Innovative Technologies for Promoting Learning

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Whether in academia or in the clinic, occupational therapists strive to achieve the cutting edge of science and technology. Online instruction has the potential to capitalize on the use of active learning techniques and multiple pathways to learning through the presentation of content via diverse methods (Van Keuren, 2006).

Instructional methods that empower students to assume responsibility for their own learning and encourage the discovery of self-directed learning facilitate autonomy and self-efficacy, both of which are crucial to the development of a sense of competency (Kaufman, 2003). After teaching fully online courses for 7 years, I (the first author) decided to adopt new technologies to enhance Web-assisted courses and provide occupational therapy students with the opportunity to have fun learning while applying critical thinking skills.

Web-Based Course Activities

Although well-designed Web-based course materials (E-packs) are available, I found that these "ready made" courses did not meet the needs of the occupational therapy students. Needing assistance to enhance my own online teaching, I contacted the university's technology services department. Their technology experts provided me with technology support and helped me design Web activities that used emerging technologies. We started by outlining our goals, developing measurable learning objectives, and then developing Web course materials based on those learning objectives. From there we began the task of enhancing online courses as well as several campus-based courses.

Online Presentations

From a teaching perspective, the online environment is definitely different from the classroom. We used an inexpensive tool called TechSmith Camtasia (TechSmith, 2006), which acts like a plug-in for PowerPoint with voice-over capability. In addition, Camtasia allows for basic video editing. We used Camtasia to produce two main products: "mini lecturettes" and narrated PowerPoint presentations (Microsoft, 2003). Mini lecturettes are short streaming videos that help provide guidance and context to a lesson. Students find these materials interesting and useful, and they can even download them to their iPods. Narrated PowerPoint presentations are very useful because they provide a means of producing high quality instructional materials quickly. Both of these online presentations are useful to the students because they provide them with some much-needed "virtual face time." Some students have difficulty in online courses because of isolation effects (Daugherty & Funke, 1998), thus these presentations help alleviate the feeling of isolation and allow the instructor to put a "personal touch" with their voice or video.

Bulletin Board

Instructional technology should empower students to assume responsibility for their own learning (Kaufman, 2003). Does it? Is there any evidence? As online instructors, we should assume the role of a facilitator or guide in the students' education, creating a multidirectional relationship in the learning process. Instructional technology is often much different than the traditional classroom environment where an instructor may spend several hours lecturing to the students, creating a somewhat unilateral relationship in the learning process. Most course management systems include a bulletin board or discussion board, which is an asynchronous communication tool (Miller & Miller, 1999). Discussion boards are similar to a bulletin board in the hallway where people post a message and everyone sees it. Educational researchers argue that students must reflect on their work (Vonderwell, 2003) to facilitate learning; therefore, instructors should establish criteria for quality postings (e.g., quality posts may include some interpretations of the original message or provide a response of a specified number of words).

Computerized Testing

Assessment-rich online content is ranked as a highly functional component of Web-assisted courses by college students (McNaught & Lam, 2005). Although many course management systems provide a means of editing online quizzes and learning activities, several commercial entities have developed third-party products to aid faculty in the development of online exams and student learning activities (e.g., Softchalk).

We used two other tools, Respondus and Respondus Studymate (Respondus, 2008). Respondus helps a faculty member to manage quiz questions and develop online exams or quizzes. The main reason we started using computerized testing in both of the campus-based courses was to prepare students to take tests on a computer, the format used by the National Board for Certification in Occupational Therapy for the licensure exam (2008).

The process of producing online exams is somewhat easy. The faculty member writes a test in Microsoft Word and then Respondus allows the test to be imported and uploaded directly into the online course. To minimize the possibility of cheating, Respondus has developed software called "the lockdown browser." We also set up the quizzes so that students could enter the quiz only if they were using this browser. Finally, another advantage of computerized testing is the computerized grading. Most online course management systems automatically grade the tests for the instructor. Students can

"see" their grades and the questions' feedback as soon as they hit the submit button.

Online Course Activities

In addition to the online exams, we designed and developed several interactive "game like" activities. The following are some examples of the course activities developed:

a. Wheelchair anatomy—A main screen with a picture of a wheelchair, and all of its parts, is listed in the menu on the left. The student interacts with the main screen, places the cursor on a part of the wheelchair, the part is highlighted, and a label and definition appears at the bottom of the page.

b. "Jeopardy!"—A set of questions and answers in a Microsoft Word document was converted into a "Jeopardy!"-style game with questions grouped by category.

c. The Interactive Hand—A tool to teach students the arches and creases of the hand in preparation for splint making. A scanned image of the hand is made interactive by using rollover graphics to label the creases of the hand.

Conclusion

Our goal was to create a virtual learning environment by using technology; however, we realized through our processing that technology by itself is not enough. Learning is an active process that requires a student's commitment to learning. High-tech learning activities require knowledgeable support people and an instructor's commitment, and with the help of campus instructional-technology support personnel, this becomes much more feasible. It is the responsibility of instructors to be aware of available technology and to provide students with didactic, problem-oriented, real-world experiences to foster their success in clinical practice. ∎

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ePortfolio: A Tool To Support Best Practice in Occupational Therapy Education

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In an effort to link innovative pedagogy with digital technology and new thinking about assessment, the occupational therapy assistant program at LaGuardia Community College in New York City implemented the use of ePortfolio in its curriculum. Together with nursing and physical therapist assistant students, OTA students began creating their first ePortfolio, using a template developed specifically for allied health majors. Portfolio folders are titled Welcome, About Me, Educational Goals, Courses and Projects, Resume, Links, and Contact information. Student-authored artifacts are collected and electronically archived from courses given at the beginning, midpoint, and end of the curriculum. Therefore, students have the opportunity to gain fluency in electronic media, demonstrating achievement of the related Accreditation for Occupational Therapy Education (ACOTE®) standard B.1.3 (ACOTE, 2007).

The Steps

One 2-hour ePortfolio lab is scheduled each semester, where students are led through the following steps.

Collect. Students upload a progression of written, audio, and video work to their ePortfolio storage area. Student technology mentors assist students with scanning and creating or uploading documents. This process promotes contextually applied fluency with software use.

Select. Students are encouraged to meet with their professors for ongoing discussions on what will be placed or replaced in their ePortfolios. The student uploads the selection from the storage area to the ePortfolio. Students can learn to identify and recognize growth in their own academic and professional skills because selection requires comparison over time.

Reflect. Students use ePortfolio to reflect on projects, growth, and learning experiences, identifying pivotal moments that have contributed to professional development. They are given assignments and questions to prompt them to reflect. Feedback enables students to make modifications to progress toward competencies designated by the college. Barrett (2008) linked multimedia technology with storytelling as a powerful tool for deep learning and reflection. Because storytelling and narrative reasoning in occupational therapy clinical reasoning are interrelated, our faculty supported the use of this step to enhance integrating knowledge that directly translates into occupational therapy clinical practice.

Connect. Students use an ePortfolio enriched by their academic, professional, and life experiences for a variety of purposes: applying to graduate school (career development), interviewing for a job, sharing with clients, meeting credentialing agency requirements, and verifying skills and achievements for professional organizations. Panetierri (2004) acknowledged that students can direct employers and graduate schools to their unique electronic work, but recommends broader strategies for success.

Benefits for Students and Classes

Although there may be concern about the time needed to compile and maintain an ePortfolio (Rodriguez, Linton, & Rodriguez, 2008), the overall benefits far outweigh the challenges. Students who are not good test takers may find that ePortfolio gives them an opportunity to express their skills and knowledge in a different medium. It also actively engages students by forcing self-reflection and promoting integrated learning.

In a national community college survey that compared overall course outcomes at LaGuardia using ePortfolio with course outcomes of community college students nationally who did not use ePortfolio, students in ePortfolio classes had higher rates of engagement (Community College Survey of Student Engagement, 2008).

Technology innovators are collaborating on new approaches to ePortfolio. Batson (2002) is leading a collaborative project to conceive of ePortfolio in virtual worlds and invites ePortfolio instructors to consider how best to cultivate ePortfolio thinking. There is a current colloquial pedagogical debate regarding whether virtual media stimulates more or less independent critical thinking because of the issue of "being led" versus leading and directing one's own acquisition of knowledge, which may better support lifelong learning habits. Further study of this phenomenon is needed.

ePortfolio efforts at LaGuardia Community College have been made possible by funding from the Title V program of the U.S. Department of Education, the Fund for the Improvement of Post-Secondary Education (FIPSE), the New York State Department of Education (through the Carl D. Perkins Vocational and Applied Technology Act), the CUNY Coordinated Undergraduate Education Initiative, and the Ford Foundation. As a result, LaGuardia is now offering mini-grants to programs and other schools to explore and introduce Web 2.0 approaches, including wikis, digital stories, and other technological innovations.

In an intradepartmental survey, 90% of LaGuardia Community College occupational therapy assistant students strongly agreed that ePortfolio helped them reflect on their career goals (Greenberg & Powell, 2008). Ninety percent strongly agreed or agreed that they would show their ePortfolio to a potential employer, 80% agreed or strongly agreed that they would use ePortfolio to apply to a 4-plus year college, and 70% strongly agreed that they would show ePortfolio to their family and friends. These data reflect the use of ePortfolio as a powerful professional career development tool for students (Beck, Nava, & Sharon, 2005). Although research is still evolving, students in ePortfolio courses report that they are more engaged in their learning (Barrett, 2005; Eynon, in press).

The Process

ePortfolio is a virtual place where student work is compiled and students share their portfolio with faculty. ePortfolio can also be linked with Blackboard, an online course management tool. Faculty can assess an individual student's work, a class composite, and a full program evaluation just by accessing a computer. ePortfolio also allows for readily comparing student work in introductory courses with that of final courses.

Assessment

A key institutional goal is to use ePortfolio as an evaluation tool to measure the development of student competencies throughout their college experience. Using the software, faculty can perform periodic program reviews that support the data collection needed for assessing student outcomes. Specifically, the technology could be used in occupational therapy academia for a portfolio of the program itself that functions as an annual report, with sections that correspond to ACOTE indicators for faculty effectiveness, student satisfaction, and more.

In contrast to individual selection of artifacts, students also anonymously deposit at least one piece of work each semester into categories that include written communication and critical thinking, oral communication, quantitative reasoning, information literacy, and technology. Student work is assessed by consistent cohorts, both in an introductory course for a given year and subsequently for a final course in the curriculum sequence. An assessment team uses predesigned rubrics to analyze cohort progress over time for the deposited work in each theme area. This progress is then measured against preset target goals and results in an action plan.

The Digital Divide

Preparing an ePortfolio enables students to cross the digital divide (i.e., inequitable electronic access). The video *Did You Know? Shift Happens 2.0* (Fisch, 2007) emphasizes the exponential changes in the digital age. Students report increasing competence as they develop their ePortfolios and increasing recognition of the value of computer-related skills (Greenberg, Powell, Early, Mallari & Lazarus, 2008). In addition, "new technologies are making distance irrelevant…revolutionizing the way we learn, work and play…and…how we deliver health care" (National Telecommunications and Information Administration, 2008, p. 4).

Conclusion

Specialized software firms and information integrators have joined academic members on consortiums that offer models of a premier gold standard (www.eportconsortium.org). The electronic format of ePortfolio entices students used to the fast pace of text messaging and social Web environments and builds on those skills. Faculty can use ePortfolios to promote learning, provide a system of electronic program assessment (educational outcome management), and expand opportunities for student participation. It is important for programs to have technological support at the college level. Changing and emerging technologies will continue to enhance ePortfolio learning as they are incorporated into classroom environments and course content. ∎

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