

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

II. Executive Summary

Purdue University's 2000 PT3 implementation project, P3T3: Purdue Program for Preparing Tomorrow's Teachers to use Technology (#P342A000075), supports recently implemented teacher education reforms at the university. New elementary and secondary teacher education programs were launched in 1999 and fully implemented by the end of the 2002 spring semester. These new programs feature a cohesive set of courses, arrayed in blocks, with accompanying field experiences. Four strands anchor the programs – technology, diversity, field experience, and portfolio assessment. The P3T3 project supports 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 technology-enabled virtual field experiences for pre-service teachers that enhance opportunities for observations of diversity, classroom practice, and exemplary technology use; and (c) development and implementation of a dynamic electronic portfolio system that provides pre-service teachers with opportunities to document their teaching knowledge and performance, reflect on their evolving practice, and meet performance-based standards for certification. Ultimately, Purdue's pre-service teachers learn about technology, integrate it as they see it modeled by their instructors, and document 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, the faculty development component of the project continued. The final four "start-up" workshops for faculty members and graduate teaching assistants were offered in May, June, August, and October of 2002. Faculty and graduate teaching assistants who participated in these workshops received one-on-one technical support and mentoring from the P3T3 project staff as well as a small amount of supply and expense funding to be applied to a technology integration project. Additional technology training workshops were offered both in the summer and during the academic year for faculty and teaching staff. In addition, a technology integration mini-grant competition was launched in the fall of 2002, and six faculty members were awarded mini-grants. Faculty development initiatives of the project have been featured on the PT3 website at: <http://www.pt3.org/stories/purdue.html>.

Since the inception of the project, 67 regular Education faculty members (about 95% of the total) as well as 8 adjunct/visiting Education faculty members, 9 faculty members in Liberal Arts, 3

faculty members in Science, 4 other faculty members, and 15 Education graduate teaching assistants have participated. There have been a total of over 800 attendees at project technology workshops; 91% of attendees rated these workshops "great" or "good." As of the spring of 2003, nearly all (97-98%) of the Education faculty were rated intermediate to fully technology proficient both in self-assessments and in assessments made by their students. Faculty and students report high levels of technology integration in classes, especially for: communication, information retrieval, in-class presentations, student technology projects, and on-line class discussions. Students' levels of technology proficiency in 2003, which increased in all categories compared to 2002, were highest for word processing, email, general computer use, Internet, and presentation software.

During this year, the P3T3 project continued its innovative use of Internet-based video conferencing to enable pre-service teachers to connect with classrooms unavailable in the immediate vicinity of the university. In a pilot project that has spanned 6 semesters, students in a semester-long beginning teacher preparation course have engaged in virtual field experiences with diverse elementary students in an urban school in East Chicago. The pre-service teachers have learned about classroom diversity, improved their observational skills, practiced teaching young children, and learned to use a cutting edge technology. This aspect of the project has been featured on the PT3 website at: http://www.pt3.org/stories/remote_field.html, and it was recently the subject of a *PT3 Now!* video episode, produced by WHRO-TV in Norfolk, Virginia, available on the web at: <http://www.pt3now.org/207.php>.

The P3T3 project has also continued to develop and refine a large-scale electronic portfolio system which Purdue's pre-service teachers are using to document their ability to meet new performance-based state licensure standards. Beginning with students who entered the teacher preparation programs in the fall of 2002, the use of the electronic portfolio system is a requirement for graduation and provisional teacher certification. As of the spring of 2003, over 1000 students now have accounts on the system. Integration of the portfolio system into courses throughout the teacher preparation program is occurring via a step-by-step process; Blocks I and II of the teacher preparation program began formal portfolio requirements this year. E-portfolio integration will continue over the next two years until it is fully implemented throughout all courses in the teacher preparation programs.

Purdue University hosted a Collaborative Exchange for its project on April 3-4, 2002. The Collaborative Exchange team consisted on Howard Poole from Western Michigan University, Nancy Wentworth and Rodney Earle from Brigham Young University, and Michael Brorby from Rice University. Members of the Purdue team participated in Collaborative Exchange visits at Western Michigan University, Utah State University, and the University of Puerto Rico - Rio Piedras during the past year. These exchanges proved to be highly beneficial.

A new Project Assistant Director, Dr. Jennifer Richardson, joined the project during the summer of 2002. Dr. Richardson assumed duties related to faculty development and e-portfolio support.

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

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| 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>Four two-day start-up workshops were offered -- May 2002, June 2002, Aug 2002, and Oct 2002 -- bringing the project total to 9. A total of 67 Education faculty members (about 95% of the current total) have participated as well as 8 adjunct/visiting Education faculty members, 12 faculty members from Liberal Arts and Science, 4 other faculty members, and 15 teaching assistants.</p> <p>Since the beginning of the project, there have been over 800 technology workshop attendees. Attendees' ratings of the workshops are: 66% Great, 25% Good, 3% OK, 0% Fair, 0% Poor, and 6% No opinion.</p> <p>Techie Talks (short lunch time presentations on various technology topics and faculty success stories), which began during the 2001-2002 academic year, were continued in the 2002-2003 academic year. There were 7 Techie Talks offered in the fall of 2002 and 10 in the spring of 2003.</p> |

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| | <p>Project staff continued to provide mentoring and support for participating faculty members. All participants in a P3T3 start-up workshop were assigned a staff graduate assistant to act as a liaison with the project and to provide one-on-one personal assistance. In addition, regular drop-in help time was available each week through the academic year.</p> <p>Students report that:</p> <ul style="list-style-type: none"> • 98% of faculty are intermediate or proficient in overall technology proficiency. • A high percentage of faculty are at the intermediate or proficient level with regard to specific technologies such as Internet (89%), email (97%), word processing (99%), and presentation software (93%) as well as instructional technology knowledge and use (89%). <p>Faculty self-report surveys found that:</p> <ul style="list-style-type: none"> • 97% of faculty rated themselves as intermediate or proficient in overall technology proficiency. • A high percentage of faculty rated themselves intermediate to proficient with regard to specific technologies such as Internet (89%), email (100%), word processing (100%), and presentation software (80%) as well as instructional technology knowledge and use (64%). |
| <p>Analysis</p> | <p>The project has come very close to achieving its goal of having 100% of Education faculty participate and meet basic technology competencies. Project support has played a significant role in this accomplishment. Approximately 95% of faculty took part in a "start-up" workshop, and over 77% reported participating in a P3T3 technology workshop and/or having sought technical assistance from P3T3 staff. (March 2003 Faculty Survey)</p> |
| <p>Use of Evaluation Findings</p> | <p>Students and faculty agree that faculty have achieved a level of technology proficiency. Faculty questionnaires and feedback have been used to set workshop and Techie Talks schedules this year.</p> |

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| <p>Objective 2</p> | <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> |
| <p>Definition of Success</p> | <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> |
| <p>Progress</p> | <p>Status: Accomplished</p> <p>100% of responding faculty claim to use technology in their classes. (Fall 2002 Faculty Survey)</p> |

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| | <p>85% of faculty report that they have refined the use of technology in their classes as a result of participation in the P3T3 project. (March 2003 Faculty Survey)</p> <p>Students report that 99% of their professors use technology in classes. (March 2003 Student Survey)</p> |
| Analysis | <p>Virtually all Education classes now use technology. While some of the technology is relatively basic, such as the use of e-mail or Powerpoint, in other cases more sophisticated technologies, such as use video conferencing to connect with K-12 classrooms at a distance, are integrated.</p> |
| Use of Evaluation Findings | <p>Students and faculty seem to agree that technology is now an integral part of teacher education at Purdue University.</p> |

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| Objective 3 | <p>The School of Education at Purdue will meet or exceed all CEO Forum StaR Chart institutional standards at the Advanced Level.</p> |
| Definition of Success | <p>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)</p> |
| Progress | <p>Status: Partially Accomplished</p> <p>Several of the StaR Chart indicators at the Advanced Technology level have been achieved. A campus strategic plan, developed in 2001, clearly incorporates technology. The School of Education receives excellent funding support from the campus. Campus facilities are well equipped. Faculty use of technology is rewarded, and technology use is a priority in hiring. The program aligns with NCATE standards. Faculty development initiatives and technology support meet advanced levels.</p> <p>However, some of the advanced level indicators have not been met. Technology, while well-supported in the past, has only partial line item budget support. Further, technology use, while encouraged, is not a required component of student teaching.</p> |
| Analysis | <p>Overall, progress toward the STaR Chart indicators is good given the stringent demands at the advanced level. Lack of line item budgeting for technology is a shortcoming. A draft strategic plan for the School of Education, developed during the 2002-03 academic year, proposes to rectify this problem. A lack of required technology use during student teaching is also a recognized shortcoming. Lack of technology support in K-12 schools where student teachers are placed may hamper achievement of this objective.</p> |

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| Use of Evaluation Findings | P3T3 project momentum and findings are influencing strategic planning in the School of Education, which has identified educational technology as a key focus area for the school. |
| 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. Due to PT3 budget cuts, this position was reduced to half-time during this year. However, the School of Education (SOE) has committed to restore a full-time position effective July 1, 2003.</p> <p>Within the SOE, approximately 4-5 FTE are dedicated to technology support. Faculty and students deem the access to and adequacy of hardware and software to be satisfactory.</p> <ul style="list-style-type: none"> • 83% of the faculty (up 5% from last year) report the School of Education has sufficient facilities and hardware to allow them to use technology as they would like. (March 2003 Faculty Survey) • 90% of the faculty (up 13% from last year) report the SOE has sufficient software to allow them to use technology as they would like. (March 2003 Faculty Survey) • 82% of the faculty (up 6% from last year) report the SOE has sufficient technical support to allow them to use technology as they would like. (March 2002 Faculty Survey) • 95% 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 | The great majority of faculty and students deem technology support and resources to be adequate. Comments on surveys have been overwhelming with praise for the amount of technological support the P3T3 project has provided. One faculty member said, "The technical support has allowed me to learn new techniques and expand the use of technology in my classroom." Another said, "As I've increased my use of technology in the classroom the students seem to become more excited and motivated to learn." |
| Use of Evaluation Findings | Evaluation findings have confirmed the adequacy of support available. |

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| 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. 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.</p> <p>Two School of Education computer classrooms/labs are scheduled to be upgraded at the end of the 2003 spring semester. In addition, an electronic materials production laboratory is slated to be remodeled. While these have not yet taken place, the university has committed to these improvements.</p> |
| Analysis | This objective is on target to be met as planned. |
| Use of Evaluation Findings | N/A |

Goal #2: Student Use of Technology

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| 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: Accomplished</p> <p>Students and faculty agree that student competency and use of technology is</p> |

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| | <p>high. (March 2003 Student Survey, March 2003 Faculty Survey)</p> <p>Faculty report that:</p> <ul style="list-style-type: none"> • 92% 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 (83%), email (95%), word processing (92%), and presentation skills (71%). • 64% of students are at an intermediate or proficient level in their Instructional Technology Knowledge and Use. • Overall, faculty rated 87% of the students as intermediate or proficient. <p>Students self-report surveys found that</p> <ul style="list-style-type: none"> • 97% of students rated themselves as intermediate or proficient in General Computer Knowledge and Skills • A high percentage (well over 80%) are at the intermediate or proficient level with regard to specific technologies such as Internet, email, word processing, presentation software, and spreadsheets • 76% of students ranked themselves intermediate or proficient in Instructional Technology Knowledge and Use • 99% of students agreed that they use technology for personal productivity and growth • Overall, 94% of responding students rate their technology proficiency as intermediate to proficient. |
| <p>Analysis</p> | <p>The vast majority of students continue to rate themselves as intermediate to proficient in most areas. The lowest self-report rating by students was knowledge of databases (69%). Faculty do not rate students as highly in all areas. Faculty rate more students as having introductory knowledge of databases (62%), spreadsheets (49%), and instructional technology and use (36%). However, in comparison to the results from the same survey administered one year ago, both students and faculty have rated student ability as significantly higher this year.</p> |
| <p>Use of Evaluation Findings</p> | <p>The results show that progress is being made in developing students' technology proficiency. The level of students' instructional technology knowledge and use remains somewhat below expectations, but we anticipate this will continue to improve as e-portfolio integration expands and methods course instructors integrate appropriate assignments for students.</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> |

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| Definition of Success | 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. |
| Progress | Status: Accomplished The web-based infrastructure was established at the end of year 1 and was piloted during the 2001-2002 academic year. All students in Block I, Block II, EDCI 270, and EDFA 200 are currently using the electronic portfolio system. It is now required for all students who entered teacher education after the fall of 2002. |
| Analysis | Electronic portfolio implementation is meeting expectations. |
| Use of Evaluation Findings | 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. |

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| Objective 3 | 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) |
| Definition of Success | 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. |
| Progress | Status: Accomplished Since year one of the grant, students in one section of a Block I course have participated in a virtual field experience using video conferencing to connect with diverse students in East Chicago. This experience continues and was expanded to 2 sections this year. Multiple additional experiences involving video conferencing linkages with partner schools in Crawfordsville, Lafayette, and Indianapolis have been implemented including experiences in Block V and the secondary equivalent of Block IV. |
| Analysis | 90% of participating students agree that they learned to use video conferencing in education from this experience, 76% feel it is a valuable addition to the class, 81% feel more comfortable using technology for teaching and learning as a result, and 76% feel more comfortable about working with diverse learners as a result. |

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| Use of Evaluation Findings | Positive evaluations of the distant field experiences have led to discussions within the School of Education about requiring such experiences for all teacher education students. These discussions will continue as part of strategic planning for the School of Education in 2003-04. |
| 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). (GPR 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>Status: Partially Accomplished</p> <p>Roughly four to five classes each semester have participated in two-way video conferencing since the inception of the grant. (See examples above.)</p> <p>A web-based community linking all consortium partners and teacher education students was not established.</p> |
| Analysis | <p>Students have generally reported positive attitudes toward the video-based field experiences 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> <p>No pressing need emerged to drive the development of a web-based community of consortium partners. As the electronic portfolio system continues to develop, it is serving as a focus of development efforts.</p> |
| Use of Evaluation Findings | <p>The need for an electronic community linking partners in the project, including teacher education students, was 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 2003-04.</p> |

B. Changes in Project Design

There have been 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 |
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| 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: AERA 2003 Paper

The attached paper was presented at the 2003 American Educational Research Association annual meeting in Chicago. It is included because it provides a broad summary of the project and some of the evaluation data that have been collected.

Attachment A: AERA 2003 Paper