

PRESEARCHING THE PAST TO RETOOL IN THE PRESENT FOR ACCESS TO THE FUTURE

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Abstract

Computers in Education, a course accredited by the National Council for Accreditation of Teacher Education (NCATE), USA, is the co-requisite of a field experience, Technology in Education. The courses exemplify the integration of technology to teach content, while preparing the next generation of educators. The challenges and opportunities associated with the design of age-appropriate, interdisciplinary curricula, teaching methodology, and advanced computer skills will be discussed during this paper session.

Introduction

Medgar Evers College is one of the premier four-year institutions of the City University of New York. The Education Department offers Associate Degrees and Bachelor's Degrees in Childhood Education, Childhood Special Education, and Early Childhood Special Education, all of which are programs accredited by the National Council of Accreditation of Teacher Education (NCATE), in the United States of America. One of the courses, EDUC 350, provides an opportunity for students to design instructional units by integrating technology to teach content. Authors share research on emerging technologies and their impact on the elementary classroom.

The Education Department of Medgar Evers College is built on a philosophy of culturally responsive teaching, and engages in the preparation of teacher candidates to that end. Candidates are prepared to incorporate teaching strategies to support learning of multi-ethnic and socioeconomically diverse populations of students. Candidates nurture a knowledge and respect for the backgrounds of students within immigrant communities of New York City, and design instructional materials that respond to the needs of their future students.

The Web Quest, an interactive, interdisciplinary instructional unit incorporating web-based resources is one example of instructional design. Three pre-service teacher candidates will discuss their experiences with the development of an authentic, student-centered, interdisciplinary unit. They will guide the audience through web quests in the fields of astronomy, using NASA websites; mathematics, incorporating financial literacy; and marine biology integrating

technology-driven research. The audience will experience the web quest from multiple perspectives.

Technology and Teachers

An exploration of relevant literature revealed some findings. While Harvey (2005) wrote about the effectiveness of learning objects as reusable instructional materials, extensive discussions of emerging technological tools have been the focus of many publications by scientists (Alexander, 2006; Duncan, 2003; Harvey, 2005; McCord 2003) who documented the use of institutional repositories which systematically organize digital content for learning. Duncan (2003) stated that teachers and students determine the effectiveness of technology's use and presented this idea at an e-Learn International Conference in Edinburgh on Digital Repositories. In contrast to Duncan's perspective, Escalada, Graborn, and Zollman (1996) examined the earlier development of interactive digital video when teaching physics.

Fishman (2007) voiced the concerns of educators around the issue of student achievement. According to Fishman, schools face discipline problems with students who react to being "forced to attend schools and experience a curriculum developed for a mechanical era they do not comprehend" (2007, p. 1), so he proposed the implementation of curricula based upon video game technology to engage students. Fishman's idea to use video game technology to implement curricula was supported by statements made in the August 24, 2007 issue of *eSchoolNews*. Here it was suggested the image of technology integration must be updated to address the true core teaching skills needed to prepare students for the world they will face. The article in *eSchoolNews* expressed the concept that in addition to teaching core skills "such as reading, math, science and world languages, themes such as global awareness, financial, economic, business, and entrepreneurial literacy and civic literacy are necessary components of the curriculum with a focus on creativity, critical thinking, problem-solving, communication, information and media literacy, self-direction, leadership and responsibility" (p. 2).

Klopfer, Squire, and Jenkins (2002) discussed the use of Personal Digital Assistants (PDAs) in the instructional setting. These researchers emphasized the mobility, allowing adaptation to different contexts; social and web-based connectivity; and individuality of these tools, and they depicted their application for future environmental engineers to conduct research. Previously, Escalada et al. (1996) demonstrated the use of interactive video simulations in the physics laboratory environment. Ip, Linser, and Naidu (2001) described four crucial roles

in web-based role play: “goal-based learning, role-play, online web-based communication and collaboration and the traditional lectures and tutorials” (p. 3).

Daggett (2003) discussed school reform and instructional technology skills of students that were necessary in their preparation for future employment. Daggett, who assumed the perspective of school counselors who guide students in their pursuit of a competitive role in the 21st century marketplace, said “In many cases, what individuals can do and the skills they can apply have become much more important than where they went to school, what their grades were, or how many credits they accumulated in a field” (p. 239). Daggett referred to the National Adult Literacy Survey, which presented three forms of literacy: (a) prose literacy, the knowledge and skills needed to identify, understand, and use information from continuous text sources; (b) document literacy, the knowledge and skills required to locate and use information contained in functional materials such as job applications and payroll forms; and (c) quantitative literacy, the knowledge and skills required to apply arithmetic operations, either singly or sequentially, using numerals and quantitative data embedded in printed materials (p. 240). Daggett further discussed the implications for K–12 literacy instruction. According to Daggett, in order to compete internationally, education systems within the United States must strengthen literacy skills by teaching reading beyond sixth grade, information literacy, nanotechnology, and the “Semantic web” (p. 242).

Technology Integration and Teacher Preparation

Each of the bachelor’s degree candidates in teacher education takes *Computers in Education* and *Technology in the Classroom* field experience as part of their pre-professional coursework. The students complete projects in preparation for the web quest requiring them to plan a standards-based, interdisciplinary, instructional unit and design a PowerPoint presentation; construct a table of educational theorists as a resource for teachers; and critique websites for educational value. They review the components of a web quest and carefully design each component. Students have an opportunity to present their web quests for peer review prior to presentation in an elementary classroom setting. They are called upon to submit a reflection of the entire experience after completing the field experience, which can become part of their portfolios used to demonstrate accomplishment of two unit standards within the department.

As a course within a program accredited by the National Council for Accreditation of Teacher Education (NCATE), student achievement data is reviewed at the end of each semester. Students receive feedback according to the standards documented in the rubric, and the success of the course has been assessed according to the standards. After a few semesters of teaching the course, findings

revealed an increase in the number of students achieving exemplary standards in the design and implementation of their web quests.

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