

II. Executive Summary

After five years of reform planning by its faculty and administration, the School of Education at Purdue University has begun the implementation of completely restructured elementary and secondary teacher education programs. The new programs, which were launched with students entering teacher preparation programs in the fall of 1999 and will be fully implemented in the spring of 2002, 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 initiative, dubbed 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 pre-service teachers to demonstrate fundamental technology competencies, using technology as a tool for teaching/learning, personal productivity, communication, and reflection on their teaching, and (2) 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. 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, which represents the first 10 months of the project, the faculty development component of the project was launched. Two abbreviated "start-up" workshops for faculty members and graduate teaching assistants were offered during the 2000-2001 academic 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 throughout the academic year, both for the participants in the start-up workshops and for other faculty and teaching staff. A total of 40 faculty members and 51 graduate teaching assistants participated in at least one of the project's development workshops during the reporting period.

Technology integration is a strand in the teacher preparation program at Purdue. This means that technology is an important element that weaves throughout teacher preparation. Students first acquire foundational technology knowledge and skills in an introductory educational technology course, EDCI 270, Introduction to Educational Technology and Computing. They then apply these skills in other teacher preparation courses as they become ever more sophisticated users of

technology. During the reporting period, over 600 students completed EDCI 270, and over 700 completed technology application assignments in the first block of the teacher preparation program. As the project continues, technology integration will be articulated throughout the remainder of the teacher preparation program.

An innovative use of technology to link pre-service teachers with K-12 schools was established using Internet and 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 were used to link Purdue with its partner schools. For example, in one of the most successful trials to date, students in a beginning teacher preparation course were able to observe and interact with diverse elementary students in an urban classroom in East Chicago using Internet-based video conferencing hardware and software. Other experiments in the use of two-way technologies for linking pre-service teachers with K-12 settings were also conducted. While only a few dozen students have been involved to date, these experiments 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 development of the e-portfolio system, which will feature a web-based interface to a large database to allow for flexible access by students and faculty, is now underway. Pilot implementation of the new e-portfolio system is scheduled for the 2001-2002 academic year with full implementation the following year.

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

III. Project Status

The P3T3 project has two overarching goals: (1) 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, and (2) 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. In order to meet its goals, the project is implementing three interrelated project components: (a) a faculty development, mentoring, and support program leading to technology integration in courses for pre-service teachers, (b) development of technology tools and support structures including technology-enabled virtual field experiences for pre-service teachers, and (c) the creation of a web-based electronic multimedia portfolio system for pre-service teachers. The specific objectives under each of the two project goals, as well as activities associated with the implementation components, are described below.

Objective 1.A.: 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 of technology competencies for teachers.

a) Activities (June 1, 2000 through March 31, 2001)

The original project plans called for two groups of faculty and graduate teaching assistants to participate in intensive week-long workshops during the summer of 2000 to "jump-start" their acquisition of technology knowledge and skills. After these workshops, the faculty and teaching assistants were to participate in a year-long mentoring and support program designed to assist them in implementing technology into their courses.

Because notification of funding did not come until June of 2000, it would have been very difficult to organize summer workshops and get participation from faculty members, many of whom have academic year contracts and had already made plans for the summer of 2000. As a result, an alternative approach was formulated. Rather than relying on intensive summer workshops, two abbreviated "start-up" workshops were offered during the academic year (one in October, corresponding with Purdue's fall semester break, and one in January, before the start of the spring semester). Individuals who participated in these workshops were eligible for one-on-one project support and mentoring and could access \$600 of S&E funding for project integration that was provided as an incentive. Additional technology training opportunities on topics of interest to the faculty (e.g., FrontPage, WebCT) were then provided throughout the academic year both for start-up workshop participants and other faculty and teaching staff. In general, this alternative approach proved satisfactory. The start-up sessions successfully initiated a number of faculty members into the project, and the distributed workshops proved to be an attraction for many more faculty, graduate students, and staff than likely would have participated in the summer.

The specific targets established in the grant proposal related to this objective were:

- By the end of year 1 of the grant, 25% of faculty will have engaged in workshops and the mentoring network.
- By the end of year 2, 60%.
- By the end of year 3, 100%.

b) Progress as of March 31, 2001

- Out of a total of approximately 75 faculty members in the School of Education, 16 members of the faculty and 4 graduate teaching assistants participated in the "start-up" workshops offered during the 2000-01 academic year. An additional 15 faculty are signed up to participate in a new start-up workshop before the end of the project's first year. Overall, a total of 40 faculty members, 51 graduate teaching assistants, and 10 staff members participated in at least one of the project workshops offered between October, 2000 and the end of March, 2001. In addition to the two start-up workshops, 23 technology workshops were offered, and there were over 200 total workshop registrations.
- Faculty members in Science and Liberal Arts have not yet participated in start-up workshops, and only one individual from each academic school took part in technology training workshops during the academic year.

- Parts of the support and mentoring network were successful, but others less so. All faculty members and graduate teaching assistants who participated in one of the two start-up workshops were assigned a P3T3 project graduate assistant as a contact and support person. These staff members provided one-on-one tutoring and assistance in addition to a regular "drop-in" help program. However, peer mentoring from more experienced faculty was less successful. Participating faculty in the first two start-up workshops were unaware that a peer mentor was available and, as a result, did not contact their mentor. Only one follow-up mentoring meeting was held during the academic year. However, the majority of the participating faculty members did turn to the project graduate assistants for help.

c) Barriers or Impediments

- As noted above, faculty members in Science and Liberal Arts did not participate during the reporting period. This was largely the result of scheduling issues, and the first-year shortfall will be rectified by increased participation in workshops offered during the summers of 2001 and 2002.
- Lack of use of peer mentoring was another shortcoming during the reporting period. Original plans called for start-up workshop participants to meet with a more experienced peer to discuss integration issues and concerns throughout the year. Schedules created difficulties in getting participants together during the academic year. Additional efforts will be made during 2001 and 2002 workshops to clearly identify peer mentors and encourage faculty members to make use of these individuals, in addition to P3T3 project staff, when planning and implementing technology integration activities. An electronic community of project participants, planned but not yet implemented, will be launched for the next round of workshops. The electronic community will offer opportunities for the faculty to get information and interact with one another about technology integration issues without having to necessarily meet physically.

d) GPRA Indicators

- 1.2 Technology-proficient faculty. The percentage of faculty members in teacher preparation programs that effectively use technology in their teaching will increase.
- 3.2 Interdisciplinary partnerships. The percentage of teacher preparation programs that communicate, collaborate and partner together with schools of arts and sciences on a regular and formal basis will increase.

Objective 1.B.: 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.

a) Activities (June 1, 2000 through March 31, 2001)

Integration of technology into courses for pre-service teachers is aligned with the technology strand that runs through the new teacher education programs at Purdue as well as the aims of the project. All teacher education students are required to complete EDCI 270, a 2-credit introduction to educational technology. Subsequently, technology is threaded throughout the teacher preparation program as students are required to complete technology-related

activities and develop their own electronic portfolios. To encourage faculty members to take steps to integrate technology, each faculty member and graduate teaching assistant who participates in a start-up P3T3 workshop develops a personal technology integration plan for the coming academic year. A graduate assistant from the P3T3 staff is then assigned to that individual to assist in realizing the plan.

The specific targets established in the grant proposal related to this objective were:

- 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%.

b) Progress as of March 31, 2001

All faculty and graduate teaching assistants who participated in start-up workshops developed technology integration plans; 60% of those participants have made significant progress on their plans at this time. In addition, the following indicators of technology integration were obtained from Education faculty and students:

- 100% of faculty use e-mail to communicate with students.
- 99% of faculty use word processing.
- 78% of faculty require students to use the web for research.
- 73% of faculty personally use the web as an online resource for syllabi, lesson plans, and course material.
- Faculty report that 64% of courses integrate technology. Technologies implemented include the web, a class website, e-mail, word processing, CD-ROM, Power Point, graphics software, spreadsheets, digital camera, scanner, graphing calculator, and Hyperstudio.
- However, in contrast to the above data, 57% of students believe that the faculty do not integrate technology into the curriculum.

c) Barriers or Impediments

- Time is an impediment to implementation of this objective. During this reporting period, several faculty members reported that they had insufficient time during the academic year, even with the assistance of project staff, to develop planned integration activities. Future efforts during the summer months should provide opportunities for further development.
- The data cited above suggest a problem of perception if not fact. While faculty indicate 64% of courses integrate technology, 57% of students think they do not. There is clearly a disconnect here. As the project continues, it will increase efforts to clearly integrate technology in courses and to make students aware of the opportunities provided in courses related to the use of technology.
- As noted previously, faculty from Science and Liberal Arts have not yet participated, but participation is planned for the summer of 2001.

d) GPRA Indicators

- 1.1 Curriculum redesign. The percentage of teacher preparation programs that redesign their curriculum to incorporate best practices in the use of technology in teacher education will increase.

- 1.4 Learning resources. The percentage of teacher preparation programs that use web-based, multi-media learning resources, course materials and teaching tools will increase.

Objective 1.C.: The School of Education at Purdue will meet or exceed all CEO Forum STaR Chart institutional standards at the Advanced Tech level.

a) Activities (June 1, 2000 through March 31, 2001)

The StaR chart provides an institutional perspective on technology integration. All project activities are related to this objective and are described in detail under other objectives.

Specific indicators related to this objective include:

- By the end of year 1 of the grant, the SOE will meet or exceed the Early Tech Standards on the STaR Chart.
- By the end of year 2, it will meet or exceed the Developing Tech Standards.
- By the end of year 3 it will meet or exceed the Advanced Tech Standards.

b) Progress as of March 31, 2001

See other objectives.

c) Barriers or Impediments

See other objectives.

d) GPRA Indicators

See other objectives.

Objective 1.D. and 1.E.: Existing support and technologies will be expanded through continual development of innovative educational technologies designed to help students learn to use not only what is available today but what is likely to become commonplace in the future.

a) Activities (June 1, 2000 through March 31, 2001)

This objective addresses project infrastructure and support issues. Significant progress was made during the year (see Progress below). The specific targets noted in the grant proposal related to this objective included:

- A full-time project technical support person will be hired.
- Faculty and students will deem the access and adequacy of the hardware and software satisfactory.
- 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 1 additional classroom space will be converted to accommodate new student uses of technology.

b) Progress as of March 31, 2001

- A full-time P3T3 technical support person was hired in the fall of 2001.

- A mobile computer laboratory, consisting of 10 laptop computers with wireless networking connection and a cart/base station, was acquired for faculty use in the School of Education.
- All School of Education faculty members have a personal computer with high-speed network access. An on-going university program is gradually increasing the number of classrooms on campus equipped with data projection capability.
 - 43% of faculty members believe there is enough hardware available to meet instructional needs.
 - 34% of faculty members believe there is enough computer software, and it is the right software, to meet instructional needs.
- In addition to available general purpose computing laboratories operated by the university, the School of Education maintains two 20-station computer laboratories, and another 15 stations are available for student use in the School's Technology Resource Center.
 - 48% of the students say there is enough hardware on campus.
 - 65% of the students believe there is enough computer software, and it is the right software, on campus.
- Additional infrastructure improvements, e.g., a wiring upgrade for the Liberal Arts and Education Building and creation of a "classroom of the future," have been scheduled but are not yet underway.

c) Barriers or Impediments

Except for delays in implementing some infrastructure improvements within the university, there were no significant problems related to implementation of this objective.

d) GPRA Indicators

- 1.4 Learning resources. The percentage of teacher preparation programs that use web-based, multi-media learning resources, course materials and teaching tools will increase.

Objective 2.A. All graduating students will meet or exceed the ISTE/NCATE foundations in technology competencies for teachers by the end of the project.

a) Activities (June 1, 2000 through March 31, 2001)

As noted above, all pre-service teachers are required to complete EDCI 270, a 2-credit introduction to educational technology. This course provides the foundational knowledge and skills that students need to begin to satisfy the ISTE/NCATE standards. Subsequently, technology is threaded throughout the teacher preparation program as students are required to complete technology-related activities and develop their own electronic portfolios. During this academic year, students completed EDCI 270, and significant technology-based activities were also implemented in Block 1 of the teacher preparation program.

The specific target related to this objective is:

- By the end of year 2 of the grant, students will be competent in basic computer/technology operations and concepts, apply tools to enhance own professional

growth and productivity, and apply computer and related technologies to support instruction.

b) Progress as of March 31, 2001

- During the 2000-2001 academic year, 610 students completed EDCI 270. In this class, students completed a course portfolio consisting of projects in: word processing, web searching, web site creation, spreadsheet, presentation package, and multimedia authoring. Course objectives and activities are linked specifically to the ISTE/NCATE technology standards.
- During the 2000-2001 academic year, 780 students completed Block 1 courses, the first required block in the teacher preparation program. During Block 1, students were required to apply technology skills by developing web pages containing relevant assignments (e.g., teaching philosophy, assessment of classroom diversity) from the block courses. These course activities form the foundation of what will become the electronic portfolio system.

c) Barriers or Impediments

- One problem that arose during the year was a discovery that students often enroll in EDCI 270, which is meant to be a foundational course, after rather than before Block 1, thereby thwarting the intent of having this course prepare student for later applications of technology knowledge/skills. This problem was addressed by an internal School of Education steering group, called the Block Council, that is taking measures to insure that students take the courses in the proper sequence.

d) GPRA Indicators

- 1.3 Graduation requirements. The number of teacher preparation programs that will require teacher candidates to demonstrate proficiency in the effective use of technology in teaching and learning will increase.
- 2.1 Technology-proficient new teachers. The percentage of new teachers who are proficient in using technology and integrating technology into instructional practices will increase.

Objective 2.B.: Throughout their programs of study, students will construct, build upon, and use electronic portfolios as part of their preparation to become teachers. These portfolios will serve as the foundation for performance-based licensure and a focal point for teacher reflection on teaching practice and the use of technology.

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. Teacher education students will use this infrastructure to build their own multimedia portfolios, to reflect on practice through examination of their own and others' portfolios, and to learn about portfolios.

a) Activities (June 1, 2000 through March 31, 2001)

The development of an electronic portfolio system is a key aspect of the P3T3 project. To align with new performance-based licensure in the state of Indiana, all students will soon be

required to complete portfolios as part of their teacher preparation program. The P3T3 project is conceptualizing and developing an electronic portfolio system, relying on a web-based interface to a database system with large-scale storage capability, that students will use to develop and maintain their portfolios. During the reporting period, the initial prototypes of the system began to be developed.

Specific indicators related to this objective include:

- All students will development dynamic digital portfolios and use them to engage in reflective teaching practice.
- Upon completion of EDCI 270, all students will have begun a portfolio and will have met all criteria upon graduation.
- At checkpoints in the unit assessment system, students will document their teaching practice and evidence reflection on evolving teaching practice.
- A web-based infrastructure for the portfolio system will be developed and will be complete by the end of year 1 of the grant.

b) Progress as of March 31, 2001

- A pilot version of the portfolio system, including a database in SQL Server and a web-based front end, is under development and on target to begin pilot testing in the fall of 2001.
- Initial portfolio-related activities occurred in EDCI 270, the introductory educational technology course, and in Block 1 of the teacher preparation program. These activities lay the foundation for the portfolio system, which will be expanded throughout the remaining Blocks of the teacher preparation program.

c) Barriers or Impediments

- Complete articulation of the School of Education's Unit Assessment System, including plans for the use of student portfolios, was expected prior to the start of the grant. However, this work was not completed. As a result, the P3T3 project is working with colleagues in the School of Education to complete the conceptualization of the Unit Assessment System while simultaneously pursuing our original goal to build an electronic portfolio system. This is impeding somewhat the overall development process.
- We underestimated both the time and expense involved in the development of the electronic portfolio system we seek to implement. The task is very complex, and we now hope to have a pilot system running by 2001-2002 and a full system by the 2002-2003 academic year. Further, we did not adequately budget for the complete system (e.g., we overlooked the need for a backup system) that we will need to fully implement the electronic portfolio system for our students. We are exploring possible partnerships and in-kind contributions to allow us to acquire the necessary system within our budget.

d) GPRA Indicators

- 1.3 Graduation requirements. The number of teacher preparation programs that will require teacher candidates to demonstrate proficiency in the effective use of technology in teaching and learning will increase.
- 1.4 Learning resources. The percentage of teacher preparation programs that use web-based, multi-media learning resources, course materials and teaching tools will increase.

- 2.1 Technology-proficient new teachers. The percentage of new teachers who are proficient in using technology and integrating technology into instructional practices will increase.
- 4.1 State teacher certification standards. The percentage of states that include technology proficiency as a component of their initial teacher certification standards will increase.

Objective 2.C. and 2.D.: In cooperation with partner K-12 schools, students' practical experiences will be enhanced through the capability to observe diverse school sites as well as 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).

a) Activities (June 1, 2000 through March 31, 2001)

A significant problem for the teacher preparation program at Purdue University is its location far from a major metropolitan area. This makes it difficult to place students in field situations that provide for needed experiences such as interaction with diverse student populations and implementation of exemplary technology use. As one way to address this problem, Purdue's P3T3 initiative is making use of the Internet and two-way video conferencing to link college students and classrooms with K-12 students and classrooms. During the reporting period, these efforts were initiated.

Specific targets related to this objective include:

- 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 3 school sites involving teachers and university students.
 - By the end of year 1 of the grant at least 1 experience will be integrated into course Blocks 1 and 2.
 - By the end of year 2, at least one additional experience will be integrated in Blocks 3 and 4.
 - By the end of year 3, at least one additional experience will be integrated in Blocks 5 and 6.

b) Progress as of March 31, 2001

- A website for the project has been established (<http://p3t3.soe.purdue.edu>). However, a web-based "Community of Learners in Practice," which is envisioned as an extension of the website for linking consortium partners and pre-service teachers using communication tools such as asynchronous forums, is planned but has not yet been implemented.
- A pilot project linking a group of students in Block 1 with a diverse elementary school setting in East Chicago was successfully established using two-way Internet-based video conferencing technology. This pilot project, involving one faculty member and a single section of EDCI 205, Exploring Teaching as a Career, was implemented in both the fall and spring semesters. Advantages of this approach included that the instructor was able

to make observations alongside the students, allowing her to direct the observations and lead richer discussions about classrooms events, and students were able to see and interact with a diverse group of students at a site too distant for ordinary field placement. This approach to virtual field observations and interactions is being considered as a possible model for implementation in all sections of the Block 1 and 2 field experience at Purdue. Further testing will take place next year to see if this approach could be scaled up successfully.

- Additional pilot projects have been established to link Purdue pre-service teachers with students in other partner school sites including Crawfordsville, Lafayette, and Indianapolis. These pilot projects have investigated other models of technology-mediated interaction between pre-service teachers and K-12 school sites.

c) Barriers or Impediments

- The chief barrier to implementation of this project activity has been technical issues such as firewalls and limited bandwidth in partner schools. With the cooperation of school technical support personnel, these are being overcome.

d) GPRA Indicators

- 1.1 Curriculum redesign. The percentage of teacher preparation programs that redesign their curriculum to incorporate best practices in the use of technology in teacher education will increase.
- 3.3 K-16 partnerships. The percentage of teacher preparation programs that communicate, collaborate, and partner together with the K-12 community on a regular and formal basis will increase.

Consortium Members

Member Institution/Organization	Type
Purdue University	IHE
School City of East Chicago (Indiana)	LEA
Crawfordsville (Indiana) Community Schools	LEA
Lafayette (Indiana) School Corporation	LEA
Lawrence North Township Schools (Indianapolis, Indiana))	LEA
Corporation for Educational Communications	Other non-profit
North Central Regional Technology in Education Consortium	Other non-profit
Indiana Department of Education	SEA
Apple Computer	For-profit firm
Intel Corporation	For-profit firm

IV. Budget

V. Supplemental Information

At this time, we do not anticipate making changes to our objectives and activities.

The barriers that we are facing are largely internal in nature, and we anticipate that we will be able to address them without direct assistance from the PT3 organization.

We do not have a generic evaluation tool that we are willing to share at this time. For the coming year, we plan to investigate use of MyTarget, an online assessment instrument that has been developed in Indiana by two of our partners, the Corporation for Educational Technology and the Indiana Department of Education. MyTarget is available on the web at:
<http://mytarget.iassessment.org>

Please see the attached examples of materials related to project dissemination and publicity.