

## **Establishing a Ubiquitous Computing Environment for Teacher Preparation Students and Faculty: The University of Texas at Austin Laptop Initiative**

Paul Resta  
Melissa LeBoeuf Tothero  
Learning Technology Center  
The University of Texas at Austin

### **Introduction**

In the fall of 2002, the University of Texas at Austin (UT) College of Education initiated a requirement for all teacher education students entering the professional development course sequence to acquire a prescribed laptop computer and software for use throughout their academic preparation and field experiences. The faculty and clinical supervisors were equipped with the same computer platform and software. A wireless environment was established throughout the College of Education building and in the public school classrooms where preservice courses are taught. This laptop requirement was initiated to prepare a new generation of teachers who are well prepared to use the new tools for learning in their teaching practices. It was designed to immerse preservice teachers in a technology-rich learning environment that provides ubiquitous anytime/anywhere access to technology tools, Internet-based resources, and an online communication environment to support and build communities of practice among all players. This chapter provides a description of the history and key elements of the laptop program, and shares important lessons learned in planning and implementing the initiative.

### **History**

The University of Texas at Austin teacher preparation program has a long-standing commitment to the effective use of technology in teaching and learning. Through innovative programs and in partnership with local school districts and corporate sponsors, future teachers have been given increasing instruction and opportunity to develop proficiency in the use of technology to teach in all grade levels and subject areas. The Laptop Initiative that is now implemented in The University of Texas' teacher education programs represents a comprehensive effort to immerse future teachers in technology-rich environments throughout their preparation in order to assure that they are comfortable and competent in integrating the new tools for learning into their instruction. Because Texas teachers are required to be proficient in the use of technology for instruction, with a special emphasis placed on the use of computers, it follows that students in teacher preparation programs should learn with technology and about technology throughout their teacher education experiences. The use of laptop computers in teacher education programs better prepares future teachers for integrating technology into their own instructional practice. (Fullan, 1999; Resta, 2002).

The goal of the University of Texas College of Education's Laptop Initiative is to

prepare teachers to meet and exceed standards for integrating technology into teaching and learning. The program is continually evolving in response to a multitude of influences, and we are “applying knowledge as we create it” (Fullan, 2003). Initially, efforts to increase effective uses of instructional technology on the part of pre-service teachers were hampered by limited student and faculty access to computers, particularly across the range of settings in which they were expected to work—on campus, in schools, and at home. College of Education (CoE) leaders were convinced that having university faculty model and guide effective instructional uses of computers would enhance adoption by future teachers, and that this would be realized only if all faculty and students in each class were equipped with comparable, state-of-the-art computers. Unless teacher educators model effective use of technology in their own classes, it will not be possible to prepare a new generation of teachers who effectively use the new tools for learning (Resta, 2002).

The College of Education conducted a pilot program to explore the effects of a learning environment in which a single cohort of students and faculty were provided with loaner laptop computers and common software for the duration of the teacher preparation program. Several years of the pilot effort with laptops confirmed that ubiquitous access to computers and networks produced significant gains in the integration of technology into the entire teaching-learning process. In addition, the pilot program helped identify the multiple issues that would need to be addressed in wide-scale implementation, including issues of curriculum revision, faculty development, technical support, and infrastructure.

Based on the positive results of the laptop pilot program, faculty and administrators in the UT Austin teacher preparation program developed plans to require UT Austin students engaged in teacher preparation professional certification programs to have a laptop computer conforming to prescribed hardware and software specifications. The requirement would enable technology to be infused into professional development courses and field experiences, facilitate innovative instructional technology integration in public school teaching, and equip UT Austin graduates for teaching in Texas classrooms of the future. The recommendation was approved by the UT Austin central administration in the summer of 2002 and the requirement was put into effect beginning in the Fall 2002 semester. Under this plan, each individual teacher certification program defined the semester or course when the requirement would apply to its students. In most cases this occurs as students enter the officially designated "professional development sequence" when most have two to four semesters remaining to complete all certification requirements.

The faculty and administration of the teacher preparation program decided that the most effective way to implement the laptop requirement was to select a single hardware platform and select standardized software. This decision greatly simplified the ongoing faculty development and curriculum modification required, and the necessary technical support for students and faculty (all of which must occur efficiently and rapidly). The decision to choose a single-platform is similar to that of instructors who specify a single textbook, a certain calculator, or a specific set of drafting tools for a

class. Teaching and learning is more successful if all students have comparable resources (Bransford, Brown, & Cocking, 1999; Resta, 2002).

To minimize the cost of this requirement for students who did not already own a computer meeting the specifications, the College of Education sought competitive bids from leading computer vendors. Negotiations were conducted with several computer manufacturers, and Apple ultimately offered a package including a computer that met all the specifications, technical support and training, and the lowest price by a sizeable margin. Apple's strong presence in schools and extensive experience in working with teachers and in curriculum development were also positive aspects of the partnership. Based on a careful consideration of cost, functionality, ease of use, and vendor commitment to an ongoing support partnership, the Apple iBook was selected as the supported platform for at least the initial years of the program. It came equipped with an extensive suite of applications that provided a particularly rich and easy-to-learn environment for creating and using multimedia in support of instruction.

Once the laptop was made a requirement for the program, the College of Education was able to secure an agreement with the Office of Student Financial Services to include the costs of the computer as part of each affected student's financial aid package. Additionally, the College of Education oversees a large scholarship program, and was able to assist needy students, while Apple initially offered a student financing option.

Once the decision was made, it was critical to inform students of the new requirement as quickly as possible. This was accomplished by contacting each student individually and directly. At the onset of the program there were instances in which some students or parents were upset by the new requirement because they had recently purchased a laptop computer that did not conform to the requirements of the program. Such objections, however, faded and became increasingly rare as the laptop requirement became a well-known and well-established aspect of the program.

In initiating the laptop requirement it was recognized that there would be a critical need for faculty development and student training. A faculty development unit had been established to assist all college faculty in integrating technology into their instruction. This unit, called the IDEA Studio, now assumed major responsibility for providing intensive and sustained faculty development to the faculty in the laptop initiative. Multi-day faculty development workshops were held during the summer to help faculty become comfortable and competent in using the applications, tools, and resources to be used in the program. These sessions were followed by a series of workshops and one-on-one training provided to faculty throughout the academic year. The workshops were designed to help faculty address state-mandated teacher technology competencies in their courses. Faculty recognized that the students would soon be entering their classes with clear expectations that the required laptop computers would be used extensively in their courses. This contributed in part to the high level of participation even during the summer when many faculty members were not teaching.

The laptop initiative also created a critical need to train students to use the new hardware and software tools. Frequent workshops were provided at the beginning of each semester to familiarize new students with the operating system and basic applications and resources of their newly acquired computer. These sessions were followed by an ongoing series of workshops designed to increase the students' knowledge and skills in using their computer as a learning tool.

The instant infusion of hundreds of computers into the college as a result of the laptop initiative greatly increased the need for student technical support. To help address this need a Student Laptop Help Desk was established. The Help Desk enabled any student experiencing hardware or software problems with their laptop to seek and receive immediate assistance.

The infusion of laptop computers also placed demands on the college's technology infrastructure. The program required students and faculty to have wireless access to the Internet in their classrooms and throughout the College of Education building. The wireless capabilities established during the summer prior to the initiation of the program proved robust enough to meet the greatly expanded needs. Wireless access was also needed in public school classrooms where college courses were taught. The Learning Technology Center staff worked with public school technical staff to allow the college to establish wireless access in public school classrooms where college courses were taught.

An unforeseen need at the start of the program was the huge demand for access to a variety of equipment to support the program such as digital still cameras, digital video equipment, and projectors. The college had to quickly double and triple its inventory of digital cameras to meet the growing needs.

Students can expect to make extensive use of Internet instructional resources, to use electronic publishing and data management, to develop and use multimedia materials, and to work with interactive video clips of classroom activity. The laptop computers are also used for communication with faculty, peers, and teachers from home, campus classrooms, and field sites in the public schools.

The official name and acronym, LIFE: Laptop Initiative for Future Educators, were developed during the second year of the program, as was the following set of program goals, written in Fall 2003.

*Vision:* All Students in the University of Texas' College of Education Teacher Preparation Program Will Be Prepared to Enhance their Students' Learning in Technologically-Rich Classrooms.

*Program Goal ONE:* Seamlessly integrate technology standards throughout PDS curriculum and in field experiences (Map, Implement and Evaluate).

*Program Goal TWO:* Ensure and maintain a state-of-the-art technology integration program and infrastructure.

*Program Goal THREE:* Facilitate the continued implementation and evaluation of technology integration.

*Program Goal FOUR:* Establish strong partnership with local school districts in our efforts to integrate technology and to support technology integration into our students' novice teaching experiences.

*Program Goal FIVE:* Establish networks for inclusion of all teacher preparation programs and the Principalship program.

*Program Goal SIX:* Foster faculty-ownership of initiative. Build capacity so that faculty members drive integration.

*Program Goal SEVEN:* Build a virtual community of practice for faculty, preservice students, and induction teachers.

*Program Goal EIGHT:* Demonstrate and disseminate the positive impact of the program.

## **Challenges and Opportunities**

Initiating a requirement for preservice teachers to acquire a specified laptop platform poses both significant opportunities and risks. On the one hand, the laptop requirement provides an unprecedented opportunity to scaffold multiple extended opportunities for contextualized practice and use of technology in all aspects of the preservice teacher's academic, field, and induction experiences. Over time, ubiquitous access to technology by teachers and students has the capacity to transform not only the physical learning environment, but also the learning process, the role of students, and the role of the teachers (Fullan, 1999). The new technologies also can bring exciting curricula based on real-world problems into the classroom; provide scaffolds and tools to enhance learning; give students and teachers more opportunities for feedback, reflection, and revision; build local and global communities that include teachers, administrators, students, parents, practicing scientists, and other interested people; and expand opportunities for teacher learning (Fullan & Smith, 1999, p 6).

The evolution of the learning environment, the roles of both teacher and student, and of the learning process that have been brought about by the effective infusion of technology positively impacts the conceptual understanding of students as well as students' performance on standardized tests (Bransford, et al., 1999; Fullan, 1999; Scardamalia & Bereiter, 1999).

On the other hand, initiating a laptop requirement in teacher education may pose significant risks to the university, college, faculty, and students if it is executed without careful consideration of the multiple factors involved in implementing such a large-scale initiative. The International Society for Technology in Education (ISTE) compiled a list of the most commonly cited conditions necessary to create learning environments conducive to powerful uses of technology in teacher education. Table 1 lists these crucial elements for addressing ICT needs in teacher education. In this section, we will describe how the Laptop Initiative worked to address each of these essential conditions.

Table 1.

*Essential Conditions for Implementing Information and Communication Technologies (ICT) in Teacher Education*

<p><b>Shared Vision</b>—There is proactive leadership and administrative support from the entire system.</p> <p><b>Access</b>—Educators have access to current technologies, software, and telecommunications networks.</p> <p><b>Skilled Educators</b>—Educators are skilled in the use of technology for learning.</p> <p><b>Professional Development</b>—Educators have consistent access to professional development in support of technology use in teaching and learning.</p> <p><b>Technical Assistance</b>—Educators have technical assistance for maintaining and using the technology.</p> <p><b>Content Standards and Curriculum Resources</b>—Educators are knowledgeable in their subject matter and current in the content standards and teaching methodologies in their discipline.</p> <p><b>Student-Centered Teaching</b>—Teaching in all settings encompasses student-centered approaches to learning.</p> <p><b>Assessment</b>—There is continuous assessment of the effectiveness of technology for learning.</p> <p><b>Community Support</b>—The community and school partners provide expertise, support, and resources.</p> <p><b>Support Policies</b>—School and university policies, financing, and rewards structures are in place to support technology in learning.</p>
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International Society for Technology in Education, 2002

**Shared Vision**

Defined as the presence of proactive leadership and administrative support, shared vision means that the commitment to technology is systemic. In planning and implementing the Laptop Initiative, the Chair of the Department of Curriculum and Instruction worked to assure that departmental faculty, the college dean and university central administration all understood the goals of the laptop initiative as well as the implications of the initiative for students, curriculum revision, faculty development,

technical support, and technology infrastructure. Faculty involvement in development of the vision helped assure a broad sense of ownership in accomplishing its goals and objectives.

### **Access**

A major condition for effective integration of technology into teacher education is access to current technologies, software, and telecommunications networks. One of the primary goals of the laptop initiative was to provide ubiquitous access to technology throughout the educational experience of students in the process of becoming teachers. The laptop initiative transformed every classroom into a computer laboratory providing all students and faculty with access to the Internet and rich network-based instructional resources. The wireless environment enabled Internet access throughout the education building enabling students to work on projects anytime and anywhere in the building. In addition to technology access in their coursework, the laptop initiative enabled teacher candidates to have technology access in their student teaching environments and in their classrooms in the induction year.

### **Skilled Educators**

The educators who work with teacher candidates at all levels must be skilled in the use of technology for learning. This need posed a challenge for the laptop initiative because the teacher preparation faculty ranged from those who were highly sophisticated users of technology to those whose skills were limited to email and word processing. It was recognized that, without the laptop initiative, there would be little incentive for faculty to enhance their technology skills or integrate technology into their teaching practices. The knowledge that students would be coming to their classes with clear expectations that their laptop computers would be used in the course helped create an incentive for faculty to develop their knowledge and skills in the use of technology.

### **Professional Development**

It was recognized that the laptop initiative would require a long term and ongoing effort to upgrade and update the technology skills of the teacher educators. To develop and maintain the technology skills of teacher educators requires consistent access to professional development as the technology constantly changes. A variety of venues and delivery mechanisms are used to accommodate the professional development needs of faculty. Intensive multi-day workshops were offered to faculty during the start-up of the program with assistance from Apple Computer and shorter duration workshops continue to be offered to the faculty at the beginning of each academic semester. The IDEA Studio, the college's faculty development unit, provides ongoing opportunities for professional development to the faculty including faculty workshops, one-on-one training, coaching, and customized assistance to faculty who are interested in integrating technology into their teaching practices.

### **Technical Assistance**

It was recognized that technical assistance in a timely manner was imperative for faculty and preservice teachers to feel confident that they can use technology in their teaching and learning activities. When the technology does not function well, a learning

opportunity is lost and faculty and student frustration grows. A technical support system was in place prior to the initiation of the program and the technology support needs of the faculty were effectively met through the Technical and Networking Services staff of the LTC. The technical staff provides rapid response assistance to faculty members encountering problems with their hardware or software.

A Laptop Help Desk was created at the onset of the program to provide technical support services for students. Students are able to bring their computers to the help desk staff and receive immediate assistance in resolving any hardware or software problems. If the help desk staff is unable to resolve the hardware problem, the student is provided with a loaner laptop computer. To minimize problems for the student, the files from their personal computer are transferred to the loaner computer prior to its being sent to Apple for repair.

### **Content Standards and Curriculum Resources**

One goal of the laptop initiative was to enable preservice teachers to use technology in powerful, meaningful ways in the context of teaching content. It was recognized that technology brings relevant resources from the real world to subject area content, provides tools for analyzing and synthesizing data, and conveys content through a variety of media and formats. The state has placed a high priority on technology integration in schools and has established teacher technology competency standards that all preservice teachers must meet.

The College of Education made a decision to no longer offer a separate course focused on the teacher technology competencies but to integrate the competencies into methods and content courses. Using the state and national standards for teacher technology competencies, the faculty developed a matrix identifying the courses that would address specific state teacher technology competency standards. The matrix served as a tool to help faculty in revising the curriculum and also served as a catalyst to enhance technology integration throughout the teacher preparation program.

### **Student-Centered Teaching**

The ubiquitous access to technology in all courses and classrooms served as a catalyst for changing the teaching-learning process toward more student-centered approaches to learning. Faculty recognized that technology should not be used merely as a tool for demonstration, but rather the use of technology by students should be an integral part of instruction. During the past two years, substantial gains have been made in faculty modeling the use of the technology for collaboration, acquisition of resources, analysis and synthesis, presentation, and publication, and the application of special instructional software in specific content areas.

### *Assessment*

An important component of the laptop initiative was assessing the process, progress, and problems encountered in program implementation. An instrument was

developed to assess the technology skills levels of faculty at the start of the program. The instrument has been used to guide planning for professional development and its use each year provides an indication of progress in faculty integration of technology. A student survey is conducted each year to acquire information on student perceptions of the infusion of technology into their courses and to solicit their feedback on the program's effectiveness. A number of research studies are also underway as to obtain more in-depth information about the program through student and faculty interviews. In general, the data obtained from the different assessments help ensure that the vision for technology-use maintains the appropriate direction, pinpoints potential problems, and provides data for altering strategies and acquiring resources.

### **Community Support**

The development of the laptop initiative required the support of the involved academic departments, college deans, and the university central administration. It also required the support of the school district partners who work closely with the College in supporting the field experiences of preservice teachers. Without the support and commitment of all those involved the initiative would not have progressed as far as it has during the past two years.

### **Support Policies**

Implementation of a laptop initiative requires a careful consideration of the impact of existing policies on the goals and activities of the program and the need for altering or developing new policies. For example, the large infusion of laptop computers into the College posed a number of security challenges and network security policies were developed to protect the integrity of the college and university networks. Changes in policies regarding the checkout of equipment, such as digital video cameras, were also required. In addition, the laptop initiative also required a careful understanding of and compliance with school district policies in accessing their networks.

### **Multiple Perspectives and Lessons Learned**

There are several lessons that were learned in planning and implementing a laptop initiative in teacher education. The following is a summary of these important lessons from the perspectives of administrators, faculty, technical support, and faculty involved in field experiences during the first four semesters of the initiative.

### **Administrative Considerations**

Extensive pilot work with small groups over several years provided invaluable experience for planning and implementing a large-scale initiative. Several years of the pilot effort with laptops confirmed that ubiquitous access to computers and networks produced significant gains in the integration of technology into the entire teaching-learning process. The pilot program helped identify the multiple issues that would need to be addressed in wide-scale implementation including issues of curriculum revision, faculty development, technical support, and infrastructure.

Negotiations with multiple prospective vendors made it possible to obtain an initial discount price that helped address institutional concerns about the financial impact of the requirement on students. The partnership with Apple offered extensive support in faculty development and curriculum revision as well as ongoing assistance in pricing. Since students were required to participate, the financial aid office included the purchase price in student financial aid packages.

To secure approval for the laptop requirement from the central administration required that the department and College develop and present a comprehensive implementation plan that included the needs, vision, goals, benefits, implementation activities, budget requirements, student financial implications for students, evidence of college administration and faculty commitment, documentation of planned curriculum revision, and evidence or rationale for why the laptop initiative will result in improved knowledge and skills of students and enable them to meet state teacher technology competency standards.

Collaborative planning involving university program administrators, faculty, students, and local school district personnel is critical for successful implementation. Implementation required dedication of core resources for management and faculty/curriculum development. As the LIFE program has matured, others have sought advice on starting their own laptop programs.

### **Faculty Development**

*The more powerful technology becomes, the more indispensable good teachers are* (Fullan, 1999).

As the infrastructure has improved, more effort has been focused on the integration of technology into the curriculum. During Fall 2004, the fifth semester of the laptop initiative, the primary focus of the initiative is to support faculty as they continue to enrich their syllabi with effective technology assignments. Bearing in mind that faculty are independent professionals responsible for their own development and that universities facilitate their development (Brown, 2003), the College of Education leadership utilize faculty responses to workshop evaluations to customize ongoing faculty development. After compiling input and suggestions from faculty, the CoE strives to offer faculty rich and meaningful content-specific professional development opportunities that include ample time together with colleagues to share and plan. In addition, the CoE continues to update technology-enhanced facilities that support best practices and to provide stipends through University-supported programs to assist faculty in developing new ways to integrate technology into their instruction.

The College is offering technology training workdays during which faculty meet in small content area groups to develop assessment rubrics, lesson plans, and technology-enhanced assignments that they then share with their colleagues and use in their classes. Within these groups, generalized technology training is adapted to and becomes focused on the topics of greatest interest to the discipline by the content experts—the faculty

(Laughner, 2003). Perhaps even more important than the technology products created are the support, validation, and creative energy that faculty provide each other. Many issues that might otherwise require help from the technical support staff are solved within the faculty groups (Brown, 2003). Through these interactions, faculty realize that they do not all have to be technology experts in order to successfully implement technology into their courses.

To further support the CoE faculty, each year the University-level Information Technology Advisory Committee (ITAC) distributes funds to the individual schools, colleges, and academic units in support of "vision plans" for academic computing. During the first year of the Laptop Initiative, a portion of monies awarded to the College of Education was made available to support a pilot program through which teaching faculty could propose technology-based projects that would enhance their classroom teaching through the application of technology. Through these "Vision Awards," technology-savvy students were hired to support the integration of technology into courses taught within The College. This support is distributed by means of a competitive award program. Its proposal requirements are minimal, with most proposals ranging from two to three pages. Central to the proposals are the faculty members' descriptions of how the projects will use technology to enrich classroom instruction and enhance their technology skills.

Twelve proposals were submitted and ten projects were ultimately funded during the first year. These projects were remarkably innovative and clearly represented visionary applications of technology. Projects ranged from the development of templates and guidelines for online portfolios and databases of student-created lesson plans aligned with state standards, to online multimedia simulations providing users with the opportunity to diagnose reading difficulties. Upon completion of the projects, a showcase was held where faculty members and student technologists demonstrated their products. The event was well attended by members of The College, from students to the Dean. The Dean of the College provided funding for a second year of the program. In the second year, twenty-two proposals were received and nineteen were funded.

### **Technical Support**

The Learning Technology Center (LTC) in the College of Education provides technical support of the laptop initiative. The LTC facilitates and supports the instructional and research activities of the College's faculty, students, and staff by providing computer and media production facilities, equipment, and services. The LTC has been in existence for over twelve years and has also been involved in a number of technology-related research and development projects and collaborative activities at local, state, and national levels.

In recent years the Learning Technology Center has offered vital support in developing a number of technology facilities, including the Multimedia Research and Development Laboratory, the Collaborative Learning Laboratory, the Model Technology Classroom, the Distance Learning Classroom, the Laptop Compatible Classroom, and a 40-station computer classroom called the Advanced Applications Laboratory. There are

also several general-use Macintosh and PC computer laboratories. These facilities were all designed to offer maximum classroom flexibility with the intention that future classroom technology improvements could easily be incorporated through simple renovations. The LTC has been involved in the planning and implementation of the laptop initiative and provides for faculty development, technical support, and access to a wide range of equipment and resources needed by faculty and students in the program.

The LTC Media Lab provides the supplies, facilities, equipment, and instruction for students, faculty, and staff to produce a variety of audio-visual and digital media. Basic AV production equipment and supplies are available for sale in the Media Lab and some supplies are available for room-use checkout with a student ID. Much of the equipment is available for use on a first-come, first-served basis, but some production areas may be reserved in advance for scheduled blocks of time. Media instruction is a large part of the Media Lab's service, providing students with the knowledge and skills to properly use AV and multimedia equipment to produce effective instructional materials. The Media Lab offers free informal multimedia and AV orientations. Media Lab staff can also provide basic graphics, photography, audio, and video production services to the faculty and staff of the College of Education. An example of the wide range of equipment resources, ranging from older technologies to current technologies such as loaner laptop computers and digital camcorders, is shown in Table 2.

Table 2. Range of Technology Equipment Required to Support the Teacher Education Program

Audio-Visual Equipment	Media Lab Equipment
Audio cassette recorders	Overhead Transparency Makers
Mini-cassette recorders	25" Automatic Laminator
Stereo portable CD/Cassette players	Comb Binder
Headphones	Velo-Binder
Overhead projectors	Electronic Typewriter
Laserdisc players	Ellison Letters and Shapes Die-Cutters
35mm cameras	Duratype Automatic Kroy Letterer
Camcorders (VHS, S-VHS, and Hi-8)	Light Box
16mm film projectors	Cutting Boards
35mm slide projectors	Dry Mount Presses
Digital still cameras	35mm Camera w/Macro Lens
VHS/TV carts	Lighted Copystands
DVD/TV carts	Stereo and Mono Audio Mixing Rooms
TV/VCR combos	S-VHS (VHS) Editing Bay
Tripods, zoom lens, flash	Media 100 Digital Video System
Slide trays	VHS Videocassette Players
Digital video cameras	Audiocassette Players
Various microphones	Audio CD and Video Laserdisc Player
Mac and PC laptops	All types of A-V Projectors
LCD projectors	Digital Video Editing Bay
Floppy drives	Zip drives

The Laptop Help Desk is another critical part of the Learning Technology Center's support of LIFE. The goal of the Laptop Help Desk, staffed by four student assistants, is to provide LIFE students with software and hardware support for their Apple laptops. If major hardware repairs are needed, the Laptop Help Desk can make arrangements to ship laptops under warranty directly to Apple. The Laptop Help Desk staff keeps informed about Apple news and current issues to ensure top quality service to CoE students.

### **Field Experience**

The College of Education facilitates the training of Austin Independent School District (AISD) mentor teachers to use the same technology that is modeled and taught in the preservice teachers' professional development courses. Technology training is modeled after a pilot study for professional development and technology integration called Project INSITE (Inventing New Strategies for Integrating Technology into Education) supported by a PT3 grant funded by the United States Department of Education. The technology training provided to the AISD mentor teachers is offered at the teachers' convenience in small group sessions. Mentor teachers are issued the technology tools that they are learning to use during the training sessions.

This training model provides the mentor teachers with both the tools and the training that will enable them to become personal and professional users of the technology and provide a technology-rich field experience for UT Austin preservice students. When student teachers begin their field experiences in the mentor teachers' classrooms, the technology tools that have been issued during technology training sessions will be in use in the classrooms, the mentor teacher will know how to use the tools, and the students in the classroom will also be accustomed to using them. This provides an exceptionally good opportunity for collaboration among the mentor teachers and the student teachers in incorporating the use of technology into the student teachers' lesson plans and field experiences.

### **Future Directions and Sustainability**

A complex program such as LIFE requires a considerable amount of support. During the first four semesters of the initiative, the Learning Technology Center provided extensive technology training to faculty and students; technical support for students through the Laptop Help Desk; technical support and equipment in schools in which cohorts of students have both classes and field experiences; a wide array of peripheral equipment for checkout by students to support laptop-related assignments; and loaner laptops when students or faculty must send theirs for repair. A coordinator was hired to manage and coordinate the wide range of resources and efforts needed to support the program, including facilitating communication among faculty, students, technical support staff, and vendors, thus greatly improving the efficiency and effectiveness of the program.

The LTC was able to cover these expenses by diverting funding that was needed to support vital technology equipment and services that benefit all College of Education students. The College of Education is requesting a Laptop Support Fee to provide future support for the expanding programmatic activities of the Laptop Initiative for Education. The proposed fee would be collected from students in teacher certification programs and from other CoE students whose departments or programs have been included in the Laptop Initiative. With LTC resources no longer diverted for laptop initiative support, the LTC will continue to provide the services, facilities, and equipment that are essential to the LIFE program, and also to the College of Education at large.

The Laptop Initiative for Future Educators is on a trajectory to transform the teaching-learning process in teacher education and to reach the program's initial goals of comprehensive technology infusion into teacher preparation. Technology changes exponentially while social systems change incrementally. This change will require constant updating and upgrading of technology resources and infrastructure and ongoing and continuous professional development and technical support of CoE faculty.

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