DOCUMENT RESUME

ED 477 713 IR 021 982

AUTHOR	Denton, Jon
TITLE	Technology Mentor Fellowship Program, Performance Period September 23, 1999-December 30, 2002. 1999 PT3 Grant Final Report.
INSTITUTION	Texas A and M Research Foundation, College Station.
SPONS AGENCY	Department of Education, Washington, DC.
PUB DATE	2003-00-00
NOTE	55p.
CONTRACT	PR342A-990311
PUB TYPE	Reports - Evaluative (142) -- Tests/Questionnaires (160)
EDRS PRICE	EDRS Price MF01/PC03 Plus Postage.
DESCRIPTORS	*Computer Assisted Instruction; Computer Uses in Education; Consortia; Cooperative Programs; *Educational Technology; Elementary Secondary Education; Fellowships; Higher Education; Instructional Development; *Mentors; *Partnerships in Education; Preservice Teacher Education; Professional Development; *Program Evaluation; *Technology Integration
IDENTIFIERS	Texas; Texas A and M University

ABSTRACT

The Technology Mentor Fellowship Program (TMFP), a consortium consisting of 6 rural East Texas school districts, 1 urban Central Texas School district, and Texas A&M University has designed an approach for integrating technology into teacher preparation programs that impacted over 5,000 minority, language-minority, and children of poverty and of geographic isolation to access teachers that are prepared to teach in their increasingly high-tech classrooms. The TMFP matched technologically-proficient pre-service teachers with K-12 teachers and University faculty to model technology as an instructional tool in K-12 classrooms and college classrooms. Undergraduate student mentors and a Web-based resource bank supported campus and school-based teacher preparation faculty involved in professional development. Across the three years of this grant, 628 Technology Fellow placements have provided one-on-one technology support to teacher education faculty. The Tech Fellow faculty dyads have collaboratively developed 1,043 learning objects across a wide range of content areas for learners from kindergarten through graduate school. Many of these digital learning objects have been integrated into online courses. Through their direct experience with technology instructional development, both the Technology Fellows and their faculty partners have gained a greater appreciation of what is possible regarding technology applications for their classrooms. The project staff and external evaluation team remained stable across the project as the continuing implementation of the redesigned elementary and secondary teacher preparation programs was supported. The elementary program has 9 Professional Development Schools (PDS) and 17 Integrated Methods Schools (IMS). Integrated Methods Schools are pairs of schools that support the field-based teacher preparation programs. Actual methods of teaching course experiences are conducted at the school sites. (Author/AEF)

Technology Mentor Fellowship Program

1999 PT3 Grant Final Report

U.S. Department of Education
Award No. P342A-990311

Performance Period
September 23, 1999 – December 30, 2002

Report Prepared by

Jon Denton, Principal Investigator

Texas A&M Research Foundation
Texas A&M University
College Station, Texas

February 21, 2003

Technology Mentor Fellowship Program (TMFP)
Award number: PR342A-990311
Texas A&M Research Foundation

B. Executive Summary

Project Overview: The TMFP matched technologically-proficient pre-service teachers with K-12 teachers and University faculty to model technology as an instructional tool in K-12 classrooms and college classrooms. Undergraduate student mentors and a web-based resource bank supported campus and school-based teacher preparation faculty involved in professional development.

Background and Origins: TMFP, a consortium consisting of six rural East Texas school districts, one urban Central Texas School district, and Texas A&M University has designed an innovative approach for integrating technology into teacher preparation programs that impacted over 5,000 minority, language-minority, and children of poverty and of geographic isolation to access teachers that are prepared to teach in their increasingly high-tech classrooms.

Conceptual Framework: The Net Generation (currently ages 20-birth) currently represents 30 percent of the population in the United States. Net Generation members have become the new youth wave given the large numbers in which "Net Geners" are being born. This wave of youth coincides with the digital revolution that has transformed all corners of our society. This project had as its roots the assumption the Net Generation would assist other generations in learning new ways to use the technology in a system that has been stubborn to change and steeped in the tradition of doing things the same as always…institutions of higher education.

Project Description: Across the three years of this grant, 628 Technology Fellow placements have provided one-on-one technology support to teacher education faculty. The Tech Fellow-faculty dyads have collaboratively developed 1043 learning objects across a wide range of content areas for learners from kindergarten through graduate school. Many of these digital learning objects have been integrated into on-line courses. These digital learning objects hint of the synergy generated by these teams that has resulted in a cadre of teaching candidates with substantial technology skills and communication skills in providing technology support. Through their direct experience with technology instructional development, both the Technology Fellows and their faculty partners have gained a greater appreciation of what is possible regarding technology applications for their classrooms. Further, the project staff and external evaluation team remained stable across the project as we supported the continuing implementation of the redesigned elementary and secondary teacher preparation programs. The elementary program has **9** Professional Development Schools (PDS) and **17** Integrated Methods Schools (IMS). Integrated Methods Schools are pairs of schools that support the field-based teacher preparation programs. Actual methods of teaching course experiences are conducted at the school sites.

Evaluation/Project Results: Technology Fellows and their faculty partners were asked to complete self-assessment surveys of their technology skills across their participation in

the project. Unfortunately completing self-assessments have been uneven, with 243 of 729 participants completing the assessment at least two times. Responding to this challenge, project staff developed the *i-Folio* system as an assessment protocol for technology skills. During year 3, project staff members worked with a faculty member in implementing the *i-Folio* (electronic portfolio) system with a class of teaching candidates on a pilot basis. The final phase of the project (4-month extension of project) has seen the implementation of *i-Folio* with over 700 undergraduate teaching candidates.

Sustainability: The department head of teacher education has worked closely with the TMFP project staff to provide the equipment infrastructure to support technology integration throughout the teacher preparation curricula. This support is evidenced by the large cost-share contribution of equipment ($1,125,056) provided by the college and department for this grant. To illustrate, four "smart carts" were placed at PDS/IMS schools to enable greater technology integration into the field experiences for our teaching candidates. The smart cart consists of a large heavy-duty movable cart equipped with a laptop computer with Internet card, a digital projector, a VCR, a digital camera, and a PolyComm (2-way audio-video communication system). An additional smart cart was made available for on-campus use and additional rooms used for on-campus teacher education courses were equipped with ceiling mounted video projectors. In support of this considerable equipment investment, TMFP project staff assigned teams of Technology Fellows (2 to 4) to assist faculty in developing instructional objects for the methods classes and classroom activities in the schools.

During the final phase of the grant, the teacher education department purchased a motorized cart with wireless capability that contained 30 laptop computers. In addition, the teacher education department administrators with support from the TMFP staff have designed and implemented a "classroom of the future." The primary purpose of this facility is to provide a faculty development resource on evolving technology and software. A secondary purpose is to use this facility for small classes that employ web-based technology. This technology classroom is funded by local and corporate funds (in excess of $120,000). We believe these collaborations and efforts with faculty are significant factors in sustaining the goals of TMFP.

While the growth of technology skills and knowledge by faculty and teaching candidates were the goals of this project, by-products of staff ingenuity in resolving unanticipated challenges in managing and implementing the program resulted in solutions that have dramatically affected this project and are shaping the college's technology future. To illustrate, the logistical challenges were daunting for tracking so many Technology Fellows at a time that an **Electronic Management System** was developed during project start-up. This system was designed to track the Technology Fellow assignments, to provide work schedule targets, to provide payroll information, to serve as a repository for electronic learning objects developed by the Faculty-Technology Fellow teams, and to serve as an online communication system for the Technology Fellows, the Project Coordinator, and the Faculty members who worked with the Technology Fellows. The management system utilizes the Internet to address challenges associated with multiple levels of communications, project management and monitoring of electronic instructional object development. This management system is available at the TMFP web-site: http://tmfp.coe.tamu.edu/. The utility of this program became evident during the first year of the project, and staff soon realized the aforementioned attributes could be applied to the management system for eEmpowerment Zone an on-line professional development system http://empowermentzone.tamu.edu/, and the *i-Folio* system, an electronic portfolio system that has been adopted by the college to provide the framework and storage for all teaching candidate electronic portfolios http://i-folios.coe.tamu.edu/.

The Technology Fellow model for technology professional development will continue to be supported by the teacher preparation department especially for preparing incoming teaching candidates to use the i-Folio system. These Technology Fellows will also provide faculty support in preparing instructional resources that can be demonstrated and used in the classroom of the future. An additional provision for sustainability of TMFP resources and protocols occurred with the employment of the TMFP project coordinator for 50 percent effort to supervise the work schedules of Technology Fellows and provide leadership for directing the classroom of the future. Evaluation protocols developed and used to assess the TMFP will continue to be applied especially those protocols used to assess the eEmpowerment Zone, the electronic management system, and i-Folios.

Lessons Learned: Many (but not all) teacher education faculty were willing to engage in technology professional development experiences delivered by a Technology Fellow (undergraduate student) if the professional development activities were tailored to the faculty member's individual needs and project assignments and arranged to fit their time schedule. The key to a successful professional development experience was to establish a dyad (faculty member and technology fellow) that opened communication channels quickly with the dyad members establishing regular meeting times to work and share ideas, techniques and project products. As technology knowledge and skills have grown among faculty members, encouraging teaching candidates to integrate technology into their class activities has dramatically increased by these faculty members.

Include a project URL: http://tmfp.coe.tamu.edu/ **and** http://eeducation.tamu.edu

Technology Mentor Fellowship Program (TMFP)
Award number: PR342A-990311
Texas A&M Research Foundation

C. Report Narrative

PROJECT OVERVIEW

The TMFP matched technologically-proficient pre-service teachers with K-12 teachers and University faculty to model technology as an instructional tool in K-12 classrooms and college classes. A consortium consisting of seven participating independent school districts and Texas A&M University (TAMU) designed an innovative approach for integrating technology into teacher preparation programs that allowed over 5,000 minority, language-minority, and children of poverty to access teachers who are prepared to teach in their increasingly high-tech classrooms. Over the course of this project, 450 undergraduate students were employed to fill 628 Technology Fellow placements. Placements were made each semester and many students were employed as Technology Fellows for multiple semesters. Similarly, 279 teacher educators (46 campus-based and 233 school-based) worked with the 450 employed Technology Fellows across the project summing to a total of 729 participants. These participants have collaboratively developed 1043 learning objects across a wide range of content areas for learners from kindergarten through graduate school.

BACKGROUND AND ORIGINS

What was your starting point?

Computer Support Staff members had completed Y2K hardware and software diagnostics for all workstations in the college and were working to solve identified problems by September 1999. The Distance Learning Coordinator and support staff had established a college-wide distance learning coordination effort with support being available to faculty using three distance learning systems in the Harrington Education Center (physical location of a large component of the College of Education). Other context issues were:

- A year long planning effort with support provided by Provost's Office ($150K competitive grant) resulted in an on-line masters degree being initiated in September 1999.
- Reorganization of the college resulted in the relocation of the academic program for Educational Technology being placed in Educational Psychology.
- The implementation of an equipment use fee began generating substantial resources (over $400K/1999) for equipment. Most of these resources were targeted to purchase computer equipment for instructional applications by students.
- Computer Support Staff had achieved a high level of client satisfaction after an extended period of less than satisfactory evaluations by faculty and staff.
- All college faculty members had workstations acquired within the past four years due to the faculty workstation program.
- All faculty and staff offices had Ethernet 10Base-T connectivity. Unfortunately, only one 100Base T connection was available in Harrington Tower (one of the main facilities for the College of Education).

What was your level of readiness?

The **Technology Mentor Fellowship Program (TMFP)** drew upon successful strategies evolving from programs funded by the U.S. Department of Education's

Technology Literacy Challenge program. Specifically the Generation www y program (Challenge Grant – Olympia, Washington), the Profiler and TrackStar tools developed by the South Central Regional Technology in Education Consortia and extensive experience of the South Central Regional Technology in Education Consortia-Texas (SCR*TEC-TX) staff (became the eEducation group) in working with schools on technology integration all played a role in framing the initial experiences for TMFP.

Did you conduct an assessment of needs?

Yes, the following sections provide accounts of needs assessments conducted just prior to the release of the RFA for the PTTT application.

Overview of Needs Sensing Activities

The first needs sensing activity, a survey entitled, Technology and the Pre-service Teacher Education Program: A Survey of Colleges, Schools, and Departments of Education, [available at http://eeducation.tamu.edu/ihe/allstates-1.html] was conducted at all public and private teacher education programs at institutions of higher education in Texas to: (1) determine how and to what degree instructional technology was being incorporated into teacher preparation; and (2) determine the status of technology support to faculty and students provided by institutions of higher education. A second survey and needs sensing activity the, Levels and Use of Technology in Texas Public Schools: 1998 Survey (Denton, Davis, Strader, Jessup and Jolly, 19990) was completed to determine the changes in Texas public schools regarding technology infrastructure, financial support for this infrastructure, staff development related to technology, and use of the technology infrastructure. Both surveys were then compared to see if Colleges of Education in Texas were indeed keeping pace with the advances in technology occurring in K-12 schools and whether teacher preparation programs were providing the necessary pre-service experiences in technology to teachers entering the profession.

Colleges of Education (COEs) Needs Scan

The survey entitled, Technology and the Pre-service Teacher Education Program: A Survey of Colleges, Schools, and Departments of Education was distributed to all deans of the Colleges of Education across a five-state region (Kansas, Missouri, Nebraska, Oklahoma, and Texas). For purposes of this needs sensing activity, Texas data were extracted from the group data of the other four states. Responses from the Texas sample occurred from small private institutions of higher education to large state sponsored institutions of higher education and included both public and private institutions. Continuing data collecting activities occurred until a 60% response ratio was attained.

Interpretation of the collected data revealed that Texas College of Education administrators saw an increased level of support for technology but many still felt that support for technology in their college was meager at best. For example, one COE administrator saw the installation of computer labs for faculty use as support while another COE administrator whose college was already equipped with computer labs saw technical assistance and training given to faculty as increased support. Access to and use of the Internet by both faculty and students, along with administrative support and encouragement for the use of technology were rated as adequate but not highly satisfactory.

Colleges of Education administrators were also asked about technology skills considered to be important for teaching candidates and were asked their perception of the adequacy of general skills training currently received by their pre-service teachers. The respondents felt that pre-service teacher skills were currently adequate regarding candidates' ability to operate a computer system, to use software and tools that were directly related to their own professional use (such as, productivity tools - databases, word processing, and spreadsheets). Respondents reported that pre-service teachers were just beginning to use multimedia in projects although, for the most part, they were not required to do so. They (pre-service teachers) seemed to possess the skills to produce multi media projects with little assistance provided by the faculty.

In response to questions regarding faculty members using certain hardware and software technologies, the majority of responses indicated a low level of use by faculty. The exceptions to this were in the instructional use of the VCR and the use of word processing, spreadsheets and presentation software. Respondents felt that web-based technology and programs had been around long enough for faculty to develop a verbal knowledge but they had not been given support to apply these technologies in their classes. Pre-service teachers were not required by the faculty to use technology in their teacher preparation programs but many of these pre-service teachers actually had the skills to use advanced technologies and software and many times did so without being required to do so. Integrating these findings with the extant literature, it seems that faculties have found that the first wave of what we call the "Net Generation"(first wave being ages 18-22 years of age) feel much more comfortable with the new technologies and take the initiative to use the technologies without much prodding (Tapscott, 1997). Pre-service teachers now in our Colleges of Education are now made up of predominately the Net Generation (sometimes called Generation Y). The Net Generation, having grown up with the new technologies, is entering our institutions of higher education with a much better comfort level for technology than the existing university faculty who grew up with television and radio. Consequently an "Intergenerational Digital Divide" exists.

Technology in Texas Public Schools - 1998 Survey

This state-wide survey was based on the hypothesis that federal and state funding had affected technology infrastructure of school districts through nearly 1000 grants awarded to Texas public schools between 1996 and 1998. All 1043 school districts in Texas were invited to participate in this survey by completing the survey online or completing a mark-sense instrument and remitting it by mail. At the close of data collection, 789 surveys were submitted by 75.6 percent of the state's public school districts. Key findings from this survey included:

- Computer to student ratios of 1:5 and 1:10 were cited most often.
- T-1 connections were the most common Internet connection to school districts.
- The modal value of computers per classroom was one with many of these having an Internet connection.
- Ninety-one percent of the districts reported having connectivity to the Internet.

In addition to the increasing presence of technology hardware in schools, professional development opportunities increased dramatically from 1996 to 1998. Topics that received much attention in Texas schools were Internet applications and in-depth instruction on software applications and content-focused applications for classroom instruction. In addition, a modest percent of responses (20 percent) indicated that their teachers and students were beginning to access the Internet in class. The findings from the total survey indicated that both teachers and their students were in the initial stages of employing technology at the instructional level in 1998, but with equipment in place and professional development opportunities expanding, much expansion of Internet-aided class instruction was expected.

Given the findings from these surveys, consortium members identified the following needs to be addressed by this project:

- *development of faculty in the TAMU College of Education to be proficient in the use of various instructional and communications technologies;*
- *development of capacity within the TAMU College of Education in digital media that supports the National Council for the Accreditation of Teacher Education (NCATE) standards and the International Society for Technology in Education (ISTE); and*
- *development of support to faculty transitioning to new teaching preparation programs by supporting their technology infusion efforts into the curricula.*

Give specifics about the organization -type, size, and location

Texas A&M University is a land-grant, sea-grant, and space-grant institution with nine colleges including Agriculture and Life Sciences, Architecture, Business, Education, Engineering, Geosciences, Liberal Arts, Science, Veterinary Medicine, and the Bush School of Government and Public Service. The university is centrally located, approximately equidistant from three of the country's ten largest cities (Houston, Dallas, and San Antonio) and the state capital, Austin. Texas A&M continues to grow and prosper in the twenty-first century. Some of the university's accomplishments are:

- Texas A&M ranks 5th in the nation in enrollment, with over 44,000 students.
- Texas A&M ranks in the top ten of National Merit Scholars.

- The 4.2 billion dollar endowment is ranked number eleven in the nation in fiscal year 2000.
- More than half of entering freshman in top 10% of HS class (2001)
- Number one in the nation in 1999-2000 in outgoing Fulbright Scholars

Texas A&M University is among the 61 invited members of the American Association of Universities (AAU). The University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (SACS). The focus to become a national leading university has led Texas A&M to implement a set of 12 imperatives in order to be recognized as one of the ten best public universities in the nation by the year 2020, while at the same time maintaining and enhancing the University's distinctiveness. This is the foundation of what Texas A&M calls Vision 2020. The very fabric of the institution has been transformed in less than four decades and the evolution continues.

Although our college is only thirty-three years old, we have benefited from the rich experiences of the university. Education courses have been offered on this campus for nearly a century. Agricultural and industrial education courses were taught in the early 1900s, and the department of education was officially established 1936. In 1945, the department of education became the department of education and psychology, and it remained in that pairing until the formation of the College of Education in 1969.

Presently, the College of Education works to continue its outreach to the community, state, and nation by developing, designing, and implementing a variety of programs involved in the preparation of educational personnel. Instruction is provided at both the undergraduate and graduate levels. The College of Education is accredited by the

National Council for the Accreditation of Teacher Education (NCATE). The School Psychology and Counseling Psychology Programs are accredited by the American Psychological Association (A.P.A.). Additionally, the College of Education is a member of the American Association of Colleges for Teacher Education (AACTE), the Association of Colleges and Schools of Education in State Universities and Land Grant Colleges and Affiliated Private Universities (ACSESULGC/APU), and a founding member of the National Network for Educational Renewal (NNER).

The College of Education at TAMU with over 4,000 students enrolled in various curricula, was ranked 18th nationally among programs preparing secondary education teachers in the U S News & World Report in 2001. The eEducation group within the College developed the PT3 application and has implemented and administered this technology integration project.

What problem did your project address?

A vast majority of teacher preparation faculty in the College of Education at Texas A&M University was not integrating technology into the restructured field-based teacher preparation programs, nor were they encouraging their teaching candidates to become proficient with technology applications for the classroom.

CONCEPTUAL FRAMEWORK

What was the idea behind your project?

Net Generation: The baby boom generation is being eclipsed by the Net Generation (currently ages 20-birth). The Net Generation currently represents 30 percent of the population as compared to the boomers' 29 percent making it the one generation in a long time large enough to rival the boomers and their culture. What makes the Net

Generation unique? What makes it such a dominant force in our culture? It is not Net Generations' size but their growing up during the dawn of a new interactive medium of communication. Although their parents (predominately boomers) may have spent their formative years around television, this medium was much more limited than the medium that the Net Generation is engaging during its formative years. The context and environment are fundamentally different from those of their parents and for sure the experiences of their grandparents.

Net Generation members have become the new youth wave given the large numbers in which "Net Geners" are being born. This wave of youth coincides with the digital revolution that has transformed all corners of our society. Together these two factors have produced a generation that is not just a demographic bulge but also a wave of social change and transformation (Tapscott, 1997). Net Geners have grown up in households with the greatest penetration of digital media, as the penetration of digital media has always been greater in houses with children. And during the Net Generations' stay interactive technology has begun to really pour into the schools with an impressive 82 percent of all children today having used a computer (Tapscott, 1997).

Some analysts predict a raging war between the generations brought on by the new technologies. But many of us see ways to pair the generations together to get the most benefit for all involved. This project had as its roots the assumption the Net Generation would assist other generations in learning new ways to use the technology in a system that has been stubborn to change and steeped in the tradition of doing things the same as always...institutions of higher education. However our institutions of higher education must change as they are experiencing, right now, the first wave of the Net Generation.

What change did you intend to make?

The project was designed to provide professional development activities related to technology integration for pre-service teaching candidates and for both school and campus-based faculty members involved in teacher preparation. The goals of the three-year project were to

- Support innovative strategies for preparing technology-proficient future educators through field experiences that include the application of technology in instructional delivery.
- Offer an extensive professional development program to enable all teacher educators (school and campus-based faculty, clinical faculty, cooperating teachers) to assess and develop their own skill levels for developing synchronous and asynchronous web-based instructional systems.
- Assist all teacher educators in developing and demonstrating innovative instructional resources, such as web-based environments, on-line forums, multimedia project-based instructional activities, and, where appropriate, related digital instructional objects for web-based courses.

How did you expect that you could effect change in your institution?

When the grant began in 1999, our eEducation group was completing a five-year professional development effort as the Texas partner of the South Central Regional Technology in Education Consortia with the prime contractor being the University of Kansas. This effort addressed technology professional development of educators with a special emphasis being placed on web-resources. By 1999, visits to our webpages were exceeding 80,000 per month and we were actively providing professional development activities on technology integration to public school teachers across the state. The RTEC project was preceded by a three-year effort (1992-1995) funded by the Texas Education Agency to provide technology for field-based teacher education programs. This state funded program was out initial entry into providing equipment and professional development activities for teacher education faculty. With these prior experiences providing background knowledge and expertise, we felt prepared and ready to undertake the rigors of the Technology Mentor Fellowship Program.

Second, as the executive associate dean in the College of Education at that time, the Principal Investigator, Jon Denton was responsible for establishing and maintaining the technology equipment infrastructure and computer support staff for the college. At the beginning of the project, all faculty and staff offices across the college were equipped with 10Base T Ethernet drops and computer support response time to faculty requests (hardware and software) were being handled within 4 hours.

PROJECT DESCRIPTION

Recruitment of Teacher Education Faculty and Technology Fellows: Extensive processes were developed for recruiting, providing continuous technology skill training, and monitoring the work of technology undergraduate fellows with university and public school teacher education faculty. These processes were essential because the key strategy was to match technologically-proficient pre-service teachers with K-12 teachers and University faculty to model technology as an instructional tool in K-12 classrooms and college classrooms.

Teacher education faculty, defined as campus-based faculty as well as classroom teachers who supervise student teachers and other field experiences of teaching candidates were recruited to participate in the project during the preparation of the application. Fortunately, this process was an "easy sell" with the recruitment of classroom teachers being coordinated through district technology directors who worked with building principals. As the project continued, demand for Technology Fellows outstripped the resources to provide additional fellows. Campus-based faculty members were recruited through personal visits and presentations at faculty meetings of the teacher education faculty by TMFP staff. Additional recruiting support was garnered as other college department heads encouraged their faculty who taught teacher preparation classes to participate in the program. While not every campus-based faculty member who worked with teacher preparation candidates chose to participate in this program, the response to the program was within the range of what was planned when the project application was developed.

Undergraduate technology mentors were initially recruited from the undergraduate classes of educational technology students who were also teacher preparation students. TMFP staff visited each class to explain the project and benefits for participating as a technology fellow, such as,

- paid training ($7.50/hr for 20 hrs of training) to work as technology mentors using web resources, Microsoft production tools and instruction on communication skills before beginning their experience with faculty partners;
- a paid field experience ($7.50/hr for 10 clock hours per week) with an opportunity to continue across ensuing semesters;

- working with an experienced teacher or faculty member on an individual basis to learn about pedagogy and their personal views about teaching; and
- providing technology support to faculty member in integrating technology into their instruction.

This recruitment strategy resulted in approximately 70 percent of the expected number of Technology Fellows during the first semester of the project. This strategy was then expanded to all teacher preparation classes during the second semester of the project with disappointing results. Strategies to advertise over a local radio station and in the campus paper at the beginning of the semester for Technology Fellows produced telling results. The radio adds produced very modest returns for the cost, but the campus paper add resulted in doubling the number of Technology Fellows within a three week period. This strategy was used throughout the remaining semesters of the project with much success.

Faculty Orientation and Technology Mentor Training: A training schedule was developed and implemented with participating faculty members and the Technology Fellows that included the following components.

Role of Faculty in TMFP Program – the following tasks were suggested to faculty members agreeing to work with Technology Fellows by TMFP project staff as a beginning point in the just-in-time technology professional development experience.

First month

- Meet face-to-face with Technology Fellow at school or departmental meeting.
- In initial session with Technology Fellow complete Profiler and suggest possible projects. Review project files available in management system for ideas.

- Establish a calendar for meeting and outline tasks/projects/due dates for the next two months or remaining weeks in the semester.
- Contact TMFP staff if assignment will not work due to scheduling or other reasons.

Second and third months of semester

- Begin with a project such as a web-page with Tech Fellow (if you do not have a web-page) and/or a Track from TrackStar.
- Plan to develop two or three projects during the coming 6 to 8 weeks in the semester.
- Approve weekly reports on electronic management system.
- Meet weekly with Technology Fellow to share work on projects and discuss ideas to complete the projects.

Fourth through eighth months of project

- Take stock of projects completed and needs for integrating technology into courses.
- Participate in Spring Semester seminar with Technology Fellow on progress and future steps.
- Develop a project calendar for the Spring Semester.
- Continue approving weekly reports on electronic management system.
- Complete end-of-year Profiler.

Role of Technology Fellows in TMFP Program – The following tasks were identified as expected experiences for Technology Fellows employed by TMFP to provide just-in-time technology professional development experiences with faculty.

First month

- Complete orientation training on Profiler, Netscape Composer and/or Dreamweaver 3.0 for web-editing, Microsoft Office Suite, TrackStar and QuizStar before meeting with assigned faculty.
- Learn the process of submitting time sheet and progress report on electronic management system.
- Meet face-to-face with faculty member at school or departmental meeting.
- In initial session with faculty complete Profiler and suggest possible projects. Review project files available in management system for ideas.
- Establish a calendar for meeting and outline tasks/projects/due dates for the next two months or remaining weeks in the semester.
- Contact TMFP Project Coordinator if assignment will not work due to scheduling or other reasons.

Second and third months of semester

- Begin with a project such as a web-page for faculty member (if faculty does not have a web-page) and/or a Track from TrackStar.
- Plan to develop two or three projects during the coming 6 to 8 weeks in the semester using the resource list as a guide to the extent of the project.
- Submit weekly reports on electronic management system.
- Participate in "just-in-time" training in development laboratory for projects requiring different skill sets.
- Meet weekly with faculty to share work on projects and discuss ideas to complete the projects.

Fourth through eighth months of project

- Take stock of projects completed and needs for integrating technology into courses of faculty member.
- Participate in Spring Semester seminar with faculty on progress and future steps.
- Develop a project calendar for the Spring Semester.
- Continue submitting weekly reports on electronic management system.
- Continue meeting weekly with faculty to share work on projects and discuss ideas to complete the projects.
- Complete end-of-year Profiler and work with faculty member in completing end-of-year Profiler.

Continuing Professional Development of Technology Fellows: Initial training and continuing training were provided to Technology Fellows in the TMFP laboratory containing twenty workstations equipped with Dreamweaver 3.0, and Microsoft Office Suite. The laboratory was open from 8:00 AM to 5:00 PM Monday through Friday for Technology Fellows' skill updating and their use in developing projects for their faculty partners. During year 2 of the project, project staff began developing and implementing online professional development lessons for new Technology Fellows that effectively reduced face-to-face training sessions from 20 hours to 2 hours, with the remaining training being provided through online lessons. Formative evaluation of the training experiences (by staff and the project's external evaluators) indicated the online lessons were very effective training tools. The second year of the project also marked the beginning of Intel training for all Technology Fellows by a project staff member. The

Intel curriculum was provided in addition to the initial training experiences that were used when the project began.

An **Electronic Management System** was developed to track the Technology Fellow assignments, to provide work schedule targets, to provide payroll information, to serve as a repository for electronic learning objects developed by the Faculty-Technology Fellow teams, and to serve as an online communication system for the Technology Fellows, the Project Coordinator, and the Faculty members who worked with the Technology Fellows. The management system utilizes the Internet to address challenges associated with multiple levels of communications, project management and monitoring of electronic instructional object development.

Key Assumptions about web-resources: At the outset of the program two SCR*TEC web tools (Profiler and TrackStar) were considered to be integral components to implement the planned activities. The Profiler tool a server-based, web-application designed to capture technology self-assessment information from individuals within an organization and making the information known across the organization. The idea was that Profiler would help teachers solve problems by providing information about colleagues in the organization who possess key information and/or skills needed to complete the tasks at hand. In addition, Profiler would provide just-in-time access to tutorials or explanations of complex production tasks in a multi-media environment. When combined with a performance support tool, such as TrackStar (a tool for organizing interactive, on-line presentations), Profiler would become a key component for developing a distributed learning environment. Software applications and Internet tools identified in the National Standards for Technology in Teaching and Learning, supported by the National Council for Accreditation of Teacher Education (NCATE) and the International Society for Technology in Education (ISTE), were developed by project staff in collaboration with Partner school technology coordinators.

The high expectations for Profiler were not attained and an alternate approach (i.e., the *i-Folio* system) was developed to track the technology competence of participants in the program. The flawed program assumption about Profiler was that program participants would willingly complete regular self-assessments of their technology proficiency. After considerable effort 33% of program participants had completed Profiler at least twice. This disappointing observation led the team to actively develop an electronic portfolio system (*i-Folio*) to track technological proficiency and knowledge of program participants. Additional support for the requisite training to use *i-Folio* was developed using eEmpowerment Zone an on-line professional development system. Data provided under program evaluation of this report indicate the eEmpowerment Zone resources are quite useful for teacher professional development.

In a positive sense the underlying assumption that TrackStar would be a valuable production tool was realized. The TrackStar tool did contribute substantially to the large number of electronic resources being produced over the course of the project and has been cited as a valuable resource by participants for organizing on-line instructional resources.

Describe the Project Staff for TMFP

The eEducation group at Texas A&M, evolved from the results of five years of research, evaluation, and anecdotal experiences, gleaned from the implementation of externally funded, technology-rich programs at Texas A&M. Research and evaluation efforts focused on three areas: the effectiveness of on-site and online professional development experiences for teachers and school district and regional leaders; field-tests of web-based instructional materials (which included student performance measures and teacher reviews); and statewide technology infrastructure and use studies in Texas. This group builds on the premise that the integration of four key development components: leadership development, professional development, infrastructure development, and materials development, supports the overall success, implementation, and penetration of technology-rich programs. The eEducation group found that when implementing several programs the following generalization was key: **focused professional development experiences that directly support the utilization of instructional materials in the classroom, yields favorable penetration results**. Moreover, having administrator buy-in and the infrastructure in place to use the materials was critical. Certainly, situational contexts, needs sensing and funding, will shape the extent to which each component can be addressed (Davis & Denton, 2001).

Staff members of eEducation were experienced with instructional design and development of interactive multimedia; database development- applications-management, distance education experience, and experience with networking and telecommunication resources when this project began. Jon Denton, Ed.D. is a professor in Teaching, Learning and Culture and the executive director of eEducation in the College of Education at Texas A&M University. He serves as the P.I. or co-P.I. on six federal grants/contracts involving the integration of technology into classrooms and was the Principal Investigator on TMFP (.22 effort). Francis Clark, Ed.D. is a Professor in Teaching, Learning and Culture in the College of Education at Texas A&M University.

Dr. Clark was the Project Director for TMFP (.35 effort). Ben Smith, M.Ed. was the project coordinator for TMFP responsible for the coordination and logistics (.55 effort) of Technology Intensives (professional development experiences). Trina Davis, M.S. and Ph.D. candidate is the director of the eEducation group in the College of Education at Texas A&M University. Ms. Davis has designed and established the eEmpowerment ZONE (.50 effort). Arlen Strader, M.S. and Ph.D. candidate is Director of Computer Support for the College of Education at Texas A&M University. Mr. Strader oversees the network server operations to enable http://eEducation.tamu.edu/ to function efficiently and effectively for the college and the funded projects including TMFP (.15 effort). Deborah Jolly, Ed.D. is a research scientist in the College of Education at Texas A&M University and served as the internal evaluator for TMFP (.20 effort). George Jessup, Ph.D. is a research scientist in the College of Education at Texas A&M University and served as an investigator for TMFP (.10 effort). Windy Hollis an administrative assistant in the College of Education at Texas A&M University was the bookkeeper for TMFP, responsible for processing the Tech Fellow bi-weekly payroll (.25 effort).

EVALUATION/PROJECT RESULTS

Wexford, Inc., a non-profit educational agency served as the external evaluation team for this project. The Wexford evaluators are multi-ethnic and multi-lingual, and are experienced in working with students, staffs, and faculty and have evaluated a variety of programs, including Title I, Title VII, Star Schools, Effective Schools, and district and regional student and professional development programs. Project staff members and site coordinators were integral partners with Wexford staff in conducting the evaluation processes. The methods of evaluation included the use of objective performance measures that were clearly related to the intended outcomes of the project and have produced quantitative and qualitative data that were provided in the preceding section. **Descriptive evaluation data** were drawn on program pre-service teachers, college faculty and school-based faculty aggregated to prevent identification of individual participants. **Formative Evaluation data** were collected using the Profiler, an on-line tool to survey the technology skill levels of program participants. **Implementation Analysis data** were collected by protocols developed and implemented by the project staff and shared with the evaluation team. Program participants were surveyed to determine their Stages of Concerns using the Concerns Based Adoption Model. During the initial phase of the program, **Goal, Objective and Outcome Attainment Evaluation data** were compiled from all of the preceding sources and organized with respect to the project goals and objectives. **Impact Evaluation data** analyses were organized into a report each year for the three years of the project.

Summarize your major evaluation findings in a table.

Matrices of actions, events and outcomes occurring across the total period of the grant are organized and summarized by program objective. These accounts provide the essence and the scope of TMFP.

Objective 1: *Complete the implementation of redesigned elementary and secondary teacher preparation programs for all teaching candidates in the College of Education at TAMU by fall semester 2000* (GPRQ Indicator-Curriculum Redesign)
Benchmark Assumption: One hundred percent of the teaching candidates in the teacher education department are completing redesigned programs (field based programs).

Outcome: The redesigned elementary and secondary teacher preparation programs were fully implemented as field based programs during year one of this grant. This statement translates as "**all** undergraduate teaching candidates (100%) in the teacher education department are participating in field-based teacher preparation programs at Texas A&M University." These programs enroll approximately 430 teaching candidates each semester. Given the benchmark, Objective **1 was fully accomplished.**
Analysis and Interpretations: The primary challenge in meeting this objective was devising a sufficient number of field sites for a large teacher preparation program in a community of 150,000 people. A second challenge has been the high costs associated with field-basing teacher preparation. This second challenge has led to the consideration of other options for certifying teachers. Alternative approaches have been devised for preparing teachers to address the high costs of the intensive field-experience approach to preparing teachers. First, a post-baccalaureate program for secondary teaching candidates has been launched and second, an on-line Alternative Certification Program (Accelerate Online) has been approved by the state certification agency and is under development for secondary level life science teachers. Third, Professional Development Schools are being replaced with Integrated Methods Schools as field sites to reduce the cost of the field-based programs.
Objective 2: *Provide 100 technology proficient teaching candidates opportunities to receive technology mentor fellowships (valued at up to $1,344 per year) to mentor teacher education faculty on technology integration into their instruction beginning with the spring semester 2000.* (GPRA Indicator-Technology Proficient New Teachers)
Benchmark Assumption: Number of Technology Fellows placed each semester: benchmark =100
Outcome: Technology Fellow placements each semester across the grant were Spring semester, 00 – 69; Fall semester, 00. – 137; Spring semester, 01 – 156; Fall semester, 01 – 132; Spring semester, 02 – 134. An average of 125.6 placements per semester was realized. Given the benchmark, **Objective 2 was fully accomplished**. A four month no-cost extension of the project **during the fall** semester, 2002 enabled the placement of 16 Technology Fellows.

Analysis and Interpretations: The initial semester of the grant (Fall 99) was spent in getting the program initiated and Technology Fellows recruited from teacher education classes. Processes used the first year were not sufficiently robust to place 100 Technology Fellows/semester. Thus additional recruitment approaches (placing radio ads and placing ads in campus newspaper) were used beginning with the Fall 00 semester. The ads placed in the campus paper were very effective in recruiting sufficient undergraduate students for the remaining semesters of the grant. We proposed placing 600 Technology Fellows across the grant and placed 628. The process of recruiting teaching candidates to serve as Technology Fellows (mentors) evolved to recruiting undergraduate students to serve as Technology Fellows. An unexpected benefit from expanding the resource pool has been that undergraduate students from other colleges (engineering, business, science) began to consider teaching as a career option. A value-added aspect of this process has been the substantial technology and leadership skill development demonstrated by the Technology Fellows. We are very pleased with the level of commitment and expertise demonstrated by the Technology Fellows throughout the project.
Objective 3: *Implement the technology mentor model for technology skill development of 10 or more campus based teacher educators and 30 to 50 classroom based teacher educators during the spring semester, 2000.* (GPRQ Indicators-Technology Proficient Faculty and K-16 Partnerships)
Benchmark Assumption: Participation of 10 campus based teacher educators and 30 – 50 classroom based teacher educators whose self-reports on technology skill development indicate growth.
Outcome: Twenty-two (22) campus based faculty and forty-seven (47) K-12 school based educators worked with Technology Fellows during the spring semester, 2000. During this period, thirty-two (32) participating teacher educators completed a self-assessment of their technology skills twice using the web-tool, Profiler. The Profiler results for these individuals indicted growth across the 25 indicators of technology knowledge and skills. Given the benchmarks stated, **objective 3 was partially**

achieved. While we exceeded the number of teacher educators participating in the program, just 46% of those participating completed the self-report survey (Profiler) on technology skill/knowledge development.

Analysis and Interpretations: Difficulties experienced in accomplishing this objective were:

- Placement difficulties did occur when an assigned faculty member and the Technology Fellow's respective schedules did not correspond. In response to this situation, the displaced Technology Fellow provided support to the project team in developing on-line instructional resources and served as support staff in the professional development laboratory for faculty and other Technology Fellows. Over the course of the grant, 17 Technology Fellows served the project in this manner. Concerted efforts occurred during years 2 and 3 at the beginning of the semesters to bring the Technology Fellow and the teacher education faculty member together to meet face-to-face. The purpose of this meeting was to initiate communication and sharing of schedules. This practice did resolve many of the difficulties, but some assignments simply didn't seem to work and reassignment to the development laboratory was a default option used by the project staff.

- The majority of faculty simply would not complete the Profiler (self-assessment) tool regarding their technology skill proficiency. After much encouragement and frequent reminders to teacher education faculty to complete their technology skill self-assessments we came to the conclusion the Profiler system was simply not working for our purposes; and further, we were not comfortable with self-assessed technology skill proficiency ratings. A different evaluation system was devised called, *i-Folio*. This system is based on the idea that the teaching candidate sends their assignments (electronic products) to faculty for approval. By involving faculty in the technology skill assessment process, faculty are informed of the knowledge and skills expected for technology proficiency, as well as adding responsibility to the faculty for assessing the technology competence of their students.

Objective 4: *Expand implementation of the technology mentor model for technology skill development of all campus based teacher educators and all classroom based teacher educators of partner school districts during fall semester 2000.* GPRQ Indicators-Technology Proficient Faculty and K-16 Partnerships)
Benchmark Assumption: Participation of 20 campus based teacher educators and 100-120 classroom based teacher educators.
Outcome: Across the second year of the grant, the Technology Fellow placements numbered 137 during the fall semester and 156 during the following spring semester. Thirty-eight (38) campus–based faculty and 99 school-based educators assignments occurred during the fall semester of year 2. During the following spring semester, 57 campus-based faculty and 99 school-based faculty assignments occurred. The increased number of campus-based assignments was due to multiple Fellows being assigned to campus-based faculty working with a smart cart at one of the field sites. During year 3, the Technology Fellow placements numbered 132 during the fall semester and 130 during the spring semester with 1/5 of the Technology Fellows being assigned to campus-based faculty. Across the grant 46 different campus-based faculty and 233 different school-based faculty participated in this program. Given the benchmarks stated, **objective 4 was fully accomplished** during years 2 and 3 of the grant.
Analysis and Interpretations: After we adjusted the recruitment process and increased the orientation activities of Technology Fellows and teacher education faculty, the process has continued to become more efficient and effective. Second, turnover among Technology Fellows diminished between the Fall and Spring Semesters during year 3. We think a key reason for this stability of Technology Fellow placements is the addition of on-line resources provided through the eEmpowerment Zone, a professional development portal for pre-service and in-service educators. End-of-year surveys and interviews conducted during the spring semester 2002 support our hypothesis about the stability of placements and the functioning of the program. Given feedback during year 1 of the grant regarding the lack of clear expectations for both teacher education faculty and the Technology Fellows, the staff directed much attention to establishing clear directions and providing more extensive training for the Technology Fellows. As time passed, 20 hours of repetitive face-to-face small classes with beginning Technology

Fellows were replaced with carefully designed on-line tutorial lessons and 2 hours of face-to-face meetings on technology skills needed for technology enhanced instruction. These on-line lessons are now offered through the eEmpowerment Zone and are available for pre-service and in-service teachers now the grant has concluded.
Objective 5: *Encourage all participating teacher educators to assess their individual technology skill development twice during the initial year and once each of the following two years by completing the web-based Profiler provided on-line by SCR*TEC (University of Kansas Regional Technology in Education Consortia).* (GPRQ Indicators-Technology Proficient Faculty and K-16 Partnerships)
Benchmark Assumption: All Technology Fellows and all teacher educators participating in TMFP complete the Profiler at least twice during their period of participation.
Outcome: Since TMFP began with the placement of Technology Fellows, eight hundred ninety-one (891) self-assessments have occurred on the Profiler system. A total of 243 TMFP participants or 33% completed the TMFP Profile at least two times through year 3. Given the benchmarks stated, **objective 5 was partially accomplished** during years 2 and 3 of the grant.
Analysis and Interpretations: It is disappointing that less than half of TMFP participants have completed the self-assessment at least two times. In particular, getting faculty to complete the TMFP Profile has been a major challenge. Yet information on technology savvy school-based educators are being shared with the Director of Field Experiences as recommended supervisors for the field experiences of our future teaching candidates. The development and implementation of a skills performance system with faculty involvement was one of our "must do" tasks for year 3 of TMFP. The disappointing response by faculty to Profiler led the TMFP staff to create *i-Folio,* an interactive portfolio documentation tool that allows pre-service teachers to display products from pre-professional experiences and correlate those artifacts to state and national standards. The products in *i-Folio* are artifacts of the teaching candidate that reflect on the

preparation of the individuals as well as the nature of the experience provided by the teacher preparation program. The tool serves as an electronic clearinghouse for student portfolios developed as teaching candidates complete competency demonstrations associated with certification and course requirements. Students maintain their own portfolio web site on a College of Education server that contains assignments and projects from courses, student organizations, community service projects, and personal interests. The student places their work products (responses to assignments) on their own college web site and then sends a request to their professor to evaluate the product.
Objective 6: *During the spring semester 2000, at least 10 participating teacher educators with the assistance of technology mentors will develop and demonstrate digital instructional objects involving various multi-media resources for at least one teacher preparation course.* (GPRA Indicator-Learning Resources)
Benchmark Assumption: Ten digital instructional objects for use in teacher preparation classes produced during year 1 of TMFP.
Outcome: Ten (10) participating teacher educators with the assistance of technology mentors did develop and demonstrate digital instructional objects involving various multi-media resources for at least one of their courses or instructional experiences. Given the benchmark stated, **objective 6 was fully accomplished** during year 1.
Analysis and Interpretations: All Technology Fellows were provided an initial orientation and training to work with faculty partners. • Open laboratory time (8 to 5 M-F) was established for Technology Fellows as a resource for completing tasks with faculty partners. • A Technology Fair and technology workshops were conducted for twenty (20) campus based faculty during spring semester 2001 to communicate the array of technology resources available for their use. • Intel training was completed by 134 Technology Fellows during year 2 and 250 Technology Fellows during year 3 to support the development of the large array of electronic learning objects. • Demonstrations of the *i-Folio* system were provided to campus-based faculty during

the spring semester 2002. Providing quality professional development experiences for technology applications in the classroom was a strength of the staff at the outset of the grant. This attribute has evolved with additional experiences and delivery approaches being added to our repertoire over the course of this project.
Objective 7: *During FY01 and FY02, all participating teacher educators with the assistance of technology mentors will develop and demonstrate digital instructional objects involving various multi-media resources for at least one course they teach.* (GPRA Indicator-Learning Resources)
Benchmark Assumption: All Teacher education Faculty-Technology Fellow teams will produce one digital instructional object per team for at least one course per semester. Benchmark for Year 2 = 293 digital instructional objects; Benchmark for Year 3 = 266 digital instructional objects.
Outcome: A large number of electronic objects (1,043) have been created across a wide range of content areas. Digital resources have been developed for mathematics, science, social studies, language arts, history, English, ESL, teacher education, technology, reading, graphics design, fine arts, economics, physical education, special education, French, agriculture, business education and engineering) for the continuum of learners from kindergarten through graduate school. Given the benchmarks stated, **objective 7 has been fully accomplished**.
Analysis and Interpretations: The large number of electronic resources developed across the project suggests faculty have begun to integrate electronic learning objects in their instruction. Yet faculty members often need help in identifying quality web resources for their classes. In response, Technology Fairs and Technology Workshops were held during year 2 and demonstrations of the *i-Folio* system occurred during year 3 to introduce teacher education faculty to an array of technology resources. The idea that we must keep in mind is that substantial interest was exhibited by faculty members during this project to integrate technology into their courses, and continuing support and suggestions will keep them expanding their technology skills and increasing their electronic resources.

Objective 8: *During FY02, with the assistance of technology mentors, at least 10 teacher educators will integrate digital instructional objects involving various multi-media resources into web-based synchronous or asynchronous courses.* (GPRA Indicator-Learning Resources)

Benchmark Assumption: Ten synchronous or asynchronous distance education courses will have been developed and offered by faculty participating in TMFP.

Outcome: Five (5) Technology Fellows have participated in WebCT training (WebCT is the online system supported by Texas A&M Univ.) to provide support for faculty in placing their courses online. Support provided by Technology Fellows have resulted in the following:

- Thirteen courses have electronic resources (webpages, on-line syllabi, and PowerPoint presentations) that are associated with their courses. One of these listings is offered completely as asynchronous course.

  AGED 340 - Professional Leadership Development
  AGED 440 - Principles of Technological Change
  AGED 489 - Special Topics: Electronic Media in Agriculture
  AGED 601 - Advanced Methods in Agricultural Education
  AGED 611 - Advanced Methods in Distance Education
  EDCI 675 - Teaching Strategies: Patterns of Learning
  EDCI 689 – Special Topics in Integrating Technology into Instruction
  EDCI 690 - Theory of Curriculum and Instruction Research
  INST 301 - Educational Psychology
  RDNG 650 - Foundations of Reading Instruction
  SEFB 618 - Applied Behavior Management in the Classroom
  TEFB 201 - Self Directed Experiences with Adolescents
  TEFB 323 - Teaching Skills I.
- An on-line professional development portal has been developed for continuing professional development opportunities for Technology Fellows and teacher preparation faculty.
- An on-line Alternative Certification Program for secondary life science teachers

(Accelerate Online) has been approved by the state and is being developed for implementation during the Spring Semester, 2003 under the eEmpowerment Zone portal.

Given the benchmark stated, **objective 8 has been accomplished**.

Analysis and Interpretations: Developing distance education course offerings have been emphasized across the University for the past decade. While 25-30 synchronous courses/semester have been offered by faculty in the College of Education, this project led to asynchronous courses being provided across the college as well. The impact of the Technology Mentor Fellowship Program (TMFP) can be judged by the number of College of Education and K-12 faculty members who have developed and used on-line electronic resources and tools. These electronic resources and tools include the 1043 electronic learning objects and instructional resources, the eEmpowerment Zone <http://empowermentzone.tamu.edu/>, the MyTMFP electronic management system, and *i-Folios* <http://i-folios.coe.tamu.edu/>. The commitment of the college's teacher preparation programs for further faculty development and increased use of these electronic tools is seen as a positive consequence of TMFP.

Give example of a change in the quality of work produced through integrating technology into instruction.

The following responses, especially the responses to interview questions posed by the external evaluation team serve as examples of perhaps the best data that were collected to reflect quality of the program and quality of work produced as a result of the project.

What evidence do you have about your desired outcomes? Provide at least 3 key findings and present data summary graphically.

As stated near the beginning of this report, this project was conducted to provide professional development activities related to technology integration for pre-service teaching candidates and for both school and campus-based faculty members involved in teacher preparation. Evidence to support attainment of project goals is framed after each goal statement.

- **GOAL:** *Support innovative strategies for preparing technology-proficient future educators through field experiences that include the application of technology in instructional delivery.*

FINDING 1: At the conclusion of each semester, Technology Fellows completed an on-line, ten item questionnaire to reflect their perceptions about their experiences in the project ranging from 1 (strongly disagree) to 5 (strongly agree). The ten items provided formative data to project staff about daily operations and curricula offered by the project. The following statements provide brief summaries across items on this questionnaire.

1TF. Overall, participating in this project was beneficial to me. **The ratings ranged from 4.26 to 4.52 across semesters with higher ratings occurring during the final project year.**

2TF. The project seemed well organized. **The ratings ranged from 3.96 to 4.44 across semesters with higher ratings occurring during the final project year.**

3TF. The project is focused on important needs and activities. **The ratings ranged from 4.17 to 4.27 across semesters with slightly higher ratings occurring during the final project year.**

4TF. The project provided a support network of online resources and personal assistance. **The ratings ranged from 4.28 to 4.42 across semesters with slightly higher ratings occurring during the final project year.**

5TF. The activities and strategies in the project facilitated my learning. **The ratings ranged from 4.00 to 4.37 across semesters with higher ratings occurring during the final project year.**

6TF. The project was an important resource for me. **The ratings ranged from 3.90 to 4.22 across semesters with higher ratings occurring during the final project year.**

7TF. The project helped me to learn important skills and knowledge. **The ratings ranged from 4.19 to 4.46 across semesters with higher ratings occurring during the final project year.**

8TF. This project has or will impact my work in the classroom. **The ratings ranged from 4.06 to 4.39 across semesters with higher ratings occurring during the final project year.**

9TF. This project has or will assist me in helping others use technology. **The ratings ranged from 4.33 to 4.57 across semesters with higher ratings occurring during the final project year.**

10TF. This project has or will assist me in helping others integrate technology into the curriculum, after-school or community program. **The ratings ranged from 4.23 to 4.51 across semesters with higher ratings occurring during the final project year.**

Additional Technology Fellow perceptions of the program were collected by our external evaluators as they conducted end of year interviews. The following responses were gleaned from the Year 3 Evaluation Report 2001 – 2002.

"I really feel that I have gained a lot of knowledge from being involved with the program. It has pushed me to complete and attempt projects that I would have otherwise not been exposed to."

"I have learned to search the Internet and find useful web sites. I have also learned how to use more technology and ideas for integrating it into my classroom."

"I have learned a lot about Web page design and many other aspects of computer software programs. Also, I have learned how to work with teachers on projects first hand."

"This project has greatly helped me understand the importance and accessibility of technology in the classroom."

"I have gained lots of knowledge that I will be able to use when I have my own classroom. I also got the opportunity to work with a veteran history teacher who taught me a lot of very practical things for when I am a teacher myself."

"I have benefited from TMFP through many experiences. My communication skills have increased and my knowledge about computers have grown, I also get gratification from helping others."

"I've learned valuable teaching skills as well as how to work with other teachers in a professional environment."

"Basically, working on this project has benefited me greatly. Now more than ever I wish to become a teacher. Before I was only considering it and leaning towards teaching in the future. But now, I know this is the career path I want to choose."

"I personally have learned how to use TrackStar, Dreamweaver, and Publisher through this program. Before I began TMFP, I had not used any of these programs, and had only heard of 1 of them (Publisher). I am now very familiar with these programs. I have created numerous web pages through, Dreamweaver, and Publisher, and completed several TrackStar (resources) for my cooperating teacher. In fact, these programs have come in handy in many of my classes, especially Publisher. I have used the program to make brochures and handouts for many of my projects. Because of the program, my handouts looked more professional and creative, but did not take much extra work. In many cases, these handouts caught the eye of my professors."

- **GOAL:** *Offer an extensive professional development program to enable all* *<u>teacher educators</u>* *(school and campus-based faculty, clinical faculty, cooperating teachers) to assess and develop their own skill levels for developing synchronous and asynchronous web-based instructional systems.*

FINDING 2: At the conclusion of each semester, <u>on-campus faculty</u> completed an on-line, ten item questionnaire to reflect their perceptions about their experiences in the project ranging from 1 (strongly disagree) to 5 (strongly agree). The ten items provided formative data to project staff about daily operations and curricula offered by the project. The following statements provide brief summaries across items on this questionnaire.

1TE. Overall, participating in this project was beneficial to me. **The ratings ranged from 3.83 to 5.00 across semesters with higher ratings occurring during the final project year.**

2TE. The project seemed well organized. **The ratings ranged from 3.94 to 4.75 across semesters with higher ratings occurring during the final project year.**

3TE. The project is focused on important needs and activities. **The ratings ranged from 4.29 to 4.86 across semesters with higher ratings occurring during the final project year.**

4TE. The project provided a support network of online resources and personal assistance. **The ratings ranged from 3.54 to 4.33 across semesters with higher ratings occurring during the final project year.**

5TE. The activities and strategies in the project facilitated my learning. **The ratings ranged from 3.94 to 4.57 across semesters with higher ratings occurring during the final project year.**

6TE. The project was an important resource for me. **The ratings ranged from 4.00 to 4.88 across semesters with higher ratings occurring during the final project year.**

7TE. The project helped me to learn important skills and knowledge. **The ratings ranged from 3.80 to 4.50 across semesters with higher ratings occurring during the final project year.**

8TE. This project has or will impact my work in the classroom. **The ratings ranged from 4.30 to 4.67 across semesters with higher ratings occurring during the final project year.**

9TE. This project has or will assist me in helping others use technology. **The ratings ranged from 3.75 to 4.44 across semesters with higher ratings occurring during the final project year.**

10TE. This project has or will assist me in helping others integrate technology into the curriculum, after-school or community program. **The ratings ranged from 3.86**

to 4.50 across semesters with the lowest and highest ratings occurring during the final project year.

Additional On-campus faculty perceptions of the program were collected by our external evaluators as they conducted end of year interviews. The following responses were gleaned from the Year 3 Evaluation Report 2001 – 2002.

"My technology fellow has assisted with web-site development and administering (an) on-line course to students through TTVN and on-campus."

"Have a better understanding of how advanced in technology our pre-service teachers are, which helps me design class activities that can better meet my students' needs in class."

"The students have been very helpful in moving my projects forward."

"Resources and person power to get many tasks completed well and on time."

"Development and production of a WebCT course, a personal webpage, and several PowerPoint presentations."

"How accomplished and patient the Tech Fellows who have worked with me and how accomplished the TMFP staff are in coordinating the Tech Fellows and providing relevant technology training to the fellows."

FINDING 3: At the conclusion of each semester, School-based faculty completed an on-line, ten item questionnaire to reflect their perceptions about their experiences in the project ranging from 1 (strongly disagree) to 5 (strongly agree). The ten items provided formative data to project staff about daily operations and curricula offered by the project. . The following statements provide brief summaries across items on this questionnaire.

1SB. Overall, participating in this project was beneficial to me. **The ratings ranged from 4.03 to 4.46 across semesters with the lowest and highest ratings occurring during the final project year.**

2 SB. The project seemed well organized. **The ratings ranged from 3.83 to 4.19 across semesters with the highest rating occurring during the final project year.**

3 SB. The project is focused on important needs and activities. **The ratings ranged from 4.07 to 4.38 across semesters with moderately higher ratings occurring during the final project year.**

4 SB. The project provided a support network of online resources and personal assistance. **The ratings ranged from 4.00 to 4.28 across semesters with the highest rating occurring during the final project year.**

5 SB. The activities and strategies in the project facilitated my learning. **The ratings ranged from 3.82 to 4.00 across semesters with moderately higher ratings occurring during the final project year.**

6 SB. The project was an important resource for me. **The ratings ranged from 3.44 to 4.10 across semesters with higher ratings occurring during the final project year.**

7 SB. The project helped me to learn important skills and knowledge. **The ratings ranged from 3.70 to 4.07 across semesters with the lowest rating occurring during the final project year and the highest rating occurring during the second project year.**

8 SB. This project has or will impact my work in the classroom. **The ratings ranged from 4.03 to 4.30 across semesters with the lowest and highest ratings occurring during the initial project year.**

9 SB. This project has or will assist me in helping others use technology. **The ratings ranged from 3.88 to 4.00 across semesters with highest rating occurring during the final project year.**

10 SB. This project has or will assist me in helping others integrate technology into the curriculum, after-school or community program. **The ratings ranged from 3.87 to 3.97 across semesters with the lowest rating occurring during the final project year. This is the only set of responses across the three groups of participants that failed to reach 4.00 across four semesters.**

Our external evaluators collected additional School-based faculty perceptions of the program as they conducted end of year interviews. The following responses were gleaned from the Year 3 Evaluation Report 2001 – 2002.

"The TrackStar set up was especially beneficial for not only my students, but to others who used it. Although I had been shown how to set up TrackStar, I still had many questions and was unsure how to get things done. Jennifer helped lighten my load."

"I have learned more about TrackStar and how to utilize lessons that are already in place. I have been able to present good information to the students that I would not have had the time to complete on my own."

"I have been able to develop a usable web page for my classroom."

"If you get a reliable tech fellow, the program works much better."

"I wish that I had more time to devote to this. It takes a lot of time out of my schedule here at school, and sometimes that is a hindrance."

"I would like to have spent more time with Avery—but my schedule does not permit that."

"I have found new web sites that reinforce what we do in class."

"I have become more proficient with my use of the computer and have been able to communicate data to teachers, staff and administration more effectively."

"I have gained an understanding of power point as a mindtool."

"I have had a positive experience with technology in my classroom."

"I received projects for students that take time to do myself, so I saved time."

"I have been able to present great information to the students in a motivating format that is very interesting and informative for them. As a coach, classroom teacher, science fair coordinator, and parent, I would have great difficulty completing all the projects that we used to present to my students. I have a touch-screen board in my class this year and the lessons Melanie helped to create and find were invaluable to use in presentations to the students on various subjects. In addition, she came to our computer lab to help my students with their science fair projects when we were typing the reports and preparing the information for their project boards."

- **GOAL:** *Assist all teacher educators in developing and demonstrating innovative instructional resources, such as web-based environments, on-line forums, multimedia project-based instructional activities, and, where appropriate, related digital instructional objects for web-based courses.*

FINDING 4: Direct evidence of the assistance that has been provided to faculty participating in TMFP by the 1043 electronic learning objects developed over the course of the TMFP project by Technology Fellows with their faculty partners.

SUSTAINABILITY

Are there products or processes produced with grant resources that will outlive the funding period? How will they do so?

While the growth of technology skills and knowledge by faculty and teaching candidates were the goals of this project, by-products of staff ingenuity in resolving unanticipated challenges in managing and implementing the program resulted in solutions that have dramatically affected this project and are shaping the college's technology future. To illustrate, the logistical challenges were daunting for tracking so many Technology Fellows at a time that an **Electronic Management System** was developed during project start-up. This system was designed to track the Technology Fellow assignments, to provide work schedule targets, to provide payroll information, to serve as a repository for electronic learning objects developed by the Faculty-Technology Fellow teams, and to serve as an online communication system for the Technology Fellows, the Project Coordinator, and the Faculty members who worked with the Technology Fellows. The management system utilizes the Internet to address challenges associated with multiple levels of communications, project management and monitoring of electronic instructional object development. This management system is available at the TMFP web-site: http://tmfp.coe.tamu.edu/. The utility of this program became evident during the first year of the project, and staff soon realized the aforementioned attributes could be applied to the management system for eEmpowerment Zone an on-line professional development system http://empowermentzone.tamu.edu/, and the *i-Folio* system, an electronic portfolio system that has been adopted by the college to provide the framework and storage for all teaching candidate electronic portfolios http://i-folios.coe.tamu.edu/.

What provisions are in place for sustainability (i.e., policies, staffing, curricular requirements)?

The Technology Fellow model for technology professional development will continue to be supported by the teacher preparation department especially for preparing incoming teaching candidates to use the *i-Folio* system. These Technology Fellows will also provide faculty support in preparing instructional resources that can be demonstrated and used in the classroom of the future. An additional provision for sustainability of TMFP resources and protocols occurred with the employment of the TMFP project coordinator for 50 percent effort to supervise the work schedules of Technology Fellows and provide leadership for directing the classroom of the future. Evaluation protocols developed and used to assess the TMFP will continue to be applied especially those protocols used to assess the eEmpowerment Zone, the electronic management system, and learning objects in the *i-Folio* system.

What major step will you take for the period following the completion of your project, and what evaluation activities will continue?

Near future applications of these "by-products" of the TMFP project include full implementation of the *i-Folio* tool with all teaching candidates, the launching of an Alternative Certification Program (*Accelerate Online*) for secondary life science teachers using eEmpowerment Zone, and an electronic data collection and management system to track benchmark data for the college's strategic plan and NCATE standards for continued program accreditation.

LESSONS LEARNED

What lessons did you learn about the preparation of technology-proficient teachers?

Teacher education faculty are willing to engage in technology professional development experiences delivered by a technology fellow (undergraduate student) if the professional development activities are tailored to the faculty member's individual needs and project assignments and arranged to fit her time schedule. The key to a successful professional development experience is to establish a dyad (faculty member and technology fellow) that opens communication channels quickly with the dyad members establishing regular meeting times to collaborate and share ideas, techniques and project products. As technology knowledge and skills grow among faculty members, the issue of encouraging teaching candidates to integrate technology into their class activities will occur through modeling what they have experienced in their classes.

A second consideration is to have a member of the leadership team of the college (i.e., department head, associate dean) as the project director for the PT3 project. In our TMFP effort, the lead person was the executive associate dean of the college. He was able to provide resources from the college, from arranging substantial cost- sharing for the grant, to garnering support from department heads in the college to encourage their faculty to participate in the project and providing physical space for the professional development laboratory. Although faculty members can negotiate these resources for their project, energy and time of the project leadership team can be conserved if an administrator has substantial responsibility for the project's implementation.

What organizational policies changed as a result of this project?

Professional development opportunities for technology integration will be continued on an individual basis, especially since the annual faculty evaluation system now includes technology integration among the evaluation categories for a faculty member's annual performance review. In addition, a requirement for employment in teacher education has been instituted that all future teacher education faculty members must be proficient technology practitioners in their teacher preparation classes, and when employed the new faculty member will be informed that they will be evaluated on their proficiency and use of technology.

Did you experience any unanticipated consequences?

As noted previously, a major unanticipated benefit of this project has been the development of an **Electronic Management System** that has been applied as the management system for each of the following resources eEmpowerment Zone (an on-line professional development system), the *i-Folio* system, (an electronic portfolio system for teaching candidates), *Accelerate Online*, (an online secondary teacher certification program for life science teachers), and the college program evaluation protocol.

REFERENCES

Davis, T., & Denton, J. (2001). The eEducation Development[4] Model. Unpublished paper prepared for the Dean's Office, College of Education, Texas A&M University: College Station, Texas.

Denton, J., Davis, T., Strader, A., Jessup, G., & Jolly, D. (1999). The changing technology infrastructure in Texas public schools. *INSITE* , Summer, 1999, 13:2, 34-38.

Tapscott, D. (1997). *Growing Up Digital.* McGraw Hill, New York.

D. Qualitative Example

Please provide *one* vignette (approximately one page) on one of the following topics: Give evidence of the impact of improved preparation on your pre-service teachers.

The following comments were provided by a Technology Fellow to the external evaluators for our project during end-of-semester data collection procedures. "I personally have learned how to use TrackStar, Dreamweaver, and Publisher through this program. Before I began TMFP, I had not used any of these programs, and had only heard of 1 of them (publisher). I am now very familiar with these programs. I have created numerous web pages through, Dreamweaver, and Publisher, and completed several TrackStar (resources) for my cooperating teacher. In fact, these programs have come in handy in many of my classes, especially Publisher. I have used the program to make brochures and handouts for many of my projects. Because of the program, my handouts looked more professional and creative, but did not take much extra work. In many cases, these handouts caught the eye of my professors."

Give an example of how technology was integrated into instruction by a faculty member that resulted in a change in the type and quality of the work.

The following comments were provided by a classroom teacher to the external evaluators for our project during end-of-semester data collection procedures. "I have been able to present great information to the students in a motivating format that is very interesting and informative for them. As a coach, classroom teacher, science fair coordinator, and parent, I would have great difficulty completing all the projects that we used to present to my students. I have a touch-screen board in my class this year and the lessons Melanie helped to create and find were invaluable to use in presentations to the students on various subjects. In addition, she came to our computer lab to help my students with their science fair projects when we were typing the reports and preparing the information for their project boards."

E. Summary of Quantitative Data

Areas of Measurement (*Use area in the box below for any definitions or qualifiers you wish to make.*)	**Number**
Unduplicated count of targeted faculty: i.e., faculty identified as targets or as within the scope of your project	College of Education 105 Arts & Sciences 0 School -based faculty 500
Unduplicated count of faculty who actually participated in the project	College of Education 46 Arts & Sciences 0 School based faculty 233
Unduplicated count of faculty for whom you have evidence of technology proficiency.	15
Unduplicated count of faculty for which you have evidence of expanding use of technology in pre-service teaching and/or field experiences. Note: This can be through observation, assessments, curriculum redesign, and other means.	243
Unduplicated count of pre-service teachers benefited by the project over the period of the grant	450
Unduplicated count of pre-service teachers for whom you have evidence of technology proficiency	450
Estimated number of program graduates affected by the project who are/will be teaching in schools with underserved populations	400-450
Others affected by your project. Define: Number of K-12 schools participating in project Number of courses redesigned to include best practices	 42 14
Unduplicated count of institutions of higher education that used products produced by your project	5
Unduplicated count of institutions of higher education that used services produced by your project	5

F. Checklist

Please check below all strategies, activities, products, and artifacts present in your project.

Activities

Curriculum/Standards Issues

X Redesigned pre-service courses/curriculum

❑ Aligned pre-service courses/curriculum with state standards

❑ Aligned pre-service courses/curriculum with national standards

X Developed technology standards

X Addressed technology standards (adopted or incorporated them)

Technical Assistance/Professional Development

X Provided mentors to faculty

X Provided mentors to pre-service teachers

X Provided online training

X Provided face-to-face training/workshops

X Provided technical assistance to other PT3 projects

X Provided just-in-time support or individualized training

X Provided joint training opportunities for faculty and P-12 teachers

X Hired students to provide technology assistance to faculty

❑ Required SCDE faculty to maintain e-portfolios

❑ Required non-SCDE faculty to maintain e-portfolios

X Developed leadership programs to support technology proficiency and integration

X Conducted a needs assessment

❑ Loaned hardware or software to faculty

Pre-service Teachers

X Instituted/supported others in technology proficiency graduation requirement

❑ Changed credentialing requirement

X Required pre-service students to produce products using technology

X Enhanced student field experience by increasing technology resources or integration

X Adopted E-portfolio for assessing students

X Required pre-service students to maintain e-portfolios

X Provided mentors to pre-service teachers

❑ Students conducted action research projects

❑ Loaned hardware or software to pre-service teachers

Collaboration

X Partnered with P-12 school districts

X Partnered with other institutions of higher education

☐ Partnered with state education agencies

☐ Formed partnerships with corporate entity

X Created an electronic learning community

X Formed teams including faculty, teacher, student, and administrator

☐ Formed cross-disciplinary collaborative teams at institution

X Provided services to other institutions of higher education

☐ Utilized video conferencing

X Leveraged to other grants Transition To Teaching Grant: U.S. Dept. of Education; OPTIONS award: an online teacher certification program Houston Endowment Foundation;

Provide name and source of grants:

Developed and distributed products

X Developed online courses

X Developed online tools

☐ Developed videos (specify:)

- ☐ on the project itself
- ☐ on electronic portfolios
- ☐ on teaching practices

X Developed evaluation instrument(s)

X Developed a web site

X Developed web portal

☐ Developed technology-infused lesson plans

☐ Developed assessment rubrics

☐ Developed case studies

☐ Produced CD-ROMs and/or DVDs

X Developed e-portfolio tool

X Disseminated project results

- X in written publications (brochures)
- X on the Web
- X at conferences

☐ Developed print publications – on topics other than project results – such as books, journals.

If you had any other important activities or products not included in the listing above, please identify them below.

☐ Other. Specify: ______________________________

☐ Other. Specify: ______________________________

☐ Other. Specify: ______________________________

G. Collaborative Exchange (Implementation Grantees Only)

Did you participate in the Collaborative Exchange? XX Yes ❑ No

If you participated in the Collaborative Exchange, what contribution did it make to your project?

We developed the *i-Folio* system (an online electronic portfolio system for teaching candidates) as a result of participating in the Collaborative Exchange.

H. Products and Artifacts

Provide a list of the products included with your Final Report. Put any significant products that you developed through your project on a CD-ROM or DVD. If the original medium is video, you may submit the videotape(s) in lieu of CD or DVD. If the material is on a proprietary system, we request that you send screen shots, or if appropriate, information about how to log in to view the product.

Our Products and Artifacts are all web-based!

- This management system is available at the TMFP web-site: http://tmfp.coe.tamu.edu/.
- eEmpowerment Zone an on-line professional development system is available at http://empowermentzone.tamu.edu/,
- *i-Folio* system, an electronic portfolio system is available at http://i-folios.coe.tamu.edu/.

Near future applications of these "by-products" of the TMFP project include full implementation of the *i-Folio* tool with all teaching candidates, the launching of an Alternative Certification Program (*Accelerate Online*) for secondary life science teachers using eEmpowerment Zone, and an electronic data collection and management system to track benchmark data for the college's strategic plan and NCATE standards for continued program accreditation.

I. Staff and Partner List

Please list all of your consortium partners and staff members since the beginning of your grant. Please indicate which partners were added to or dropped from your consortium since the beginning of your grant as submitted in your original proposal. Also please

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

ERIC
Educational Resources Information Center

REPRODUCTION RELEASE

(Specific Document)

AERA

I. DOCUMENT IDENTIFICATION:

Title: Technology Mentor Fellowship Program (TMFP), Final Report 1999 PT3 Grant

Author(s): Jon Denton

Corporate Source: College of Education, Texas A&M University

Publication Date: 2/21/03

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents	The sample sticker shown below will be affixed to all Level 2A documents	The sample sticker shown below will be affixed to all Level 2B documents
PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) 1	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) 2A	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) 2B
Level 1	Level 2A	Level 2B
[X]	[ ]	[ ]
Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) *and* paper copy.	Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only	Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Sign here, please →

Signature: Jon Denton	Printed Name/Position/Title: Jon Denton, Professor	
Organization/Address: eEducation Group, College of Educqtion, TAMU	Telephone: 979-845-5352	FAX: 979-845-6129
	E-Mail Address: jdenton@tamu.edu	Date: 2/21/03

(Over)

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, or, if you wish ERIC to cite the availability of these documents from another source, please provide the following information regarding the availability of these documents. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the documents being contributed) to:

ERIC Processing and Reference Facility
4483-A Forbes Boulevard
Lanham, Maryland 20706

Telephone: 301-552-4200
Toll Free: 800-799-3742
FAX: 301-552-4700
e-mail: ericfac@inet.ed.gov
WWW: http://ericfac.piccard.csc.com

EFF-087 (Rev. 2/2000)