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ABSTRACT

The California State University (CSU) has established the Educational Technology Professional Development Program, designed to encourage institutions of higher education and K-12 organizations to work together to help teachers use technology in their classrooms. The program is intended to help teachers reach the highest level of competency in the Instructional Technology portion of the Teacher Computer-Based Technology Proficiencies, as developed by the California Technology Assistance Project (CTAP) Proficiency Committee. This study was conducted by the CSU to provide insight into possible methods of instruction that may help to better prepare teachers in instructional technology. The study addressed the following questions: (1) How do California K-12 educators perceive their level of technology proficiency in the following areas: general computer knowledge and skills, Internet, e-mail, word processing, publishing, databases, spreadsheets, presentation software, and instructional technology? (2) How do various training models affect educators' perception of their level of technology proficiencies? (3) Is there a significant difference between elementary school teachers' and high school teachers' perception of their level of technology proficiencies? and (4) How does teachers' perception of their level of technology proficiency affect their use of technology in the classroom? (MES)

ED 462 934

Educational Technology Professional Development Program

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Educational Technology Professional Development Program

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Overview

The California Governor's budget for 2000-2001 included an appropriation to the California State University (CSU) system of $6,500,000 for intensive K–12 staff development on the use of technology in the K–12 classroom. This funding was intended to enable new and experienced teachers, teamed with their site administrators, to expand their knowledge and expertise in using technology in their classrooms to improve student achievement. The CSU was asked to coordinate and administer this important aspect of professional development.

To initiate the process, the CSU established the Educational Technology Professional Development Program—a program designed to encourage institutions of higher education and K–12 organizations to work together to help teachers use technology in their classrooms. This program is intended to help teachers reach the highest level of competency in the Instructional Technology portion of the Teacher Computer-Based Technology Proficiencies, as developed by the California Technology Assistance Project (CTAP) Proficiency Committee.

A request for grant proposals for the Educational Technology Professional Development Program was distributed to teacher preparation and K–12 agencies in Spring 2000. Funding began during the summer of 2000. Twenty-eight of 35 submitted proposals were funded. To enroll in a local project, K–12 schools created teams (2 or more participants) and hosted the team by paying a $1000 co-payment. Participants receive a $1000 stipend ($500 after completing the initial activities and $500 at the end of the program) for successfully completing the requirements of the program. Participants can earn university credit, also.

Purpose

The purpose of this research paper is to address the following questions:

1. How do California K–12 educators perceive their level of technology proficiency in the following areas: General Computer Knowledge and Skills, Internet, Email, Word Processing, Publishing, Databases, Spreadsheets, Presentation Software, and Instructional Technology?

2. How do various training models affect educators' perception of their level of technology proficiencies?

3. Is there a significant difference between elementary school teachers' and high school teachers' perception of their level of technology proficiencies?

4. How do teachers' perception of their level of technology proficiency affect their use of technology in the classroom?

Theoretical Framework

Researchers continue to report that there is a tremendous lack of technological proficiency among educators, and that the need and desire for educational technology development is great (ISTE, 1999; NCES, 1999; OTA, 1995; Willis, Thompson, Sadera, 1999). Both national and state standards have been established to improve teachers' technological proficiencies: the International Society for Technology in Education (ISTE) recently published the *National Educational Technology Standards for Teachers* (ISTE, 2000), and the National Council for Accreditation of Teacher Education (NCATE), as well as several state accreditation agencies (i.e., the California Commission on Teacher Credentialing), now require teacher education programs to integrate technology instruction into their preservice programs. The California Technology Assistance Project (CTAP), a statewide organization supporting schools and districts in the implementation of technology, designed proficiency profiles aligned with state requirements set by the California Commission on Teacher Credentialing the California (CCTC) to assist in the professional development process.

Although the California Commission on Teacher Credentialing now requires that technology be integrated into preservice education, additional educational technology competencies still need to be addressed. In addition, these requirements are not applicable to California's current teachers. Some may need to take a computer course to clear their credential, but, again, research shows that such courses do little to prepare teachers to effectively integrate technology into instruction (OTA, 1995). Teachers continue to report that they feel ill prepared to teach with technology. Hence, current teachers – those that serve as mentors and role models for our preservice teachers – are at a disadvantage because they do not have an adequate technology background. The lack of technology proficient role models is a disadvantage for preservice teachers, as well as for the children in the classroom, also.

NCATE's Task Force on Technology and Teacher Education reports that the ability to effectively employ technology in the classroom will require new understandings, new approaches, and new forms of professional growth (NCATE, 1997). Schrum (1999) examines several models of professional development, noting that those with presentation of theory, clear demonstrations, practice with feedback, coaching, and on-going follow-up are more likely to produce change in how teachers use technology in their classrooms than traditional models of staff development. She describes traditional models as one-day seminars usually hosted by an expert or after school workshops that focus on "hot" topics without follow-up, support, or direction. Brand (1998) recommends that training be geared toward teachers' perceived needs and goals.

Method

A request for grant proposals for the Educational Technology Professional Development Program was distributed to teacher preparation and K–12 agencies in Spring 2000. Responses to the request had to include an institution of higher education and at least one district or county K–12 organization, as well as other essential elements:

- Curriculum delivery of at least 40 hours of initial activities and 80 hours of follow-up/professional development
- Alignment with technology performance standards and the state academic content standards
- K to 12/University Collaboration
- Focus on School Teams

- Stipends and University Credits
- School Co-Payment
- Ongoing Professional Development
- Number of Participants per Program
- Evaluation and Accountability

Funding began during the summer of 2000. Twenty-eight of 35 submitted proposals were funded. The proposal review team consisted of ten experts in the field of teacher education and/or educational technology. Proposals were reviewed in a blind format and evaluated by at least two different pairs of experts. Due to the overwhelming requests and need for teacher preparation in technology, some of the projects were partially funded so more institutions could participate. There continues to be a waiting list of teachers interested in participating in the program.

Each of the funded proposals adhered to the requirements of the grant; however, each proposal approached the delivery of instruction and follow-up in different ways. Some offered video-based instruction; others provided educators with choices of onsite workshops; some projects relied on individual learning plans or a combination of different learning modules. Some projects dictated the content; others let the teachers determine the instruction.

Each project tracks participants' progress using the $CTAP^2$ assessment site at http://ctap2.iassessment.org/csu. Participants complete a self-assessment pre-test at the beginning of their educational technology professional development program and completes a post-test following the first 40 hours or module of training. During the pre-test, participants are ask to evaluate their proficiency in the following areas:

- General Computer Knowledge and Skills
- Internet
- Email
- Word Processing
- Publishing
- Databases
- Spreadsheets
- Presentation Software
- Instructional Technology

The post-test that follows the first 40 hours of instruction asks the participants to re-assess their knowledge and skills in Instructional Technology – integrating technology across the curriculum. An additional post-test, assessing all areas, is taken by the participants at the end of the required 120 hours of training. Both the pre- and post-test are available online at http://ctap2.iassessment.org/csu. Participants are assessed on their ability to integrate technology within their own classrooms, also.

Data Sources

Over 3700 educators have already participated in the initial training and have benefited from the Educational Technology Professional Development program. Projects are working with many teachers' year-round schedules to accommodate the initial 40 hours of intensive instruction. The program anticipates serving a total of 5000 educators during the first year. Tables 1 through 4 provide background information about the educators being served, as well as their schools.

Table 1. Job title.

Teacher	Administrator	Technology Coordinator	Librarian	Other
92%	2%	2%	2%	2%

Table 2. Type of credential held by participants.

Multiple Subject (includes those with additional credentials in Administration, Special Education, or Library-Media)	Secondary Subject (includes those with additional credentials in Administration, Special Education, or Library-Media)	Special Education	Library-Media	Both Multiple and Secondary	Administration	Interns and Emergency Permits
52%	31%	3%	1%	2%	2%	9%

Table 3. Grade levels taught.

K–5	6-8	9-12	Other
48%	14%	37%	1%

Table 4. School API Scores*.

Less than 400	400-499	500-599	600-699	700-799	800-899	900+
1%	16%	19%	33%	20%	10%	1%

* School API scores range from 385 to 944.

42% of participants are from low performing schools.

Results

How do California K–12 educators perceive their level of technology proficiency in the following areas: General Computer Knowledge and Skills, Internet, Email, Word Processing, Publishing, Databases, Spreadsheets, Presentation Software, and Instructional Technology?

Participants' responses to the pre/posttest are categorized in the following categories: Introductory (little or no experience), Intermediate (some experience), and Proficient (a lot of experience). Initial self-assessment reports reveal that participants' knowledge base in Word Processing is the highest (somewhat proficient), followed by General Computer Knowledge and Skills and Presentation Software. In general, participants rate themselves as Intermediate users in all other areas, feeling least comfortable with the Internet, Spreadsheets, and Instructional Technology. Following the first 40 hours, participants did report growth in Instructional Technology (the only topic re-assessed), but it remains as one of the participants' weakest areas. Follow-up hours are designed to help teachers with integrating technology into their curriculum, as well as address participants' needs in other proficiency areas – spreadsheets, databases, Internet, and so on. Final evaluation data re-assessing all areas will be collected and analyzed throughout the year as each project concludes and again, for all projects, in the beginning of June, 2001, to determine the overall success of the program. This data will be reported at the NECC conference.

Teachers report that they do not feel prepared to teach with technology, yet the preliminary data of this study suggests that the majority of teachers rate themselves as "intermediate users" of most technologies. Self-assessment data may or may not indicate the accurate proficiency levels of educators in their use of technology. Researchers warn that self-assessment type measures are only

accurate to the degree that the self-perceptions are correct and to the degree that the person is willing to express them honestly (Borg and Gall, 1989). "Intermediate" status may also reflect the teachers' ability to use the technology, but not to apply or integrate it within their own classroom. This supports the fact that participants rated themselves the weakest in Instructional Technology.

How do various training models affect educators' perception of their level of technology proficiencies?

A description of the training models can be found at http://edtech.calstate.edu. An analysis of how the different models may have affected educators' perception of their level of technology proficiencies will be presented at the NECC conference. Final data will not be available until June, 2001.

Is there a significant difference between elementary school teachers' and high school teachers' perception of their level of technology proficiencies?

Preliminary data suggest that there is a difference between elementary and high school teachers' perception of their level of technology proficiencies. The significance of this difference will be tested in June, once all of the data is available.

How do teachers' perception of their level of technology proficiency affect their use of technology in the classroom?

Teachers who generally rated themselves at "intermediate" levels of proficiency at the beginning of the program did not necessarily incorporate much technology into their classrooms. Following the training and follow-up sessions, teachers have reported "dramatic" changes in the way they thought about and incorporated technology into their instruction. For example, in a mid-year report, one director documented the following:

> Prior to the Instructional Technology Partnership program, Annemarie's experience and comfort level with computers was limited to the word processing features of Apple Works. Following the first forty-hour workshop, Annemarie now feels comfortable using the advanced features of Microsoft Office, creating newsletters, spreadsheets for grading, class lists, parent record sheets and lesson plans. She applied her knowledge of PowerPoint to create a presentation for "Back to School Night." In addition to parent presentations, Annemarie uses PowerPoint for classroom instruction. According to Annemarie, " Whenever there is any type of writing I have to do for school or home, I head straight to my computer for a professional looking document."
>
> Annemarie's use, comfort level, and sophistication with application tools increased considerably through the first module of the Instructional Technology Partnership program. In addition to using the tools for her own professional growth, she feels comfortable integrating the applications into her classroom instruction.
>
> Following Module 2 Annemarie noted that her classroom instruction changed dramatically. She commented:
>
> *"Now when planning a unit, I not only look up the topic for information, but I share the research process with my first grade students. Prior to Module 2, I thought web sites were mainly for older students. I didn't think there was anything out there for first graders. Boy was I wrong. After our last Meet the Masters lesson, we went back into the classroom and looked up the artist Kandinsky and found photos of many of his pieces. For Dr. Seuss Day, we looked up a few sites and found crossword puzzles, mazes and a variety of other activities. We even found a contest to enter, but we ran*

out of time. In a few weeks my students will be doing a fish and sea life unit. I'll be using the lesson plans I created in Module 2, which includes a tour of the Monterey Bay Aquarium."

Thanks to the Instructional Technology Partnership program, Annemarie views and uses technology as an invaluable tool to help increase student learning. She is very enthusiastic about the possibilities that technology has to offer and "jumps" at the opportunity to learn more – recently attending a digital camera class offered through her district. Her confidence has soared, and she can't wait to do more.

Proficiency levels will be assessed again in June for final analysis. Preliminary data suggest that teachers need lots of experiences and guidance in the use of technology before they feel comfortable and confident in purposefully integrating technology their classrooms.

Importance of the Study

Researchers continue to report the need to better prepare educators to effectively use technology. This study will provide insight into possible methods of instruction that may help to better prepare our teachers in Instructional Technology. How each variation of training will affect the participants' perception of their level of technology proficiencies is yet to be seen. This will be recorded and compared throughout the year and presented at the NECC June 2001 conference.

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