Technology Integration: Best Practices in Higher Education

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Abstract

The primary goal of this study is to explore and identify indicators of best practices in technology integration by the teacher education faculty at The University of Northern Colorado. This is a qualitative study involving seven teacher education faculty members who participated in the University’s federally funded grant, Preparing Tomorrow’s Teachers to Use Technology (PT3). Interviews with faculty, classroom observations, faculty websites, and content analyses of the PT3 proposals written by each faculty member were used to triangulate the data. This study will benefit faculty members and their preservice student teachers by providing insights into their personal beliefs, philosophy, and practices. The emerging indicators of best practices will help illuminate the impact modeling can have on the preservice teachers. The indicators may also help faculty set a benchmark for their work and evaluate their practices against national and state technology standards.

Purpose of the Study

The purpose of this qualitative research study is to explore best practices in technology integration by faculty in teacher education programs at the University of Northern Colorado (UNC). The following research question will guide the proposed study: What are the indicators of best practices of technology integration among higher education faculties? This study is based on the theories of technology integration and, change theory suggested by Gene Hall and Shirley Hord (2000). The benefit of this study will be the illumination of various indicators of best practices of technology integration. These indicators will help educators understand the impact of faculty modeling best practices for preservice teachers, and the ways these preservice teachers transfer the observed best practices to their teaching. It will also benefit the faculty by allowing them to compare their practices against national and state technology standards.

Research has shown that faculty are comfortable using technologies such as word processing and e-mail (McCoy, 1999; Vannatta, 2000), but are not comfortable using multimedia technologies, databases spreadsheets etc. Regardless of their experience with technology, rarely it is used for instructional purposes. A study done by Vannatta (2000) found that an understanding of instructional methods of technology was a better indicator of technology integration than knowledge of the technology applications. The literature review has yielded very little research in the area of identifying best practices in technology integration by faculty in their personal and professional growth that has a direct impact on their teaching. Most of the studies for best practices in technology integration have focused on indicators that are influential at an organizational level rather than at an individual level. Overall, this study will benefit not only the faculty members, but also the preservice teachers who will gain insights into their own personal beliefs and practices.

Method

Participants and Procedure

In June of 2000, the Department of Educational Technology at UNC was awarded a PT3 (Preparing Tomorrow’s Teachers to use Technology) grant by the U.S. Department of Education. This paper is solely concerned with initiatives regarding effective utilization of technology for instruction and modeling of appropriate technology use by UNC teacher education faculty within their courses at UNC.

Since June of 2000, a total of 19 faculty members have been selected to participate in the PT3 grant initiatives. These faculty members, from various disciplines within the university, redesign a course so that it incorporates technology in effective and appealing ways. These redesigned courses are taken by preservice teacher education students during their educational career. Only faculty members whose courses are required for elementary, middle grades, and secondary teacher licensure candidates, as well as general studies and content courses typically taken by these students are eligible to participate in the grant. Faculty members are selected each semester based on a proposal review process conducted by the project director, project manager, and deans of the College of Education and College of Arts and Sciences. Faculty members who are chosen to participate are released from one course and have access to a small budget ($500) for the purchase of software. Each faculty member is also paired with an advanced doctoral student in Educational Technology who serves as the technology coach and instructional designer. The released faculty members also
participate in weekly faculty development seminars on technology use in the classroom.

E-mail was sent out to all 19 faculty members, at the beginning of spring semester 2002 inviting them to participate in this study. Two faculty members had already retired from the University, so seven faculty members were chosen from the remaining 17 faculty members. These faculty were chosen based on their availability to participate in the study, as well as the time frame of the classes to be observed. Of the seven faculty members that participated in the study, four were males and three female. The age group of the faculty ranged between 30 and 50 years, with a minimum of five years teaching experience at the University.

Data Collection Methods

Data collection methods primarily comprised of interviews, observations and content analyses. The seven faculty members were interviewed with an in-depth probing on their perceptions of best practices in technology integration, philosophy of education, rationale for using technology, and impression of the impact technology integration could have on their teaching and eventually on their student teachers.

One artifact for the study was the set of proposals by the seven faculty members. These proposals were written as part of the PT3 qualifying process. Individual websites and projects faculty completed with PT3 support were used in addition to the observations and interviews. This method was used to triangulate the data to reveal broader and more in-depth results.

Data Analysis

The data from the interviews and content analyses were transcribed and read and reread to explore the major themes. Major themes were philosophy of education, perceptions of technology, rationale for using technology and indicators of best practices. The findings reveal that indicators of best practices in technology integration by faculty are highly influenced by the faculty’s philosophy of education and his/her perception and attitudes towards technology. Some of the philosophies of the faculty were: constructivism, pragmatism, cultural and international understanding, and interdisciplinarity of knowledge. These faculty members perceived technology in a myriad of ways: technology as a tool, as a process, as a way of thinking, as glamour, as extensions of human capabilities, as power, as recreation and, as a buffer between abstraction and real world.

It was further found that the best practices of technology integration were contingent upon the faculty members’ rationale for using technology. For example one of the faculty members incorporated multimedia technology into his website to be able to motivate the learners by gaining their interest through use of video and audio. Another faculty member supplemented Blackboard™ technology so as to incorporate unique instructional capabilities, like linking learners to information resources, helping learners visualize problems and solutions through real time data. Some of the other best practices that emerged were: use of personal digital assistants and laptops to be able to communicate with students, use of content specific software for providing more accurate information quickly and creating student friendly material more quickly. Finally the findings could be summarized by a statement made by a faculty member “Best practice is not a tool; it's how you integrate the tool in your teaching and learning process.”

Conclusion

The benefit of this study is to help higher education faculty teaching in teacher education program to benchmark and evaluate their classroom practices against those of the indicators of best practices in technology integration. This will eventually lead to an effective modeling by faculty in their classrooms, thus directly affecting their preservice teachers. Also the indicators of best practices in technology integration support the overall effectiveness of the PT3 initiatives related to technology infusion in the preservice teacher education program as a whole. This research also served as a pilot study for developing an instrument to capture best practices in technology integration by faculty in higher education. The instrument is still under development by the researcher for her dissertation. The purpose of this study was to identify best practices of technology integration by the faculty participating in a PT3 grant. Only seven faculty volunteered to participate, and hence the findings of the study are not necessarily reflective of the best practices in technology integration by all the faculty involved in the PT3 grant.

References


