

El Paso Partnership for Technology Integration

INTRODUCTION

In looking at what has occurred over the past three years as a result of the U.S. Department of Education's Technology Innovation Challenge Grant (TICG) to El Paso, it is clear that a great deal has been accomplished. The El Paso Partnership for Technology Integration model and program have been widely implemented. Commitment and support for program goals has deepened and intensified, not only in program schools but at the district level and at the University. Teacher practice reflects a focus on integrating technology into high quality curricula, and an understanding of how that is to be incorporated into classroom practice on a daily basis. Finally, student academic achievement in reading, writing and mathematics is improving in all program schools with the greatest improvements in those schools that have been in the program for the longest period of time.

RETURN ON INVESTMENT

Among the clearest evidence that El Paso Partnership for Technology Integration efforts are making a significant impact on program schools are the following:

- A cadre of 315 Technology Teacher Leaders, in 63 schools, have been identified and trained, leading not only to the transformation of the use of technology in their own classrooms, but to deepened use of technology among other teachers at their schools.
- Over 120 teachers are working toward or have received Master's degrees in Educational Technology, and working with Technology Teacher Leaders, have created teams of technology staff developers in over 63 schools.
- The teacher preparation program at the University of Texas at El Paso has introduced technology integration into the professional education curriculum in the authentic ways in which scientific communities, business and industry use it.
- A system of monthly principals' seminars has been implemented, along with on-site training institutes, to ensure that school leaders commit to leading Technology Program efforts at their schools.
- Over 120 parent educators have received professional development in the use of technology to improve teaching and learning in mathematics, reading, writing and science, and to access information about college. These parent educators have provided training for additional parents in over 60 schools.
- Significant student achievement gains in mathematics, reading and writing have occurred in program schools, especially among students in those cohorts that have participated in the program for the longest period of time. From the baseline year of 1997, math achievement has improved almost 20 points, and reading achievement improved by 8 points.

While much remains to be done, a great deal has already been accomplished and the infrastructure for deepening and extending the work to many more has been put into place.

I. Project Leadership

The goals and activities of El Paso Partnership for Technology Integration are embedded in a decade-long systemic educational reform effort across the El Paso region. This is a region-wide K-16 effort with the central goal of significantly raising the academic achievement and success of all public school students, K-16.

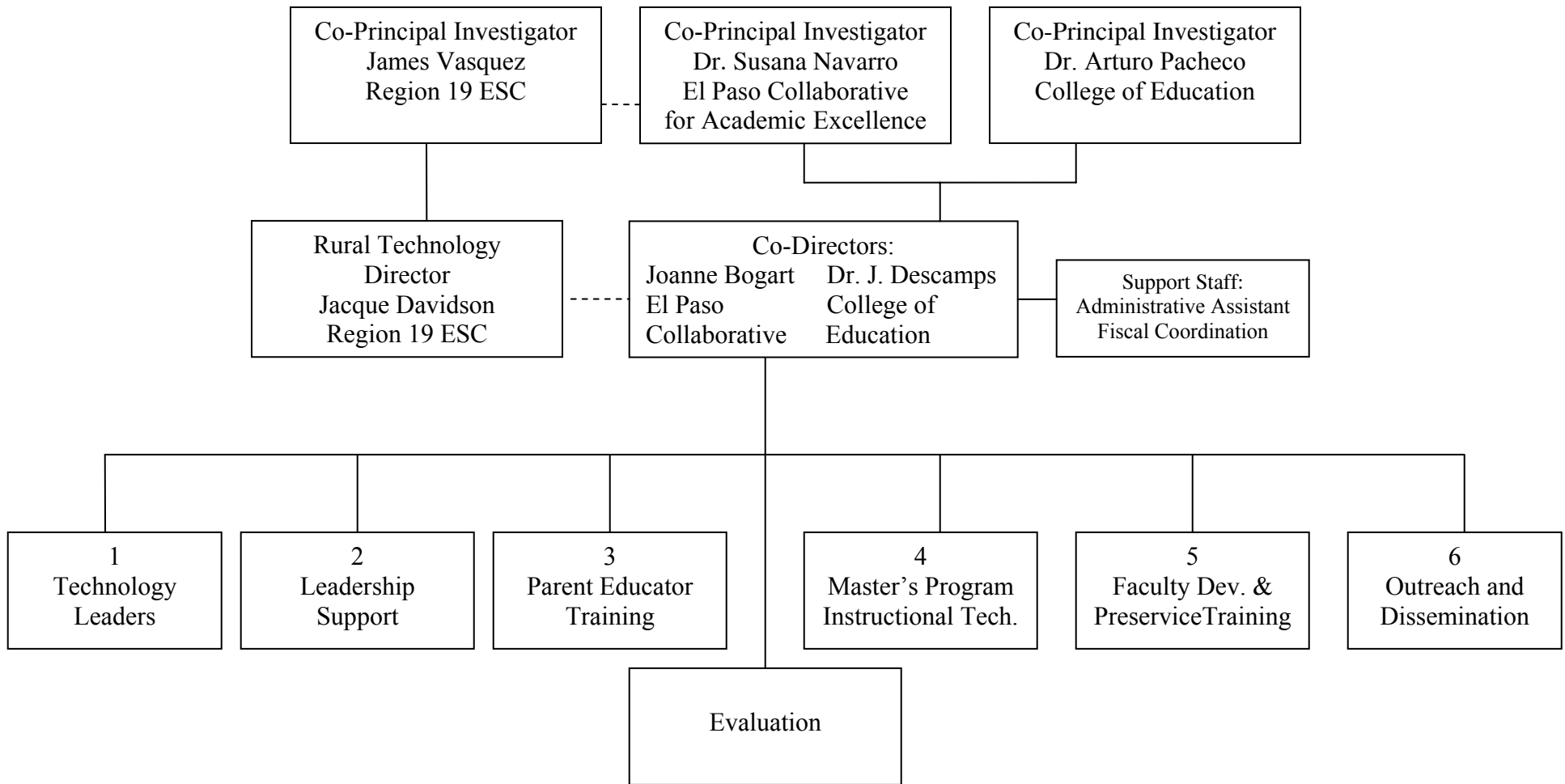
This systemic reform effort, under the auspices of the El Paso Collaborative for Academic Excellence, has been central to efforts that have resulted in improved statewide K-12 standardized test scores and accountability measures (TAAS), increased enrollments in college preparatory courses, and increased high school graduation rates, college going rates, and retention in the first year of college. This citywide effort has also been instrumental in the improvement of teacher quality, both in the preparation of new teachers at the university and the professional development of experienced teachers in the field.

This 10-year-old K-16 partnership includes the superintendents of El Paso's three largest school districts (135,000 students), the University of Texas at El Paso, El Paso Community College, Texas' Region 19 Education Service Center, which works intensively with 9 small rural school districts (20,000 students), the business community, the major grass roots community organization, and El Paso's Mayor and County Judge.

The leadership of the El Paso Partnership for Technology Integration is reflected in this larger systemic reform effort. The Co-Principal Investigators for the project are Susana Navarro, Executive Director of the El Paso Collaborative, Arturo Pacheco, Dean of the College of Education, and Jimmy Vasquez, Executive Director of Region 19 Education Service Center.

The leadership team also includes two Co-Directors who oversee the day-to-day activities of the grant, and a Technology Education Director for the rural school districts. These are Joanne Bogart, Director of Dissemination and Policy for the El Paso Collaborative, Jorge Descamps, Chair of the Department of Teacher Education at UTEP, and Jacque Davidson, Rural Technology Director for Region 19 Education Service Center. See Figure 1.

Figure 1
El Paso Partnership for Technology Integration
Organizational Chart



II. Project Definition, Goals, and Coherence

Project Goals

The overarching goal that will continue to drive our efforts under the El Paso Partnership for Technology Integration is to **transform the ways in which educators use technology to support high quality curriculum and accelerate learning so that all students attain high levels of academic achievement**. We believe that this goal lays the framework for each of the activities addressed in the grant, as they are critical to supporting the use of technology toward improving students' learning. The following goals support the attainment of the overarching project goal and recognize the importance of directing our classroom-focused professional development efforts on teachers, but also on others who affect students' learning.

- Transforming the ways in which current teachers use technology to support high quality curriculum and accelerate learning—through school team training and Master's degree programs—so that all students attain high levels of academic achievement.
- Impacting the work of district and school-level administrators and others (e.g., technology coordinators) in leading and supporting the integration of technology with high quality curriculum.
- Transforming the roles of parents in supporting their students to use technology effectively in meeting high academic standards and preparing for post-secondary education.
- Enhancing university faculty development and pre-service teacher technology expertise.
- Developing and disseminating materials illustrating the program model and key products in order to support other K-16 partnerships in replicating the program.

The successful attainment of each of the each of the goals relies on the partnership between the University of Texas at El Paso, College of Education, the El Paso Collaborative for Academic Excellence, and the Region 19 Education Service Center. Indeed, each partner serves a critical function in facilitating systemic change—supported by the use of technology as a key component—across El Paso area schools.

A. Professional Development

The K-16 focus of our professional development, supported through the grant, recognizes the importance of successfully reaching teachers with support that is connected to their work, focused on their schools and classrooms, and directed at others who affect learning. More critical, however, is that professional development is focused on the integration of technology with high quality curriculum and instruction (particularly in literacy, mathematics and science) to accelerate learning—not the use of technology in and of itself. Technology is one component of a broader systemic instructional reform effort in El Paso. Indeed, we believe it is only by

continuing to focus on enhancing the quality of instruction that technology can be successfully used as a tool. All three partners address these priorities through either technology Teacher Team training or the Master's degree component. While support for teachers is the key priority, the model recognizes the critical role of others—particularly administrators and parents—in the success of their efforts.

A.1. Technology Staff Development for Teacher Teams

Staff development for Teacher Teams (Activity 1) is focused on the training of instructional leaders in technology. Under the grant, five Technology Teacher Leaders at each participating school receive at least 120 hours of training focused on the integration of technology with high quality instruction, and on their roles as instructional leaders at their respective campus. State and national standards in content areas and technology, keys to effective coaching and professional development of mentees at their schools, and the varied and effective use of technology inform the content of their training. With this background, Technology Leaders are better prepared to assume responsibility for supporting their schools to better integrate technology into instructional content, to support professional collaboration and improved teaching practice, and to facilitate productivity.

Technology Leaders are trained to use technology to enhance instructional content. They are supported in planning and designing effective curriculum to support content standards. For example:

- Teams of teachers create modules and develop sample lessons (published on CDs) to be integrated as part of units on mathematics, science and literacy. These CDs are then shared with teachers across the Cohort and in the Leaders' own school. One elementary school team, for example, developed a multi-disciplinary unit on the water cycle and water conservation. A high school team created a module based on factors to consider in buying a car, which also integrated different content areas.
- WebQuests are incorporated into the model to support students and teachers in effectively utilizing the Internet as users rather than searchers of information. Technology Leaders are trained in incorporating the use of a WebQuest—an Internet lesson based on the learner as user of information in a constructivist setting—and publish it for other teachers to use.

The project also focuses on supporting teachers to use technology to evaluate and reflect on their professional practice and classroom instruction. In addition, they use listservs and e-mail for collaborative sharing of lessons and student work. Other efforts include:

- Expanding an on-line professional learning community, in which teachers publish a classroom webpage. This webpage includes student work, teaching strategies, and information for parents. The web site is a resource for mentoring and building capacity at school sites. In addition, the web site serves as a tool for professional communication for other teachers, students, parents and community members.

- Reflecting on teaching practices and using the Texas Professional Development Appraisal System Teaching Domains, teachers develop professional portfolios to examine their practice, enhance decisions they make in their classrooms to more extensively use technology to improve student achievement. The portfolio is a teaching/reflection tool created using PowerPoint links to the WebQuest and Teacher/Team Website.
- Technology Leaders meet on a regular basis throughout the year in study groups and WebBoard discussions to engage in discussion on topics focused on change using such titles as *7 Habits of Highly Effective People*, *Tom Peters Seminar* and the current book *Teaching What Matters Most*. They use WebBoard discussions to share comments with one another. After Teacher Teams meet, teachers post their comments on a listserv and/or WebBoard to share their thoughts on the reading.

Technology Leaders are also supported in the use of technology to enhance productivity and presentations. All teachers develop proficiencies in a full set of applications: basic word processing, presentation skills, spreadsheets, databases and web authoring. Training in these areas is not done in isolation, but rather embedded in the development of a long-range product. Technology Leaders are trained in the use of PowerPoint, FrontPage, Access, multimedia equipment, iMovie, HyperStudio, Director, Excel, and the Internet to enhance their instructional strategies.

Technology Leader training is delivered through a variety of strategies, including large-scale institutes and summer sessions, and specialized sessions focused on selected topics. In addition, follow-up sessions are conducted to focus on creating technology-integrated products for use in the classroom. These small group sessions support in-depth teacher discussion on the units/curricula they created as well as the opportunity for teachers to ask questions about a variety of issues related to technology use in the classroom. Teachers' individual needs and interests are addressed through technology sessions that focus on the teachers' level of technology, as well as a range of topics. Session topics include: PowerPoint, Multi-Media uses in the classroom, Constructivism, Macromedia's Director, Microsoft Access. Teachers in rural school districts are also supported in using technology to address the barriers that isolation and limited resources pose for them. Training addresses comprehensive strategies for addressing their unique needs.

In the spring of 2002, the rural Technology Leaders and their mentees will utilize the Region 19 ESC distance learning network to enhance what they have learned through Partnership-supported training. The distance learning network will, for example, be used to facilitate live discussions focused on topics ranging from technology integration to successful practices in mentoring. In addition, mentors will share ideas and experiences through mentor-to-mentor collaboration. This will allow mentors separated by distance to discuss issues and share successes. The Partnership is also implementing synchronous web-based approaches to include email, listservs, and discussion boards for rural participants. In addition, asynchronous chat rooms and video-conferencing are scheduled by content area and grade levels. In all situations, the distance education/learning methods implemented will be monitored and administered by Region 19 ESC instructional technology staff members.

To assist urban and rural Technology Leaders in applying Partnership training in their classroom, they each receive a technology package that includes a multi-media, Internet ready computer, productivity and multi-media software printer and other peripherals for use at their schools. Technology Leaders are given a choice between a Windows based or Macintosh platform, and may select from a portable or a desktop computer. The equipment provided is housed in the classroom and serves to increase the number of computers available for student use.

A.2. Master's Degree in Curriculum and Technology Integration

The Master's component of the program (Activity 4) provides 200 teachers with half tuition scholarships toward a Master's degree in the integration of educational technology. As of September 2001, 166 teachers have enrolled in the Master's program. A tenure-track faculty member (Dr. David May) and two instructors (Brenda Castaneda and Barbara Shaw) with expertise in education technology and curriculum integration support this activity.

Learning outcomes: The design and implementation of the Master's program is based upon the standards and guidelines of the International Society for Technology in Education (ISTE) and the Texas Essential Knowledge and Skills in Technology (TEKS). The program's learning outcomes include:

- Knowledge about and skill in the use of various forms of hardware commonly designated as instructional technology.
- Skill in designing instruction to effectively integrate technology into the teaching and learning process.
- Knowledge and skill to evaluate instructional software;
- Knowledge and skill to mentor colleagues who are less skilled in the use of technology.

Rationale for the Master's program. National surveys on technology staff development in schools indicate that: 1) the majority of technology training sessions focus on individual software titles or generic skills rather than focusing on the infusion of technology across the curriculum; 2) half of the technology training is offered in one-day workshops while only a small number of the sessions are given over several days or weeks; 3) training sessions are sporadic, attended by large groups of participants, and lack follow-up at the classroom level. (Siegel, 1995. *Electronic Learning; Technology in Education 2000; Report of the Web-Based Commission to the President and Congress of the US, 2000; The CEO Forum School Technology Readiness Report, 2001*)

The Master's program addresses these training shortcomings. Teachers attend 3-hour graduate classes, in the evening, twice a week during six semesters. The program does not rely on experts who present to large groups of teachers, but emphasizes small group training sessions (20 teachers) where cohorts of teachers from the same schools help each other during class time as well as at work. These teachers in turn become trainers of teachers at their buildings.

Course work: Course work in the Master's program is designed to provide a thorough grounding in the complexities inherent in instructional technology as well as in the nuances of designing and conducting lessons which integrate technology seamlessly into the teaching and learning process.

The program of study for the Master's degree includes a core of four technology integration courses and eight support courses that provide an educational framework for "best teaching practices" and the continuing development of knowledge and skill in the use of instructional technology. The four technology courses are:

EDT 5371 - Introduction to Technology Integration in the School Curriculum

This course provides an introduction to the concepts and processes involved in utilizing instructional technology as an integral element of the teaching learning process. While the course is focused primarily on PK-12 classrooms, the strategies presented have applicability to every classroom. As the first in a series of technology integration courses, this course develops knowledge and skill primarily in computer applications to increase quality and quantity of teacher productivity. Course outcomes are based upon ISTE Standards. Study topics include Microsoft Office Suite, Inspiration, the Internet, and web quests.

EDT 5372 - Technology Integration in the School Curriculum I

In this course, students plan, design, and construct multi-media based instructional materials for use within their classrooms. The Texas Essential Knowledge and Skills (TEKS) are used as the basis for instruction, both within content areas and also the technology TEKS. ISTE standards for PK-12 students, and other national standards projects provide additional focus for designing instruction. Students also construct and maintain a personal web site for posting materials for their class, colleagues and parents. Students use a computer application titled HyperStudio to construct their instructional materials.

EDT 5373 - Technology Integration in the School Curriculum II

Building upon the expertise and experience gained in EDT 5371, students work with multi-media authoring programs to gain further knowledge and experience in constructing course materials. Projects are uploaded to web sites for student and parent use.

EDT 5374 - Technology Integration in the School Curriculum III

This course has as its focus study and practice of the concept of distance education, the use of technology to expand classroom walls to assist students in interacting with a world-wide community of learners. Analysis of commercial software as an additional resource also forms an important part of this work.

Interwoven with the technology classes are seven support courses that emphasize the role of technology in teaching and learning, and provide an educational framework for "best teaching practices." Participants take seven of these courses as a cohort. The eight courses are:

TED 5300 - Research for the Classroom Teacher

TED 5301 - Curriculum Theory & Design

TED 5302 - Instructional Strategies & Classroom Management

TED 5303 - Assessment of Student Learning

TED 5313 - Schools and Community: Applied Critical Pedagogy

TED 5396 - Action Research in the Classroom

TED 5319 - Mentoring

Elective

Equipment: Students in the Master's component are provided with technology equipment that enables them to apply in their classroom what is being learned in the program of study. This

package of instructional technology, that is housed in the teachers' classrooms, includes: 1) a state-of-the-art PC with a built-in CD-ROM, modem, Zip drive, Microsoft Office Suite, Clarisworks, HyperStudio and Director software; 2) a Scanner; and 3) a Digital camera. Equipment remains in school classrooms.

B. Scale-up/Mentoring

In order to successfully influence a transformation in the ways educators use technology to support high quality teaching and learning a strategy for scaling up and mentoring—which holds both administrators and teachers accountable—must be put in place. While documented mentoring has taken place across participating campuses, their range of approaches has differed. A modification to our model provides a more structured focus on mentoring, which incorporates a unified plan and clear set of expectations. This new mentoring plan clarifies the role of mentors in a school's plan for the use of technology, addresses the minimum number of teachers to be mentored at each school, sets measurable outcomes based on mentees use of lessons, and defines how lessons are to be provided to, and used by, students. Key areas for which schools will be held accountable include:

- The use of technology to enhance instructional contents, including effective use of the Internet—based on support in evaluating web pages, and other technology tools (e.g., graphing calculators);
- The use of technology to support communication, including effective use of e-mail and listservs to support instruction, including on-line collaborative sharing of lesson plans and student work; and,
- The use of technology to support productivity and presentation, including the use of PowerPoint, electronic portfolios,

Plans will also address minimum requirements for administrators and parents and strategies for sustaining mentor/mentee relationships (including incentives—e.g., stipends and substitutes) and how they might be expanded to address more teachers or the school as a whole.

The scale up plan for the El Paso Partnership for Technology Integration, by school and for all 63 participating schools to date, is illustrated in the tables that follow.

Educators and Students Reached by the Project - Per School

One school	Teacher Team Training	Graduate Preparation	Administrator Training	Parent Training	Students Impacted
Trained	5 teachers	2 teachers	Principal Tech. Coord.	2 Parent Educators	
Benefiting	15 teachers	6 teachers	Entire school staff	30 Parents	600 Students

Educators and Students Reached by the Project - To Date

63 schools	Teacher Team Training	Graduate Preparation	Administrator Training	Parent Training	Students Impacted
Trained	315 teachers	120 teachers	Principal Tech. Coord.	120 Parent Educators	
Benefiting	945 teachers	360 teachers	Entire school staff	1,800 Parents	37,800 Students

Educators and Students Reached by the End of the Project

100 schools	Teacher Team Training	Graduate Preparation	Administrator Training	Parent Training	Students Impacted
Trained	500 teachers	200 teachers	100 Principals & Tech. Coords.	200 Parent Educators	
Benefiting	1,500 teachers	600 teachers	Entire staff from 100 schools	3,000 Parents	60,000 Students

C. Ensuring Quality of the Master’s Program and University Commitment

Overview of the multiple roles of the university. The university has taken a lead role in the El Paso K-16 educational renewal partnership as well as in the Technology Partnership. The University in part through the grant, provides faculty development support and infrastructure support (technology labs) in order to impact: 1) the Master’s degree program in technology integration; 2) the technology preparation of pre-service teachers; and 3) the technology leadership of future principals.

Benefits of the Master’s program to the school districts

A study of Challenge 95 participants in the Master’s program shows that in 1995, at the beginning of the project, 9% of the participants held technology positions in schools or districts. By 2000, at the end of the program, 35% percent of the participants had become campus or district instructional technology leaders. The present Master’s program, like its predecessor Challenge 95, is the main provider of instructional technologists for area schools. There is no other program in the El Paso region that prepares instructional technology specialists. It can be said that the present technology impetus taking place in the region is the result of both 95 and 98 Technology Grants.

By the end of the project, the El Paso Partnership for Technology Integration will have infused 200 Master’s degree technology specialists into the 100 urban and rural schools of the region that participate in the project. These 200 graduates will have mentored a minimum of 600 colleagues at their own campuses. Their impact on student achievement is clear through anecdotal evidence and is now beginning to be documented.

Technology Pre-service Teacher Preparation at the University

Since 1993, the teacher preparation program at UTEP has introduced technology integration into the professional education curriculum in the authentic ways in which workers in scientific communities, business, and industry use it. Today, faculty members have access to technology and telecommunications in their offices and in classrooms, and students have access to state-of-the-art computer labs with Internet connections. In order to ensure best use of the technology hardware, training in the use of instructional technology is provided to faculty and students. Faculty members receive tutorial and workshop opportunities offered by staff from the university technology office. More importantly, however, the College of Education has established a full time technology coordinator position dedicated to support faculty development and classroom instruction. That coordinator has worked closely with faculty to maximize their use of technology in the classroom. Additionally, all teacher education candidates take a hands-on course in instructional technology for classroom teachers, and are expected to complete assignments that require technology skills and Internet use as part of their teacher preparation courses. The objective is to prepare pre-service teachers to use technology effectively during their clinical experiences when assigned to partner school classrooms, and to use it effectively later in their own classrooms.

Examples are cited in the next section to show how faculty who teach content and methods courses are using instructional technology as integral teaching and learning tools, and serve as role models for future teachers. Because our city wide K-16 Partnership has received two Technology Innovation Challenge Grants (1995-2000 and 1998-2003), a large number of mentor teachers participating in the field-based teacher preparation program have been trained in the use of technology, and pass on these skills to pre-service students assigned to their classrooms for clinical experiences.

Technology Development of Teacher Preparation Faculty

A simultaneous effort to the technology training of teacher cohorts in the Master's and Technology Teacher Leaders programs is the professional development of university faculty so that they integrate technology and national standards into their course curricula at the pre-service teacher preparation level. Presently, the teacher preparation faculty in the Department of Teacher Education is divided into two groups: those who have become very advanced in the use of technologies (over 50%) and those who don't go beyond the use of email communications and PowerPoint presentations. Technology proficient faculty integrate the use of technology into their pre-service teacher preparation courses and their students work with educational technology tools as part of their course content.

Almost all teacher education faculty members use email to maintain contact with students outside of class hours and a significant number use websites to post syllabi, assignments, and other course materials. Chat rooms to discuss relevant course materials and questions are another form of electronic communication frequently used. Project staff continues to work with teacher preparation faculty to support their technology integration efforts. Examples of faculty technology practices are:

- **Dr. Elaine Hampton:** “My webpage (www.utep.edu/ehampton) is designed as a resource for elementary/middle level science teachers. They have access to curricula on local themes, to science websites, to a list of local scientists who will work in the classroom, and to ongoing research.”
- **Dr. Miguel Licona:** “My class syllabus, schedule, handouts, web links & announcements are at <http://www.vquad.com/home/TX/mlicona/>. I use Inspiration software for student presentations, concept mapping, pre/post-tests.
- **Dr. Sally Blake:** “ My Saturday class is an experimental class supported by NASA and Eisenhower grants. The class uses graphing calculators, motion detectors, and computers.”
- **Dr. Mourat Tchoshanov:** “I use two types of technological instruments in my undergraduate classes: a) computer-based visual animations in mathematical problem solving and proof; and b) hand-held technology (graphing calculators, CBL-s and CBR-s) to conduct real-life activities. They are aimed at fostering student understanding of the connections between the content and pedagogy. See examples on my web-site: <http://dmc.utep.edu/mouratt/>.”
- **Dr. Mariella Herold:** “ My pre-service students participate on a weekly basis, in academic discussions through a chat room and message board. I was part of a Fulbright group of educators that visited Japan this past semester. As a result, my undergraduate students experienced first-hand the value and effectiveness of technology education when we sustained uninterrupted weekly academic exchanges from Japan to El Paso via our message board.”
- **Dr. Judith Munter:** “ In class we do our reflective journaling on-line. At the beginning of the semester I create a listserv for each class and hold weekly online dialogues about a variety of topics. I post questions, and students respond to me, to each other, and/or ask new questions. The listserv allows for a collective voice in our journaling.”
- **Dr. Sandra Hurley:** “ In my literacy class, students access state and national standards via the Internet and develop standards-based literature projects. Students include multimedia software in their projects and review literacy software (e.g., Living Books). I model multimedia technology on a daily basis in class (e.g., document camera, videos, websites).”
- **Dr. Ellen Treadway:** “ I ask my students to create an electronic portfolio that showcases course papers and projects. The electronic portfolio is also a way to review basic computer technology competencies that pre-service teachers need to have mastered on completion of the teacher education program. At the end of semester, I ask my students to self-assess their technology skills using the entry-level teacher competencies of the *National Standards for Educational Technology* developed by the International Society for Technology in Education. ”

D. Project Coherence

As a major initiative within a much larger systemic educational reform effort, the goals and activities of the Partnership for Technology Integration have both an external and internal coherence. That is, the goals of the Partnership are consistent with and supportive of the classroom academic achievement goals of the larger reform effort, and are interconnected and supportive of each other. As such, the work of the Partnership builds on the knowledge and experience gained from a decade of successful reform, including the following:

- The University of Texas at El Paso has vastly improved its teacher preparation program transforming it into one that is standards-based and field-based, and developed in close collaboration with the public schools. This work has proceeded in conjunction with membership in the National Network for Educational Renewal, led by John Goodlad.

- The El Paso Collaborative for Academic Excellence, which works with the urban schools, has developed new forms of teacher professional development and helped build school organizational capacity in over 100 area schools.
- The Region 19 Education Service Center is a key leader in regional efforts to focus all districts—especially the smaller, rural districts—on improved student achievement, providing them multiple school improvement supports.

This Partnership builds on the learning and success of an earlier Technology Innovation Challenge Grant (Challenge 95) to El Paso. The guiding assumption of the Partnership and the larger reform effort is that teachers, working together in schools, are the critical agents of change and improvement.

All of the elements, activities, and goals of the El Paso Partnership for Technology Integration, although focused on the infusion of technology, contribute to a shared vision and common agenda, which is the same for the larger systemic reform effort: the improved classroom performance and academic achievement of all students in the El Paso region.

E. Project Sustainability

Efforts to sustain the impact and lessons of the El Paso Technology Innovation Challenge Grant will extend across the city's K-16 efforts. Among the city's three large urban districts, long-term benefits from the grant have already emerged. One district (Ysleta) has restructured district-supported professional development to focus on training additional school-based instructional teacher leaders who will support technology integration at their campus sites. School-based grants funded in a second district (El Paso) for technology equipment use the Technology Leader model to illustrate how resources will be effectively used. Finally, a district-wide technology innovation pilot in a third district (Socorro) relies heavily on teachers trained through the El Paso Partnership to carry out district-supported training.

To further efforts toward ensuring sustainability, Partnership staff will increase collaboration with district technology and instructional content staff to identify critical needs, share lessons, and develop common outcomes and objectives. The priorities identified in these sessions will be reflected in joint agreements between the Partnership and the districts.

The Master's program at the university will be institutionalized at the end of the project. The university has committed new faculty resources to continue offering the program to teachers from the local schools. Additionally, the teacher preparation program is revising its curriculum to include technology components into all core teacher preparation courses.

A working assumption of the project is that technology capacity building among teachers will continue as a result of: 1) the continuation of the Master's program, 2) the mentoring culture created in most of the area schools, and 3) the infusion of technology proficient pre-service teachers.

F. Unique Identifier of the El Paso Partnership for Technology Integration

The El Paso Partnership for Technology Integration is part of a K-16 systemic change effort in El Paso. It brings together twelve urban and rural school districts, an Education Service Center, and a university in a *partnership* aimed at infusing quality and quantity usage of instructional technology with a high quality curriculum in our area school in order to accelerate student achievement.

The project seeks to transform the various K-16 constituencies: teachers, administrators, technology coordinators, parent educators, teacher preparation faculty, future teachers, and future administrators to integrate technology with challenging instructional content in mathematics, science and literacy.

III. Evaluation Plan: Design, Key Questions and Methodology

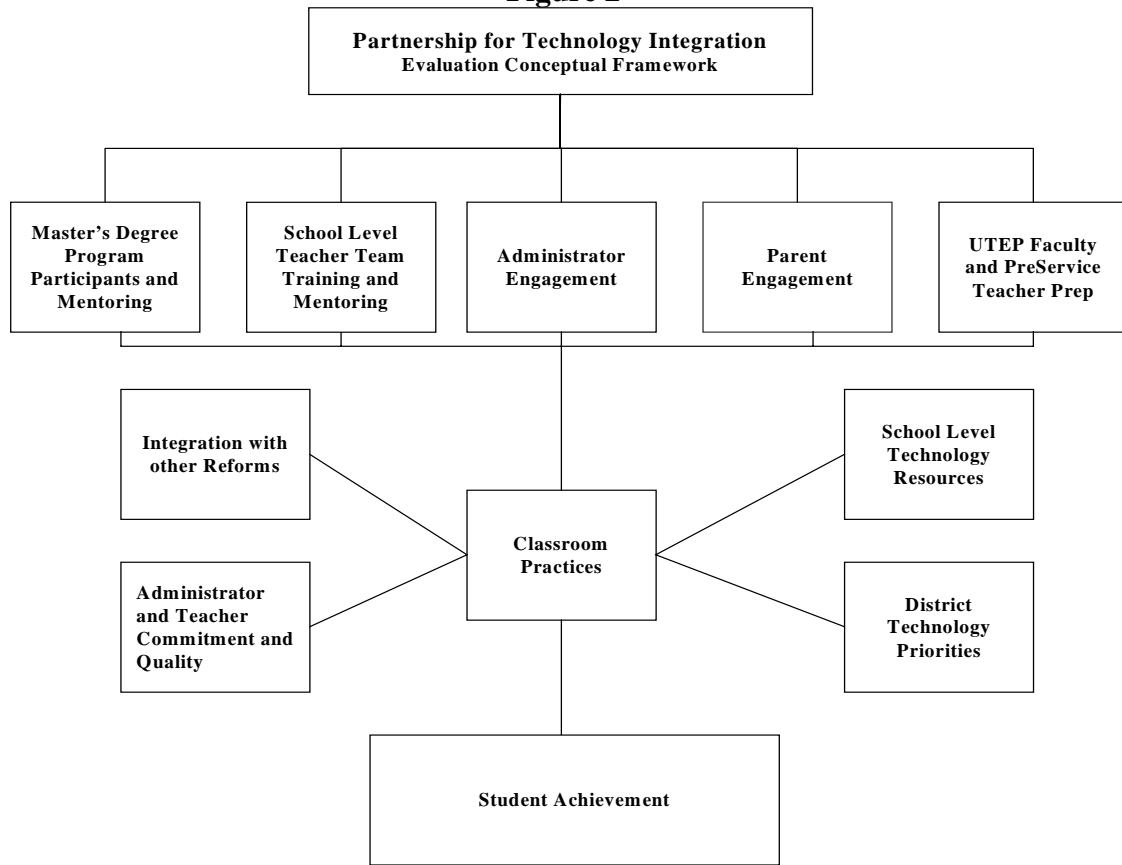
Overview. The redesigned evaluation plan for the El Paso Partnership for Technology Integration is guided by three principles that are central to the design of the overall project as well as to our conceptions about the role of evaluation within the grant and for the Dept. of Ed.*

- We see this as a single, integrated evaluation rather than as a set of studies on issues of interest and importance. Because of the interconnected, systemic nature of the whole initiative, it is essential that the evaluation capture those “big-picture” elements, not just answer separate, discrete questions.
- The evaluation design must look comprehensively at the factors interacting with program activities that impact classroom technology practices, including the impact of other school reform activities and school resources and commitments.
- The evaluation needs to provide information that will improve program implementation as well as information about the ultimate impact and success of the initiative.

The conceptual model of the evaluation plan, which reflects the guiding principles, is shown in Figure 2. At the top of the model are the interconnected elements of El Paso’s Technology Integration Partnership, all of which are aimed at impacting classroom practice. Other factors affecting classrooms, including district and school technology plans and priorities, and other reform efforts, are also shown in the model as impacting practice. Finally our focus on student achievement as the ultimate goal of this project is clearly reflected in the diagram.

* This evaluation design and methodology is patterned after the work of the Research Consortium, headed by the American Institutes for Research and RAND and including PACE, EdSource and WestEd, assessing California’s Class Size Reduction Initiative.

Figure 2



While each of the elements of the model give rise to a variety of questions that will guide the evaluation and its methodology, there are three overarching questions that are the fundamental questions that the evaluation seeks to answer:

Key Questions:

- How can the initiative be implemented most effectively?
- What are its effects on students?
- What factors account for its success or failure?

The following section addresses each of the key components of our design and the research questions associated with each.

A. Program Implementation

In this section, we look at some basic questions about the activities of El Paso’s TICG grant. Before we can ask questions related to the impact of the initiative, we must be clear about whether the initiative has actually been put into place in schools, to what extent implementation has occurred, and about the conditions within schools that impact implementation of the program.

Key Questions:

- Is the program reaching the numbers of schools, teachers, administrators and parents proposed?
- Is it reaching the number of faculty and Master’s students proposed?
- What describes the nature, focus and content of the professional development received by the Teacher Teams? by administrators? by parents?
- What describes the nature, focus and content of the Master’s Degree Program?
- What describes the nature and focus of the impact of the project on College of Education Faculty and Pre-Service Teacher Preparation?
- Has the approach used to identify schools (and, thus, teachers [Master’s and Technology Leaders], administrators and parents) surfaced the best, most “ready” candidates for professional development and program activity implementation?
- What is the plan for scale-up or mentoring of other teachers by Technology Leaders? by Master Teachers?
- What level of training will be received by mentors or additional teachers? What is expected to occur as a result of that training?
- Does technology implementation differ in low vs. high intensity mathematics/science/literacy reform implementation schools?

B. Integration with other Reforms

The design of El Paso’s Technology Integration Partnership recognizes that technology, however valuable as a focus for teaching and learning, is most useful within school settings as a tool to enhance the learning of high quality, standards-based content. Thus, technology initiative efforts

are purposely embedded within the context of math, science and literacy reform efforts of the El Paso Collaborative and the Region. In addition, however, other reform initiatives are also in place at these schools. The Technology Partnership has the potential to enhance these reform efforts or to hamper their work. We know, for example, that undertaking too many reforms can reduce the effectiveness of all. They can distract and/or exhaust teachers and administrators, leading everyone to drop everything new in favor of business-as-usual. The questions in this section are aimed at addressing such issues.

Key Questions:

- What is the nature of the other reform efforts into which the Technology Program is embedded?
- Does the Technology Partnership serve to improve implementation of existing reform efforts or does it provide a diversion from efforts focused on curricular reform?

C. Administrator and Teacher Commitment and Quality

The effectiveness of almost any reform is integrally tied to the skills and abilities of those individuals central to program implementation. In addition to their skills, another key factor is the extent to which these individuals understand the value of, and are committed to implementing the reform. In the case of the Technology Program, it is important to examine these aspects in relation to teachers and administrators in program schools.

Key Questions:

- How is Technology Partnership implementation affected by Principal and Teacher attitudes regarding technology?
- What are the qualifications and experience of teachers assigned to the Teacher Teams and of those recommended for the Master's Degree program?

D. School and District Technology Resources and Priorities

Some districts have clearly prioritized the use of technology, have redirected district resources to support technology, and have developed clear plans. Others have made sporadic efforts, but have not prioritized technology, nor developed coherent, organized plans for ensuring that all classrooms are using technology appropriately. Schools, too, have focused on technology to varying degrees. Issues around consistency with such plans and variations in implementation in relation to pre-existing commitments to technology are those that we seek to answer in this category.

Key Questions:

- Is the Technology Partnership consistent with Districts' Technology Priorities?
- Does the Technology Partnership serve as a catalyst to improve coordination of technology priorities and to guide technology resource purchases at the campus and/or district level?

- How does prior district or school prioritizing of technology affect implementation of the Technology Partnership?

E. Classroom Practices

Technology use in the classroom is clearly of importance in this evaluation. It is well known that teacher professional development may increase teacher knowledge in a given area, but it may not necessarily translate into changes in what teachers do on a day-to-day basis. Further, with regard to technology use, it is important to know how teachers are using it. Is it used primarily to help teachers access higher quality lessons from the internet, as a word processing tool in the classroom, or to help students undertake higher level work that would not readily be possible without the use of technology? These are among the issues to be addressed by the following questions.

Key Questions:

- What changes have occurred in teaching practices as a result of the Technology Program? Among Technology Leaders? Among Master's Degree Teachers? In the scale up to other teachers at the school (mentors)?
- How is technology being used now in Technology Leaders classrooms? Master's Program classrooms? Mentors Classrooms?
- What is the role of technology in supporting implementation of higher level curricula and higher level student work?
- Do classroom practices related to the Technology Program differ across groups of students (low income, minority)? Does program implementation differ across districts?
- To what extent does the model linking the Master's teachers and Technology Leaders enhance implementation of the technology program at the schools?
- To what extent do Master's teachers and Technology Leaders enhance the focus on/and implementation of curricular reform efforts through the use of technology?
- To what extent do technology program parents extend and deepen the focus on improved student achievement through curriculum reform and technology use efforts?
- To what extent has school administrator understanding of and support for curriculum reform and increased technology use impacted decision making regarding resource allocation and classroom practice?

F. Student Achievement

The ultimate measure of the impact and success of El Paso's Technology Integration Partnership is the improvement of student academic achievement. Beyond the basic question of whether achievement has improved, a central question is the extent to which those improvements are associated with Technology Partnership activities. In addition, we need to examine whether any relationships between technology use and student achievement vary across groups of students.

Preliminary analyses, based on overall TAAS (Texas Assessment of Academic Skills) pass rates indicate that project schools, overall, are showing significant gains in core subject areas. Most

notable is improvement in mathematics for all schools, including a 23 percentile point increase for Cohort 2 from 1997 (prior to the grant award) to 2001.

**Achievement Gains for Project Schools
TAAS Pass Rates in
Reading, Writing, Mathematics and Science**

	Percentile Point Gains for All Students in Cohort Schools 1997 – 2001		
	Cohort 1	Cohort 2	Cohort 3
Reading	8	10.2	5.5
Writing	3.1	10.6	2.9
Mathematics	12.9	23	16.4
Science	N/A	9.7	9.3

Among the question to be addressed in this section are the following:

Key Questions:

- Has student achievement in math, science and literacy improved since the Technology Program began?
- Are changes in student achievement occurring in Technology Leaders’ and Master’s Program Teachers’ Classrooms? Are changes occurring in the school as a whole?
- Are students more engaged in school (in terms of attendance and behavior)?
- Are these improvements associated with increased use of technology in the classroom?
- Is there varying program impact on student achievement among different groups of students?

METHODOLOGY

Data from a variety of sources will be used in evaluating El Paso’s Technology Program. These include existing data, such as data on the state achievement test, the Texas Assessment of Academic Skills (TAAS) as well as attendance data. An additional source of data will be interviews of, and questionnaires completed by teachers, students, administrators and parents. A third source of data will be observation and videotaping. Finally, we will undertake case studies to complete the picture of the Technology Program’s impact. Figure 3 outlines the data collection approaches that will be utilized to answer evaluation questions in each of the research topic areas.

**Figure 3. El Paso Partnership for Technology Integration
Evaluation Data Collection Plan**

Methods	Program Implementation	Other Reforms	Administrator/Teacher Commit/Qual.	District/School Tech	Classroom Practices	Student Achievement
AEIS						X
PEIMS						X
Alternate Assessments						X
Questionnaire/Interviews						
Teachers	X	X	X		X	X
District Administrators	X	X		X	X	
Principals	X		X	X	X	
Parents	X				X	X
Students	X				X	X
School Ratings	X					
Classroom Observation/ Videotaping	X				X	
Case Studies	X	X	X	X	X	X

Much of this work is in progress now, and we anticipate producing reports that will answer key evaluation questions in the coming months. For example, by Summer, 2002, we will complete a study of program implementation and program impact on Leaders and their students. Data for this report includes teacher and student questionnaires, teacher interviews and classroom observations. Results will be analyzed and reported to examine the impact of the grant both within and across schools. Linked to this work will be a study examining the process and efficacy of the scale-up work of the Technology Leaders and Master's teachers, that is, mentoring to other teachers in the school. Questionnaires, interviews and observation will be used to identify the roles played and the professional development offered by Technology Leaders and Master's teachers in scale-up work, what mentees actually do as a result of training, and how teachers interact with the principal to implement technology scale up. Case studies focused on exemplary practices and that clearly illustrate success in achieving the goals will also be added to the evaluation plan. These case studies will address broader implementation issues, as well as high quality product development, and will inform future dissemination work. Finally, the evaluation plan will address links between Challenge grant-supported Partnership efforts and other school and district technology supports (see Figure 4).

Figure 4
Selected Studies and Completion Dates

Studies	Completion Dates
Study of Program Implementation and Impact (to address technology use within broader context of systemic supports, e.g., administrator and parental engagement)	Summer 2002 (interim report) Summer 2003 (final report)
Study re: Process and Efficacy of Scale-up	Summer 2002 (interim report) Summer 2003 (final report)
Case Studies of Effective Practices	Fall 2002 and Fall 2003
TICG Links with School and District Supports	Fall 2002 (interim report) Fall 2003 (final report)