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## ABSTRACT

Since September 1995, the Utah, Colorado, Arizona, New Mexico-Rural Systemic Initiative (UCAN-RSI) has promoted systemic reform to improve science, technology, and mathematics education for all rural students in its states. Initially, UCAN targeted 159,000 students in over 430 rural, primarily American Indian or Hispanic, communities. These communities are characterized by independence, strong sense of place, differences in culture and language, and interest in self-determination. Six self-defined regional coalitions were formed through which UCAN seeks to engage whole communities, to develop local support for continued educational reform. These coalitions are the Navajo Nation Coalition, New Mexico Tribal Coalition, Arizona Tribal Coalition, New Mexico County Coalition, Southern Colorado Coalition, and Ute Four Corners Coalition. This document contains yearly reports on the strategies and progress of UCAN-RSI during its first 3 years: September 1995-August 1998. Efforts are outlined in the following areas: development of standards-based math and science curricula that are culturally relevant to UCAN's communities; coordination of policies at the national, state, and local levels to support systemic reform; partnerships, collaboration, and resource convergence; professional development; community support and capacity building; technology training and distance education; student achievement and attainment; closing the gap between minority and Anglo/White students; and community involvement. A Third Year Executive Summary highlights accomplishments of specific coalitions. (SV)

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UTAH \* COLORADO \* ARIZONA \* NEW MEXICO

# UCAN A FOUR-STATE RURAL SYSTEMIC INITIATIVE

First Year Report (August 31, 1996)

First Year Analysis (August 31, 1996)

Year Two Annual Report (September 1, 1997)

Third Year Report (September 1, 1998)

Year Three Annual Report Executive Summary ( September 1, 1998)

Dr. Vicente J. LLamas, Principal Investigator  
Elizabeth A. Yost, Program Director

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UCAN  
A FOUR-STATE  
RURAL SYSTEMIC INITIATIVE

First Year Report

August 31, 1996

Dr. Vicente J. LLamas, Principal Investigator  
Elizabeth A. Yost, Program Director

**UCAN RSI First Year Report**  
**Narrative**  
**August 31, 1996**

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**INTRODUCTION**

Po-Vi (meaning FLOWER in the Tewa language), a ten year old girl is sitting with her grandfather on a hill top over looking the pueblo. Po-Vi's grandfather is reminiscing aloud of older times when he was a young boy. The fields by the Rio Grande River were lush and green and not brown and barren like now. The areas beyond the creek was all open space. Part of that site is now occupied by the newly renovated BIA school building. On top of one building is a round object facing towards the sky. Grandfather asks Po-Vi what that funny looking thing is? Po-Vi tell her grandfather that it is a satellite dish that will bring into the day school classrooms exciting things.. Po-Vi tells her grandfather that the teachers were trained last year to use the classroom computers for teaching new things. They call this distance learning. Grandfather then looks at his granddaughter beaming with pride thinking what a smart granddaughter I have . One day she will be a leader. [Dreams of a Pueblo grandfather.]

This story exemplifies the hopes and dreams of many of the communities UCAN is working with during this first year of implementation. Some of our communities are moving rapidly forward towards true reform of their educational system, while others are still struggling with far more basic issues of survival. A brief review of what UCAN is in terms of the communities it is serving as well as those it hopes to serve will set the stage for understanding its progress.

The Utah, Colorado, Arizona, New Mexico-Rural Systemic Initiative (UCAN RSI) targets 159,000 students. Of these students, 53% are Native American and 25% are Hispanic. Results from the 1992 National Assessment of Education Progress in mathematics of grade 8 students show less than half of the Native American (44%) and Hispanic (44%) students scoring at or above basic mathematics competency compared to 74% of the Anglo or White students in the four states (State Indicators of Science and Mathematics Education, 1995). As a group, these students are generally ill-prepared for higher education, employment, or informed participation in an increasingly technological world. School districts have student populations experiencing from 30-70% poverty levels as designated by the federal government. The UCAN RSI encompasses a target area of 250,000 square miles spread out over 450,000 square miles in the four states.

The UCAN RSI is made up of over 430 rural communities including 4 state governments, 46 tribal governments, and 110 public districts/BIA Agency schools in 466 locally controlled schools and districts. Diversity is the single most characteristic element of the UCAN RSI. The 46 Tribal (Sovereign) Nations and the Hispanic communities UCAN serve represent an unusual confederation of "multi-cultural" groups.

UCAN serves peoples whose first language are in at least 9 distinct families: The Pai and the Pima/Tohono O'odham; Athapaskan (Navajo, Apache); Zuni (Zuni); Uto-Aztecan (Ute); Tanoan (Tiwa, Tewa, Towa); and Kerasan (Karasan); along with Indo-Aryan

(English, Spanish); the latter being the only ones with a written tradition, all other are oral tradition only. Although it may be debatable in some research areas, our view is that different language families represent different cognitive processes. At the least, they embed different worldviews in their vocabulary, representing an educational challenge for the Tewa-speaking Tesuque first grader than an English speaking first grader does not have. It is language and culture that represent the natural glue of peoples. UCAN communities speak Navajo in three states, Apache in two states, Pueblo communities cross two states, and there is an artificial boundary of contiguous cultures from northern New Mexico to the San Luis Valley of southern Colorado.

Each tribal nation is a self-governing political entity with legally recognized sovereign authority over most forms of civil and criminal issues in their territory. Each sovereign nation is clearly identified by their distinct culture, language, political systems and social structures and each has established a unique relationship with the federal government and the surrounding state governments. The specific dynamics of each federal-tribal relationship are defined by the plenary authority of the federal government over Native Americans and by the history of that tribe with the US government. The US Constitution gives the US Congress sole authority over relations with Native American tribes. The US Supreme Court has defined this authority as plenary. Thus, every treaty, agreement or specific arrangement made between the federal government and a tribe is an organic document that defines the scope of authority of a tribe. Each tribe is further defined by its long history with the surrounding regional governments. This long history includes difficulties and shared experiences, both positive and negative, that greatly complicate efforts to coordinate resources and systemic reform efforts. In fact, the greatest remnants of enmity and racism exist at the local level between states and tribes.

Likewise, the majority of Hispanic communities served by UCAN have had long histories of struggle and survival in the same southwest. The diversity of Native peoples described above is replicated in the Hispanic communities. In northern New Mexico, many of the Hispanic rural communities are descendants of Spanish Conquistadors whose families settled in the region over 400 years ago. The southern Colorado border counties in UCAN are made up of New Mexican families that migrated north. In fact, in northern New Mexico, these northern "cousins" live in an area called "occupied New Mexico." In addition, migrant families from Mexico have settled in southern New Mexico and in many of the agricultural regions of the state. These Hispanics are very different in culture from those in northern New Mexico where much of the Spanish spoken is still characterized by 15th century forms of the language. These same communities were formed sometimes in partnership, but often in competition with many of the Native tribes. Again, these communities survived primarily due to their unique culture and language, powerful and supportive extended family structure, and their isolation from the rest of the country.

The geopolitical framework within which UCAN works is characterized by fiercely independent communities living on ancient lands (predating the westward settlements of early America by at least 300 years) and separated from each other by high mountain ranges, severe deserts, large distances with limited access, and less than "basic" infrastructure for modern communication. This independence is partly exemplified by the local governance nature of school boards across UCAN and the increasing interest

in self-determination of Indian tribes, in particular.

~~Part of their ruralness is defined by their geographical separation from other communities within their own governmental structures, as well their paucity of communication systems, whether by radio, print or other “normal” means, and certainly by advanced systems such as internet or satellite access. This “baseline” represents a major challenge to any organization whose focus is on something as specific as improvement of math and science education for all students and the appropriate use of technology in the support of this reform effort.~~

It is this independence, powerful sense of place, culture and language, and interest in self-determination that forms the basis for the approach taken by UCAN in its efforts to positively impact the quality of SMET education in this vast area of the southwest. This approach centers on working with the whole community, whether the “whole community” is a Chapter House of the Navajo Nation, or a small, mountain village of farmers and other self-sufficient families. In many of these communities, the terms science, mathematics, and technology are either imported words to their language, or vague references to activities and professions outside of their experience. Thus the entire community must be engaged at the outset in a way that is meaningful for them and defined by them.

In order to work with individual communities in this fashion, UCAN has over time, developed six regionally, self-defined coalitions [See map on next page]. These coalitions were formed to focus on systemic reform activities that supported the following UCAN RSI goals:

- To significantly improve science, mathematics and technology education for all students in rural areas;
- to prepare a technologically competent workforce;
- to enhance scientific literacy and scientific understanding and appreciation among students and the general community; and
- to develop community infrastructures, both human and physical, that provide resources that sustain educational improvements.

Therefore, the UCAN RSI has focused on the “system” represented by this very complex, connected group of communities. By working with these communities, often from a baseline well removed from any sign of readiness to consider curricula reform, policy changes, or other reform requisite issues, we have the opportunity to develop a strong, sustainable, local support system for continued educational reform. In this process, the concepts of quality math and science education and the appropriate use of technology can be introduced and thereby form the basis for long term community planning.

## **UCAN RSI FIRST YEAR REPORT**

The first year for the UCAN RSI has been a year of building the foundation and moving forward the efforts for systemic reform throughout the region. It has also been a year of learning for all concerned. The six coalitions had to learn how to work with their unique and diverse constituents as well as how to work together to share their resources for a common set of goals. The coalitions found they had many common strategies which

invited collaboration across coalitions. These strategies were reinforced in our most recent bi-monthly meeting and further tied to the NSF drivers. The over-arching goal for UCAN is to significantly improve learning leading to high achievement in challenging science and mathematics by all students. The principal underlying goal is that the "system" supporting such improved learning becomes capable of sustaining this effort over time. Each of the NSF drivers (Curricula, Policy, Resource Convergence, Community Support, Student Attainment, Student Attainment for All) and other common UCAN strategies will be addressed.

### CURRICULA { CULTURE / LANGUAGE / CONTENT } STANDARDS

During this first year of UCAN operations, the states of Colorado and Utah passed legislation that requires content standards in math and science that reflects the national standards. For Colorado, state level normed reference testing has been suspended, and standards based performance assessment must be in place in all public school districts by January, 1997. For Utah, Performance based assessment tied to the standards must also be in place by the end of the 1997 school year. This has given two of our coalitions a significant boost in their efforts to bring standards based curricula to their targeted communities. These schools have responded to the new legislation by asking UCAN support in developing short and long term plans for professional development focusing on content, assessment, implementation and evaluation. Professional development in these areas was offered to over 530 teachers, and over 350 administrators and community members. Our second year efforts in these communities will be focused on bringing the standards to the classroom. A UCAN district in Colorado hired a Director of Curriculum and Technology to develop innovative, challenging curricula which aligns with the Colorado and National standards. These efforts in 5 districts are impacting 4200 students, approximately 50% of which are minority.

For the New Mexico County Coalition, the overriding concerns are to acquire community consensus on student expectations, design an accountability process with clear criteria for school success, and to use these products to plan a curriculum that will deliver successful student achievement in math and science. This is the second year focus. The first year's efforts culminated in most (18 districts) New Mexico County Coalition schools completing the first stage of a statewide planning process, the Educational Plan for Student Success (EPSS). This requires that local school curriculum and assessment practices are revised to assure that there is a one-to-one correspondence between curriculum and assessment, that this is based on the national and state standards for science and mathematics. The EPSS also serves as a management tool that drives the delivery of quality curriculum and provides a process for school/community accountability. Professional development on the integration of standards and technology into coalition schools included 24 districts, 602 teachers, 82 administrators, 150 parents, and 15 school board members.

The approach to the issue of standards based curriculum in science and mathematics cannot be done in a vacuum from culture, language and relevant content. UCAN communities are motivated for involvement in systemic reform when that reform is for all students, that the curriculum recognizes the unique environment and culture of the community, and that language and the conceptual framework it represents is valued as a

means for increased learning, not as a detriment. Examples of UCAN efforts to address science and math standards and the integration of culture follow.

The Navajo Nation is undergoing reorganization that supports greater local empowerment, especially as it relates to the local educational system, whether it be public, BIA, private, or contract/grant schools. Navajo educational philosophy is also undergoing revision, recognizing the need to incorporate standards that reflect national concerns, as well as reinforcing the need to incorporate culture and language in the curriculum regardless of where its students receive education. UCAN is working with the Navajo Division of Diné Education and the Navajo School Board Association in developing these revisions. In order to facilitate mutual understanding of needs and concerns, the first of a series of workshops on Navajo culture was held for UCAN and some of its partners in Tsaile, New Mexico, on the campus of the Navajo Community College. This workshop focused on Navajo clan history and philosophy and its connection to education of Navajo students. The Northern Arizona University's Indian Education Office, the Colorado Plateau Coalition, and the Navajo Community College were sponsors. Future workshops will offer insights to Navajo governance and policy as it affects education, curriculum, professional development and the current reorganization of BIA to contract/grant school operation. This experience may be expanded in the future to engage UCAN's other ethnic groups.

Arizona Tribal Coalition (ATC) developed a collaboration to propose the development and sharing of quality, culturally based SMETE curriculum electronically, and for capacity building of the InterTribal Council of Arizona. A School To Work proposal was submitted to the State of Arizona to support this effort. Professional development focused on introducing the standards to 10 reservations and 30 schools through the 2nd Annual Reservation Conference on Systemic reform. Over 200 teachers, administrators, and school board members were involved in intensive, hands-on workshops presented by WestEd (previously Far West labs).

Our Native American communities are highly motivated to find culturally relevant curricula for their children. Although there are some excellent culturally-specific curricula that have been developed for Native American children, widespread use, even within the tribe that these materials were designed to support, has been minimal. This need is being addressed by bringing together those Indian educators involved in the development of American Indian science and math relevant curricula to share the process of their development, professional development, and implementation strategies. Additionally, they and RSI representatives will begin the review of these materials and their connection to the national science and math standards. This may offer the Native American/Alaska Native RSI's a very effective way of introducing quality curricula into tribal schools throughout our Native communities.

RSI leadership have identified a need to provide a more rigorous science curriculum in many of the RSI schools. In those schools that have substantial native populations, the leadership are committed to developing or adapting a curriculum that meets national science standards but also incorporates native peoples' knowledge, understanding, and wisdom regarding the natural world.

Over the past six months, UCAN has worked with PI's from the western RSI sites to discuss their concern about quality science curriculum that is also culturally relevant. Rather than each of the RSI's pursuing an interest in this topic individually, it is more efficient and effective to join together in investigating viable, standards-based science curriculum that incorporates the traditional science understandings of native people. In addition, the RSI sites can explore the complex process of putting a new curriculum in place through professional development, materials acquisition, and teacher supervision.

In cooperation with Alaska, High Plains, and ITEC RSIs, UCAN proposed a science curriculum workshop focusing on integrating Native American culture and language into the classroom. The objectives of the workshop (to be held in September, 1996) are to provide identified RSI representatives an opportunity to

- increase the knowledge and understanding of standards-based science curriculum that incorporates concepts, values and culture representative of the Indian tribes within the RSI; and
- To exchange information regarding the process for adopting/adapting and implementing a science curriculum that meets the needs of their indigenous people.

Followup meetings will be planned to further develop successful strategies for integrating Native culture and language based science and math curriculum that are tied to the national standards.

## POLICIES

In order to bring about systemic change, the policies at the national, state, and local levels must be addressed. Recently, the State Education Agency (SEA) representatives of the five states met with UCAN and the Southwest Comprehensive Center to develop strategies for coordination of federal and other dollars to support systemic reform. The state consolidation plans are being used as a basis for leveraging across federal and state programs for the common purpose of improving schools and integrating state and national curriculum standards and assessments. A followup meeting of an SEA team including the state Superintendents of Education, rural education specialists, math and science coordinators, federal program coordinators, and Indian Education coordinators will be meeting in October or November, 1996. Each of the superintendents will have major roles in the meeting and Dr. Scott Bean, superintendent of schools for Utah, will co-host the conference with UCAN.

Tribes are developing official education organizations to make education policy determinations. UCAN support is being used to prepare the Navajo Nation and its Division of Diné Education to assume the role of a state department of education for the Navajo people. Additional efforts focus on developing policies that support self-determination for Navajo schools through their local school boards. The Navajo Area School Board Association has asked UCAN to help with development of policy guidelines for Navajo BIA schools moving towards contract or grant status. This may result in the development of a Navajo School Board Association and Navajo State

Department of Education equivalent to the state counterparts. Additional efforts through the New Mexico Tribal Coalition have resulted in the initiation of the San Juan Pueblo Division of Education. Discussions are taking place with other pueblos and tribes regarding the establishment or restructuring of existing offices similar to that at San Juan Pueblo. These efforts will ensure that the pueblos and tribes within UCAN take an active and responsible role for education reform, not only of their own school systems, but also to develop mutually responsible partnerships with the public schools that serve their children.

UCAN is currently pursuing developing a relationship between the Navajo Division of Diné Education and two large public school districts in New Mexico that serve between them over 17,000 Navajo students. Such a formal relationship can be the model for Native/Public school cooperation wherein the cultural and linguistic differences becomes the core of an enriched educational enterprise. The opening of an Office of Science, Mathematics and Technology Education in the Navajo Division of Diné Education is the first step in this effort.

As UCAN addresses policy, strategies have been developed that include tribal and public school collaboration. Other strategies address partnerships with post-secondary institutions as well. The Southern Ute Indian Tribe provides paid work experiences for Native American high school students and the public school has developed a curriculum plan that allows credit toward high school requirements. The program began with 15 students participating this past year. Pueblo Community College now provides college credits for college level science and math courses available in Ignacio High School. Two neighboring school districts allow students from the Ignacio High School to attend classes not offered in their district. Graduation requirements in one district have been increased to include three math courses and three science courses with Algebra I as a minimum requirement for the ninth grade. A new position of director of curriculum and technology has been added to the Ignacio school district. Class sizes have been limited to 20. Colorado has adopted state model content standards in both science and mathematics. A new licensure program is currently being implemented for all teachers.

Adams State College along with other colleges and universities are re-configuring their teacher education programs to be in compliance with the new state policy. The Colorado Commission on Higher Education is piloting a project designed to investigate the success of college students who are admitted on the basis of a standard-based transcript.

The Arizona Tribal Coalition has been working on policy at three levels--at the State Level with the Arizona Systemic Collaborative (a group of organizations committed to systemic reform including the Urban Systemic in Phoenix, UCAN and the Arizona AMP), at the university and college level with the new ASU East Campus, and at the local level with the tribes and reservation schools. The Arizona Systemic Collaborative promotes broad-based support for SMET educational policies at the state level.

The New Mexico County Coalition has been working with the districts to influence the hiring practices of new teachers to include expertise in SMETE. This has included adopting the use of the SRI Teacher Perceiver System that matches school/district needs with teacher competencies. The same process will be used to provide profiles of current

staff to reveal strengths and weaknesses in order to manage for better results. New Mexico County Coalition local coordinators have also been working with school boards to help them focus on establishing policy supporting SMETE reform and professional development, rather than micro-managing districts.

### RESOURCE CONVERGENCE: PARTNERING / COLLABORATION

Collaboration, although not the norm in many communities/schools prior to UCAN, was successfully practiced in many forms this past year. It was recognized that collaboration and partnering had to extend beyond the school and beyond the usual educational organizations if UCAN's efforts were to continue after external funding disappeared.

Formal partnerships were formed with Ft Lewis College, Pueblo Community College, Colorado Department of Transportation, the Council of Energy Resource Tribes, Norwest Bank, and the Southern Ute Community Action program to specifically support the Ute Four Corners Coalition. The San Juan Elementary School, a public school, and the Ohkay Owingeh Community School, a tribal school, joined to write a joint proposal for teacher professional development. This is the first time such a tribal/public school partnership exists in this region.

Through a collaboration between the New Mexico County and tribal Coalitions, the Taos Day School and the Ghost Ranch Museum staff are planning teacher in-service opportunities using distance learning. The Arizona Tribal Coalition worked with the Inter Tribal Council of Arizona to write a School-to-Work capacity-building grant. The Colorado Plateau Coalition, in collaboration with UCAN staff, is working with the Navajo Division of Diné Education (NDODE) to build capacity for implementation of their respective educational goals through professional development of NDODE personnel. UCAN wide partnering has been very successful.

One of the highlights of this partnering is our relationship with the Southwest Comprehensive Regional Center (SWCC), funded through the US Department of Education. In order to better serve our large indigenous populations, UCAN initiated the Indigenous Institute for Educational Excellence (IIEE). The coordinators for the activities of the Institute include the UCAN PI and one Co-PI. The UCAN Co-PI, a Navajo educator and curriculum specialist, is being funded at 25% FTE by the SWCC and whose travel is also supported by the Center. The UCAN PI sits on the Advisory Board of the SWCC with the Co-PI as his alternate. The director of the SWCC also sits on the Advisory Board for UCAN. The SWCC has offered facilitation and professional development for UCAN's bi-monthly coalition meetings. Technical assistance available from the SWCC will be coordinated through IIEE to support SMETE reform agendas of UCAN coalitions serving Native American tribes.

This partnership has resulted in numerous meetings around the five states of the SWCC, the UCAN four corner states, and Nevada. Recently, the State Education Agency (SEA) representatives of the five states met with UCAN and the SWCC to develop strategies for coordination of federal and other dollars to support systemic reform. A larger followup meeting is being planned for November, 1996 that will focus on specific strategies on leveraging federal, state and other resources to implement quality curricula

and professional development supporting the integration of national science and math standards in their public schools.

The UCAN Steering Committee (see list in the appendix) has met tri-annually to address the needs of UCAN communities. This partnership holds the promise of long-term support of UCAN's efforts for systemic reform. Action teams have been formed by the SC to focus on education policy, engaging business and industry, and coordinating federal and other resources in the four corner states. Many Steering Committee members' organizations offer professional development support, technical expertise in curriculum and assessment, and telecommunications and other technologies, and other outreach activities aimed at school and community involvement. Agreements have been made by many of the SC organizations to allocate resources and opportunities to UCAN schools and communities. A significant amount of in-kind support is expected via these partnerships and will develop long-term commitments between the SC organizations and UCAN schools.

Another significant partnership is with the three educational laboratories funded through the US Department of Education. WestEd (previously Far West Lab) and McREL have offered professional development for both the UCAN Leadership Team (made of the PI Team and Coalition leaders) and for Native American communities in the areas of science and math national standards implementation and assessment. SEDL has been focusing its efforts on the two New Mexico coalitions.

Both the Southern Colorado Coalition (SCC) and the two New Mexico coalitions are working closely with their respective State Systemic Initiatives. The requirements for participating in NSF funded RSIs precluded two counties within the San Luis Valley. These counties play a major role in determining educational activity within the valley. Colorado's SSI is using their funds to bring in these two counties to the systemic efforts of the Southern Colorado Coalition. The SCC coalition leader's position is 1.0 FTE shared equally between UCAN and Colorado's SSI. The Colorado SSI and the UCAN RSI worked together to conduct the Alamosa 2020 Future Search Project in which 53 diverse representatives of the community came together to start planning for their educational needs. New Mexico's SSI, SIMSE, has been active partners with UCAN before UCAN received its developmental grant, and works closely with New Mexico County and Tribal Coalitions in the areas of professional development and standards implementation. NM SSI has funded the Electronic Bridge project affecting 18 districts and 3 pueblos for the last two years. Two UCAN coalitions have applied for inclusion in the Annenberg Rural Challenge.

## PROFESSIONAL DEVELOPMENT

Whether a community underwent a “Shades of Change” community self-assessment and planning experience, or developed their Educational Plan for Student Success, professional development for teachers, administrators and community leaders was identified as one of the top priorities for our coalitions.

One coalition had 316 community members, teachers and administrators involved in approximately 4,200 hours of SMETE professional development. Another had 102 school employees and school board members attend a two day training session on team building and site based management with followup planned for later this first contract period. Others held workshops on alternative assessment for their teachers and administrators and inquiry based instruction consistent with national math and science standards for school staff and community members.

Workshops on standards based curriculum were held for 201 reservation school teachers with 2,348 hours of hands-on instruction. Another 200 teachers, teacher aides, administrators and community members participated in the Second Annual Science and Mathematics Conference for Reservation Schools which focused on implementing the national standards into the classroom. This included over 1,600 hours of hands-on instruction. Three of our coalitions have initiated professional development programs for teachers to incorporate technology tools and materials into science and mathematics curriculum.

## COMMUNITY SUPPORT: CAPACITY BUILDING / SUSTAINABILITY

All the coalitions were involved in capacity building to help assure sustainability of their reform efforts. It was recognized early on in our coalition building pre-developmental grant period, and further reinforced during our developmental grant, that sustainability had to be a priority and common thread in all UCAN and coalition efforts.

Community meetings were held by all the coalitions to contribute to the awareness of SMETE and to increase the diversity of community involvement. Over 1000 community members were involved in a variety of venues. The Shades of Change Community Planning Process has been used in 8 communities to work on their educational and community plans so that a community-wide engagement builds the interest and capacity for continued self-assessment and sustainability. Across the coalitions, capacity building focused in the following areas; self-assessment, professional development, infrastructure, use of technology and local leadership.

The New Mexico County Coalition sponsored a very successful Rural Convergence Conference on Systemic Reform which was also attended by representatives from the Southern Colorado County Coalition as well as school and community representatives outside of NMC targeted communities. This resulted in the NMC Coalition leader being invited to a similar conference for the Southern Colorado Coalition to share the NMC successful strategies in systemic reform. Additional regional Rural Education Conferences are being planned for New Mexico and southern Colorado. The NMC is based on a cooperative of 25 districts with several years of experience in school

improvement efforts. This Northern New Mexico Network for Rural Education has opened its doors to non-network districts as a result of its relationship to UCAN. Southern New Mexico districts are now considering starting their own rural education network modeled after the northern network and incorporating the implementation of quality science and math curriculum into their reform efforts.

The Shades of Change community building process was introduced to many UCAN communities in New Mexico and is scheduled for both the Hopi and the White Mountain Apache Tribes in Arizona this fall. Other community building processes were used on the Navajo Reservation and in Colorado. A coalition cluster is spearheading the development of a math/science teacher association whose task will be to develop a master plan for improving the quality of math/science instruction across six school districts.

The liaison between the Colorado Plateau Coalition and the Navajo Division of Diné Education (NDODE) has received extensive training in the field and through other professional development avenues so that she may begin transferring these skills to other NDODE staff members. This and other UCAN support is being used to prepare the Navajo Nation and its Division of Diné Education to assume the role of a state department of education for the Navajo people. Efforts through the New Mexico Tribal Coalition have resulted in the initiation of the San Juan Pueblo Division of Education.

These efforts will ensure that the pueblos and tribes within UCAN take an active and responsible role for education reform, not only of their own school systems, but also to develop mutually responsible partnerships with the public schools that serve their children.

### TELECOMMUNICATIONS

Communities in all the coalitions are concerned with the development of their communications capabilities. Understanding and the utilization of technology is essential to overcome the barriers of distances and lack of resources these communities are faced with.

Recognizing the need, and in partnership with UCAN and its Ute/Four Corners Coalition, the Ignacio School Board had invested \$600,000 in technology this past year and has committed \$200,000 of additional funding per year for the next few years. Two districts in the San Luis Valley are test sites for a NSF Grant to test wireless communications.

A Pacific Bell Telephone technology specialist has been assisting tribal communities in Arizona understand the pros and cons of different technologies to help them make intelligent, well-thought-out decisions. Technology training has been provided to the Gila River Indian Community via an effort spearheaded by Intel and AISES. Whiteriver Unified School District (White Mountain Apache Tribe) has been included in a NSF proposal submitted by Electronic Pathways.

Using a \$10,000 grant from the Los Alamos Laboratory, six communities are piloting a

university on-line system to take courses via the Internet. The Electronic Bridge Project which incorporates distance learning allows staff from the NM Museum of Natural History to mentor teachers and students at remote middle schools. This effort is being considered for expansion into other UCAN communities.

### STUDENT ACHIEVEMENT AND ATTAINMENT

UCAN has established working partnerships with several key institutions throughout our four states to enhance our ability to collect indicators of student attainment. For example, UCAN has established a partnership with the College Board and receives Advanced Placement data for our region on tape directly from Educational Testing Service. Similarly, ITBS data is received on tape directly from the New Mexico and Arizona State Departments of Education. Post-Secondary enrollment data is currently being received from New Mexico and Arizona Commissions on Higher Education and the Colorado Commission of Higher Education is in the process of providing these data. [See data on ITBS scores for New Mexico and Arizona following this discussion.]

Due to the diverse nature of the assessment systems in use in our region, UCAN is working closely with State Departments of Education and other organizations toward a framework of assessments and reporting standards that accurately and appropriately reflect student attainment throughout the UCAN region. UCAN has collected student attainment data in the following areas: enrollment in upper level math and science courses, normed- and criterion-referenced test results, enrollment in and test scores for advanced placement courses, high school graduation and enrollment in post-secondary institutions.

Arizona is in the process of revising its assessment requirements and instruments. Revised Math Standards were adopted 8/26/96, while Science Standards are still in draft form. Anticipated implementation of pilots of the revised Arizona State Assessment Program is Fall, 1998. We are working closely with the State Department of Education, and they are providing the data they are collected as it becomes available.

Colorado is also in the process of revising its State mandated assessment system. A pilot of the new student assessment program is anticipated to begin this Fall, 1996. Implementation of the new system throughout Colorado schools is anticipated for Fall, 1997.

### ASSURING EXCELLENCE FOR ALL STUDENTS

Since the UCAN RSI is working with a broad range of communities and schools in terms of their readiness and ability to implement systemic change, a UCAN wide assessment relative to closing the gap between underrepresented and Anglo or White students is premature. However, some of our coalitions have had accelerated experiences that offer evidence for UCAN's impact.

Ignacio High School had an 33% increase in honor roll students in the 1996 graduating class. Eighteen Southern Ute Indian Tribe Educational Excellence students are in the college scholarship program and there were 20 college bound students this past year. This is up from 16 in 94/95. Other indicators for future success are the numerous efforts underway in tying the district assessment plans to state standards. Local communities are developing science and math standards based on state and/or national standards. The Ignacio School District adopted the Colorado State Science Standards in March of 1996.

There are also efforts focusing on the high school to college transition to increase the retention rate. Gila River Indian Community, ASU East and the Chandler-Gilbert Community College have established an American Indian Track at the ASU East Campus to help assure student college career success.

San Luis School District in southern Colorado has a coordinated program led by the elementary principal, that has involved all of the staff K-12 in a variety of professional development efforts focused exclusively on standards. They have also allocated all their Chapter 1 and Eisenhower funds to support professional development related to quality curricula based on state standards.

For the New Mexico County Coalition, the overriding concerns are to acquire community consensus on student expectations, design an accountability process with clear criteria for school success, and to use these products to plan a curriculum that will deliver successful student achievement in math and science. This is the second year focus. The first year's efforts culminated in most NMCC's schools initiating their Educational Plan for Student Success (EPSS). This requires that local school curriculum and assessment practices are revised to assure that there is a one-to-one correspondence between curriculum and assessment, and is based on the national and state standards for science and mathematics.

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Efforts for the next programmatic year will continue to focus on standards implementation and accountability, culturally relevant curriculum tied to the national math and science standards, professional development on new assessment strategies, community engagement and capacity building, particularly with our Native American sovereign nations, state policy support for reform, and disseminating successful models of community/school engagement and planning, use of telecommunications, and successful collaborations. With UCAN partnerships, an increased effort on increasing student attainment, especially for underrepresented students, will be a major focus. PI and Co-PIs will be working closely with the governors' offices of the four UCAN states to align our reform efforts with the goals of the Governor's Education Summit.

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UTAH \* COLORADO \* ARIZONA \* NEW MEXICO

UCAN  
A FOUR-STATE  
RURAL SYSTEMIC INITIATIVE

First Year Analysis

August 31, 1996

Dr. Vicente J. LLamas, Principal Investigator  
Elizabeth A. Yost, Program Director

**The Utah•Colorado•Arizona•New Mexico**  
**Rural Systemic Initiative (UCAN-RSI)**

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**First Year Analysis**

The UCAN-RSI, a four state, six coalition enterprise, focusing on systemic reform of science, mathematics and technology, has made substantial progress in engaging its diverse communities in this endeavor.

Of the 278 schools reached by UCAN since September of 1995, 136 were directly impacted by professional development, leadership training, science and math standards implementation, and educational planning activities. Of these 136 schools, 132 (97%) are designated as having over 60% of their students on reduced or free lunch support and are therefore described as high poverty schools. These 136 schools serve 33,787 minority students of which 70% are Native American and 19% are Hispanic.

Each of UCAN's six coalitions have initiated, and in many communities, established community leadership teams whose main purpose is to engage the general population in systemic reform efforts throughout their local "system," whether that system is a local Navajo Chapter House or a mountainous rural Hispanic farming community having no community center. These teams form the base from which not only the relatively short term intervention of UCAN springs, but in which the long-term commitment and capacity for continuation of the reform process is entrenched. In the over 100 communities targeted for 1995-96, 42 community teams have been formed or are in process of formation. These teams include community/tribal leaders, parents, school and school board personnel, teachers, and in many cases, students.

Those communities who have been involved in previous or other continuing reform efforts, have taken the next step by working on their educational and community plans. These intensive activities are designed to acquire community consensus on student expectations, design an accountability process with clear criteria for school success, and to use these products to plan a curriculum based on national and state standards that will deliver successful, and high levels of student achievement in math and science. A total of 51 communities, 30 districts, and 87 schools are involved in this process affecting 20,476 students.

Through collaboration with partners, communities and schools, UCAN has leveraged over \$1.8 million in other federal and non-federal funds. Of these funds, \$126,000 (7%) was used for curriculum and materials directly in the classroom; \$306,000 (17%) was used for professional development; \$115,200 (6.4%) was used to support coalition administration; \$174,600 (9.7%) for distance learning; \$675,000 (37.5%) for telecommunications in the classroom; \$72,000 (4%) for program and student assessment; and \$331,000 (18.4%) for public awareness and community action.

Across all coalitions, 346 K-12 school administrators received professional development in the areas of science and math standards and alternative assessment. Of these administrators, 60% were given between 1-7 days of professional development while the rest were given introductions to systemic reform. Hands-on training in standards based science and mathematics was given to 1,329 K-12 teachers with 75% having between 1-3 weeks of professional development. Of the total number of teachers, professional development was offered to 556 (42%) K-5 teachers, 438 (33%) for science and math 6-8 teachers, and 335 (25%) of 9-12 teachers.

Policy and capacity building have also been areas of intense UCAN involvement. Through a successful partnership with the Department of Education funded Southwest Comprehensive Regional Center, state education leadership, including the superintendent's office, Indian education office, federal programs office, and rural education office have met to develop strategies for coordination of federal and other dollars for the common purpose of improving schools and integrating state and national curriculum standards and assessments. A major five state meeting (Utah, Arizona, Colorado, New Mexico, and Nevada), hosted by UCAN and the Utah State department of education, will be held in November, 1996 to outline specific strategies for this effort.

During this first year of UCAN operations, the states of Colorado and Utah passed legislation that requires content standards in math and science that reflects the national standards. For Colorado, state level normed reference testing has been suspended, and standards based performance assessment must be in place in all public school districts by January, 1997. For Utah, performance based assessment tied to the standards must also be in place by the end of the 1997 school year. This has given two of our coalitions a significant boost in their efforts to bring standards based curricula to their targeted communities. These schools have responded to the new legislation by asking UCAN support in developing short and long term plans for professional development focusing on content, assessment, implementation and evaluation.

In Arizona, the Arizona Student Achievement Program has been refined and will play a central role in Arizona's reform efforts. The new math standards were adopted by the state Board of Education on August 26, 1996. Assessments based on the new math standards will be piloted by the spring of 1998. Graduation will depend on students performing successfully on these new assessments. In New Mexico, the math and science frameworks based on the national standards have recently been adopted by the state Board and the legislature, and current work by the Southwest Comprehensive Regional Assistance Center (a major UCAN partner) funded through New Mexico Goals 2000, will develop explicit content standards in all areas, science and math being early products. New Mexico's Educational plan for Student Success (EPSS), a comprehensive educational planning process, is mandated by the state for all public schools, and requires that the new state frameworks and content standards be integrated in their educational structure. UCAN is deeply involved with 18 districts in the development of their EPSS.

UCAN's partnership with Native American sovereign nations, have resulted in the establishment of the first Office for Science, Mathematics and Technology Education of the Navajo Division for Diné education. Additional efforts are aimed at establishing a Navajo State Board of Education and a Navajo Department of Education that have the capacity for continuing the support of systemic reform for local school boards and Navajo children. In New Mexico, the San Juan Pueblo established the San Juan Department of Education and will be utilized as a model for other such efforts with the other 18 New Mexico Pueblos a 2 Apache Tribes. The Arizona Tribal Coalition has collaborated with the InterTribal Council (including 21 tribes) to submit a capacity building grant to the state of Arizona.

Our Native American communities are highly motivated to find culturally relevant curricula for their children. Although there are some excellent culturally-specific curricula that have been developed for Native American children, widespread use, even within the tribe that these materials were designed to support, has been minimal. This need is being addressed by bringing together those Indian educators involved in the development of Native American science and math relevant curricula to share the process of their development, professional development, and implementation strategies. Additionally, they and RSI representatives, and experts on national science and math standards will begin the review of these materials and their connection to the national standards. This may offer the Native American/Alaska Native RSI's a very effective way of introducing quality curricula into tribal schools throughout our Native communities. The first of a series of workshops in this area will be held in September, 1996.

Efforts for the next programmatic year will continue to focus on standards implementation and accountability, culturally relevant curriculum tied to the national math and science standards, professional development on new assessment strategies, community engagement and capacity building, particularly with our Native American sovereign nations, state policy support for reform, and disseminating successful models of community/school engagement and planning, use of telecommunications, and successful collaborations. With UCAN partnerships, an increased effort on increasing student attainment, especially for underrepresented students, will continue to be a major focus. Representatives from UCAN coalitions, PI and Co-PIs will be working closely with the governors' offices of the four UCAN states to align our reform efforts with the goals of the Governor's Education Summit.

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UTAH \* COLORADO \* ARIZONA \* NEW MEXICO

UCAN  
A FOUR-STATE  
RURAL SYSTEMIC INITIATIVE

Year Two

Annual Report

September 1, 1997

Dr. Vicente J. LLamas, Principal Investigator  
Elizabeth A. Yost, Program Director

## OVERVIEW

The UTAH\*COLORADO\*ARIZONA\*NEW MEXICO Rural Systemic Initiative (UCAN-RSI) is working with the communities and their schools, through the use of two primary strategies: strategic planning and professional development. Existing management structures and organizations, as well as UCAN-initiated partnerships have been utilized for long term support of educational reform. The central theme of the UCAN-RSI Project during the second year focused on the process of implementing standard based-curricula and performance assessment. The process included the aligning of the curriculum to the national mathematic and science standards, tying culturally relevant curriculum to the national standards, professional development in new assessment strategies, disseminating successful models of community/school engagement and planning, and the use of technology as an educational tool.

This focus continues to create a strong, sustainable, local support system for continued educational reform. The concepts of quality math and science education and the appropriate use of technology is integrated in the everyday operations of schools and form the basis for long term community planning and support for educational reform.

The UCAN-RSI and its partners have brought together representatives of 4 state governments, 48 tribal governments, and 102 public school districts/BIA Education Agencies to focus on changes in policy, organization, government, and community involvement in the support of high expectations and achievement for all students in science and mathematics.

UCAN uses a limited number of strategies in a large number of communities as well as multiple strategies in several focus communities to address the goals of the UCAN-RSI. The lessons learned from the more progressive and successful communities are being used to accelerate the process of reform in other communities. Examples of this are documented in this report within and across coalitions. Community/District/School planning processes have been used across UCAN with local expertise being developed through capacity building strategies.

Through collaboration between coalitions, these human resources and community experiences are then transferred to other like communities within UCAN. For example, performance assessments developed and implemented in one lead tribal school are being used as a model for similar development in twelve other tribal/BIA schools. An accountability model being implemented in another coalition is being considered for statewide adoption by the State Department of Education. The effective use of distance education technology in one coalition has expanded to two other coalitions in two UCAN states. BIA and federal program coordinators at State Departments of Education (e.g., Title I, Bilingual Education, and others) are meeting to develop cooperative strategies that support reform efforts at the local level.

## UCAN'S PROGRESS IN YEAR 2

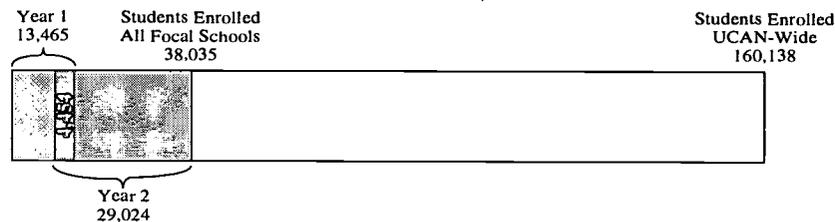
The following is based on the previously stated focus for UCAN's six coalitions in year 2. It was clear that although our first year efforts were critical in laying the foundation for long-term systemic effort and support, UCAN needed to move more quickly into the classroom than originally designed, or we would not have a significant impact in the area of student achievement by the end of our five year effort. Thus, our coalitions quickly moved forward in those

communities who were ready and anxious to make changes at the classroom level and who are committed to implementing standards-based science and math curricula. This report will focus on curriculum and assessment, policy, resource convergence, broad-based community support, student achievement, and achievement of under-represented students, and will use specific examples from coalitions to illustrate implementation.

UCAN worked with 102 focal schools during year 2 with at least 25% of math and science teachers at each school receiving 60 hours or more of professional development or where UCAN provided 20 person hours or more of on-site services. These schools have a total enrollment of 29,024 with 46% being Native American and 34% being Hispanic. Figure 1 shows the number of students enrolled in focal schools during year 2, as well as the enrollment in year 1 focal schools. Across the two program years UCAN has involved 128 schools with 38,035 students or 24% of all UCAN students.

**Figure 1**

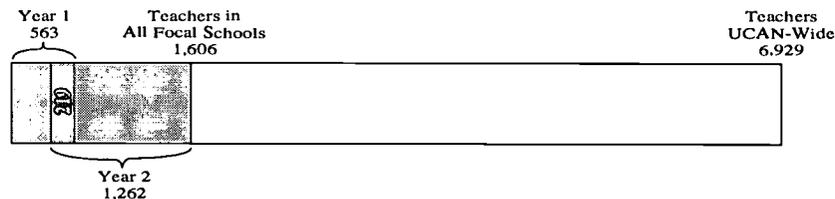
**UCAN Focal Schools Student Enrollment**  
September 1, 1995 to August 31, 1997



These 102 year 2 focal schools have 1,048 elementary, 110 secondary math and 104 secondary science teachers on their faculties. Figure 2 shows the total number of elementary, math and science secondary teachers in these focal schools, as well as the number of teachers in year 1 focal schools.

**Figure 2**

**Number of Elementary, Math & Science Teachers**  
**in UCAN Focal Schools**  
September 1, 1995 to August 31, 1997



Student Achievement and achievement of under-represented students is paramount to the goals of the UCAN-RSI, therefore this report will begin with an analysis of them, followed by the remaining four drivers.

**STUDENT ACHIEVEMENT**

The UCAN-RSI recognizes the importance of significantly raising the overall achievement of it's students. Therefore, UCAN is using a variety of data and information resources to help illustrate its efforts in math and science systemic reform.

Much of this data is being analyzed by the UCAN external evaluators so that UCAN schools can see where their strengths and barriers exist. Reports are being transmitted to coalitions, who in turn, share them with their districts/agencies for effective planning and policy recommendations. For example, gender, ethnicity and grade-by-grade data helps the schools focus on their educational needs in a way that has been unavailable to them in the past.

Due to the diverse nature of the assessment systems in use in our region, UCAN is working closely with State Departments of Education and other organizations toward a framework of assessments and reporting standards that accurately and appropriately reflect student attainment throughout the UCAN region. UCAN has collected student attainment data in the following areas: enrollment in upper level math and science courses, normed- and criterion-referenced test results, enrollment in and test scores for advanced placement courses, high school graduation and enrollment in postsecondary institutions.

UCAN is tracking the number, grade level, ethnicity, gender, and completion rates of students enrolling in math and science courses offered in UCAN secondary schools. These statistics have not historically been kept by UCAN schools which has made them difficult to collect. This past year 33% (40) of UCAN high schools serving 13,945 students reported these data to UCAN. In order to assist schools in using these kinds of data for decision making UCAN is distributing a course report to all 120 high schools which compares UCAN data to that available nationally from the Council of Chief State School Officers. The following table is an example of the kind of information included in the report to schools.

**Figure 3**

**UCAN Enrollment Percentages in Selected Science Courses in the Fall, 1996 and 1994 National Course Enrollment Percentages**

**GRADES 9-12 -- Science**

		<b>General Science</b>	<b>Biology Yr 1</b>	<b>Chemistry Yr 1</b>	<b>Physics Yr 1</b>
Percent of grade 9-12 Students taking course	UCAN	2%	16%	8%	3%
	Nationally	6%	23%	12%	5%

Student achievement data from Center School District in the Southern Colorado Coalition (SCC), showed gains in 6 test areas on the CTBS in grades 2,4, & 11. Grade 8 showed improvement in science, reading, and language mechanics. The overall dropout rate for this district improved from 9.7% in 95-96 to 5.6% in 96-97. The dropout rate for Hispanic students improved from a high of 10.1% to a low of 4.9%. In addition to the reduction in attrition, it is projected that the enrollment will increase from 742 to 825 this school year.

In New Mexico County Coalition (NMC) districts, some data shows significant momentum in student achievement. In one NMC district, student course enrollment data for two successive years, 1995-96 and 1996-97, reveals the percent increase in course enrollment as follows: 60% increase in Chemistry II, 40% increase in Physics, 50% increase in Calculus, 14% decrease in Algebra II some measure of success is due to a movement towards a more challenging curriculum in math and science, with Pre-algebra and Algebra taught at the middle school level. Also, the NMMESA program has had good success at the middle school and high school. The high school now has extended time blocks for higher level math and science courses.

The NM State Department of Education has mandated that schools and districts analyze the needs of students and the underrepresentation of minority students in higher level courses during the annual budget approval process. As a result, if district's student attainment data shows significant difference between overall student achievement and achievement of underrepresented students, the SDE will expect a proposed budget reflecting and addressing their needs.

ATC has provided in the Salt River-Pima Maricopa Indian community (SRPMIC) enhanced science class to all 5th and 6th grade students as well as mathematics to 2nd and 3rd graders.

As a result of technology workshops provided by UFC for K-6 teachers, the use of technology has been implemented in the classroom in math and science. This is also reflected in the curriculum plans for the year.

NMT has organized teaching events focused on hands-on strategies which are taught by teachers who have implemented standards based materials in their classrooms. Students have become more involved in math and science as demonstrated by increased participation in local, agency and regional science fairs. The quality of science projects has increased as well

CPC has emphasized professional development for their teachers from their local communities focused on Hands-On, standards based curriculum material. This focus on utilizing standards based curriculum materials by all UCAN districts contribute significantly to closing the gap.

### CLOSING THE GAP-UNDERREPRESENTED STUDENT ACHIEVEMENT

Most of UCAN's students are bilingual and bicultural and face significant barriers that are based in the educational system's lack of response to their needs. Our coalitions and the communities and schools within them have recognized the need for the system to be prepared to deal equitably with students from a variety of backgrounds. To that end, significant efforts were made to insure that systems are prepared to work with diversity.

Three conferences have been supported through the RSI's to critically study the issue of culturally relevant curriculum tied to the national math and science standards. UCAN facilitated two of these conferences. Discussions have focused on current and developing curricula and initiatives. UCAN used the Educating American Indian/Alaska Native Elementary and Secondary Students; Guidelines for Mathematics, Science and Technology Programs as a backdrop for one of the RSI wide Native Curriculum Conferences. This NSF document offers explicit strategies for improving math and science education in Native Communities. These strategies were developed by Native science and math educators.

The Alamosa Community, with support from the Southern Colorado Coalition (SCC) conducted a participant based Search Conference, to address issues affecting learning through the year 2020.

During this conference an action plan was designed to address, ethnic, cultural and bilingualism of the students in Alamosa schools. This determined the need for the teaching staff to receive relevant training in order to better support the achievement of its students.

As a result, the Alamosa School District is providing 30 of their teachers with the opportunity to receive a bilingual education or an ESL endorsement. The District has contracted with Adams State College to provide on-site courses to be completed in three years to this cohort of K-12 teachers. As a part of this effort, SCC provided 128 teachers and 30 community members (primarily parents) with three days of training and discussion on bilingual instruction in the classroom with specific emphasis on math and science instruction. All Alamosa teachers (K-12) attended as well as 18 teachers from Center and North Conejos. This was a holistic program that involves teachers, children and their parents.

In the New Mexico Counties Coalition, the use of Distance Education as a tool for school reform by the nineteen (19) NMC Coalition school districts has allowed these school districts to offer science projects like the "Electronic Bridge Project" to the districts' middle school students and provide professional development to the districts' teachers. This effort is leading towards increased contact of minority students with professionals in the field of math and science. It is creating a connection for students between their courses and the real world of work. An added benefit is the change in teacher behavior relative to how they teach math and science. Several of these professional development programs incorporate district bilingual education staff to provide a more wholistic program to their bilingual students.

New Mexico County Coalition rural high schools are experiencing the first advanced math and science courses delivered via satellite. Arrangements have been made in collaboration with NM Highlands University and AP New Mexico to provide Coalition high schools with AP Calculus and Trigonometry beginning Fall semester (1997). These rural schools have little access to higher level math and science courses. These courses will significantly impact student attainment. Concurrent enrollment with area universities is also being arranged, this will open the door to post-secondary education for students who otherwise might not have considered college as an option. Gender, ethnicity and other variables will be used to monitor these advanced math and science courses.

The Ignacio School District and the Southern Ute Tribe Education Department of the Ute Four Corners Coalition recognized one of the barriers to learning science and math was reading level. The Tribe sponsored a three semester hour course for teachers (K-3) in the "Spalding Approach to Reading." The tribe paid teacher stipends. The Ignacio School District has included in its Strategic Plan teacher incentives to take additional professional development in reading. Seventy (70) teachers attended a five-day "Reading Workshop" which provided a focus on SM content reading. UFC and the Utah Department of Education provided stipends for teachers to attend the workshop.

Recognizing that one of the most challenging barriers to reform is the "transition" period during which students and teachers must live in two educational worlds; the existing and reform worlds. UCAN has facilitated several short term initiatives to aide in the transition process, which allows more time for the reform efforts to become embedded in the system. The following examples establish a link between these worlds as the targeted schools are implementing systemic change:

- A six-week NASA AISTEC (American Indian Science Technology Engineering Consortium) Summer Bridge Program at ASU (Arizona State University) East provides reservation students the much needed science, mathematics, technology reading and research skills necessary for success in college or university. This year the bridge program served 29 entering 11<sup>th</sup> grade, 12<sup>th</sup> grade and

college freshmen American Indian youth from nine communities. The program size has doubled since last year and the number of communities served has almost doubled (from 5 to 9).

- **Service Learning:** In the Salt River Pima-Maricopa Indian Community, ATC has worked to facilitate a permanent partnership with ASU's Service Learning by which math and science classes are enhanced through the ongoing in-class participation of well-trained college level interns. These interns and their classroom roles are fully integrated into a standards-based curriculum. Last year's program provided science classes (botany, geology and geography) to all students in 5<sup>th</sup> and 6<sup>th</sup> grades and to some high school students. The desperate need for such intervention at these schools is indicated by the standardized scores which place them at the 17<sup>th</sup> percentile in math, the 15<sup>th</sup> percentile in reading, and the 13<sup>th</sup> percentile in writing. Although the impact of the program on students' achievement has not been assessed at the Salt River Schools, evidence from a urban core school (Martin Luther King Elementary in the Roosevelt School District in Phoenix) indicates that students there, receiving comparable reading (and other) intervention went from the 33<sup>rd</sup> percentile to the 75<sup>th</sup> percentile on the district mandated basic skills test. School administrators attribute much of the change to the ongoing intervention of the Service Learning Project. It is anticipated that the project at the Salt River schools will continue to expand at the rate of approximately one course a year until all grade levels are served.
- In response to the concerns of the Ute Mountain Ute Indians, the Montezuma/Cortez School District has supported the provision of one-and-one-half hours of tutoring services four nights each week on Ute Mountain Ute Indian Tribal lands during the school year, approximately twenty-five (25) students participated in these sessions on an ongoing basis. These efforts are assisted by the fact that the Tribe just opened a new computer laboratory which is staffed by a full-time instructor.
- The Colorado Plateau Coalition worked with targeted districts to implement standards-based curricula that integrated language and culture of the Navajo Nation. School Districts chose schools which already had a developing Navajo culture component within their curriculum, but needed the support and training necessary for the systemic change of science and math instruction. This included 6 districts and 12 schools. Letters of Commitment were signed between the UCAN-RSI/CPC and these districts that focused on the achievement needs of students as related to math and science.
- At the beginning of the NM County Coalition initiative, decisions were made by superintendents that a primary goal of the initiative would be to increase expectations for student learning as students were not being challenged sufficiently. Data necessary to test this concern or hypothesis, and a well defined method of accountability for results needs to be addressed. Several events have begun to shift matters in the Coalition region:
- The NM State Board of Education has adopted a new set of math and science standards, incorporating the national standards. These standards are being used as a basis for district Educational Plan for Student Success (EPSS), and thus, for accreditation purposes.
- The state legislature has mandated changes in the school accountability reports published annually in newspapers for community review. Included in the indicators of school success will be student achievement, tied to standards. Another piece of legislation requires a performance ranking of all school units [not districts] to be used as a basis for distribution of incentive funds, and a new state student performance assessment system will be instituted in the Fall, tied to state standards.

- NMC in partnership with Panasonic Foundation, has provided forums for district teams to consider student assessment systemically, with the rigor necessary to generate data trusted by communities. A growing number of Coalition schools provide an extended school year for students unable to complete course requirements during the regular year. Parents are trained to assist the student to catch up on required work during the summer. The Coalition districts are involved in an intensive 3-year project of bilingual professional development to prepare teachers, teacher aides, parents and administrators to implement quality bilingual/multicultural programs focused on higher student attainment. A bid for the proposed work was awarded to the University of New Mexico and the first such training began during the summer of 1997. A significant portion of the training will be delivered via satellite-based transmissions, augmented with internet connections.
- UFC serves primarily ESL students where reading skills have been identified as a barrier to math and science achievement. In collaboration with the Southern Ute Tribe, professional development in reading using math and science content materials has been offered to K-3 teachers
- NMT has initiated with all of its communities training in the process of aligning curriculum and assessment with math and science standards. In this process the schools have begun to enhance their curriculum with culturally relevant curriculum materials.

These strategies combined with other efforts outside the math/science focus in target communities will continue to be built and embedded in the next program year.

## CURRICULUM & ASSESSMENT

Implementation of standards based math and science curriculum and assessment relative to classroom implementation and community relevant curricula remained a primary focus of UCAN. As indicated in the introductory section of this report, UCAN has focused its efforts in year two on moving into the classroom as quickly as possible. Partnerships were adjusted to best aid our coalitions to accelerate their efforts in curriculum and assessment implementation. Throughout the late Fall 1996 and Spring of 1997, UCAN and its partners developed a comprehensive plan to prepare teachers and administrators to begin implementing the standards in the Fall of 1997. WestEd and The Education Trust, two of UCAN's primary partners, in cooperation with UCAN coalition leaders and school representatives, initiated an intensive summer and academic year professional development plan to train a cadre of teachers/administrators, school board members, parents and community members from each participating district/school. The cadre will return to districts to work with their teachers, continuing training during the academic year. This section includes examples that point to the coordinated effort undertaken by the coalitions across UCAN.

Survey data collected by UCAN provides some indication that UCAN teachers are providing more standards based instruction. Figures 4 and 5 present the results of teacher surveys collected from a sample of schools UCAN-wide in the Spring of 1995 and 1997. More public elementary school teachers reported using hands-on activities in their classes 'once or twice a week or more' in 1997 (1995: 54%; 1997: 72%).

**Figure 4**

Teachers were asked how often students in their classes did various activities. Responses of 'once or twice a week or more' are reported.

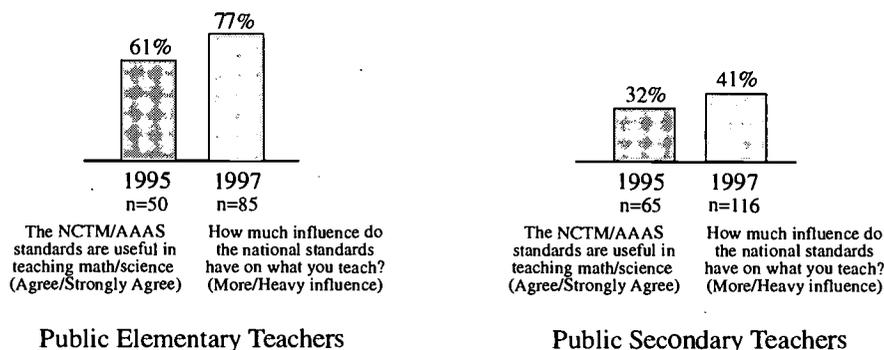
Do hands-on activities:



Similarly, more elementary (1995: 61%; 1997: 77%) and secondary (1995: 32%; 1997: 41%) teachers reported that the national standards were useful to their teaching in 1997 than in 1995.

**Figure 5**

Regarding the National Standards:



Training, using the Systemic Change Toolkit was provided by WestEd for all communities at ASU East in February 1997. As a result, ATC is collaborating with WestEd to provide two years of ongoing standards-related professional development to ATC communities schools in four clusters. This plan promises to provide excellent, sustained and cost-effective professional development for cluster staff as they initiated their efforts at implementing the standards and the associated assessments. The Toolkit Training and the associated Training of the Trainers and Shades of Change Training became the first pieces of the larger WestEd Tribal Innovation Program (TIP). This collaboration is a direct result of UCAN's work with their coalitions. TIP is designed to serve

four clusters of schools (approx. 26) from the ATC and several clusters from CPC [ at the writing of this report CPC TIP application process is not yet complete]. Teams from cluster schools will participate in the following key components in the two-year technical-assistance program: 1) regional institutes, 2) local team meetings and follow-up technical assistance, and 3) an annual week-long symposia. Teams must include the following membership: administrator, math and/or science teacher (2), instructional aide (for elementary school) or counselor/vocation education representative for secondary schools, and a community member. Two regional institutes will occur before the end of the 1997 fall semester. The others will occur in Year 3.

SCC has encouraged districts to look at their curriculum critically identify gaps and overlaps with the new state and national standards. For example, Huerfano district provided stipends for 28 math and science teachers for five day as and at the recommendation of SCC brought in consultants to provide teachers support to analyze how the curriculum aligned with the Colorado Content Standards. Math was reviewed and revised this year and science is scheduled for next year.

SCC has been very successful in providing opportunities for teachers and administrators to experience new curricula and standards-based framework of instruction during the school year. Using already established programs like Math/Science clusters as a platform for delivery, SCC brought teachers together to experience successful classroom practices. This particular avenue provided an average of 20 science teachers and 15 math teachers with 4 hours per month of professional development. Two specific workshops were held in June which provided 55 science teachers with 16 hours of professional development in standards-based curriculum alignment. These workshops not only exposed teachers to instructional methods and content, but also showed teachers how to look at their curriculum, and link assessment, experience and instruction together to provide a seamless learning process for their students.

SCC has taken a pro-active role by providing information and support for teachers and administrators with regards to assessment and evaluation. The districts recognize their needs and are working to provide professional development for their staff. SCC collaborated with CONNECT to provide scoring conferences to allow K-12 math and science teachers to experience and gain confidence in performance assessments. Two conferences were held with 80 teachers and 3 administrators participating in four hours of training. All but one district of the San Luis Valley attended the conference. Many districts are writing their own assessments to assure their relevancy to their communities. Additional assistance is planned for year 3.

The NMT sponsored a "Summer Institute for Teachers" in which 47 teachers, 3 parents, 2 school principals , superintendents from both Northern Pueblos and Southern Pueblos BIA Education Agencies and 2 SDE representatives participated. The participation of the 42 teachers constitutes at least 50% of all the school teachers in the two BIA Education Agencies. This summer Teacher Institute provided the participants with a process for matching curriculum and assessment with the national and state math and science standards and will enable a cadre of classroom teachers to begin the implementation process. As of the summer of 1997, 100% of NPA/SPA BIA funded schools in New Mexico have adopted a standards-based curriculum.

Also, NMT classroom teachers in eight schools have each received 40 hours of professional development to begin implementing standards based curriculum and performance assessments in the areas of math and science, Fall 1997. Some of these teachers received an additional 40 hours to act as local resources as the implementation process proceeds. These same teachers (except for Santa Fe Indian School) and additionally teachers at Sky City and Isleta were trained to and implemented the Center for Hands-On Learning (CHOL) or FOSS science kits during the 1996/97 school year.

All 24 NMC school districts are now using their Educational Plans for Student Success (EPSS) to guide and manage their reform efforts in all areas, focused on Content Standards, Performance Standards and Opportunity to Learn Standards. At least 70% of the districts have identified math and science reform as their EPSS primary focus areas.

The following districts, Questa, Chama, Pecos, Santa Rosa, and Wagon Mound have identified math and/or science as the primary focus area while Tucumcari, San Jon, Portales, Logan, Jemez Mountain, Dulce, Grants and West Las Vegas have technology as the primary focus area. Most of the districts are proceeding to implement the recently developed state standards in math and science by reviewing and adjusting their instructional programs. Approximately 50% of these districts are establishing consensus on what each standard means in terms of what students should know and be able to do, including initiating a pilot on what valid assessment processes should look like. NMC clusters are in varying stages of using Education Trust staff in training school based cadres who are reform resources to their district and who catalyze and support changes at the local level.

Professional development and curriculum implementation is a major focus for the UFC. In the Ignacio School District, all 4th and 5th grade teachers are trained in AIMS (Activities in Mathematics and Science) and are implementing the curriculum for the 1997/98 school year. In the Duchesne School District science and math teachers attended an "Applied Science Class" and an "Applied Math Course" in preparation for an integrated science and math curriculum which is being initiated this Fall. Student impact is estimated at 700. While the Montezuma-Cortez Schools District (MCSD) has adopted standards based curricula, they recently incorporated a more hands on approach to teaching. They have established a Small Scale Math and Science Laboratory and supported training two eighth grade teachers in the teaching techniques associated with the "Discovery Camp". MCSD will incorporate these techniques into the science labs at the Junior High level. Teachers at the Elementary level have been trained in Math Their Way, Math: A Way of Thinking, and Family Math. These event were offered to 75 teachers with an estimated student impact of 750 students.

The Duchesne School District (Utah) has established a Cultural Curriculum Committee has been charged with reviewing curriculum and making recommendations to the school district. It is also charged with visiting various schools in the area and formulating recommendations. This is to insure that the standards-based curriculum specifically integrates local culture, language and issues. SM has been particular focus area of this effort.

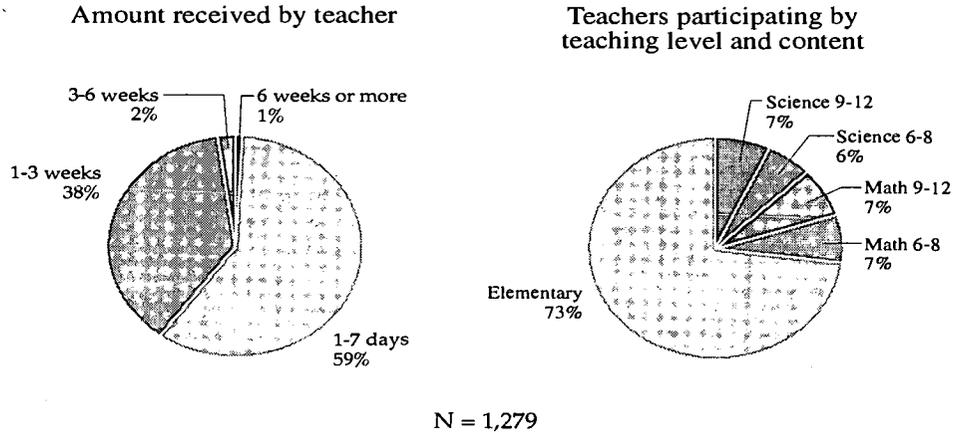
CPC professional development for teachers represented a comprehensive approach of introducing teachers to math and science standards as well hands-on materials and activities. It further included an introduction to cultural framework which provided the basis for understanding and relating to math and science.

UCAN coalitions provided or facilitated professional development for 1,279 elementary, math and science teachers during year 2. Figure 6 presents the percentage of teachers receiving different amounts of professional development, as well as the percentage of these teachers by teaching level and content area. Forty-one percent (524) of the teachers participating in UCAN sponsored activities during year 2 received more than one week of professional development. About three-fourths (73%) of the teachers who received professional development teach at an elementary school and almost equal numbers of math (14%) and science (13%) secondary teachers received professional development.

Figure 6

### UCAN-wide Professional Development

September 1, 1996 – August 31, 1997



Compared to last program year, UCAN involved 84 ( 7%) fewer teachers during year 2. However, the number of teachers receiving one week of more of professional development increased from 41 in UCAN year 1 to 524 in year 2. This increase may be attributed to increased focus on getting standards into the classroom and the amount of professional development that UCAN was able to leverage.

Growth over the past two years is illustrated by the level of involvement of the schools and communities as they determine how math and science curriculum and assessment will be implemented, with the facilitation of the UCAN-RSI.

#### POLICY

Policy is driven by local school boards in most UCAN schools. Statewide policy and mandates are only as effective as local policy implementation bodies. Therefore, UCAN works closely with educational and tribal leaders as well as school board members to update them on national, state and local policy which supports quality math and science for students and how they can continue to develop coherent policy in their communities supporting systemic reform. Student achievement testing in the four states are undergoing revisions. Colorado has suspended requirements that district test their students with norm referenced tests, and will be pilot testing a performance assessment in math and science for 4<sup>th</sup> graders in 1997/98.

Arizona suspended their Arizona State Assessment Program (ASAP) during the 1995-96 schools but has since revised it and will begin testing this year. UCAN has baseline ASAP data for UCAN eligible schools from 1994-95. However, we are unsure at this time whether this can be used for comparison. Arizona also administers a norm referenced testing program. However, it also has been changed from Fall testing to Spring testing and the test has been changed from the Iowa Test of Basic Skills (ITBS) to the Stanford Achievement Test (SAT). We have good data from Arizona and New Mexico and expect our Colorado and Utah state departments will be equally helpful when their testing programs are started.

The Performance-Based assessment in UTAH has been initiated. Mathematics and Science Standards have been adopted and is being implemented across the State. The norms for math have been determined and science will be done this year (1997/98) on a schedule with the rest of the State. ~~New Mexico is changing its student assessment process from ITBS norm-referenced test to a new system incorporating norm-referenced test-items-as-well-as-criterion-referenced items.~~ Initial use of the new system will begin in the spring of 98. Mathematics and science standards have been adopted and are being used by schools in their annual planning process.

Policy has been influenced by UCAN-wide strategies to offer workshops to build the climate of reform. During the first two years, the Arizona Tribal Coalition and UCAN sponsored conferences on systemic reform in science and mathematics in which over 200 school and school board administrators received professional development on system requirements and structures that support change in the classroom. Similar workshops were held across UCAN continuing to build the climate for reform and policy changes supporting reform.

NMC schools are using accountability and assessment criteria to drive improvement in instruction. NMC organized a group of nine districts to effect system accountability changes focused on three system components: teaching and learning, governance and leadership issues and community and parent engagement. District teams comprised of teachers, parents, administrators and other community persons, were guided through an intensive process of developing strategies to account for results at the local level. In partnership with Panasonic Foundation, NM Re:Learning, the NM State Department of Education and Albuquerque InterFaith, five 2-day workshops were conducted and guided by national experts in accountability issues.

In collaboration with NMHU's Center for the Education and Study of Diverse population (CESDP), an accountability manual was developed to be used by the NMC school districts in their effort to develop an accountability plan for systemic reform in all content areas. The manual can be downloaded from the web site: <http://www.cesdp.nmhu.edu>. This manual gives the school districts direction on how to develop an accountability process for their schools. NMC has funded an expansion of this guide to specifically focus on math and science.

As a result of NMC leadership and a \$75,000 Goals 2000 grant, the NM State Department of Education Blueprint 2000 Plan for Student Assessment is being revised to accommodate districts' need for grades K-12 student achievement data instead of the original plan to limit this data to grades 4, 6 and 8. The accountability framework also being piloted by districts within the NMC and the standards-based assessments are being considered by the State Department of Education for statewide adoption. This work culminated in the Northern Network/County Coalition being awarded funds (\$103,000) from the 1997-98 Goals 2000 Project for revamping the SDE's Blueprint 2000.

The NMC, the Northern Network (an organization of school administrators), the newly appointed NM State Superintendent, Panasonic Foundation, the Santa Fe Institute (an internationally renowned scientific think tank) and UCAN leadership met for three days in August, 1997 to plan the specifics of the pilots mentioned above, as well as to develop guidelines for long-term support of reform in New Mexico.

The recent NM legislative session produced several bills signed into law which are influencing the way NM Coalition schools deal with accountability issues. Accountability will include both district and school levels. There will be statewide indicators established for districts and schools to measure improvement in student achievement, dropout rates, attendance, community involvement, and school safety.

During the first year of UCAN operations, the states of Colorado and Utah passed legislation that requires content standards in math and science that reflects the national standards. For Colorado, state level normed reference testing has been suspended, and standards based performance assessment must be in place in all public school districts by January, 1998. The standards have been adopted by all Colorado schools at the end of January, 1997. For Utah, performance based assessment tied to the standards must also be in place by the end of the 1997 school year. This has given the schools targeted by our coalitions in those states a major incentive to implement curricular changes supporting UCAN goals.

In Arizona, the Arizona Student Achievement Program has been refined and will play a central role in Arizona's reform efforts. The new math and science standards were adopted by the state Board of Education in 1996. Assessments based on the new math standards will be piloted by the spring of 1998. Graduation will depend on students performing successfully on these new assessments. In New Mexico, standards based on the national standards have recently been adopted by the state Board and the legislature, and the Southwest Comprehensive Regional Assistance Center (a major UCAN partner) funded through New Mexico Goals 2000, developed explicit content standards in the areas of science and mathematics. Other content areas are in development.

New Mexico's Educational plan for Student Success (EPSS), a comprehensive educational planning process, is mandated by the state for all public schools, and requires that the new state frameworks and content standards be integrated in their educational structure. School plans for this are required during the 1998 Spring semester.

Working in the context of annual tribal elections, one NMT school is leading the way to ensure that a consistent environment exists for systemic change. The Department of Education of the Pueblo of San Juan formed a nonprofit 501 (c)(3) organization that serves as the educational leadership for the tribe. Ohkay Owingeh Community School was established by the US Government in the late 1920's as the San Juan Day School became a tribally-controlled school. In July, 1996, the Pueblo of San Juan established and chartered a tribal department of education to oversee all educational activities within the pueblo. The grant was subsequently transferred to the Tribal Department of Education. This model is being considered by other pueblos as a way of bringing educational leadership and stability to their tribal schools.

In order to enhance the educational system of the tribe, the tribal councils in UFC have authorized the establishment of a 501 (c)(3) non-profit corporation with the three tribes serving on the advisory board to further the outcomes of systemic reform in math and science education beyond NSF funding. This entity will be independent of the political changes that often disrupt education policy.

In Alchesay High School (Arizona), the board has increased graduation requirements for all students by eliminating General Science and replacing it with Biology I and Physical Science. In addition, ALL teachers are required to finish 180 hours of professional development before re-certification is considered.

Ignacio High School, with UCAN support, has discontinued its remedial math courses and instituted a policy requiring three years of math/science prior to graduation including Algebra I. Professional development for teachers supported the introduction of Applied Biology and Chemistry. (in which there has been a 10% increase in enrollment from 100 in 95/96 to 110 in 96/97), Principles of Technology (PT) and Applied Mathematics. The PT course has been required of all students since 95/96. The 96/97 school year shows an increase in enrollment of 33% (from 75 to 100 students). To accommodate the increased time necessary to have students effectively engaged in these applied courses, the school day has been changed to four 90 minute periods.

CPC has been able to facilitate opportunities for the Navajo Nation to work together on policy related to math and science educational reform. In April 1997, a strategic planning change model seminar was conducted for representatives from Diné College, the Navajo Nation tribal governmental entities, education program managers, and the four school board associations that included the chief executives, board members and regents, and some school teachers. This was the first time that these representatives were brought together to discuss Navajo education its past, present conditions, and future plan. Topics discussed were: community leadership; alignment of community resources; coordination of partnerships; partnerships for teaching and learning; community involvement and partnerships; alignment of community resources; teaching and learning; leadership and education. They identified their strengths, weaknesses/barriers, and opportunities which would guide and allow the Navajo Nation to prioritize their goals. Action Teams were identified and further meetings and following up are scheduled for year three.

Generally speaking, most Coalition districts are at the initial stage of using policies as a tool to drive school reform. This is rapidly changing and UCAN support will continue to be provided for this much needed component.

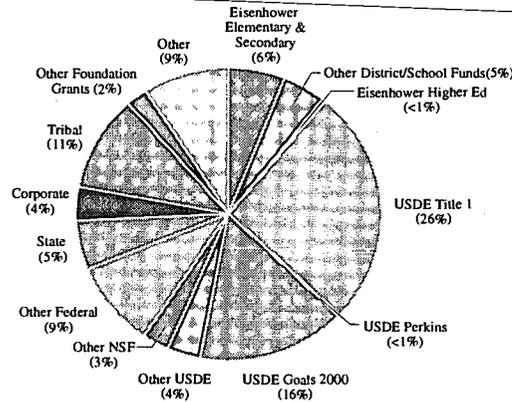
## RESOURCE CONVERGENCE

Partnerships have been the backbone of UCAN's efforts in year 2. UCAN has established working partnerships with several key institutions throughout our four states to enhance our ability to collect indicators of student attainment. For example, UCAN has established a partnership with the College Board and receives Advanced Placement data for our region on tape directly from Educational Testing Service. Similarly, ITBS data is received on tape directly from the New Mexico and Arizona State Departments of Education. Postsecondary enrollment data is currently being received from New Mexico and Arizona Commissions on Higher Education and the Colorado Commission of Higher Education is in the process of providing these data.

Significant coordination among partners has resulted in much leveraging of resources tying US Department of Education Laboratories, NSF SIs, and non-profit organizations to the goals of UCAN and its coalitions. Figure 7 presents the sources of UCAN-wide leveraged funds and each sources' percent of the total funds, as well as the actual financial and the value of in-kind assistance leveraged during year 2.

**Figure 7**

Resource Convergence  
October 1, 1996 – September 30, 1997



\$3,979,893	Leveraged funds
<u>+1,148,980</u>	Value of in-kind assistance
\$5,128,873	TOTAL leveraged funds

Resource convergence continues to be a strength of the UCAN initiative. NSF/SI funds were matched 100% in actual leveraged dollars from a variety of sources. In addition, convergence of in-kind assistance represents 22% of the total leveraged funds.

During Year 2, UCAN increased its leveraged funds by 26% (\$830,178) over Year 1. Though funding from most sources increased, there were particularly significant increases in the percent of funds coming from Eisenhower Elementary and Secondary Funds (1% to 6%), Tribal Funds (7% to 11%) and USDE Title 1 Funds (13% to 26%).

UCAN has continued to succeed at acquiring resources to support schools as they pursue quality math and science instruction for their students and communities. Much of the success is due to the commitment demonstrated by the UCAN's coalitions across the four state region. In many cases, the initiative is at the forefront of school change and is seen to be an effective change agent. As a result, resources have converged in these forms:

UCAN-RSI provided catalytic support in bringing together WestEd and the Education Trust to develop a common framework for their professional development design. This design will aid UCAN's coalitions in the implementation and assessment development process for standards-based curriculum in science and mathematics. The Education Trust and West Ed will continue to provide extensive professional development for UCAN schools on curriculum and assessment alignment.

Partnerships between SCC and the following organization have been formed; Monte Vista Coop., San Louis Valley Education Center, Otero Junior College, Arkansas Valley Board of Cooperative Educational Services, South Central BOCES, El Telar, the local American Association of University Women, and the local School-to-Career Coordinator . El Telar and the School-to-Career were instrumental in helping SCC bring together for the first time, seven local

districts to write a Technology Innovations Challenge Grant and a Technology Literacy Challenge Grant. Seven districts (six from UCAN and one from CONNECT) of 14 districts of the San Luis Valley are partnering in this effort.

~~CONNECT-SSI, CU Project Learn, CU-Science-Discovery, CSU-S(3)TAR, and US Space Foundation collaborated to provide funding and professional development training to teachers in SCC. These sessions occurred at the monthly cluster meetings and at the CAST (Colorado Association of Science Teachers) conference. These were joint efforts with CAST. Funding resources such as Goals 2000, School-to-Career, CAST and McREL were utilized to provide additional local opportunities for professional development.~~

In CPC, the Navajo Nation Education Committee resolution provides for priority funding for SM Undergraduate majors (ECAP-16-95). As a result, the majority of the Research and Development Program funds for undergraduate degrees will be directed at the science and math majors. Head Start completed an Early Childhood Instructional Curriculum. This curriculum which includes science and math has been developed in a way that emphasizes the Navajo Language and Culture at the learning level of preschool age children. This is the first time in Early Childhood curriculum that the emphasis of Navajo Language and Culture has been developed within the Navajo Nation. Head Start is also involved in preparing teachers to implement the situational curriculum with assistance from the office of Diné Culture this coming fall. Some Head Start centers have been designed as the pilot sites to implement the two curricula this Fall as part of SM model schools/communities and will be used as training resources.

After several meetings with the 12 program directors of the Division of Dine Education, CPC and the Navajo office of North Central Accreditation have developed strategies to implement standards-based curriculum in all of their schools. The 12 program directors have identified common goals between their individual programs and UCAN/CPC and have committed resources in the support of reform. Northern and Southern Pueblo BIA agency schools formed the Consortia of Educators of Native American Children (CENAC). They successfully submitted a grant and have been awarded \$200,000 from the BIA Goals 2000 program. These funds will be used to continue the implementation of standards based curriculum and instruction in the areas of math, science and language arts. Additional training will be available for computer literacy and computer classroom integration into science and math subject areas. Santa Fe Indian School is acting as a Mentor School to 3 NPA schools and 2 SPA schools and Taos Day School is acting as a Mentor to 2 NMP schools and 2 SPA schools.

Additionally, Santa Fe Indian School has submitted a technology grant proposal to link the BIA funded Day Schools and SFIS through telecommunication. All this was the result of a PI Team site visit with New Mexico Tribal Coalition as part of its monitoring role. During this site visit, the PI Team and school representatives discussed the progress of the NMC and developed cooperative strategies which led to the successful acquisition of the Goals 2000 grants. In addition, SFIS has taken the lead on an Annenburg planning grant to address the coordination of curriculum across grades among the various schools.

In the UFC, the City of Cortez, Empire Electric, Pueblo Community College, and Phone Net have formed a partnership to install a city wide fiber optics system. This will support the District's commitment to invest \$400,000 in technology in its schools over the next year. This money was received through the Fort Lewis College SCIL Grant.

The Ignacio School District agreed to incorporate the "Activities Integrating Math and Science" (AIMS) into its 4th and 5th grade curriculum. All teachers within these grades will receive "AIMS" training during the Summer of 1997. Training for all teachers is being provided by the UCAN-RSI and AMOCO.

A primary example of resource convergence within the Montezuma Cortez School District (MCSD) is the summer science camp for fourth and sixth grade students. Each of these camps served 20 students, and focused on integrating the camps activities with the District's curriculum. Two eighth grade teachers were trained in utilizing a camp environment for teaching science during the regular school year. This has been a shared venture between the Ute Mountain Ute Indian Tribe which pays for more than 80% of the expenses and the MCSD.

In New Mexico, technology is prevalent as a tool for school reform. The distance education network, established by the Northern Network in collaboration with the NM County Coalition and three area universities, funded by a \$755,000 grant from the US Department of Commerce, allows compressed video and audio transmissions via satellite. In addition to additional courses for rural students and teachers, an increasing number of community organizations are partnering with the schools to serve their constituents. Twenty-five school communities are now linked with three area universities and the outside world.

Pueblo Community College has collaborated with Ignacio High School to begin offering a 5<sup>th</sup> year resulting in a high school diploma and credits towards an AA degree. The science and math requirements for the high school graduation have increased to three units. General or remedial science courses no longer meet graduation requirements.

### BROAD-BASED SUPPORT

In Year 2, support for math and science systemic reform included collaborative efforts from across the UCAN-RSI community. Below are examples of the diversity of this broad based support:

On August 13, 1997 over 200 Northern and Southern Pueblo Agencies school staff members, school administrators, school board members, tribal leaders and community members attended a "Rally for Reform" as the kickoff of their major effort to implement standards-based SMT curricula and assessments for the coming school year.

SCC created opportunities for local well-developed resources to take leadership roles. The El Telar group, a non-profit telecommunications group, brought together seven school districts and several local businesses along with Adams State College to submit a proposal to the Technology Literacy Challenge Grant and the Technology Innovations Challenge Grant. The Center School District has shared its experience in the use of technology in education with the other districts. In a partnership development across coalitions, the Virtual High School and NovaNet resources came from Center to NMT and NMC. Technology plan sharing.

On February 13, 1997, the BIA Northern Pueblo and Southern Pueblo Agency school superintendents, principals, and Santa Fe Indian School participated in a UCAN PI team site visit for the NMTC. For the first time since 1985 the superintendents and principals formally expressed the need to set some common goals that they could pursue together. On March 6, 1997, the Superintendents from NPA, SPA and Santa Fe Indian School and the Principals from all of the schools, formally met to begin the process of establishing a consortia (CENAC - Consortia of Educators of Native American Children) to meet some commonly defined objectives. UCAN/NMT

acted as a facilitator at that meeting. Common goals to ensure that standards and assessment are being used in classrooms to guide teaching and learning was established. Five objectives were also established: 1) To identify and to share in meeting common professional development needs, 2) to develop a common curriculum framework based on National standards, 3) to work together to obtain funding for professional development, 4) to develop a communication system among the schools, agencies and communities, 5) to develop a plan for community involvement and development.

A major outcome of the meeting was a decision to prepare a Goals 2000 proposal to supplement the UCAN sponsored summer teacher institute designed to assist in implementing the process of bringing standards, assessment and curriculum together as a unit. Two Goals 2000 proposals were approved for a total of \$200,000. The goals 2000 grants will continue to provide the professional development assistance needed to implement the standards based education process at the individual classroom level.

A second major common need identified by the CENAC consortia was in the area of technology. As a result of a CENAC planning meeting, the consortia submitted a Challenge Technology Grant proposal through Santa Fe Indian School including all CENAC member schools.

On August 13, 1997 over 200 NPA/SPA school staff members, school administrators, school board members, tribal leaders and community members attended a "Rally for Reform" as the kickoff of their major effort to implement standards-based SMT curricula and assessments for the coming school year.

At the local level, in the Laguna Pueblo Community, a PTA was formed for the first time and their bylaws focused on supporting school reform in science and mathematics. In addition, most of the 19 pueblos in the Northern and Southern Agency sponsored science fairs. The effect on the community and the students was highly visible. Almost 100% of the students from BIA and tribal schools participated in the events. Parents and community members mobilized to support the effort both before and during the science fair. Teachers were given training on how to ensure that the science fair projects were aligned to the national and/or state and BIA science and math standards.

ATC continued its work with SRPMIC focused on strategic planning and community involvement. The result was the participation of over 120 people in a spring 1997 meeting. Focused on systemic reform in math and science and the continued function of an action committee that has addressed the identified issues.

UFC has initiated a series of activities to raise community awareness and involvement in math and science. Family math involved 20 parents and teachers. Community courses for parents in technology have resulted parents returning to UCAN for additional support in skills to assist their students

CPC has initiated an advisory committee representative of the stakeholder concerned about the math and science education of Navajo Students. A strategic planning process has been initiated within the Department of Dine' Education that has resulted in several potential collaborations to improve math and science education.

New Mexico Coalition districts have remarkable support and collaboration from community organizations that have the vision to perceive the mutual benefits that can accrue from collaborating with public schools. An excellent example is the Chama School District and Ganados Del Valle, a non-profit corporation dedicated to the social and economic development of the region. These two

entities have formed an emerging partnership, supportive of each other, to provide educational opportunities to all community residents. They are now sharing the public school's distance learning infrastructure to provide classes for members of the cooperative; in return the cooperative is sharing its knowledge of community development with teachers and students. The public schools business education department has used these resources to shift the direction of its curriculum and has included Ganados personnel in its instructional process.

In general, community support across the NM Coalition is improving. The EPSS process has generated much interest for all community residents. The struggle now is to go beyond traditional approaches of PTAs, etc. and establish a true partnership where the community and home assume a well-defined role in higher student attainment. The Albuquerque InterFaith Group, a community activist group has offered to assist districts in a unique process of organizing communities for action.

The Santa Fe Indian School (SFIS) submitted an Annenberg pre-proposal to facilitate the transition of students from one school to another; broader than just to SFIS. It includes bureau schools, head start, elementary, and public schools through a feeder system analysis. A planning grant of \$20,000 from Annenberg has been received to develop a comprehensive request for a grant to coordinate technology efforts among communities and schools.

The Okay Oweengeh Community School and the San Juan Tribal Department of Education are working with Santa Fe Indian School in establishing the instructional program for grades 7 and 8 expansion. The development of this plan is ongoing and is standards based. This is to insure that the transition of students from the Okay Oweengeh Community School to SFIS is smooth. Teachers from both schools are developing the curriculum transition issues.

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The UCAN-RSI made significant progress in bringing about educational change in its schools/communities within the four-state consortium during its second year of implementation. The process of implementation of standard based mathematics and science curricula coupled with professional development in bilingual education, alternate assessment, hands-on teaching strategies, and use of technology has enhanced the educational opportunities of students. Policy has been influenced by UCAN-wide strategies to build the climate of educational reform. Partnerships and community engagement, and capacity building established by UCAN has been the back bone of systemic change. As UCAN enters its third year of implementation, all dimensions of systemic reform will be addressed, including curriculum, assessment, alignment with standards in the content areas, policy to support these efforts, resource convergence, and broad-based community support resulting in closing the gap.

The diverse and extensive nature of the year 2 support for math and science reform from all segments of the UCAN-RSI indicates that the base of support is truly beginning to widen, contributing to the overall goal of systemic reform in the UCAN geographical region. As UCAN enters its third year, the coalitions will build on the success of year 2.

UTAH COLORADO ARIZONA NEW MEXICO

UCAN  
A FOUR STATE  
RURAL SYSTEMIC INITIATIVE

THIRD YEAR REPORT

September 1, 1998

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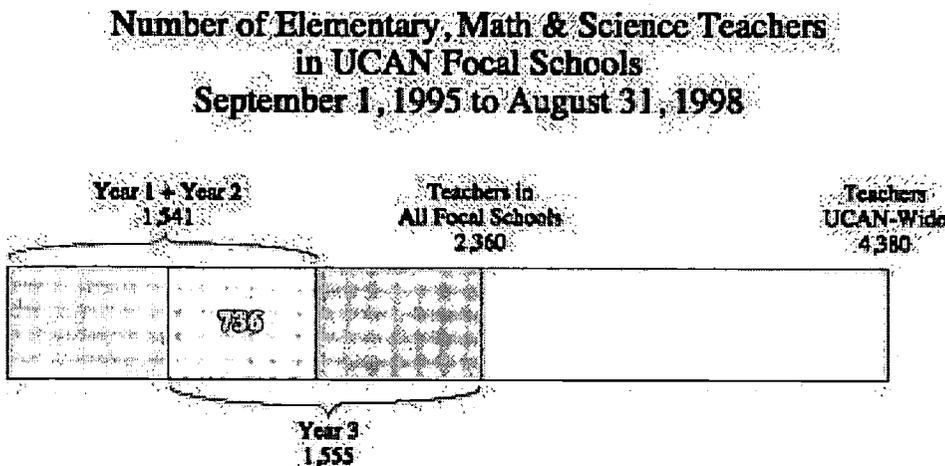
**(I) ABSTRACT**

As UCAN entered its third year of operation, its efforts were focused on the support needed to accelerate the process of implementation of standards based curriculum into its focal schools. To support this focus, UCAN leveraged its existing partnerships, established new partnerships, and brought in new funding in support of UCAN third year goals.

New partnerships include significant contributions by the New Mexico Collaborative for Excellence in Teacher Preparation (NM CETP), Sandia National Laboratories, Los Alamos National Laboratory, and the National Renewable Energy Laboratory. NM CETP and UCAN signed an Memorandum of Understanding (MOU) that has resulted in numerous support activities in year three. The three National laboratories, already part of UCAN's Steering Committee, through a series of planning sessions, have agreed to set aside professional development opportunities for UCAN schools and to co-plan their 1998/99 professional development calendars. Existing partnerships have been particularly supportive in the areas of teacher professional development, educational capacity building, and to some extent, community engagement. The following graphics and discussions document UCAN's efforts throughout year three.

**I a.) PROFESSIONAL DEVELOPMENT**

The professional development offered through UCAN and its many partners were primarily offered to our focal schools as their needs were critical in this time of standards implementation. The following graphic illustrates our efforts in year three.



Note that the number of new elementary, middle, and high school math and science teachers receiving professional development increased 35% during year three. Although UCAN has reached only 46% of all targeted teachers by the end of year three, just keeping this pace will result in UCAN reaching 98% of its total targeted teachers by the end of year five. However, changes in leadership of administrators, lead teachers, school board members, or tribal leaders (as had occurred throughout UCAN in year three), may require UCAN to reinvigorate focal schools that have suffered such losses. Such efforts may impact UCAN's ability to reach our five year goals.

It is important to point out that UCAN developed a more complex definition of focal schools than that being used by the NSF. This resulted from a request from NSF to submit UCAN's criteria for consideration. The focal school definition has **seven** criteria of which **four** must be active for the school/community to be considered focal. The seven criteria are as follows:

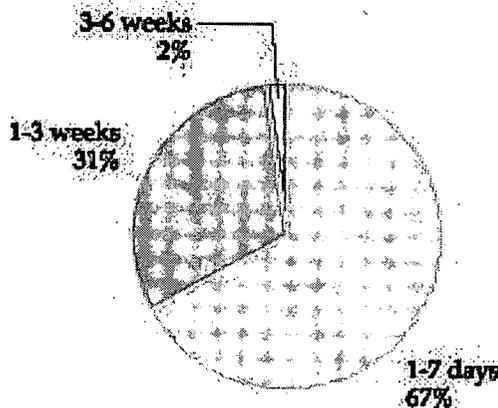
1. A team is in place at the school and each member has had at least 40 hours of PD on standards/assessment with continuing PD planned or in process.
2. The school board/tribal education committee has had at least six hours of PD on the importance of standards and supporting policies that further the implementation of standards in the classroom.
3. Better than 25% of the elementary school teaching staff, or better than 50% of the mid/high school math/science teaching staff have received PD and/or other forms of service on standards and/or assessment or some other area that supports UCAN goals and they are continuing to receive PD as they implement standards in the classroom.
4. Superintendent/principal has received at least 12 hours of PD on standards and reform that specifically supports implementation of standards based curriculum.
5. Tribal council, tribal education committee, or other tribal leadership, or non-tribal community members are part of a local advisory group that regularly meets to address implementation of standards or other reform issues.
6. Community based planning has occurred such Shades of Change and that such planning documents that emerge are being implemented.
7. Resource Convergence has become an organized and successful activity.

Based on these criteria, UCAN has identified 124 focal schools/communities.

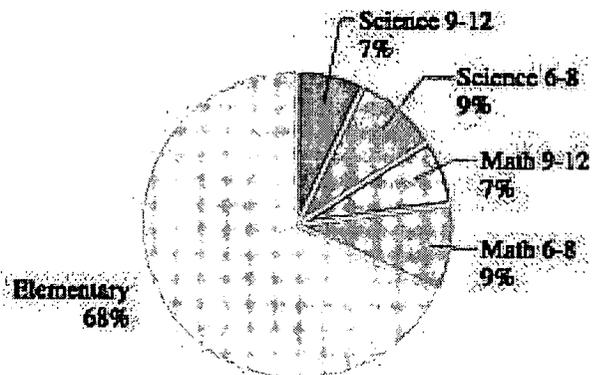
During Program Year 3, UCAN worked with 20% of elementary teachers in targeted schools and 50% of math and science teachers in targeted secondary schools. The professional development in year three is broken down by positions and content areas in the next graphic.

## UCAN-wide Teacher Professional Development September 1, 1997 – August 31, 1998

**Amount received by teacher**



**Teachers participating by teaching level and content**

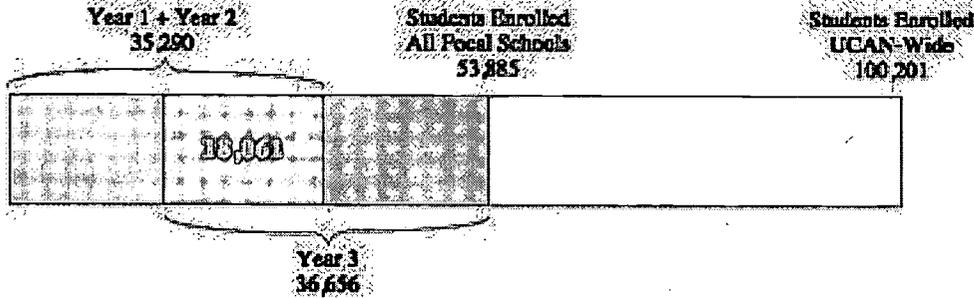


N=1,064

I b.) STUDENT IMPACT

The following graphic shows the increase in the student population impacted by UCAN's efforts since inception.

**UCAN Focal Schools Student Enrollment  
September 1, 1995 to August 31, 1998**

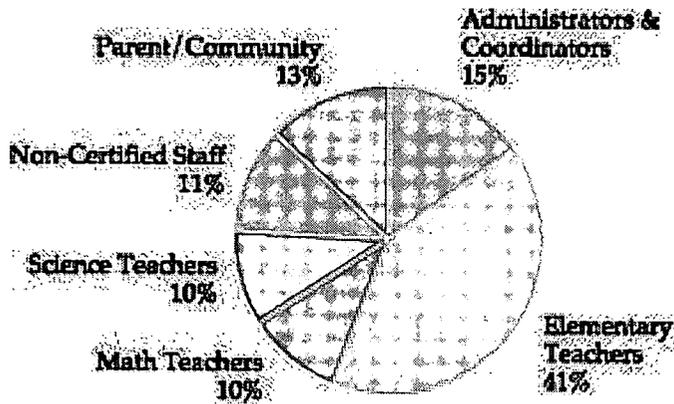


Note that there is a 53% increase in focal students impacted during year three. To reach our goals of 100,201 students, UCAN must increase its focal schools such that the student population impacted increases by 36% per annum over the remaining two years of implementation.

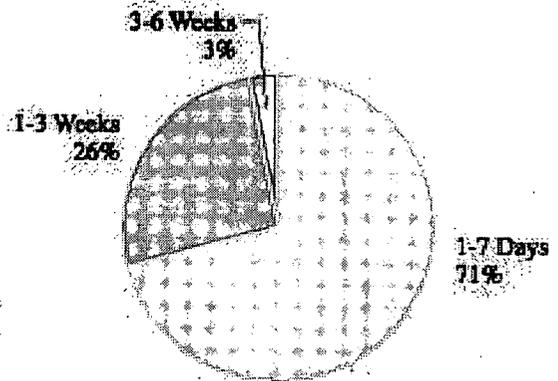
Critical in our efforts to establish a sustainable reform process in our communities is the understanding and commitment of administrators, teachers, and the community at-large. The next graphic shows the amount of professional development and the target audience.

**UCAN-wide Professional Development  
September 1, 1997 – August 31, 1998**

Participants by Position



Amount Received



N = 1,746

Note that Parent/Community and Non-Certified Staff constitute 24% of UCAN's overall professional development efforts. This is expected to increase over the next two years as part of our plan to build local capacity and leadership.

A detailed analysis of UCAN's third year and its impact via the NSF drivers follows.

## (II) INTRODUCTION

Any Systemic Initiative truly connected to local and regional issues, must be dynamic in its approach to reform. The UCAN RSI is certainly no exception. Our Third Year Strategic Plan was based on the knowledge and experience we had garnered in our first two years of full implementation. Our success or shortcoming at achieving all of our 3rd year goals depended greatly not only on our understanding of our focal school/community needs and vision, but also on internal and external conditions that UCAN can influence and those that are outside of UCAN's control. There were two primary third year goals for UCAN: Increased Professional Development supporting the implementation and dissemination (scale up) of standards-based science and mathematics curriculum; and System Accountability.

As part of our professional development support and scale up strategy, UCAN identified four levels of service to targeted schools/communities. The first and second levels of service included a focus on professional development needs of focal schools as it supported implementation of standards-based science and mathematics curriculum, and greater utilization of partnerships with school/district initiatives. The third level included those schools/communities who were not yet focal schools but who could benefit from the professional development and other opportunities offered by UCAN coalitions. These schools/communities were to be connected to focal/level one schools for mentoring. Level four schools/communities were to be served by newsletters, special events, and conferences.

As will be seen in the following report, the first two levels of support were very successful during year three, whereas the successes in levels three and four were much more limited. The mentoring process in level three occurred only sporadically throughout UCAN as the demands from focal schools for support in their efforts to implement standards were greater than anticipated. Additionally, changes in educational leadership including principals, superintendents, board members and others required UCAN coalitions to focus on engaging the new leadership to support the reform efforts of their predecessors. Level four activity was also limited in that newsletters have been distributed, but not in all coalitions. There have been special events and professional development experiences in which non-focal schools have participated, but not as comprehensively as we had envisioned at the beginning of our third year. However, the planning for the Leadership Institute in October and the Curriculum Showcase in November of our third fiscal year that we are currently undertaking, is giving us an opportunity to directly address many of our third year goals.

The second goal for our third year, system accountability, became integrated in our efforts in leadership development and capacity building. For the system to be accountable, those creating policy and those carrying out that policy must be able to support the success or failure of the system with an accountability process that is aligned with the system expectations and goals. Thus knowing what data is available, collecting that data, and analyzing it with reference to the process of change and its implications and expectations is central to the type of capacity building required of focal schools in UCAN. Specific examples of how accountability was integrated in year three follows below.

### **(III) UCAN'S THIRD YEAR REPORT**

Since its inception, UCAN has focused on four strategies with an overarching theme of sustainability. These areas are: (1) Leadership and Capacity Building; (2) Systemic Reform of Existing Organizations; (3) Systemic Development of New Organizations; and (4) Multi-Jurisdictional Progress. The first strategy has since been modified to include accountability to emphasize the importance of the need to highlight and implement an accountability framework aligned to our efforts. In Year 3, UCAN's efforts have matured in a number of these areas and represents the core of this report.

#### **III a.) LEADERSHIP, ACCOUNTABILITY AND CAPACITY BUILDING.**

Without the entrenched and knowledgeable leadership at the local and regional levels, and the attendant capacity for research, accountability and renewal, systemic reform would flounder and fail. With UCAN partners including WestEd, McREL, SEDL, the University of Denver, the Southwest Comprehensive Center, NM CETP, RE:Learning NM, and The Education Trust, UCAN has offered administrators, lead teachers, and tribal and community leaders a rich set of experiences to enhance their abilities for systemic reform at the local and regional levels.

In February 1998, UCAN brought a team of 14 education leaders from focal and other schools to the NSF sponsored Leadership for Systemic Reform Conference. As a result of this conference and the pre-conference planning, UCAN, along with its ongoing efforts, developed additional opportunities to increase local leadership for reform.

- The UCAN RSI Administrator Accountability Workshop in February of 1998, brought together UCAN coalitions and their partners (McREL, WestEd, SEDL, SWCC, CERT, the University of Wyoming through the auspices of the National Resources Council, and the Annenberg Foundation) to develop a tool for school administrators involved in reform to assess their own efforts. Through an analysis of the NSF drivers and the elements of reform found to be most critical, the participants drafted a set of guiding questions for self-assessment. These guiding questions, with additional input of the UCAN PI Team, were organized into the UCAN Guidelines for Local Community Visits (See Section V-C1). This document is used as a cooperative tool between the PI Team and the leaders in the focal school/community being visited. This ensures that all NSF drivers are being addressed, and offers the school/community a focus for their efforts.

- The spring 1998 TIMSS Leadership Workshop, offered through our partnership with SEDL, NM CETP, and the NM Partnership for Mathematics and Science Education (NMPMSE), brought 25 UCAN leaders from focal schools for an intensive introduction to the TIMSS' results and their ramifications for school reform. Evaluations from the workshop showed a clear need for further training. A Spring 1999 follow up training is being planned with the same partners and because of decisions made by various State Departments of Education and the BIA, this Spring workshop will include the Stanford 9 and the Terra Nova assessment systems used in Arizona, New Mexico and Colorado.

- Throughout UCAN's third year, the Southern Colorado, New Mexico County and New Mexico Tribal Coalitions have used combinations of administrator workshops on disaggregated data for school planning, whole school staff training, where possible, on implementation of standards in the classroom, and workshops for principals on implementation and management strategies supporting reform. These workshops have directly supported the schools/districts within these three coalitions in their efforts to establish their own accountability system based on their reform plans and actions.

- The UCAN Evaluation Team designed and offered the UCAN Leadership Team (made up of coalition leaders and their support staff as well as the Co-PIs) an intensive workshop on the use and analysis of data for school planning. Topics included kind and use of data, confidentiality

issues (FERPA guidelines), relationship of data to action plans, disaggregation and equity issues, and use of data for planning. Follow up workshops with focal school administrators and lead teachers are planned for the Fall of 1998 within the Leadership Institute. This area will be further addressed in the Spring 1999. These will be coordinated with many of UCAN's partner organizations.

- The NSF Leadership Task Force from the February conference and the PI have developed a three day UCAN Leadership Institute for October 14-17, 1998. [See brochure Section V-C2.] This will bring approximately 400 UCAN leaders in school/district teams of seven together to plan and prepare to implement leadership development strategies for reform in their schools. Current planning and support partners include NM-CETP, SWCC, WestEd, CO-CETP and the Phoenix USI. A follow up conference in the Spring of 1999 is also being planned.

### III b.) SYSTEMIC REFORM OF EXISTING ORGANIZATIONS

Existing organizations offer both an opportunity and a challenge for systemic reform. The opportunity is to use the organization's structure, political power, and community recognition to support science and math reform. The challenge is not only to have the organization carry this forward, but also to change the way they are structured and operate for long term support of reform. UCAN has been particularly successful with two large scale organizations.

- During the 3rd year, a successful transition occurred for one of UCAN's coalitions. The Colorado Plateau Coalition working with the schools serving Navajo students, and operated out of Northern Arizona University, moved to the Division of Diné Education (DODE) of the Navajo Nation. The 12 program managers of the DODE have aligned their resources in support of the Navajo Nation Coalition (NNC) and have changed their mode of operation for a more systemic approach to SMT and their overall approach to overseeing the improvement of education for Navajo children. As a result, services to the Navajo people have been strengthened. The NNC and the Annenberg Rural Challenge are now housed with the Teacher Education Program, a tribally recognized operation. This has allowed stronger coordination among those projects with a focus on teachers, both preservice and inservice. The NNC has brought together educational entities and other resources across the Nation in a coordinated effort to implement standards in their focal schools. On June 29, 1998 the NNC convened, for the first time, a meeting with the Indian Education Offices of Utah, Arizona, and New Mexico, with the Bureau of Indian Affairs, and the superintendents of schools serving significant numbers of Navajo students.

- The Northern New Mexico Network for Rural Education (Network), part of the New Mexico County Coalition (NMC), is an 18 year old organization of clusters of 24 rural school districts (15 of which are UCAN districts) whose Executive Director is also the NM County coalition leader. This organization has been significantly impacted by UCAN in a number of areas. (1) There now exists an emerging partnership with the State Department of Education impacting policies at the state level on student assessment and accountability. The NMC helped the Network impact student assessment policy; moving from testing at grades 4/8/10 to an ability to test in grades 1 through 8 in math and language arts. (2) The Network, through NMC, influenced the SDE to expand the use of technology for school systems. One such example is the virtual library. On August 13, 1998, the SDE launched the Virtual Library concept, which is an internet based site of resources on instructional reform. The material will be organized around the state standards. (3) The Network has moved from annual goal setting to long range planning based on accountability frameworks. The Network and other NMC districts are now focusing on the use of good data to make decisions. Leadership development of principals and faculties have become the key to continually address school reform. (4) The Network districts pool their operating budgets to ensure that professional development supports instructional reform on an ongoing process. The Rural Cooperative Centers (RCCs), state funded operations, are working with the Network, the Panasonic Foundation and other districts. This partnership offers a workshop on team building, one that increases the capacity of school site leadership teams to implement "whole school

continuous improvement plans” based on an Accountability Database System. In addition, a series of meetings during year three between the NMC and five RCCs, resulted in plans for the establishment of Science and Math Resource Centers within the structure of the three northern RCCs. UCAN views the partnership of the Network with the RCCs as a potential long term organization to continue NM County’s efforts. This supports the NM SDE efforts to increase services to rural schools through the RCC system.

### III c.) SYSTEMIC DEVELOPMENT OF NEW ORGANIZATIONS

Although UCAN’s preference is to work with existing organizations and help them move to a more systemic base of operations, there are instances that require the development of new organizations. Reasons vary from grass roots needs leading to organized efforts through the support of UCAN and its coalitions, to regional needs being met by public institutions as they perceive opportunities to absorb UCAN formed efforts. The next three examples speak to the former, while the last example speaks to the latter reason.

- The 19 Pueblos and two Apache Tribes of New Mexico have been served, since the early 1950’s, by two separate BIA Agencies, the Northern and Southern Pueblo Agencies. This separation has created artificial barriers in many areas of social, political and educational concerns of the BIA schools. At the end of the first year of UCAN’s implementation, the New Mexico Tribal Coalition received a site visit from the UCAN PI Team and met with many principals and the superintendents of the two agencies. As a result, over the next few months, most member pueblo schools of the Northern and Southern Agencies and their respective principals and superintendents formed a new organization called the Coalition of Educators of Native American Children (CENAC). The basic premise of the organization is to engage, support and share resources to effect standards based education in all of their BIA schools as well as the Santa Fe Indian School.

The Santa Fe Indian School, one of the CENAC partners, has acted as the fiscal agent for many of CENAC’s efforts to secure additional funding for the implementation of standards based education in their BIA schools. Since the end of year 2 and during year 3, CENAC has been successful in obtaining two BIA Goals 2000 grants of \$200,000 and \$250,000, respectively. CENAC recently was awarded an additional \$220,000 from Goals 2000. A unique aspect of these grants is that only three or four Pueblo schools could apply for any one grant. CENAC has agreed and followed through with the principle that any funding for CENAC is shared among all cooperating Pueblos and schools. An additional \$652,000 (\$326,000/year) has been received by the Santa Fe Indian School for CENAC through the Annenberg Rural Challenge. Additionally, CENAC received \$38,000 from the State of New Mexico for professional development and community outreach. These funds are shared with public schools serving large numbers of Pueblo students. A recent request from the NM State Legislature resulted in a House Bill #2 award of \$500,000 for professional development and community projects addressing the BIA/public school interface. This represents a significant funding increase in support of raising standards in education in BIA schools. These resources and the developing leadership within CENAC establishes a successful organization based on reform principles.

- In the San Luis Valley (SLV), 7 districts have formed the SLV Technology Consortium. Through this consortium, districts are working together for the first time for a common purpose: to establish resources for and to implement standards based curriculum that is integrated with appropriate technologies, both as a background support for classroom implementation, and as regional support for sharing electronic resources. The consortium is also pooling professional development funds so that a critical mass of teachers in each school/district have the necessary expertise to be local resources for their peers.

Building on the cluster of districts in the San Luis and Arkansas Valleys that were formed in the late 1980’s during the NSF funded Project LINK (Linking Institutions Networking Knowledge), the Southern Colorado Coalition has helped them refocus on the implementation of standards and

the integration of technology into their classrooms. These clusters have a long history of working together and are now developing long and short term plans reflecting NSF and local reform goals.

- When UCAN was initiated, Adams State College's Vice President of Academic Affairs committed to sustain the math and science education outreach to the area schools that was to be initiated by UCAN. Since that time, the Dean of Math and Science and the Vice President of Academic Affairs have been replaced. However, this summer, the new Vice President, David Svaldi, reconfirmed the commitment of the college to maintain the position of education outreach coordinator after UCAN funding ends. The Southern Colorado coalition leader has received significant operational and infrastructure support and recently moved to the new science and technology building.

- The Ute Four Corners Coalition (UFC) joined with an existing 501 (c) (3) organization in conjunction with the Adult Learning Center in Ignacio, Colorado. The purpose of the non-profit is to provide an independent vehicle that all three Ute Tribes can utilize for the purpose of continuing the reform efforts initiated by UCAN. Members of each Tribe serve on the Board of Directors. This brings together, for the first time in recent history, these three Tribes working for the common goal of standards-based education for their children.

An unique compact between the Southern Ute Tribe and the Ignacio (public) Schools resulted in starting a "School Within the School" system. This pilot K-1 effort focuses on the integration of science and mathematics within the existing curriculum to ensure early and deep exposure to standards-based material. The Southern Ute Tribe funds the project but it is managed by the Ignacio School District. Next year the program will be in K-2 and will continue to expand throughout the 12 years students study in the system. The objective is for the Ignacio School District to take over full operational as well as fiscal responsibility.

- As the Arizona Tribal Coalition (ATC) established relationships with BIA schools, the InterTribal Council, and other Tribal organizations, Arizona State University (ASU) realized the opportunity it had to develop long term relations with these entities. Dr. Marigold Linton, who was the ATC coalition leader, was instrumental in establishing a new office for Indian education called the American Indian Program (AIP). ASU-East is continuously strengthening this program, most recently through allocation of new facilities thus enhancing its potential to sustain ATC's work with tribes in Arizona beyond NSF funding. This office currently houses ATC and other Indian education efforts of the new campus, ASU-East. AIP is increasing its fiscal responsibilities as it has recently hired a new full time director who is also part (0.5 FTE supported by ASU-East) of the ATC team. Although the focus of AIP is broad based, the premise for its establishment is standards based education through its outreach and summer bridging programs (supported by NASA). ASU-East and the AIP are committed to leveraging and expanding ATC's work in the BIA and public schools.

### III d.) MULTI-JURISDICTIONAL PROGRESS

One of the most challenging issues facing the UCAN RSI are the numerous jurisdictions that deal with education, policy and resource management for the focal schools in our four state region. By building up from local and regional partners, organizations and schools/districts, UCAN has established relationships and partnerships that are successfully working with these multiple jurisdictions. A common concern is coordination among public, BIA, and private educational systems.

- Tohono O'odham Nation have both BIA and public school K-12 systems on their reservation. A consortium has been formed ( the Tohono O'odham Education Consortium) through the ATC's Tribal Innovations Program to develop curriculum across both systems. Teachers from each grade level of each school in the two systems, both BIA and public schools, are working together on aligning a common curriculum and developing assessments. Tribal and other community members

help integrate cultural issues at each grade level. The superintendents of both systems are leading the efforts of this consortium. This affects 2100 students and 141 teachers. Similar consortiums focused on other educational issues has formed with Gila River Indian Community and the public schools serving that community. The Schools Effectiveness Alliance (7 schools) are focusing on student data for planning and effecting change, and the Gila River Education Collaborative is developing a database on student achievement and other factors affecting student success.

- As mentioned previously, the Navajo Nation Coalition (NNC) is working with the Indian Education officers of each of three State Department of Education (Utah, New Mexico, and Arizona) along with the BIA to make sure schools on the reservation support standards based curriculum that integrates culture and language. Never before has this group come together for a common purpose. Lead superintendents from both BIA and public schools serving Navajo students are also working together to ensure smooth transitions between reservation and public schools. The potential student impact is well over 60,000.

- In New Mexico, the Pueblos of the New Mexico Tribal County Coalition have been working with the Northern and Southern BIA Agency School Superintendents and these schools have adopted both the BIA and the New Mexico State standards. Both of these have been aligned to the national NCTM and NAS curriculum standards. Also, the CENAC schools have adopted the New Mexico student assessment system (Terra Nova) so that state and BIA data can be closely coordinated. Two K-12 school systems, made up of BIA and public schools, are sharing resources and professional development to ensure articulation across these two jurisdictions on a community wide basis.

- Cross-State partnerships have developed through the use of technology resulting in new resources being made available to public and BIA schools in New Mexico and Colorado. The Network, CENAC schools, and the cluster districts in Southern Colorado's San Luis Valley (SLV) Technology Consortium are using satellite and internet resources such as the Virtual High School and the NM Museum of Natural History's Environmental Sciences Programs. The SLV Technology Consortium is in the process of developing access to the New Mexico Virtual Library of standards based resources. The connection is expected to be in place in the early part of UCAN's 4th year.

- UCAN has initiated discussions among Department of Education partner education laboratories and technical assistance centers (SEDL, McREL, WestEd, SWCC) to bring State Department of Education leaders from the four UCAN states together to focus on the progress and future of standards based education in the public schools. An initial meeting was held with New Mexico's State Department of Education with UCAN partners and the Regional Technical Assistance Provider's (RTAPs). An assessment of the RTAP work with New Mexico SDE is being conducted with the intention of planning future meetings with SDE's and the BIA.

#### IV. THIRD YEAR REPORT BY DRIVERS

The drivers are followed by a direct copy (in italics) of the introductory paragraph from UCAN's Third Year Strategic Plan. The Results section is a summary of UCAN-wide efforts to address those strategies.

IV a.) CURRICULUM AND ASSESSMENT -- *Focus on bringing resources to the coalitions and the schools/communities will continue. Coalitions will address the classroom implementation of curriculum and assessment. The PI Team will continue the Training of Trainers and focus on its expansion to include more districts in the coalitions, sponsor at least one showcase on curriculum and assessment, and continue to identify resources and provide professional development for the Leadership Team.*

##### Results:

- The six coalitions continued their efforts to implement standards-based science and mathematics curricula within their focal schools. UCAN partners such as The Education Trust, WestEd, NM RE:Learning, SEDL, and NM CETP supported a series of UCAN wide or multiple coalition wide workshops on curriculum alignment, assessment, use of data for decision making, and accountability. As a result, 124 schools serving 53,885 students received professional development in these areas. More specifically, 1061 teachers (K-12), 261 principals, superintendents and school board members received an average of 41 hours of professional development and capacity building.
- The Leadership Team, made up of the Coalition Leaders and their field coordinators, as well as the PI Team, met in early December, 1997 to finalize a professional development plan that focused on the leadership needs of the coalitions. The highest priority item identified by the UCAN Leadership Team was in the area of accountability. A multi-partner effort to address this issue resulted in the UCAN RSI Administrator Accountability Workshop held in February, 1998. The UCAN Guidelines for Focal School/Community Visits represents a valuable self-assessment tool for education and community leaders within our focal schools. The PI Team carried through an intensive set of site visits with individual focal schools [see calendar of visits] throughout the school year using the Guidelines to ensure that all NSF drivers are being addressed and to offer the school/community a focus for their efforts.
- An NSF Leadership Workshop Team was formed in early February in preparation for the NSF Leadership Workshop on Systemic Reform. As a result, a number of UCAN wide and coalition specific strategies and goals were identified for the remainder of the third year of implementation. Since February, the Leadership Institute Planning Team has developed an ambitious agenda for a major leadership and capacity building workshop to be held in October, 1998. This will bring teams of seven administrators, teachers, and community/tribal leaders from over 80 of our 116 focal schools for an intensive workshop on successful practices in implementing standards based curricula in K-12 schools. UCAN expects over 400 participants from four states. A follow up conference on sharing of best practices is scheduled for April 1999.
- A UCAN wide workshop on the potential impact of TIMSS for school reform planning was held in April of 1998. School leaders at the workshop clearly indicated a need for further training in the use of TIMSS as well as how to use the Stanford 9 and Terra Nova student assessment data. A follow up workshop focusing on the new state assessments is being planned for the early Spring of 1999.
- A UCAN wide Curriculum Showcase (See brochure in Section V-C3) focused on successful classroom instructional models and NSF sponsored standards-based curricula is being planned for the Fall of 1998 in November. Teams of five teachers and administrators have been invited to participate from UCAN focal schools. Over 300 participants are expected.

IV b.) POLICY -- *To ensure sustainability, policy issues will be addressed through policy reviews and public awareness activities. Coalitions will complete the identification of policy issues in their focal communities and assist schools in the development of appropriate action plans. The PI Team will provide technical assistance as needed.*

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•Due to the jurisdictional complexity of UCAN coalitions, much of this effort took place within the coalition structures. Both New Mexico Tribal and New Mexico County Coalitions worked closely with the BIA and State Departments of Education, respectively, to ensure a common student assessment system for New Mexico students. With direct support of the New Mexico Tribal Coalition and CENAC, for the first time, the NM BIA schools have adopted the same student assessment system as the rest of the state. This will strengthen UCAN's efforts to form a bridge between the BIA and public schools serving their students. Many of the Southern Colorado Coalition schools are also using the Terra Nova. Thus SCC and the two New Mexico coalitions have been working closely together in the areas of professional development, curricula alignment, distance learning, and the use of data for school planning. This common student assessment system across their two states will greatly facilitate their co-planning for further professional development and leadership training.

•As a result of discussion between UCAN and the Southwest Education Laboratory, a pilot effort to impact policy and capacity building at the state department of education level was initiated in November, 1997. At that time, a number of Regional Technical Assistance Providers (RTAPs) including SEDL, the Southwest Comprehensive Center (US Department of Education), UCAN and Programs for the Improvement of Teaching and Learning among others, met with the New Mexico State Department of Education. Five areas of technical assistance needs were identified and task forces for each area were formed. These five areas are: Use of Data for School Planning, Standards and Benchmarks, Limited English Proficiency, Parental Involvement, Internal Capacity Building for State Education Agencies. Over the next few months, these task forces met electronically to more clearly define specific goals and identify resources to reach those goals. This pilot effort is designed for scale up to include the other three state departments of education in Arizona, Colorado, and Utah.

•The Panasonic Foundation has been working with the NM State Department of Education, the Legislative Study Committee, and the New Mexico County Coalition (through the Northern NM Network for Rural Education) during the last three years. Their focus has been on whole system change that requires review of existing policies and organizational structure. Because of the close working relationship between NMC and the Panasonic Foundation, the Foundation has agreed to support the UCAN reform efforts in New Mexico for the next two years. The Northern Network and NMC have been designated one of Panasonic's National Reform Sites. This means that their extensive technical assistance resources will be available to support the NMC's work towards sustaining reform.

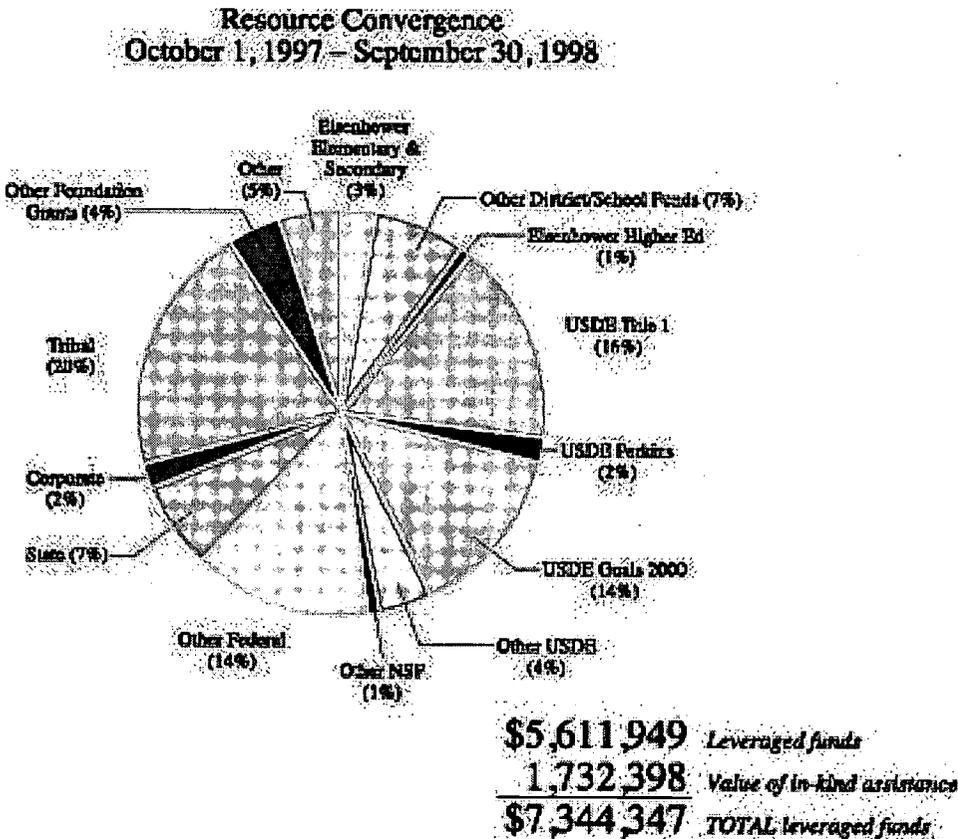
•New Mexico currently requires student assessments in grades 4, 8, and 10. The NMC coalition has asked for and received permission from the SDE to do sweep testing in grades 1-8. The state funded NMC for \$102,000 from Goals 2000 to support the development of Terra Nova based tests for these eight grades. These assessments have been developed and are now available to NMC schools.

•The Advanced Placement Program of The College Board has long been recognized for the high standards set by teachers following their curriculum development guidelines. UCAN operates AP-NM and has greatly increased its impact with the support of Sen Jeff Bingamin (D-NM). In the past two years Senator Jeff Bingaman has supported the AP-program in New Mexico and with legislation at the national level. His support has also included significant time from his staff at the state level. Specific accomplishments have included:

- An increase from \$50,000 to \$200,000 in funding from the 1997 state legislature for the 1997-98 year.
- An initial commitment of \$40,000 from local industry to support the efforts of AP-NM
- The development of a 5 year plan that includes goals specifically for math and science. At the end of 5 years, every high school will be able to offer students a minimum of one AP level course in mathematics, science, and English.
- An increase from \$200,000 to \$202,100 from the 1998 state legislature for the 1998-99 year.
- In the 1998 spring session of Congress, federal legislation at the state level was passed to provide student fee reductions for low income students to take AP exams.

IV c.) RESOURCE CONVERGENCE -- UCAN will continue to focus on bringing resources to the coalitions and the schools/communities. Coalitions will continue to work on inter-coalition strategies. The PI Team will continue to work with the Steering Committee to identify resources that could impact the coalitions and their communities.

UCAN has been particularly successful in utilizing its existing partners and finding new resources to meet our expansion needs to reach our five year goals. The following graphic delineates our resources by source.



This constitutes an increase of 43% in leveraged resources over year two. Specific examples of how these resources supported UCAN's goals follows.

**BEST COPY AVAILABLE**

•Two UCAN wide workshops with Shiela Sconiers (with the Consortium for Mathematics and Its Application [COMAP]), will result in at least six grant applications from districts within UCAN for professional development support of their efforts to implement standards in the classroom. Each of these grant applications are for \$50,000 and if successful, may be used as a basis for a much larger scale PD effort. In addition, at the Utah Rural Education Conference held in July 1998, the San Juan County Schools (SJCS) in southeastern Utah met with UCAN presenters and were anxious to explore a closer connection to our initiative. As a result, a team from SJCS attended the latest workshop and developed their own application for professional development. They are anxious to review and reform their math curriculum and plan on sending a team to the October 1998 Leadership Institute.

•Many of the coalitions have developed their own expertise in resource development that resulted in significant new funding in year three in support of their strategies and UCAN's goals. For example, the Southern Colorado Coalition facilitated the development of a 7 district Technology Literacy Consortium. This consortium applied for a \$440,000 Technology Literacy Grant from the Colorado Department of Education. They were awarded \$200,000. Two other SCC districts were awarded \$50,000 each. As was mentioned previously, UCAN districts will be applying to ESIE for six \$50,000 planning grants for professional development supporting the implementation of standards-based mathematics curriculum in the K-8 grades.

The New Mexico Tribal Coalition and CENAC have been particularly successful in securing new funding. CENAC received two BIA Goals 2000 grants of \$200,000 and \$250,000 and recently received an additional request for \$200,000 from Goals 2000. In addition, CENAC received \$38,000 from the State of New Mexico for professional development and community outreach. These funds are shared with public schools serving large numbers of Pueblo students. The One2One Foundation has invested \$75,000 to fund the Pueblo Connection Project. This effort will enable all Northern and Southern Agency BIA schools to be connected to the internet. Teams from each school will receive a total of 180 hours each of technical training to maintain school and classroom access to the internet and to integrate the use of computers and the internet into their standards-based SMT curriculum.

•The Navajo Nation Coalition, as well as the Southern Colorado, Arizona Tribal and New Mexico County coalitions have been very aggressive in utilizing UCAN partners to support their efforts. WestEd and The Education Trust are working closely with Arizona Tribal in their Tribal Innovations Project; a two year professional development program supporting standards-based curriculum K-12. The Education Trust and RE: Learning NM are working with the NNC, NMT, SCC, and NMC to train teachers in how to align their curriculum to the standards and to the new assessment systems being put in place by New Mexico and Colorado. The Navajo Nation Coalition has been placed in a tribally recognized unit of the Navajo Nation - the Office of Teacher Preparation Programs (OTEP). These two initiatives along with the Annenberg Rural Challenge, have brought together their resources in a coordinated plan supporting UCAN goals. Increased support to NNC have developed through the auspices of the Diné Science and Math Task Force, chaired by the Director and Associate Director of North Central Association. A Division of Diné Education support team, including Johnson O'Malley, Diné Language and Culture, Navajo Nation Office of Teacher Education Programs, Navajo Nation North Central Association, and Diné Technical Assistance Services, works with NNC to support its goals in areas of overlap. This has resulted in common planning and budget reallocations across these programs.

•The Southwest Comprehensive Center (SWCC), a technical assistance center funded by the US Department of Education and a major UCAN partner, is having their Colorado office meet with the Ute Four Corners and Southern Colorado coalitions on September 11-12, 1998. The NM SWCC office already sponsored meetings with the NM SDE and NMC throughout year three. The Phoenix SWCC office will be initiating similar meetings in year four. This time will be used to develop a common plan for technical assistance for schools in two UCAN coalitions during the

1998/99 academic year. Some of the resources from the SWCC Denver office will be earmarked to support consolidated school planning and implementation of standards in UCAN schools in Colorado.

~~IV d.) BROAD-BASED SUPPORT~~ *Public awareness and involvement strategies will be employed to engage community support. The PI Team will provide assistance in identifying resources and developing strategies. A UCAN newsletter will be initiated.*

- A consortium of businesses, institutions of higher education, national laboratories and NSF funded initiatives worked together over nine months to develop a Toolkit on Hands-On Learning Development. This Toolkit is designed to be used for the general public, parent organizations, school board members and business people to inform them of the value of hands-on approaches to science and mathematics education. Partners include Sandia National Laboratory, the Center for Hands-On Learning (non-profit), NM CETP, UCAN and Intel Corporation. The Toolkit has been effectively field tested and will be widely disseminated throughout UCAN in year four.

- As a result of the last two UCAN Steering Committee meetings, and additional meetings between the coalition leaders and Department of Energy laboratories, Los Alamos, Sandia, and NREL National Laboratories have agreed to incorporate UCAN schools into their planning and professional development opportunities. Los Alamos has set aside 10 slots for UCAN teachers and administrators in each a number of their professional development programs beginning this summer, 1998. NREL (National Renewable Energy Laboratory) is offering a two year Teacher Enhancement Summer Program for Southern Colorado and the Ute Four Corners coalitions. Using the National Center for Improving Science Education (NCISE) methodologies, up to 20 teachers from each coalition will receive intensive training in standards-based classroom delivery of scientific content.

- An MOU between UCAN and the New Mexico Center for Excellence in Teacher Preparation (NM CETP), has resulted in a dynamic example of resource sharing. [See MOU in Section V-C4.] Both organizations have agreed to share professional development opportunities, utilize UCAN focal schools in CETP outreach through their Master Teachers, use UCAN focal schools as preservice experiences for CETP fellows, and place CETP novice teacher in UCAN focal schools. NM CETP is a significant partner in supporting the UCAN Leadership Institute for Systemic Reform planned for October 1998, as well as the TIMSS workshop this last April 1998 and its follow up planned for Spring 1999.

- Education community outreach has been a strategy for some of our coalitions. ATC and SCC have reached out to their educational communities through their coalition. The UCAN newsletter is being reviewed and is expected to be distributed by the start of the next academic school year (September 1998). UCAN's web page has been significantly upgraded with timely articles, reports, and an extensive Calendar of Events. Web server records show increased traffic to our web site but is not being utilized as much from focal communities. Part of the reason for this is lack of technological access for some communities, and lack of visibility in others. A recent collaboration with another UCAN partner focuses on this area of need.

- In partnership with the Phoenix USI and Maricopa Community College, UCAN will establish a UCAN RSI Community Engagement Center (CEC). If funded by NSF, the CEC will train teams of parents and other tribal/community members in Math for Parents, a standards-based mathematics awareness and engagement experience. These teams in turn will work in their own communities with CEC support as a means to increase the knowledge base and engagement levels of other parents and community members in the reform effort. The Math for Parent modules are currently available in English and Spanish. If deemed appropriate, additional written languages such as Navajo may be used to make these materials more accessible to their communities. Maricopa Community College and UCAN have agreed to fund a pilot if the grant application is not

approved. The Southwest Comprehensive Center and the Center for Education of Diverse Populations are developing community outreach activities based on standards-based reform models and will also partner with UCAN and Maricopa.

•The New Mexico Tribal Coalition sponsored the Second Annual for Reform in August, 1998. All SPA and NPA schools, their whole school staff (including food services, janitorial services, bus drivers), and tribal members (over 350 participants) celebrated the results of three years of efforts in implementing reform in their communities. Dr. Sandra Fox from OIEP provided the introduction and Dr. Carolyn Elgin, president of the Southwest Indian Polytechnical Institute offered the invocation.

•All the coalitions have teams associated with many of their focal schools in which community and/or tribal representation exists. In addition, there have been many Search Conference or Shades of Change workshops in year 3 that focused on bringing the community to a deeper appreciation of the value of standards-based SMT curricula in their schools. These teams and activities are part of UCAN's overall effort to reach out to its communities.

IV e.) STUDENT ACHIEVEMENT -- *All coalitions will be collecting and utilizing data for decision making as they work with their schools/communities. Coalitions will also work with their schools on how to utilize data in planning and decision making at the district/school level. The PI Team and Evaluation Teams will assist with technical assistance as appropriate.*

UCAN schools are recognizing the power and need for student data in ways heretofore either not available, or more often, not collected. As UCAN states demand more local accountability, particularly in New Mexico and more recently Colorado (House Bill 1267), UCAN focal schools have become anxious for the requisite training needed for short and long range planning to improve student achievement.

•As pointed out above, the New Mexico and Colorado States Department of Education are expecting a higher level of accountability for student success at the local level. The New Mexico County Coalition, in cooperation with the NM State Department of Education and with the Panasonic Foundation, initiated, in year three, a pilot project aimed at implementing an accountability framework for increasing student success. Three school sites, one of which is a K-12 district, piloted a whole school staff training model to implement the accountability framework. This was delivered with technical assistance from the NSTA. Although the results were very successful, the cost for disseminating this approach from a coalition level was prohibitive. The model was revised to train a leader cadre from a new, larger set of pilot sites. This cadre will then in turn, train the whole school staff at the local level. This pilot involves 24 districts (26 sites) who have revised their Educational Plan for Student Success (EPSS) using the accountability framework as a guide. The EPSS revisions, an audit of the teacher competencies in math and science, and an audit of the school/district abilities in addressing areas of need, have resulted in a focused set of professional development activities designed to positively impact students at the classroom level. The SDE will use the results from this pilot to disseminate to other districts in the state best practices in the areas of accountability.

In Colorado, new legislation requires districts to develop an accreditation and implementation plan that addresses standards, student achievement, and accountability reporting. Initial work with the SCC schools and districts is leading to the fourth year plan for a major effort in establishing a common accountability framework building on UCAN's efforts thus far.

•The Colorado Department of Education had delayed the introduction of a new student assessment system until the year 2000. The Southern Colorado Coalition schools in the San Luis Valley decided that a student assessment system was needed immediately, particularly because of the professional development, curriculum alignment, and technology integration into the classroom

training that SCC had been offering. These schools decided to use the Terra Nova assessment system, the same that is being used in New Mexico and the BIA schools in the state. These three coalitions have been working closely together on professional development, student and school data analysis, and alignment of student assessments with the curriculum. Colorado recently announced its intention to also contract with McGraw-Hill to develop student assessments in math and science. [McGraw-Hill is the authoring organization for the New Mexico Terra Nova.] Thus the focal schools and districts in the three coalitions have made significant strides towards establishing a student assessment system that can be compared across state lines and across multiple educational jurisdictions.

- The Arizona State Department of Education adopted the Stanford 9 student assessment system. The BIA schools in Arizona and on the Navajo Nation have also adopted the Stanford 9 and will allow UCAN to compare Stanford 9 results with previous student assessment systems. Likewise, in New Mexico and Colorado, UCAN will be able to compare Terra Nova results with previous ITBS scores on a quartile basis.

- As mentioned elsewhere in this report, UCAN and its partners are developing a follow up workshop (Spring 1999) on student assessment systems comparing Terra Nova and Stanford 9 with the TIMSS data and its implication for school policy, teaching methodologies, and course content. The April 1998 TIMSS workshop showed the need for further training of school administrators in the use of data for school planning.

Student achievement data across the four states has been difficult to obtain due to the changes that UCAN states and the BIA have made regarding this issue. Comparative data will be available later this year (October 1998) and will be reported at the end of the fourth year. By then, UCAN should have significant student achievement data across all educational jurisdiction. The following discussion and tables gives a snapshot of student achievement across UCAN.

**UCAN-RSI**  
**Grades 9-12 Math & Science Upper/Lower Level Course Enrollment**  
**Fall, 1996 and Fall, 1997**

The 21 High Schools for which we have longitudinal Fall, 1996 and Fall, 1997 course data represent 18% of UCAN eligible High Schools, and 15% of UCAN's eligible 9-12 student population.

These data show that there has been a reduction in both lower level math and lower level science course enrollment since Fall, 1996. Upper level science course enrollment has increased, up 2% from 44% in Fall, 1996 to 46% in Fall, 1997. However, upper level math enrollment has decreased 2% since Fall, 1996.

	FALL, 1996	FALL, 1997
	N=6,577	N=6,641
Lower Level Math	20%	17%
Upper Level Math	54%	52%
Lower Level Science	25%	23%
Upper Level Science	44%	46%

Lower Level Math Includes: General Math; Math Tutoring; Pre-Algebra; Technical Math

Upper Level Math Includes: Algebra 1, 2 & 3; Calculus; Calculus AP; Geometry;  
 Advanced Geometry; Integrated Math; Math Topics; Statistics; Trigonometry/Pre-Calculus

Lower Level Science Includes: General Science; Life Science; Physical Science

Upper Level Science Includes: Biology 1, 2, and AP; Chemistry 1, 2, and AP; Integrated Science;  
 Physics 1, 2 and AP

**Grades 9-12 Math & Science Course Enrollment - Selected Courses**  
**Fall, 1996 and Fall, 1997**

Looking at the 'gate-keeper' courses of Algebra 1 and Biology 1, enrollment in Algebra 1 has remained constant at 20%, while enrollment in Biology 1 has increased 4% since Fall, 1996.

	FALL, 1996	FALL, 1997
	N=6,577	N=6,641
Algebra 1	20%	20%
Biology 1	21%	25%

Additional student achievement data is available from New Mexico using the ITBS assessment system that has been replaced by the Terra Nova for 1998/99 school year. These data represent the gains made by students in UCAN schools compared to students in non-UCAN schools.

# UCAN RSI ITBS DATA

## New Mexico Public Schools

Percent of Schools Increasing Numbers of Students Scoring  
In the Top Two Quartiles

	Increased in Math & Science	Increased in Math	Increased in Science
NM Statewide N=557 Schools Total=229,242	29% +6.4 students	13% +0.8 students	18% +1.4 students
NM UCAN Wide N=150 Schools Total=43,265	31% +8.2 students	14% +0.9 students	18% +2.1 students
NM UCAN High Activity Schools N=54 Schools Total=12,302	32% +10 students	15% +1.3 students	20% +2.3 students

Note the significant increase in student achievement in those schools that are considered high activity sites. These data, however, represent gains from the 1996-1997 school year. Achievement data for the 1997-1998 for both New Mexico and Arizona will not be available until October 1998.

IV f.) **CLOSING THE GAP** -- *In addition to the utilization of data to identify and address student needs, coalitions will continue to identify resources addressing the concerns of underrepresented groups and achievement in math and science. Special initiatives to address equity, student needs and to collaborate in the offering of enrichment opportunities for students will be addressed by the coalitions. The PI Team will continue to identify resources and model programs in this area.*

The six UCAN coalitions have continued their efforts and in some cases, expanded their work in offering underrepresented students enrichment experiences, offering professional development in integrating culture and language into the curriculum, using distance education to bring advanced courses or courses only periodically offered to rural schools, and increasing the skills of teachers and administrators to use disaggregated data to address equity and other related issues.

•UCAN has sponsored two workshop/planning sessions for its Leadership Team on how to train school staff and administrators on the use of disaggregated data for school planning. As a result, the Leadership Institute in October 1998 will address this issue and its impact on equity in the

classroom, as well as the follow up conference in April 1999. The UCAN wide Curriculum Showcase will focus on best practices in the classroom using standards-based curricula in science and mathematics, and specifically on curricula that has been modified for nontraditional students.

•A unique example for “closing the gap” is the School-Within-the-School project that was initiated in year three in the Ute Four Corners Coalition. This pilot K-1 effort focuses on the integration of science and mathematics within the existing curriculum to ensure early and deep exposure to standards-based material. In addition, teachers are given professional development in integrating Ute culture into the curriculum and encouraging use of the Ute language and environments. The Southern Ute Tribe funds the project but it is managed by the Ignacio School District. Next year the program will be in K-2 and will continue to expand throughout the 12 years students study in the system.

#### **V) LOOKING TOWARDS YEAR FOUR**

During the June 1998 planning workshop for UCAN, a careful analysis of the current state of UCAN and its focal schools helped us identify six strategic areas for UCAN’s focus in year four. To a great degree, these six areas evolved out of the work done in year three and the lessons learned regarding the barriers and opportunities UCAN encountered and our attendant successes and failures. The six strategies for year four are as follows:

- Leadership Development, Accountability & Capacity Building
- Community Outreach Focusing on Standards-Based Education
- Data Use as an Educational Planning Tool
- Expanding and Strengthening School Networks
- Modeling & Mentoring Reform as Scale Up Strategies
- Multi-State, Multi-Jurisdictional Policy Support Development

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UTAH \* COLORADO \* ARIZONA \* NEW MEXICO

UCAN  
A FOUR-STATE  
RURAL SYSTEMIC INITIATIVE

Year Three

Annual Report Executive Summary

September 1, 1998

Dr. Vicente J. LLamas, Principal Investigator  
Elizabeth A. Yost, Program Director

## **EXECUTIVE SUMMARY -- 3RD YEAR REPORT**

This is a sampling of the accomplishments during the 3rd year of operation. The individual coalition reports have additional detail.

### **Student Achievement**

In order to increase student achievement, the Navajo Nation Council mandated that all schools on the Navajo Nation incorporate Navajo language and culture in their curriculum and instruction. At least five K-12 schools and Diné College were successful in meeting the mandate through curriculum development, instruction and teacher training. NNC is further disseminating these successful models in their SMT standards-based education for teachers, administrators, parents and school board members.

At least 100 school staff members from 12 NMC school districts and 29 sites participated in two training sessions on Excel and Access student data collection models on the NNMCC (Northern New Mexico Community College) Campus to provide disaggregated data for better decision making. An accountability framework for increasing student success has been initiated in cooperation with the NM Department of Education and the Panasonic Foundation. Three school sites, one of which is a K-12 district, piloted with the assistance of NSTA, a whole school staff training model to implement this accountability framework.

The BIA math and science curriculum was adapted by NMT schools to align with state science and math standards and benchmarks that takes into consideration the uniqueness of the culture of the communities served by the schools. During a series of 8 professional development workshops, 23 teachers from the SPA/NPA BIA schools were trained to implement this curricula into their respective schools.

SCC emphasized assessment and the use of data in decision making to help meet the needs of the student population. Types of assessment in the SCC districts were cataloged and training sessions on assessment were held to assist school staff understand the use of data for policy development and school planning. Other districts were informed of training sessions to maximize resources. The Education Trust provided training on assessment to 4 clusters of schools.

With the assistance of its partners, McREL and SWCC, UFCC conducted a Colorado Diverse Learning Academy for the Ignacio School District staff. Both the Montezuma/Cortez and Ignacio teachers (17) and students (70) attended the Ute Mountain Ute Discovery Camp conducted by the Ute Mountain Ute Tribe's Environmental Department. Lessons learned will be followed up in the classroom throughout the next school year.

Expectations of students are being raised with the implementation of state standards in Arizona. To address these greater expectations, ATC, with its partners WestEd and Education Trust, initiated professional development programs for 9 clusters of schools this past year to prepare the staff. The Arizona State Department of Education adopted the Stanford 9 student assessment system. The Navajo Nation also adopted the Stanford 9. This will allow UCAN to compare student assessment results across Arizona and with previous student assessment systems.

### **Under Represented Student Achievement**

ATC schools, including public, BIA, and Charter, are conducting after school study halls, Saturday Schools, professional development, regional institutes, curriculum development and assessment to close the gap and to meet the 1997 Arizona Department of Education new standards in science and math including the other four content areas. Students must pass Arizona Instrument

for Measuring Standards (AIMS) to graduate from high school. Pima language programs are being instituted in the Pima Communities to address language problems. GRIC (Gila River Indian Community) is implementing a drop out rate study to understand the underlying cause of the student drop out problem.

NNC developed culturally relevant standards-based materials and provided professional development for 37 staff members representing 16 different schools. They received training on identifying wildlife concepts in the context of Navajo culture. A reference guide compiled by and for Navajo Nation teachers was used in their classrooms during the school year. AHORA Consultants provided staff training. A math and science task force consisting of the Navajo Nation Accreditation, Johnson O' Malley, Diné Technical Assistance Service Office, Office of Language of Diné Language and Culture, Navajo Nation Teacher Education Programs and DODE Administration pooled their resources that focused on student SMT needs.

Data collection training to identify student achievement gaps, such as student achievement scores, graduation rates, disaggregated course enrollment data, was provided by NMC with subsequent followup at the local school sites. Over 100 school staff participated representing 12 districts and 29 sites received this training. Teaching strategies to assist the underrepresented students will be developed to address these gaps.

A major shift of instructional methods from a lecture oriented to a hands-on, group learning structure occurred for 118 NMT teachers in 13 elementary/middle schools. This resulted through intensive instruction in utilizing more hands-on math and science tool kits, and use of the Internet as a research tool.

SCC partnered with the Alamosa School District to incorporate math and science into their bilingual programs. Adams State College certified teachers in bilingual education through a two credit summer session held in San Luis. Teachers lived with Hispanic families for seven days while attending bilingual workshops on agricultural issues, water issues, land formations and ecological issues with the Taylor Ranch. The workshop produced standards-based curriculum modules that will be used in the classrooms. Teachers learned as much as they could about the language and the culture of their students. The local parish was instrumental in setting up the program with local families.

The Ute Mountain Ute Tribe and the Montezuma/Cortez School District established a Task Force consisting of administrators, Tribal parents, teachers and representatives from the Tribal Council to work on issues affecting Indian students' ability to become successful in the Montezuma/Cortez schools. This Task Force formed a Cultural Sensitivity Group and is in the process of conducting a survey of district teachers to gain insight into their needs for professional development. An Educational Reform Plan is being developed to address special needs of students. The District and the Tribe provided a full time teacher for the Education Center on the reservation.

### **Curriculum and Assessment**

In collaboration with WestEd and The Education Trust, ATC provided professional development and technical assistance to the tribal schools/communities. After three, two day TIP (Tribal Innovation Program) Regional Institutes serving 111 teachers, instructional specialists, principals and community members, it became obvious that professional development had to be tailored to individual communities. Nine clusters have been formed to allow customized professional development delivery.

A total of 40 teachers, principals, and professional staff received professional development by attending a Navajo Nation K-12 Standards Driven Curriculum Units & Performance Assessments Instruments Workshop. The participants were required in followup meetings to report work they

completed in their classrooms/schools that included rubrics, developing learning sections, polishing/refining sections, presentations of work to colleagues and evaluation. Additionally, 38 participants received professional development on curriculum alignment. A final workshop on Standards-Based Curriculum Alignment brought participants from the two groups together to start planning on how to prepare for returning to school and incorporating these materials. Each participant received 40 hours of classroom and field study course-work.

Twenty-nine teams of teachers, administrators, and data managers from 12 NMC school districts are engaged in a year long process to prepare them for providing instructional leadership aimed at increasing student achievement. Using the EPSS frame work, these teams received professional development initially to collect and analyze data to enhance the instructional process, to be followed by standards-based instruction and team capacity building to manage the change process. These teams returned to their school sites and engaged their entire faculty to make instructional decisions based on solid student and system capacity data.

The Montezuma/Cortez School District offers Math their Way and Math: A Way of Thinking in the elementary schools. Over 70 teachers participated in training for these programs. The SUIT (Southern Ute Indian Tribe) purchased The Spalding Approach to Reading curriculum and provided the Ignacio School District K-3 staff with a three hour professional development course. The West Middle School and the Todd Elementary School in the Uintah School District changed to the ECRI (Ethna Read) reading Program to address their reading deficiencies as a way to build a stable learning base.

Southern Colorado Coalition trained 488 (out of 804) math and science K-12 teachers in implementation of standards-based science and math curriculum and alignment of assessments affecting approximately 13,000 students. Professional development was provided to a total of 45 principals and 18 superintendents, 40 preservice teachers by engaging faculty from ACS and Otero Junior College. Five districts formed local teams to provide training for other SCC districts.

Over 100 Northern Pueblo Agency and Southern Pueblo Agency teachers, teachers aides and administrators attended workshops in developing a standard based curriculum and aligning the math and science curriculum with the New Mexico standards.

## **Policy**

In 1997, the Arizona Department of Education approved content standards in six areas, including mathematics and science. Public schools must meet these standards for continued funding. Most BIA and charter schools have also adopted these state standards. In order for Arizona students to graduate from high school in 2001, they must pass AIMS (Arizona Instrument for Measuring Standards). This state policy impacts all public and ATC BIA/Tribal schools and some Navajo schools (others are under the State of New Mexico standards) encouraging each to adapt challenging, standards-based curriculum and practices.

Upon the successful transition of CPC to NNC in year three, policies governing the maintenance and operations of the Division of Diné Education (DODE) were modified to include: 1) support and collaboration with the 12 existing DODE departments; 2) establishment of an Advisory Board that not only advises NNC but also provides resources; and 3) establishment of an internal task force to assure coordination among the various DODE programs.

Meetings held between NMC and the New Mexico State Department of Education resulted in changes in the accountability framework based on a pilot effort with a K-12 district and two other school sites. The SDE granted permission to conduct sweep testing in grades 1-8 and provided \$102,000 from Goals 2000 to develop and conduct these tests.

Thirteen School Boards of the NMTC Northern Pueblo Agency/Southern Pueblo Agency adopted the Terra Nova Assessment model as the testing instrument for the spring Standard Achievement testing. This affects 2041 Pueblo students. Note that this assessment is the same as that adopted by the State of New Mexico and will allow comparative studies across jurisdictions.

In Southern Colorado, the Moffat school board adopted a policy that releases their teachers to work on aligning curriculum to standards. The Moffat District developed their own standards-based assessments that are relevant to their community. Moffat School District also set policy to include the community in the planning process which was demonstrated by surveying over 500 families for their input.

The UFCC Duchesne School District implemented math/science standards during the 1997/98 school year. The District requires two years of math, two years of science and one year of technology for graduation. This represents an increase in graduation requirements.

### **Resource Convergence**

WestEd and The Education Trust are working closely with Arizona Tribal in their Tribal Innovation Project, a two year professional development program that supports standards-based curriculum K-12. The NASA American Indian Science Technology Education Consortium (AISTEC) Summer Bridge Program continues to provide opportunities for ATC students to experience challenging course work in mathematics, science and technology in a supportive atmosphere at the ASU East campus. In year 4, ATC plans to followup with the high schools and teachers to strengthen the connection between the academic programs.

Four existing programs within DODE that work with K-12 schools, committed their resources to NNC to support a new grant (\$1 million) received from the Annenberg Foundation that focuses on school reform. Emergence of these resources minimizes duplication and overlap but most importantly expands and strengthens the working relationship between NNC and the K-12 schools with training and team-building. Further, resources from the Advisory Board are also extended to NNC. Consultants are also being used.

Three UCAN Coalitions (NMC, NMT, SCC) leveraged their UCAN and external funds to provide school staff conferences, workshops and training on such issues as Students-At-Risk, Bio-Regional math and science, virtual convergence, and curriculum alignment with math and science standards. NASA's AISTEC is partially supporting with NMC, a Circuit Rider who acts as a technical assistance resource for clusters of districts.

The Santa Fe Indian School/CENAC Group of NMT, worked with the NM State Legislature to seek special legislation funds. In the 1998 Legislative session, \$500,000 was awarded for professional development and community outreach. In addition, \$200,000 was received from Goals 2000 and CENAC received \$38,000 from the State of New Mexico for professional and community development.

SCC facilitated a Technology Literacy Consortium consisting of five school districts (North Conejos, Sangre de Cristo, Sanford, Alamosa and Mountain Valley) to apply for a \$400K tech literacy grant being administered by the Colorado Department of Education. They received \$200K. Sargent and Monte Vista (through collaboration with CONNECT) will be added for the next funding cycle. Antonito and Sierra Grande each received their own \$50K grant.

At Union High School, a district within the UFC, 55 students were involved in internships through the School-to-Career program in 1997/98 of which eight were Native American. Fourteen Native American teachers/tracers (tracers monitor student progress) were funded jointly by the

school district, JOM and NUIT (Northern Ute Indian Tribe) to serve 800-900 Native American students.

### **Broad Based Support**

ATC community liaisons continue to provide important links and resources within communities. The Tohono O'odham community liaison, who is also the School Board President for the consolidated BIA school board, has been instrumental in connecting the community and the schools and has been involved with the TIP throughout its existence. The Salt River Community Liaison continues to be a strong advocate for ATC in the community and throughout the state.

The NNC advisory board consisting of representatives from DODE, Diné College, Navajo Social Services, Navajo Enterprises, and industries such as Transwestern Pipeline Co., El Paso Natural Gas Co., and Pittsburgh & Midway Coal Mining Co. are lending resources and personnel toward promoting SMT education among the general public, schools/communities, chapter houses and other agencies.

Three Virtual Convergence Events were broadcasted by NMC to coalition sites to engage 15 school board members and 165 teachers, students, administrators, parents and community members to discuss accountability issues, student assessment and systemic change.

Policy changes by NMT school boards support CENAC Initiatives such as the adoption of the Terra Nova assessment instrument for testing of NPA/SPA 2041 students in 13 schools. The NMT sponsored the second annual rally for system reform in August. All NPA/SPA schools, their whole school staffs, including food service, janitors, bus drivers and tribal members (over 350 participants) celebrated the results of three years of efforts in implementing reform in their communities.

SCC solicited input and disseminated information to schools/communities. The Alamosa School District engaged its community in a Search Conference involving 40 stakeholders from all walks of life to participate in a 16 hour session to plan for Alamosa 2020. The results were Action Plans to mobilize all sectors of Alamosa to create a learning community for all of its citizens. These plans were later revised. The community of Rocky Ford also conducted a Search Conference that addressed The Community Coming Together for Lifelong Learning. Action plans included: 1) Employability training for Rocky Ford citizens; 2) Making appropriate health care accessible to all children in Rocky Ford; 3) Safety: Reducing violence; 4) Attracting new industry and more affordable housing; 5) Life Skills Center; and 6) Improving literacy.

UFCC took the approach of building a firm foundation of community support for education including math and science education. This philosophy is based on the research that if the basic needs of the individual are not attended to, they will not be ready or interested in higher level thinking. With this in mind, UFCC introduced the concept of a Search Conference with the Ute Mountain Ute Tribe to bring all stakeholders together to address local issues of the community that impact their children. The results of this Search Conference were action plans to address issues affecting Tribal children. This result has resulted in improved dialogue between the Montezuma/Cortez school administration and the conference participants.



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