

Purdue University's P3T3 Project: Purdue Program for Preparing Tomorrow's Teachers to use Technology

II. Executive Summary

After five years of reform planning by its faculty and administration, the School of Education at Purdue University is implementing completely restructured elementary and secondary teacher education programs. The final courses in the new programs are being implemented this semester, and the first cohort of students to complete the new programs will graduate in May, 2002. These new programs feature a cohesive set of block courses and practical experiences that are anchored by four strands – technology, diversity, field experience, and portfolio assessment. Purdue's PT3 implementation project, P3T3: Purdue Program for Preparing Tomorrow's Teachers to use Technology, is addressing all four of these programmatic strands.

The overall goals of the P3T3 project are to (1) prepare teacher education faculty in Education, as well as colleagues in Science and Liberal Arts, to teach pre-service teachers in technology-rich environments, modeling approaches that future teachers should use themselves, and (2) prepare pre-service teachers to demonstrate fundamental technology competencies, using technology as a tool for teaching/learning, personal productivity, communication, and reflection on their teaching. The project is meeting its goals via three complementary implementation components: (a) a faculty development, mentoring, and support program that prepares faculty to integrate technology into their courses and model its use for pre-service teachers; (b) use of key technology tools and support structures including technology-enabled virtual field experiences for pre-service teachers that enhance opportunities for observations of diversity, classroom practice, and exemplary technology use; and (c) a dynamic assessment system that provides pre-service teachers the tools and opportunities to select multiple ways of viewing their evolving teaching practice, reflect on that practice, and use digital representations to meet performance-based assessments as they build electronic multimedia portfolios. Ultimately, Purdue's pre-service teachers learn about technology, integrate it as they see it modeled by their instructors, and reflect on their own learning about teaching via digital technologies that, in the end, they will model and use with their K-12 students.

During the reporting period, April 1, 2001 through March 31, 2002, the faculty development component of the project continued. Three summer "start-up" workshops for faculty members and graduate teaching assistants were offered in May, June, and August of 2001 to add to the two conducted during the project's first year. Faculty and graduate teaching assistants who participated in these workshops received one-on-one technical support and mentoring from the P3T3 projects staff as well as a small amount of S&E funding to be applied to a technology integration project. Additional technology training workshops were offered both in the summer and throughout the academic year, for all faculty and teaching staff in Education and our partner academic schools. Since the project began, 45 Education faculty members (about 65% of the total) as well as eleven other faculty members and ten graduate teaching assistants have

participated in start-up workshops, and there have been a total of about 600 technology workshop attendees.

Technology integration in the teacher education curriculum is anchored by EDCI 270, Introduction to Educational Technology and Computing, a two-credit, required course for all teacher education students. Students usually take the course as freshmen or sophomores, and in it they acquire skills such as word processing, web searching, web page development, presentation software, and use of multimedia in education. They then apply these skills in other teacher preparation courses as they become more sophisticated users of technology. During the 2001-2002 academic year, over 800 students completed EDCI 270, and nearly as many completed Block I of the teacher preparation program in which they completed assignments to go in the electronic portfolio system under development. Articulation of technology integration into the remainder of the teacher preparation program continues. Students report a high level of proficiency with computers and technology applications.

An innovative use of technology to link pre-service teachers with K-12 schools involves the use of Internet-based video conferencing technologies. In order for pre-service to have the opportunity to observe classroom settings typically unavailable in the immediate vicinity of Purdue University, two-way interactive technologies are being used to link Purdue with its partner schools. In one of the most successful trials to date, students in a beginning teacher preparation course each semester for the past two years have observed and interacted with diverse elementary students in an urban classroom in East Chicago using Internet-based video conferencing. Other pilot projects in the use of two-way technologies for linking pre-service teachers with K-12 settings have also been conducted. While probably fewer than 200 students have been involved to date, students have reacted positively to these experiences, and these pilot projects may lead to a model that can be more widely implemented in teacher education at Purdue and elsewhere.

A key aspect of Purdue's project is the development of a dynamic assessment system featuring the development of electronic multimedia portfolios, or e-portfolios, by all pre-service teachers. The dynamic assessment system uses the e-portfolios as one component of a Unit Assessment System (UAS), the plan in the School of Education that indicates how pre-service teachers are meeting new performance-based state licensure guidelines. Initial student use of the e-portfolio system, which features a web-based interface to a large database, took place during the 2001-2002 academic year. Students in Block I and EDCI 270 began placing artifacts in the portfolio system. Formative evaluation has led to numerous revisions and improvements to the system. Beginning with students who enter teacher preparation by the fall of 2002, the development of an electronic portfolio will be a requirement for graduation and provisional teacher certification.

Project Co-Director, Dr. David O'Brien, left the university in August of 2001. Dr. James Lehman, the other Co-Director, assumed duties as the sole Project Director at that time. Dr. O'Brien continued involvement in the project, working on the development of the electronic portfolio system, as a consultant during the 2001-2002 academic year.

For additional information, see the project website: <http://p3t3.soe.purdue.edu>

III. Project Status

Purdue's P3T3 project is designed to address two main goals:

Goal #1: Faculty will teach pre-service teachers in technology-rich environments, using conceptual technologies (technologies for learning and thinking about complex systems), modeling approaches that future teachers should use to teach their K-12 students.

Goal #2: All teacher education majors will demonstrate fundamental technology competencies, using technology as a tool for teaching/learning, personal productivity, communication with faculty and peers, observation of diversity and exemplary practices, and reflection on practice and the role of technology in practice.

The project has established five objectives to meet goal #1 and four objectives to meet goal #2. These are each shown below:

A. Progress in Meeting Program Goals

Goal #1: Faculty Use of Technology

Objective 1	All teacher education faculty, including graduate teaching assistants and key faculty in the Schools of Science and Liberal Arts, will meet or exceed all ISTE/NCATE foundations in technology competencies for teachers. (GPRA 1.1, 1.2, 1.4, 3.1)
Definition of Success	By the end of year 1 of the grant, 25% of faculty will have engaged in workshop and mentoring network. By the end of year 2, 60%. By the end of year 3, 100%.
Progress	<p>Status: Partially Accomplished.</p> <p>Five two-day start-up workshops have been offered to date: October 2000, January 2001, May 2001, June 2001, and August 2001. A total of 45 Education faculty members (about 65% of the total) have participated as well as seven faculty members from Liberal Arts and Science, four other faculty members, and ten teaching assistants.</p> <p>Technology training workshops for faculty and staff were offered in summers and during the academic year on topics such as WebCT, FrontPage, Dreamweaver, and PowerPoint. During the reporting period, there were 385 technology workshop attendees, bringing the grant total to about 600.</p> <p>Techie Talks (short lunch time presentations on various technology topics and faculty success stories) were launched during the 2001-2002 academic year. Some of these titles included: Tips and Tricks for Netscape Email,</p>

	<p>Working with Graphic Images, Tips and Tricks for Microsoft Windows, and Using WebCT for Course Support.</p> <p>Project staff provided mentoring and support for participating faculty members. All participants in P3T3 start-up workshops were assigned a staff member to act as a liaison with the project and to provide personal assistance. Peer mentoring, as originally conceived, was discontinued.</p>
Analysis	<p>Over 60% of the faculty participated during the project's first two years, meeting the designated objective.</p> <p>Original plans called for peer mentoring through follow-up sessions during the academic year to maintain project involvement. This proved to be problematic. Scheduling group follow-up sessions was difficult; faculty members were reluctant to add another meeting to their schedules. Few faculty members were aware that they had a mentor. Therefore, the project shifted to supporting faculty members through one-on-one tutoring and mentoring from the staff of graduate teaching assistants.</p>
Use of Evaluation Findings	<p>As a result of the faculty peer mentor findings, the use of graduate assistants increased, and over 83% of the faculty found their mentoring and support to be useful. (March 2002 Faculty Survey)</p>

Objective 2	<p>Technology will be meaningfully integrated into teacher preparation courses and key courses taken by pre-service teachers in the Schools of Science and Liberal Arts. (GPRA 1.1, 1.4, 3.1)</p>
Definition of Success	<p>By the end of year 1 of the grant, 25% of the courses will have integrated technology. By the end of year 2, 50%. By the end of year 3, 75%.</p>
Progress	<p>Status: Accomplished</p> <p>Students report that 90% of their professors use technology in classes. (March 2002 Student Survey)</p> <p>94% of faculty report that they have refined the use of technology in their classes as a result of participation in the P3T3 project. (March 2002 Faculty Survey)</p> <p>Faculty claim to use technology in 96% of their classes. (January 2002 Faculty Survey)</p>
Analysis	<p>Many teacher preparation courses already integrate technology as self-reported by the faculty and corroborated by student surveys.</p>

	Faculty would like to integrate even more technology into their classes, but report that they lack time and request release time to work on this.
Use of Evaluation Findings	The baseline surveys given to both faculty and students in the fall of 2000 showed a disconnect between what faculty and students considered technology and how it was used in the classroom. More pointed questions concerning use and knowledge of technology on recent surveys have elicited similar responses across both faculty and students and have shown that both groups now are quite knowledgeable about technology and use it frequently.
Objective 3	The School of Education at Purdue will meet or exceed all CEO Forum StaR Chart institutional standards at the Advanced Level.
Definition of Success	By the end of year 1 of the grant, the SOE will meet or exceed the Early Tech Standards of the StaR Chart. By the end of year 2, it will meet or exceed the Developing Tech Standards. By the end of year 3, the Advanced Tech Standards. (GPRA 1.2, 1.4)
Progress	<p>Status: Partially Accomplished</p> <p>Most of the StaR Chart indicators at the Developing Technology level have been achieved. A campus strategic plan, developed in 2001, clearly incorporates technology. The School of Education continues to receive excellent funding support from the campus. Campus facilities are well equipped. Faculty use of technology is rewarded. The program is guided by NCATE standards. Partnerships with K-12 schools focus on technology. There is adequate faculty development and support for technology, and faculty use technology to promote students learning.</p> <p>Two problems are noted: (1) no data are available to identify the level of technology integration in courses across all departments on campus. (2) there is no budget line item for technology in the School of Education. Funding for technology comes from central campus programs, development efforts, and use of whatever surplus funds may be available annually.</p>
Analysis	The lack of a budget line item for technology is a recognized shortcoming. Given the current budgetary climate (loss of state appropriations leading to university cuts) and interim leadership in the School (the dean and both department heads are interim), this is unlikely to change in the short term.
Use of Evaluation Findings	Strategic planning in the School of Education, to align with the university's strategic plan, will take place during the fall of 2002. This will provide an opportunity to plan for on-going budgeting of technology.

Objective 4	Sufficient technological support and resources will be available. (GPRA 1.4)
Definition of Success	A full-time technical curricular support person will be hired. Faculty and students will deem the access and adequacy of the hardware and software satisfactory.
Progress	<p>Status: Accomplished</p> <p>A full-time technical curricular support person for the P3T3 project was hired in the fall of 2000. Within the School of Education, approximately 4-5 FTE are dedicated to technology support.</p> <p>Faculty and students deem the access to and adequacy of hardware and software to be satisfactory.</p> <ul style="list-style-type: none"> • 78% of the faculty report the School of Education has sufficient facilities and hardware to allow them to use technology as they would like. (March 2002 Faculty Survey) • 77% of the faculty report the SOE has sufficient software to allow them to use technology as they would like. (March 2002 Faculty Survey) • 76% of the faculty report the SOE has sufficient technical support to allow them to use technology as they would like. (March 2002 Faculty Survey) • 94% of the students say they have sufficient access to facilities, hardware, and software on the Purdue campus to support their technology needs. (March 2002 Student Survey)
Analysis	<p>The great majority of faculty and students deem technology support and resources to be adequate.</p> <p>Faculty who do not consider the software sufficient would like to see more software specific to their area of expertise. Faculty members who do not deem the technical support personnel sufficient would like the technical staff to complete project for them and would like to receive more direct assistance in developing technology based instruction.</p>
Use of Evaluation Findings	<p>To address the need for content-specific software, some faculty members have used their project incentive funds to acquire software for their discipline. The university also makes funding available for acquisition of software for teaching.</p> <p>Those faculty members who seek more personal support are regularly encouraged to contact the P3T3 staff to help them in reaching their technology goals. The P3T3 staff strives to help the faculty become technologically self-sufficient but tends not to just complete projects for faculty who desire work to be done for them.</p>

Objective 5	Technology resources will be expanded through continual development of innovative school-based technology. (GPRA 1.4)
Definition of Success	By the end of year 1 of the grant, a mobile computer “lab” will be established. By the end of year 2, a flexible classroom space will be developed. By the end of year 3, at least one additional classroom will be converted to accommodate new student uses of technology.
Progress	<p>Status: Partially Accomplished</p> <p>A mobile "lab" of wireless laptop computers and a cart was acquired and deployed during year 1. Because of limited demand for an entire laptop lab, these computers are more commonly used in small clusters for class activities now. Additional laptops, as well as desktop machines for the School's Technology Resources Center, have been donated by project partner Intel. These machines are regularly used by faculty and students.</p> <p>A new flexible classroom space was developed as part of the TCCT (Twenty-First Century Conceptual Tools) Center within the School of Education. Also, wiring within the building was upgraded to accommodate bandwidth intensive applications such as video conferencing. An additional space has been identified for development in year 3 of the grant.</p>
Analysis	This objective is on target to be met as planned.
Use of Evaluation Findings	N/A

Goal #2: Student Use of Technology

Objective 1	All graduating students will meet or exceed the ISTE/NCATE foundations in technology competencies for teachers by the end of the project. (GPRA 1.3, 2.1)
Definition of Success	By the end of year 2 of the grant, students will be competent in basic computer/technology operations and concepts. They will apply tools to enhance their own professional growth and productivity. Students will apply computer and related technologies to support instruction.
Progress	<p>Status: Partially Accomplished</p> <p>In recent surveys administered to both faculty and students, both groups reported that student competency and use of technology is high. (March 2002 Faculty Survey, March 2002 Student Survey)</p>

	<p>Faculty reported that</p> <ul style="list-style-type: none"> • 97% of students are intermediate or proficient in General Computer Knowledge and Skills • A high percentage of students are at the intermediate or proficient level with regard to specific technologies such as Internet, email, word processing, presentation software, and spreadsheets • 62% of students are at an intermediate or proficient level in their Instructional Technology Knowledge and Use <p>Students self-report surveys found that</p> <ul style="list-style-type: none"> • 91% of students ranked themselves as intermediate or proficient in General Computer Knowledge and Skills • A high percentage are at the intermediate or proficient level with regard to specific technologies such as Internet, email, word processing, presentation software, and spreadsheets • 65% of students ranked themselves intermediate or proficient in Instructional Technology Knowledge and Use • 94% of students agreed that they use technology for personal productivity and growth
<p>Analysis</p>	<p>Survey results show that a high percentage of students are knowledgeable about computers and various applications of technology, but only about half to two-thirds are knowledgeable about instructional applications and issues. In part, this may reflect survey responses from underclassmen who have had limited opportunity to practice technology integration in instruction. However, results from upperclassmen are similar. This suggests that all students are not yet receiving adequate exposure to methods for technology integration in their teaching.</p>
<p>Use of Evaluation Findings</p>	<p>These results show that more emphasis needs to be placed on instructional technology knowledge and use. These numbers should begin to increase as more faculty members integrate technology into their own teaching and as students begin to work on their electronic portfolios.</p>
<p>Objective 2</p>	<p>The Purdue School of Education will create a model web-based infrastructure for portfolio creation, maintenance, flexible manipulation, and use in the teacher education programs. Throughout their program of study, students will construct, build upon, and use electronic portfolios as part of their preparation to become teachers. (GPRA 1.3, 1.4, 2.1)</p>
<p>Definition of Success</p>	<p>The web-based infrastructure will be complete by the end of year 1 of the grant. Upon completion of EDCI 270, all students will have begun a portfolio and will have met all criteria upon graduation. At checkpoints in unit assessment, students will evidence reflection on evolving teaching.</p>

<p>Progress</p>	<p>The web-based infrastructure was established at the end of year 1 and was piloted during the 2001-2002 academic year. Some students in Block 1 piloted the e-portfolio in the fall of 2001, and again in the spring of 2002. All students in EDCI 270 began using the portfolio in the spring of 2002. The electronic portfolio will be required effective with all students entering teacher education as of the fall of 2002.</p>
<p>Analysis</p>	<p>Pilot testing of the electronic portfolio system has been more limited than originally planned. Originally we expected to pilot the e-portfolio with all Block 1 students in the fall of 2001 and all Block 1 and 2 students in the spring of 2002. However, reluctance on the part of some faculty members, a lack of decision-making by faculty groups responsible for articulating portfolio processes, and interim leadership in the School of Education hampered this effort. Nevertheless, all students must begin using the system as of the fall of 2002, and so all faculty must begin integrating it into their courses then as well.</p>
<p>Use of Evaluation Findings</p>	<p>Based on observations of students using the e-portfolio, surveys on the e-portfolio site, and information reported by the graduate assistants, improvements to the e-portfolio infrastructure continue to be made.</p>

<p>Objective 3</p>	<p>In cooperation with partner K-12 schools, students' practical experiences will be enhanced through the capability to observe diverse school sites via electronic access. (GPRA 1.4, 3.2)</p>
<p>Definition of Success</p>	<p>By the end of year 1 of the grant, at least 1 diverse experience will be integrated into courses in blocks one and two. By the end of year 2, at least 1 additional experience in blocks three and four. By then end of year 3, at least 1 additional experience in blocks five and six.</p>
<p>Progress</p>	<p>Beginning in year one of the grant, students in one section of a Block 1 class have participated in a diverse and distant field experience using IP-based video conferencing with students in East Chicago. This experience continues. Additional experiences involved video conferencing linkages with partner schools in Crawfordsville, Lafayette, and Indianapolis were implemented during years 1 and 2 of the grant, including experiences in Block 5 and the secondary equivalent of Block 4.</p>
<p>Analysis</p>	<p>Students who have participated in the virtual field experiences have generally reacted positively to it and reported learning a great deal. Unfortunately it is not possible given current resources and course schedules to give every teacher education student a rich and individualized distant field experience. In order to accomplish this goal Purdue will have to partner with a multitude of technically-capable diverse schools willing to link with pre-service education students and classes.</p>

Use of Evaluation Findings	Discussions about the possibility of expanding distance field experiences for all teacher education students will continue as part of strategic planning for the School of Education in the fall of 2002.
Objective 4	In cooperation with partner K-12 schools, students' practical experiences will be enhanced through the capability to observe sites featuring technology-proficient in-service teachers and communication among students, faculty, and K-12 partners will be enhanced by using technology (two-way interactive video, multimedia cases, and the Internet). (GPRA 1.1, 1.2, 3.2)
Definition of Success	By the end of year 1 of the grant, a web-based community linking all consortium partners and all teacher education students will be established. By the end of the project, desktop video conferencing will be piloted with at least three school sites involving teachers and university supervisors.
Progress	<p>A web-based community linking all consortium partners and teacher education students has not been established.</p> <p>Some pre-service teachers have had the opportunity to observe and interact with K-12 partner classrooms via two-way interactive video. There have been roughly four to five classes each semester that have had this opportunity since the implementation of the grant. (See examples above.)</p>
Analysis	<p>No pressing need has emerged to drive the development of a web-based community of consortium partners. As the electronic portfolio system continues to develop, it may serve this function.</p> <p>Students have generally reported positive attitudes toward the video-based field experience and that it gave them a new perspective on both teaching and using technology in the classrooms. However, most have reported that it does not replace the real life interaction of physically being in a classroom.</p>
Use of Evaluation Findings	<p>The need for an electronic community linking all of the partners in the project, including teacher education students, will be re-evaluated. Public features of the electronic portfolio system under development may serve this function.</p> <p>Discussions concerning institutionalization of distance field experience for teacher education students will continue as part of strategic planning for the School of Education in the fall of 2002.</p>

B. Changes in Project Design

There are no significant changes in the design of the project.

IV. Budget

A. Budget Expenditures

B. Consortium Members

Member Institution/Organization	Type	Date Added	Date Dropped
Purdue University	IHE	June, 2000	N/A
School City of East Chicago (Indiana)	LEA	June, 2000	N/A
Crawfordsville (Indiana) Community Schools	LEA	June, 2000	N/A
Lafayette (Indiana) School Corporation	LEA	June, 2000	N/A
Lawrence Township (Indianapolis, Indiana) Schools	LEA	June, 2000	N/A
Center for Interactive Learning and Collaboration (formerly Corporation for Educational Communications)	Other non-profit	June, 2000	N/A
North Central Regional Technology in Education Consortium	Other non-profit	June, 2000	N/A
Indiana Department of Education	SEA	June, 2000	N/A
Apple Computer	For-profit firm	June, 2000	N/A
Intel Corporation	For-profit firm	June, 2000	N/A

V. Supplemental Information

Attachment A: March 2002 Faculty and Student Surveys

These online surveys, adapted from items on the California Technology Assessment Profile, were administered in March of 2002 to faculty and students. The surveys asked faculty and students to rate themselves and each other on various technology competencies. Data from these surveys were used to address progress on a number of the project objectives as cited in the report.

Attachment B: Year 1 Report of External Evaluators

This is the report of the external evaluation team (Allen Glenn, Rodney Reed, and Elizabeth Rhodes) following their first review of the project in June of 2001.

Attachment C: Year 2 Report of External Evaluators

This is the report of the external evaluation team (Allen Glenn, Rodney Reed, and Elizabeth Rhodes) following their second review of the project in March of 2002.

Attachment A: March 2002 Faculty and Student Surveys

Attachment B: Year 1 Report of External Evaluators

Attachment C: Year 2 Report of External Evaluators