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ABSTRACT

The College of Education at the University of Hawaii has already begun to create an infrastructure to systematically infuse technology into its curriculum through a new designation of "Technology Intensive" courses. The primary goal of this project was to prepare future teachers to integrate technology into instruction through systematic reformation in the teacher preparation programs. To meet this goal, faculty members in the College of Education and their pre-service students are being mentored by graduate students to model technology integration. The newest generation of this project is referred to as "LEI Aloha," which stands for Learning Enhancement through Innovation. (Author)

Creating "Technology Intensive" Courses Through Faculty Mentoring

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Abstract

The College of Education (COE) at the University of Hawaii. (UH) has already begun to create an infrastructure to systematically infuse technology into its curriculum through a new designation of "Technology Intensive" courses. The primary goal of this project was to prepare future teachers to integrate technology into instruction through systematic reformation in the teacher preparation programs. To meet this goal, faculty members in the COE and their pre-service students are being mentored by graduate students to model technology integration. The newest generation of this project is referred to as "LEI Aloha," which stands for Learning Enhancement through Innovation.

Project Need

The electronic revolution has created new means to present information with equipment such as digital video and multimedia authoring software. What is currently lacking, however, is the professional development and expertise in the usage of these tools in today's classrooms. Faison states that United States (US) Office of Technology Assessment (OTA) has concluded that the most direct and cost-effective way to train teachers about technology is through pre-service teacher education courses. The question then is how do we train faculty to be technology role models?

A technology needs assessment of the University of Hawaii at Manoa (UH) College of Education (COE) faculty was conducted by Ho, Sherry, Speitel, & Walton (1999) to find out how technology was being used to identify the training needs of faculty, and to provide recommendations for the future growth of technology applications in the COE. The survey was based on the guidelines of the National Council on Accreditation of Teacher Education (NCATE) and International Society for Technology in Education (ISTE) standards for technology within education.

Overall, it was found that there was a discrepancy between the use of technology for teaching and the use of technology for professional activities. Faculty and students commonly used email, word-processing, and on-line information for their scholarly work but much less frequently for teaching and learning.

It was interesting that students' use of technology mirrored that of faculty, but they used technology less frequently than faculty. This result demonstrates how important faculty are as role models to students. "After all, faculty model the use of technology applications in their courses. Also, faculty provide opportunities for students to use technology...". Since students were rated lower on technology use, it suggests that faculty are still not providing adequate technological opportunities when designing their courses. This may be because the integration of technology into teaching is more difficult than personal use of technology.

This report confirmed the need for a continuing effort to solve this problem. Five years ago the authors developed such an effort in a program to provide professional development for a new designation of "technology intensive" courses. The program provides focuses primarily on technology workshops and one-on-one mentoring assistance for faculty.

Standards and Guidelines

A 1996 pilot project was funded by the University to develop a general designation of "technology intensive" courses that could be used university-wide. The type of impact desired called for an expansive, long-term project thinking on the question of "what should our graduates know?" With the leadership of Fulford and Hines (1997), a committee of faculty members from a broad range of subject areas developed a set of technology intensive standards for the development of the courses.

The Technology Intensive Standards were derived from three sources: the UH General Education Standards, the United States Education Secretary's Commission on Achieving Necessary Skills (SCANS) Report, and the International Society for Technology in Education (I S T E) Standards for Basic Endorsement in Educational Computing and Technology Literacy.

The standards include six categories: ethics, operations, analysis, retrieval, application, and attitudes. The six categories cover 35 specific standards. The standards development team provided an explanation of each category's purpose.

The technology-intensive guidelines were established by Fulford and the committee (1997) to provide information for faculty on course development. The idea is that technology should help facilitate communication, problem solving, analysis, research, and presentation. However, the course subject matter would remain the same.

Faculty were expected to use at least one standard from each category since one course could not cover all the standards. The premise was that among the variety of courses students take, they would upon graduation have mastered these standards.

Faculty should model ethical standards as well as visual and instructional design techniques fundamental to learning with technology. Essential to all courses is the student use of technology including opportunities to create multi-media, web pages, videos, and electronic slide shows. Faculty are encouraged to discuss need for growth in technology with their students and to acknowledge issues of access, skill level, and anxiety.

Professional Development Workshops and Mentoring

Faculty in the project have been provided with ongoing professional development to effectively integrate technology into their courses. Each year the project began with professional development workshops. These efforts received help from the graduate students in an Educational Technology Practicum. In each session, experienced faculty and teachers in kindergarten-12th (K-12) schools showed examples of how they were integrating technology into their courses. These were followed by specific demonstrations of hardware and software.

The next half of each session was devoted to hands-on practice with the technology. Faculty professional development has included topics such as: course design, visual design, electronic conferencing, web page design, multi-media and video production, electronic presentations and portfolios, technology ethics and copyright, assessment of technology projects, one computer classroom strategies, and online collaboration.

Once faculty members have attended the workshop sessions they are recruited to create technology intensive courses. Faculty who express interest for integrating technology into their courses are offered one-on-one assistance to facilitate this process. Faculty are paired graduate students from the Educational Technology Department who work for the project. Typically, the pairs will meet on a weekly basis over a semester. These sessions usually last about an hour and take place in the faculty member's office. The ultimate outcome of the sessions is a course proposal in which the faculty member outlines the ways in which they have redesigned a course to incorporate technology using the technology intensive standards. The proposal also describes the ways in which the faculty member is modeling technology use, the ways in which the students are using technology, the specific hardware and software being used and any future technology needs of the faculty member. In order for the students to be able to effectively mentor the faculty toward this goal, an instructional design approach is used to: (a) set goals for the professional development; (b) provide expertise in creating a revised curriculum especially with regard to the technology-intensive standards; and (c) assist in improving technical skills to help faculty members reach their technology integration goals.

The overseeing project faculty member and experienced graduate students pair student mentors with faculty members based upon the technology areas in which the faculty member has expressed interest and the specific areas of expertise of student mentors. Compatible schedules and preferred computer platforms such as Mac or PC are also important. Once the pairs have been established, the student mentor contacts the faculty member to assess their technology needs and levels of confidence and experience. A survey developed by previous graduate students is administered to determine interest and experience with various software applications and digital technologies such as video and still imaging.

Once the student mentor has determined the technology skill and confidence levels of the faculty member, an initial session is scheduled. At this session, the mentor and the faculty member discuss the content of the course to be redesigned and the vision and goals the faculty member has for redesigning the course to integrate technology. The mentor must be tactful with the faculty member to be encouraging and yet realistic as to what can be accomplished in one semester. The pair discuss their respective time schedules and the amount of time the professor has to dedicate to the redesign process. A letter of agreement provided by the mentor is signed by the faculty member stating that a) the faculty member acknowledges that the assistance will be provided throughout the semester, b) his or her involvement will include his or her participation and communication about the progress of the course, c) he or she will cooperate in the evaluation of the course by the grant project, and d) he or she agrees to be listed as a project participant on the project web site.

Student mentors need a number of skills in order to conduct one-on-one faculty mentoring. Not only do they have technology skills that they impart to the faculty but they also use instructional design knowledge to help the faculty member plan and organize the course to be redesigned. The goal of the mentoring is to assist faculty members to be independent, self-sufficient users of technology. To achieve this goal, students often need to know how to handle "sticky" situations. Examples of "sticky" situations include faculty members expecting the mentor to do the technology work for them, faculty members not completing work they have agreed to do in order for the sessions to proceed, chronic appointment cancellations, and faculty who are continually distracted by new media and stray off topic every week.

In order to conduct one-on-ones and to handle these situations, incoming graduate students who are hired to work one-on-one with faculty must be properly trained. Training students to be mentors is organized by an overseeing project faculty member and conducted by graduate students who have mentoring experience. These cross-training sessions, where students train each other, are held early in the semester.

The most fundamental of the cross-training sessions conducted is "how to conduct one-on-ones." In this session trainees are introduced to a packet of materials created by project staff and students to assist both the faculty member and the student mentor with the one-on-one sessions. Included in the materials packet is the technology needs survey, the letter of agreement to be signed by the faculty participant and the student mentor, a copy of the technology intensive standards, and examples of the types of materials a mentor may want to use to keep their sessions organized and on track, such as lists of questions for faculty members, sample agendas and suggestions for how to keep sessions focused.

Essential features of this training session are role-playing and activities in which the new mentors are asked to come up with solutions to "sticky" situations. The first activity uses a series of written scenarios. New mentors are paired up and asked to read the scenarios, come up with solutions and provide and receive feedback on the solutions with the rest of the group. The second activity involves role-playing. Experienced graduate students act out skits of problematic one-on-one sessions and ask for feedback on various solutions. Feedback from new mentors has been positive about the role-playing and scenario problem solving. They report that it gives them a better idea of what to expect and how to handle a variety of situations. Experienced graduate students are asked to share their specific experiences conducting one-on-ones and provide helpful hints and practical tips for success.

Another cross training session conducted for incoming mentors is on the technology intensive standards. Experienced graduate students report that one of the most complicated parts of one-on-one mentoring is helping the faculty understand how to incorporate the standards into the redesigned course. The ETEC faculty member who headed the standards committee is usually asked to conduct this workshop. The faculty member gives a brief history of the standards project including how and why they were developed. She also goes over each standards category in detail and provides specific examples from previous proposals on how a standard was incorporated into a technology intensive course.

A third cross training session is provided to incoming student mentors on customer service. As representatives of the grant project and the Educational Technology Department providing a service to the college, the student mentors are expected to project professionalism, helpfulness and a positive attitude. This session goes over basics of positive communication, attentive listening, courtesy with fellow workers and customers as well as telephone behavior.

These cross-training sessions compliment the technology-based sessions conducted on a more informal basis by the students working for the project. The faculty member overseeing the one-on-ones and a graduate student organize cross-training sessions to be conducted by ETEC graduate students with specific knowledge in software or hardware. For example, ETEC graduate students have conducted cross-training on web design using DreamWeaver and Claris Home Page, advanced features of MS Word, how to use equipment such as data projectors, digital video and still cameras, effective web searching, digital video editing, WebCT and how to construct PowerPoint presentations.

The one-on-one sessions have provided individualized assistance in the same fashion as mentoring relationships. According to Archer (1999) many teachers are not confident in integrating technology into instruction. Based on project evaluations, mentoring faculty members through the one-on-one sessions has vastly improved confidence levels of the COE participants who have already created technology intensive courses.

NCATE (1999) suggests that mentoring and providing feedback is an effective method of professional development in technology integration. A train-the-trainer effort was implemented so those faculty members provided with professional development would also serve as mentors to K-12 faculty. Thus far, 17 general education faculty and 23 full-time COE faculty and 3 instructors have been involved in the project.

Response and Impact

Faculty involved in the project have been positive in their feedback about the workshops and especially the one-on-one mentoring. Surveys and interviews reflect that the most popular form of course redesign assistance is the one-on-one session. Faculty report that while the workshops increase their technology skills, the one-on-ones meet their particular needs and are where they can truly concentrate on their own course redesign. The value of one-on-one assistance is perhaps most evident in the in-service teacher training program launched about the same time the technology intensive training program was being implemented in the College of Education. The Professional Diploma in Education (PDE) program, as a distance education program targeting teachers in rural areas on Oahu and neighbor islands, relies heavily on electronic media, particularly web- based delivery and email communication, and to a lesser degree interactive TV. It was largely due to one-on-one mentoring that the PDE faculty was able to overcome their initial difficulties with Web CT to launch the distance education program.

While the technology intensive mentoring has been highly successful, there are instances where one-on-one sessions have not been successful. Sometimes these cases arise due to mentor-faculty incompatibility. These instances provide valuable insight into program improvement. For instance, a faculty member purchased a complicated statistical software program and wanted to incorporate it in their personal research and statistics coursework. None of the student mentors were familiar with the program. A student mentor attempted to learn it but was also not familiar with statistics and felt that the amount of time it was taking to grasp the program was not well spent based on his limited progress. The faculty member was encouraged to consult with another professor versed in statistics and in this particular software. While most student mentors are familiar with both computer platforms, Macintosh and PC, a situation arose where hardware problems a faculty member was have having with a Mac could not be solved by the student mentor who was more familiar with PCs. Situations like this are referred to other mentors or the Information and Technology Services Department on-campus.

Situations have also arisen where a faculty member has signed up for mentoring and had intentions of redesigning a course but then find they are too busy to add additional work to their load. Mentors may have been told this up-front or may have discovered it gradually through chronic postponing or cancellation of one-on-one sessions. Although faculty may be enthusiastic about redesigning their courses to be technology intensive, some may not be ready to completely redesign their courses. The expansion of the technology intensive project has addressed this challenge through a three-tiered approach to course redesign.

Project Expansion

Although the project has been highly successful, only a third of the College of Education faculty that work with pre-service and in-service teachers have been trained. Two challenges facing the project group are how to recruit faculty members still reticent about using technology and how to provide a continuum of technology intensive courses throughout a COE student's schooling from the Community College level through to their field-based experiences. Continued federal funding from the US Department of Education's "Preparing Tomorrow's Teachers to Use Technology" program (PT3) has allowed the project to expand to meet these needs. The newest project (PT3) is referred to as "LEI Aloha" - Learning Enhancement through Innovation.

To meet the challenge of reluctant faculty, the LEI Aloha staff has developed a three-tiered approach to support the needs of teacher education courses.

Technology Intensive Courses:

These courses follow the Technology Intensive Standards and Guidelines to improve technology literacy while continuing to emphasize course content. Students have a high level of involvement using technology, while faculty meet standards as exemplary role models using technology. In this process faculty need assistance in rethinking and redesigning their courses to integrate technology. They will have to revise course objectives, create new strategies and activities, locate and create new media, and develop alternative assessments.

Technology Applied Courses:

These courses add the use of technology to the current course structure encouraging students to use technology resources in their research, communication, and presentations. The faculty member demonstrates and uses technology in the presentation of course content and communicates with students electronically. Faculty need help to become familiar with and use the multitude of alternatives that technology provides.

Technology Enhanced Courses:

In these courses, the faculty member demonstrates and uses technology in the presentation of course content and communicates with students electronically. Faculty need to become proficient with redesigning their course presentations and using electronic communications.

To meet the second challenge of a continuum of technology intensive courses throughout a COE student's schooling, the project has expanded its mission to include Community College faculty. A majority of COE students have taken courses prerequisite to the COE at the Community Colleges. For many students, Community College faculty members provide the introduction to a college career and have a great influence on how students begin to shape their view of the teaching and learning environment. LEI Aloha is currently working with each of the seven community college campuses of the UH system to create technology intensive courses at all the campuses.

While the first components of the educational continuum are the community college and COE faculty, the final component are K-12 teachers who serve as mentors to students in their field experiences. These teachers play a vital role at a critical time in students' careers. Hinnant (1997) states that "the elements most crucial to the successful integration of technologies into teaching are teachers and their ability to use all their skills to inspire, motivate, challenge, and enrich their students (p. 1)". In these field experiences, students see first-hand whether and how technology can be integrated into the K-12 school environment. Positive role models are crucial at this juncture.

The LEI Aloha project is developing a series of web-based technology intensive teacher education courses. These courses are being offered in conjunction with a technology intensive sabbatical opportunity for K-12 teachers. The program will train in-service teachers to be technology mentors to pre-service teachers completing their field-based, student teaching requirements.

This project has been designed to create a broad ranging impact. It is based on the concept of mentoring and training-the-trainer to integrate technology. COE students are expected to become teachers who will provide their own students with the benefits of their knowledge. This will create a multiplier effect so that in just a few years, including the students of students, thousands of students will be affected.

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