education Act of 1965, as amended, and that has not been identified by the State as low-performing under that act.
- A for-profit business or organization that develops, designs, manufactures, or produces technology products or services or has substantial expertise in the application of technology in instruction.
- A public or private nonprofit organization with demonstrated expertise in the application of educational technology in instruction.

Other Requirements:

The legislation requires OIEP to meet the following specific requirements in making these awards:

- Priority to LEAs that receive insufficient amounts of Enhancing Education Through Technology Program formula grant funds – In awarding Enhancing Education Through Technology Program competitive grants, the State Education Authority must identify the LEAs that are eligible local entities and that receive Enhancing Education Through Technology Program formula grant allocations that are of insufficient size to be effective, and give priority to applications submitted by these LEAs.
- Program scope and quality – OIEP must ensure that any program supported with Enhancing Education Through Technology Program competitive grant funds is of

sufficient scope and quality to carry out the purpose of the Enhancing Education Through Technology Program legislation effectively.

–Fiscal agent – If an eligible local partnership receives an Enhancing Education Through Technology Program competitive award, an LEA must serve as the fiscal agent for the partnership.

What information must be included in the application?

Goals – a description of the applicant's specific goals, aligned with challenging State standards, for using Education Through Technology Program funding to improve student academic achievement. The goals must also be aligned to OIEP's Technology Goals as adopted in OIEP's Technology Plan

Steps to increase accessibility – a description of the steps the applicant will take to ensure that all students and teachers have increased access to technology. The description must include how the applicant will use Enhancing Education Through Technology Program funds to help students in high-poverty and high-needs schools, or schools identified for improvement or corrective action under section 1116 of Title I, and to help ensure that teachers are prepared to integrate technology effectively into curricula and instruction.

Promotion of curricula and teaching strategies that integrate technology -- a description of how the applicant will identify and promote curricula and teaching strategies that integrate technology effectively into curricula and instruction, based on a review of relevant research and leading to improvements in student academic achievement.

Professional development – a description of how the applicant will provide ongoing, sustained professional development for teachers, principals, administrators, and school library media personnel to further the effective use of technology in the classroom or library media center.

Technology type and costs – a description of the type and costs of technology to be acquired with Enhancing Education Through Technology Program funds, including provisions for interoperability of components.

Coordination with other resources – a description of how the applicant will coordinate activities funded through the Enhancing Education Through Technology Program with technology-related activities supported with funds from other sources.

Integration of technology with curricula and instruction – a description of how the applicant will integrate technology (including software and electronically delivered learning materials) into curricula and instruction, and a timeline for this integration**.**

Strategies for improving academic achievement and teacher effectiveness – a description of how the applicant will use Enhancing Education Through Technology Program funds to improve the academic achievement, including technology literacy, of all students attending schools served by the LEA and to improve the capacity of all teachers in schools served by the LEA to integrate technology effectively into curriculum and instruction.

Innovative delivery strategies – a description of how the applicant will encourage the development and use of innovative strategies for the delivery of specialized or rigorous courses and curricula with technology, including distance-learning technologies, particularly in areas that would not otherwise have access to such courses or curricula due to geographical distances or insufficient resources.

Parental involvement – a description of how the applicant will use technology effectively to promote parental involvement and increase communication with parents, including a description of how parents will be informed of the technology used.

Collaboration with adult literacy service providers – a description of how the program will be developed, where applicable, in collaboration with adult literacy service providers.

Accountability measures – a description of the process and accountability measures that the applicant will use to evaluate the extent to which activities funded under the program are effective in integrating technology into curricula and instruction, increasing the ability of teachers to teach, and enabling students to reach challenging State academic standards.

Supporting resources – a description of the supporting resources, such as services, software, electronically delivered learning materials, and print resources that will be acquired to ensure successful and effective uses of technology.

How will Local Education Agencies and eligible local partnerships be held accountable?

They are required to have long-range technology plans that are consistent with the objectives of OIEP's Technology Plan.

They are required to develop strategies for improving student academic achievement through the effective use of technology in classrooms, including improving the capacity of teachers to integrate technology into curricula and instruction.

They are required to set specific goals, aligned with State standards, for using advanced technology to improve student academic achievement.

They are also required to develop a process and establish accountability measures to evaluate the extent to which activities funded under the program are effective in (1) integrating technology into curricula and instruction; (2) increasing the ability of teachers to teach; and (3) enabling students to meet challenging State standards.

OIEP is responsible for ensuring that Local Education Agencies and eligible local entities comply with Education Technology statutory requirements and have effectively used funds to meet the goals of the program.

What process will OIEP use to make the awards?

The application package for Comprehensive Implementation Grants consists of the Education Technology Application Document and four copies of the local technology plan (one with the original signature of an authorized agent from the Local Education Agency) approved by the Education Line Officer under the e-Rate process. If an eligible partnership submits the application, each member school's approved technology plan must be submitted.

(13) ***Provide a description of how the State educational agency will ensure ongoing integration of technology into school curricula and instructional strategies in all schools in the State, so that technology will be fully integrated into the curricula and instruction of the schools by December 31, 2006.***

As part of each school's Consolidated School Reform Plan (CSRP), every school program must include a professional development plan that is based upon funding mandates and school needs. The CSRP is the roadmap that ensures a coordinated, integrated approach to school improvement and student achievement. All professional development goals must be aligned to established school goals.

OIEP staff reviews and evaluates each school's plan to insure that professional development plans cover the integration of technology into the classroom. All schools receive Title II D funds under a formula. Schools are required to spend a minimum of 25 percent of this money on professional development.

OIEP tracks the progress of teacher skill development in the use of technology in the classroom based on the results of the survey as described in (1) above.

(14) ***Provide a description of how the local educational agencies in the State will provide incentives to teachers who are technologically literate and teaching in rural or urban areas, to encourage such teachers to remain in those areas.***

Under established personnel regulations and procedures, the OIEP is permitted to use a variety of means to provide incentives to teachers. Incentives may include:

a. Staffing Differentials--Schools may pay up to 25% bonus salary in order to recruit and retain staff in hard to fill positions and locations. Permission to offer these differentials is approved on a case-by-case basis by the Director of OIEP.

b. Performance Awards--The OIEP offers performance awards to employees who perform exceptionally well in the classroom.

c. Student Loan Repayment--Any employee (as defined in 5 USC § 2105) who is determined to be highly qualified is eligible to receive a student loan repayment benefit, (except those employees who currently occupy or will occupy a position excepted from the competitive service because of its confidential, policy-determining, policy-making, or policy-advocating character). OIEP generally requires service agreements of more than 3 years under this program.

(15) ***Provide a description of how public and private entities will participate in the implementation and support of the plan.***

OIEP encourages the formation of public and private partnerships in all of its technology endeavors. In the past, OIEP has collaborated with entities such as Microsoft, Intel, and others in providing support and assistance to schools.

Currently, the BIA maintains partnerships with a broad assortment of educational institutions, including:

Montana State University; Billings, Montana.
Sitting Bull Community College: Fort Yates, North Dakota.
Oglala Lakota Community College: Kyle, North Dakota.
University of New Mexico– Gallup Branch: Gallup, New Mexico.
Sinte Gleska University: Rosebud, South Dakota.
Ft. Berthold Community College: New Town, North Dakota.
Tohono O'odham Community College: Sells, Arizona.
University of Arizona: Tucson, Arizona.
Utah State University: Logan, Utah.
University of Oklahoma: Norman, Oklahoma.
University of Idaho: Moscow, Idaho.
Western New Mexico State University: Gallup, New Mexico.
University of New Mexico: Albuquerque, New Mexico

These institutions provide a variety of benefits and services including online courses and professional development to teachers at BIA funded schools.

The OIEP established a partnership with the Heritage Ranch, Inc., to provide training and equipment to BIA schools. The partnership is currently preparing a grant application requesting Title II D funds from the U.S. Department of Agriculture.

In addition, OIEP collaborates with the Mountain Plains Resource Center to provide monitoring and technical assistance to BIA schools. A key element of the Continuous Improvement Monitoring Process is the implementation of the school's Consolidated Reform Plan (CRP). Technology planning and implementation is a key component of each school's CRP.

OIEP encourages schools to partner with other schools and private organizations in their applications for Title II D funds. Consortia applicants can receive as much as $200,000 per year, while individual schools are only eligible for $50,000. Two BIA schools were recently successful in their application for Title II D competitive grants. The rest of the 23 participating OIEP managed schools applied as consortia members and have collaborated with outside entities, such as the Center for Technology in Indian America.

Staff Use of Technology

The survey below can be given to staff to assess their use of technology. A scoring guide at the bottom of the survey can be used to determine whether individual teachers are partially proficient, proficient or advanced in the use of technology

Please judge your level of achievement in each of the following competencies. Circle the number which best reflects your current level of skill attainment. (Be honest, but be kind.) This tool is designed to help understand your current level of skills with computer technologies and to plan for professional development.

1. Basic Computer Use

____Level 1 - I do not use a computer.
____Level 2 - I use the computer to run a few specific, pre-loaded programs.
____Level 3 - I run two programs simultaneously, and have several windows open at the same time.
____Level 4 - I trouble-shoot successfully when basic problems with my computer or printer occur. I learn new programs on my own. I teach basic operations to my students.

2. File Management

____Level 1 - I do not save any documents I create using the computer.
____Level 2 - I select, open, and save documents on different drives.
____Level 3 - I create my own folders to keep files organized and understand the importance of a back-up system.
____Level 4 - I move files between folders and drives, and I maintain my network storage size within acceptable limits. I teach students how to save and organize their files.

3. Word Processing

____Level 1 - I do not use a word processing program.
____Level 2 - I occasionally use a word processing program for simple documents; generally find it easier to hand write most written work I do.
____Level 3 - I use a word processing program for nearly all my written professional work: memos, tests, worksheets, and home communication. I edit, spell check, and change the format of a document.
____Level 4 - I teach students to use word processing programs for their written communication.

4. Spreadsheet

____Level 1 - I do not use a spreadsheet.
____Level 2 - I understand the use of a spreadsheet and can navigate within one. I create simple spreadsheets and charts.
____Level 3 - I use spreadsheets for a variety of record-keeping tasks. I use labels, formulas, cell references, and formatting tools in my spreadsheets. I choose charts that best represent my data.
____Level 4 - I teach students to use spreadsheets to improve their own data keeping and analysis skills.

5. Database

____Level 1 - I do not use a database.
____Level 2 - I understand the use of a database and locate information from a re-made database such as Library Search.
____Level 3 - I create my own databases. I define the fields and choose a layout to organize information I have gathered. I use my database to answer questions about my information.
____Level 4 - I teach students to create and use databases to organize and analyze data.

6. Graphics

____Level 1 - I do not use graphics with my word processing or presentations.

____Level 2 - I open, create, and place simple pictures into documents using drawing programs or clipart.
____Level 3 - I edit and create graphics, placing them in documents in order to help clarify or amplify my message.
____Level 4 - I promote student interpretation and display of visual data using a variety of tools and programs.

7. E-mail
____Level 1 - I have an e-mail account but rarely use it.
____Level 2 - I send messages using e-mail – mostly to school colleagues, friends, and family. I check my e-mail account on a regular basis and maintain my mail folders in an organized manner.
____Level 3 - I incorporate e-mail use into classroom activities. I use e-mail to access information from outside sources.
____Level 4 - I use e-mail to request and send information for research.

8. Research/Information-Searching
____Level 1 - I am unlikely to seek information when it is in electronic formats.
____Level 2 - I conduct simple searches with the electronic encyclopedia and library software for major topics.
____Level 3 - I have learned how to use a variety of search strategies on several information programs, including the use of Boolean (and, or, not) searches to help target the search.
____Level 4 - I have incorporated logical search strategies into my work with students, showing them the power of such searches with various electronic sources to locate information that relates to their questions.

9. Video Production
____Level 1 - I do not use a video camera.
____Level 2 - I create original videos for home or school projects.
____Level 3 - I create original videos using editing equipment.
____Level 4 -I use computer programs to edit video presentations and I teach my students to create and edit videos.

10. Technology Presentation
____Level 1 -I do not use computer presentation programs.
____Level 2 - I present my information to classes or groups in a single application program such as a word processor, a spreadsheet, or a publishing program.
____Level 3 - I present my information and teach my class using presentation programs such as PowerPoint, incorporating various multimedia elements such as sound, video clips, and graphics.
____Level 4 -I teach my students how to use presentation software. I facilitate my students' use of a variety of applications to persuasively present their research concerning a problem or area of focus in their learning.

11. Internet
___Level 1 - I do not use the Internet.
___Level 2 - I access school and OIEP websites to find information. I follow links from these sites to various Internet resources.
___Level 3 - I use lists of Internet resources and make profitable use of Web search engines to explore educational resources.
___Level 4 - contribute to my school website. I teach students how to effectively use the resources available on the Internet.

12. Responsible Use/Ethics
____Level 1 - I am not aware of any ethical issues surrounding computer use.
___Level 2 - I know that some copyright restrictions apply to computer software.

___Level 3 - I understand school rules concerning student and adult use of e-mail and internet. know the programs for which the school or my building holds a site license. I understand the school board policy on the use of copyrighted materials.

___Level 4 - I model ethical use of all software and let my students know my personal stand on this issue.

13. Technology Integration

____Level 1 - I do not blend the use of computer-based technologies into my classroom learning activities.

___Level 2 - I understand the school technology plan supports integration of technology into classroom activities, but I am still learning about what strategies will work and how to do it. I accept student work produced electronically, but do not require it.

___Level 3 - From time to time, I encourage my students to employ computer-based solving outlined in the school technology plan.

___Level 4 - I frequently model and teach my students to employ computer-based technologies for communication, data analysis, and problem solving as outlined in the district technology plan.

To determine your level of proficiency add the level of performance for each question, i.e, Level 1 is counted as 1 point, level 2 is counted as 2 points, etc.
Total Points_____

Use the scoring ranges below to determine you level of proficiency.
Advanced = 42 -56 Points
Proficient = 28-42 Points
Partially Proficient = 14-28

Student Technology Standards Grades K-2

Standards	Indicators	Evidence of Mastery	Achieved
1. Basic operations and concepts --Students demonstrate a sound understanding of the nature and operation of technology systems. --Students are proficient in the use of technology.	Use input devices (e.g., mouse, keyboard, remote control) and output devices (e.g., monitor, printer) to successfully operate computers, VCRs, audiotapes, and other technologies. (1) Use a variety of media and technology resources for directed and independent learning activities. (1, 3) Communicate about technology using developmentally appropriate and accurate terminology. (1) Use developmentally appropriate multimedia resources (e.g., interactive books, educational software, elementary multimedia encyclopedias) to support learning. (1) Gather information and communicate with others using telecommunications, with support from teachers, family members, or student partners.		
2. Social, ethical, and human issues --Students understand the ethical, cultural, and societal issues related to technology. --Students practice responsible use of technology systems, information, and software. --Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and	Work cooperatively and collaboratively with peers, family members, and others when using technology in the classroom. (2) Demonstrate positive social and ethical behaviors when using technology. (2) Practice responsible use of technology systems and software. (2)		

Student Technology Standards Grades K-2

Standards	Indicators	Evidence of Mastery	Achieved
productivity.			
3. Technology productivity tools --Students use technology tools to enhance learning, increase productivity, and promote creativity. --Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.	Use a variety of media and technology resources for directed and independent learning activities. (1, 3) Create developmentally appropriate multimedia products with support from teachers, family members, or student partners. (3) Use technology resources (e.g., puzzles, logical thinking programs, writing tools, digital cameras, drawing tools) for problem solving, communication, and illustration of thoughts, ideas, and stories.(3, 4, 5, 6)		
4. Technology communications tools --Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences. --Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.	Use technology resources (e.g., puzzles, logical thinking programs, writing tools, digital cameras, drawing tools) for problem solving, communication, and illustration of thoughts, ideas, and stories. (3, 4, 5, 6)		
5. Technology research tools --Students use technology to locate, evaluate, and collect information from a variety of sources. --Students use technology tools to process data and report results. --Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.	Use technology resources (e.g., puzzles, logical thinking programs, writing tools, digital cameras, drawing tools) for problem solving, communication, and illustration of thoughts, ideas, and stories. (3, 4, 5, 6)		

Student Technology Standards Grades K-2

Standards	Indicators	Evidence of Mastery	Achieved
6. Technology problem-solving and decision-making tools --Students use technology resources for solving problems and making informed decisions. --Students employ technology in the development of strategies for solving problems in the real world	Use technology resources (e.g., puzzles, logical thinking programs, writing tools, digital cameras, drawing tools) for problem solving, communication, and illustration of thoughts, ideas, and stories. (3, 4, 5, 6)		

Student Technology Standards Grades 3-5

Standards	Indicators	Evidence of Mastery	Achieved
1. Basic operations and concepts --Students demonstrate a sound understanding of the nature and operation of technology systems. --Students are proficient in the use of technology.	Use keyboards and other common input and output devices (including adaptive devices when necessary) efficiently and effectively. (1) Discuss common uses of technology in daily life and the advantages and disadvantages those uses provide. (1, 2)		
2. Social, ethical, and human issues --Students understand the ethical, cultural, and societal issues related to technology. --Students practice responsible use of technology systems, information, and software. --Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.	Discuss common uses of technology in daily life and the advantages and disadvantages those uses provide. (1, 2) Discuss basic issues related to responsible use of technology and information and describe personal consequences of inappropriate use. (2)		
3. Technology productivity tools --Students use technology tools to enhance learning, increase productivity, and promote creativity. --Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.	Discuss common uses of technology in daily life and the advantages and disadvantages those uses provide. (1, 2) Discuss basic issues related to responsible use of technology and information and describe personal consequences of inappropriate use. (2)		
4. Technology communications tools --Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences. --Students use a variety of media and formats to communicate information and ideas	Use telecommunications efficiently to access remote information, communicate with others in support of direct and independent learning, and pursue personal interests. (4) Use telecommunications and online		

Standards	Indicators	Evidence of Mastery	Achieved
effectively to multiple audiences.	resources (e.g., e-mail, online discussions, Web environments) to participate in collaborative problem-solving activities for the purpose of developing solutions or products for audiences inside and outside the classroom. (4, 5)		
5. Technology research tools --Students use technology to locate, evaluate, and collect information from a variety of sources. --Students use technology tools to process data and report results. --Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.	Use technology resources (e.g., calculators, data collection probes, videos, educational software) for problem solving, self-directed learning, and extended learning activities. (5, 6) Determine which technology is useful and select the appropriate tool(s) and technology resources to address a variety of tasks and problems. (5, 6) Use technology resources (e.g., calculators, data collection probes, videos, educational software) for problem solving, self-directed learning, and extended learning activities. (5, 6)		
6. Technology problem-solving and decision-making tools --Students use technology resources for solving problems and making informed decisions. --Students employ technology in the development of strategies for solving problems in the real world	Use technology resources (e.g., calculators, data collection probes, videos, educational software) for problem solving, self-directed learning, and extended learning activities. (5, 6)		

Student Technology Standards Grades 6-8

Standards	Indicators	Evidence of Mastery	Achieved
1. Basic operations and concepts --Students demonstrate a sound understanding of the nature and operation of technology systems. --Students are proficient in the use of technology.	Apply strategies for identifying and solving routine hardware and software problems that occur during everyday use. (1) Demonstrate an understanding of concepts underlying hardware, software, and connectivity and of practical applications to learning and problem solving. (1, 6)		
2. Social, ethical, and human issues --Students understand the ethical, cultural, and societal issues related to technology. --Students practice responsible use of technology systems, information, and software. --Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.	Demonstrate knowledge of current changes in information technologies and the effect those changes have on the workplace and society. (2) Exhibit legal and ethical behaviors when using information and technology, and discuss Research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems. (2, 5, 6) Consequences of misuse. (2)		
3. Technology productivity tools --Students use technology tools to enhance learning, increase productivity, and promote creativity. --Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.	Demonstrate knowledge of current changes in information technologies and the effect those changes have on the workplace and society. (2) Exhibit legal and ethical behaviors when using information and technology, and discuss Research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems. (2, 5, 6) Consequences of misuse. (2)		

Student Technology Standards Grades 6-8

Standards	Indicators	Evidence of Mastery	Achieved
4. Technology communications tools --Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences. --Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.	Design, develop, publish, and present products (e.g., Web pages, videotapes) using technology resources that demonstrate and communicate curriculum concepts to audiences inside and outside the classroom. (4, 5, 6) Collaborate with peers, experts, and others using telecommunications and collaborative tools to investigate curriculum-related problems, issues, and information, and to develop solutions or products for audiences inside and outside the classroom. (4, 5)		
5. Technology research tools --Students use technology to locate, evaluate, and collect information from a variety of sources. --Students use technology tools to process data and report results. --Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.	Select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems. (5, 6) Research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems. (2, 5, 6) Use content-specific tools, software, and simulations (e.g., environmental probes, graphing calculators, exploratory environments, Web tools) to support learning and research. (3, 5) Design, develop, publish, and present products (e.g., Web pages, videotapes) using technology resources that demonstrate and communicate curriculum concepts to audiences inside and outside the classroom. (4, 5, 6)		
6. Technology problem-solving and decision-making tools	Demonstrate an understanding of concepts underlying hardware, software, and		

Student Technology Standards Grades 6-8

Standards	Indicators	Evidence of Mastery	Achieved
--Students use technology resources for solving problems and making informed decisions. --Students employ technology in the development of strategies for solving problems in the real world	connectivity and of practical applications to learning and problem solving. (1, 6) Research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems. (2, 5, 6) Apply productivity/multimedia tools and peripherals to support personal productivity, group collaboration, and learning throughout the curriculum. (3, Design, develop, publish, and present products (e.g., Web pages, videotapes) using technology resources that demonstrate and communicate curriculum concepts to audiences inside and outside the classroom. (4, 5, 6)		

Student Technology Standards Grades 9-12

Standards	Indicators	Evidence of Mastery	Achieved
1. Basic operations and concepts --Students demonstrate a sound understanding of the nature and operation of technology systems. --Students are proficient in the use of technology.	Make informed choices among technology systems, resources, and services. (1, 2)		
2. Social, ethical, and human issues --Students understand the ethical, cultural, and societal issues related to technology. --Students practice responsible use of technology systems, information, and software. --Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.	Analyze advantages and disadvantages of widespread use and reliance on technology in the workplace and in society as a whole. (2) Demonstrate and advocate for legal and ethical behaviors among peers, family, and community regarding the use of technology and information. (2) Make informed choices among technology systems, resources, and services. (1, 2) Identify capabilities and limitations of contemporary and emerging technology resources and assess the potential of these systems and services to address personal, lifelong learning, and workplace needs. (2)		
3. Technology productivity tools --Students use technology tools to enhance learning, increase productivity, and promote creativity. --Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.	Investigate and apply expert systems, intelligent agents, and simulations in real-world situations. (3, 5, 6) Use technology tools and resources for managing and communicating personal/professional information (e.g., finances, schedules, addresses, purchases, correspondence). (3, 4)		

Student Technology Standards Grades 9-12

Standards	Indicators	Evidence of Mastery	Achieved
4. Technology communications tools --Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences. --Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.	Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works. (4, 5, 6) Select and apply technology tools for research, information analysis, problem-solving, and decision-making in content learning. (4, 5) Routinely and efficiently use online information resources to meet needs for collaboration, research, publications, communications, and productivity. (4, 5, 6) Use technology tools and resources for managing and communicating personal/professional information (e.g., finances, schedules, addresses, purchases, correspondence). (3, 4)		
5. Technology research tools --Students use technology to locate, evaluate, and collect information from a variety of sources. --Students use technology tools to process data and report results. --Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.	Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works. (4, 5, 6) Investigate and apply expert systems, intelligent agents, and simulations in real-world situations. (3, 5, 6) Select and apply technology tools for research, information analysis, problem-solving, and decision-making in content learning. (4, 5) Routinely and efficiently use online		

Standards	Indicators	Evidence of Mastery	Achieved
	information resources to meet needs for collaboration, research, publications, communications, and productivity. (4, 5, 6) Evaluate technology-based options, including distance and distributed Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works. (4, 5, 6) Investigate and apply expert systems, intelligent agents, and simulations in real-world situations. (3, 5, 6) Select and apply technology tools for research, information analysis, problem-solving, and decision-making in content learning. (4, 5) Routinely and efficiently use online information resources to meet needs for collaboration, research, publications, communications, and productivity. (4, 5, 6) Evaluate technology-based options, including distance and distributed Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works. (4, 5, 6) Investigate and apply expert systems, intelligent agents, and simulations in real-world situations. (3, 5, Select and apply technology tools for research, information analysis, problem-		

Standards	Indicators	Evidence of Mastery	Achieved
	solving, and decision-making in content learning. (4, 5) Routinely and efficiently use online information resources to meet needs for collaboration, research, publications, communications, and productivity. (4, 5, 6) Evaluate technology-based options, including distance and distributed education, for lifelong learning.		
6. Technology problem-solving and decision-making tools --Students use technology resources for solving problems and making informed decisions. --Students employ technology in the development of strategies for solving problems in the real world	Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works. (4, 5, 6) Investigate and apply expert systems, intelligent agents, and simulations in real-world situations. (3, 5, Routinely and efficiently use online information resources to meet needs for collaboration, research, publications, communications, and productivity. (4, 5, 6)		