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When in Rome: Teaching 21st Century Students Using 21st Century Tools

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Abstract

The purpose of this paper was to examine the benefits of supplementing the classroom environment with available technology to engage students both within and outside the classroom. The blended-learning model was the primary context for examination, though both strictly face-to-face and online teaching will benefit from the methods discussed. A review of the literature and contemporary teaching methods provided the foundation. There were indications that the use of engaging and interesting teaching methods provided a learning environment that encouraged student interest in the material and supported student retention. Faculty members will need to independently access the tools mentioned in this paper and independently evaluate their potential.

When in Rome: Teaching 21st Century Students Using 21st Century Tools

Teaching today's students requires communicating with them and keeping their attention while they live their lives in high gear, with access to music, video, and friends on demand. In this world of attention-challenged and tremendously busy scholars (on both sides of the podium), faculty may feel the need to find a solution to this communications problem. Recent technology-based trends and innovations have provided communications tools to assist us with extending the learning environment outside of our classrooms.

This paper will address some of the tools available to engage students in higher education. The idiom "When in Rome, Do as the Roman's Do" was chosen to demonstrate the

mindset suggested for today's faculty to ensure we teach the way today's students learn. Only by implementing the tools in use by today's students can today's teachers effectively communicate with them, and effectively teach them.

Why Do Something Different?

Yesterday's college students were primarily "traditional." They were twenty-somethings who had recently finished high school and had chosen to follow the long-standing advice of past generations to continue their education immediately. Their college and university courses were taught using the same teaching methods to which they had grown accustomed in high school, and to which faculty had grown accustomed during their own years in higher education.

Today's college students are different. There are many descriptions used to identify this group, but none seems as effective as "The 'Net Generation" (Oblinger & Oblinger, 2005). This generation is not necessarily one based on age – it is defined by experience, expectations, and exposure to information-gathering techniques that place institutions of higher education in direct competition with such collectors, repositories, and disseminators of information as Google and Yahoo! (Prensky, 2001; Oblinger & Oblinger, 2005). The experiences and tools available to this group of learners give them the ability and expectancy to acquire information on virtually any subject within moments of thinking about it. They are the users of microwaves, the purchasers of iPods, the members and users of the YouTube video service, and the community members on social networking websites like MySpace and Facebook. They have spent less than 5,000 hours reading and over twice that many hours playing video games (Prensky, 2001). They are digital (Roman) natives, while many of us are digital (Roman) immigrants (Prensky, 2001).

What should we do differently?

One of the goals of higher education is to increase opportunities for interaction between

students and faculty (Sreebny, 2007). By increasing interaction, faculty can also increase the perceived value of higher education for students, ensure student satisfaction, and build student loyalty to the institution. Bruning and Ralston (2001) suggested that faculty ensure they are available to students for both formal (in class) and informal (outside the classroom) communication. The challenge, then, is to find out where students are, so that interaction and informal communication can occur. So where do students congregate (known in Rome as 'hanging out')?

Though the answer may be the university food court, the neighborhood coffee shop, or their dorms and apartments, faculty need not look too far from their office desktops to access the majority of their students outside of the traditional classroom environment. Today's learners use modern technology in their everyday activities, and faculty focused on learner-centered activities and approaches can benefit from this predisposition. Most of today's college students have an online presence and regularly communicate online in some form (Oblinger & Oblinger, 2005; Huwe, 2006; Sreebny, 2007).

By using familiar technology environments, today's faculty can cultivate a learning environment in which they can better reach today's students (Kagima & Hausafus, 2001). The technology changes that today's students have embraced give us, as those tasked with "educating" them, two options. We can embrace their technology, or we can deny its impact on their (and our) lives. The first choice will allow us to maintain our positions (both individually and collectively) and continue to assist students with their desire to learn. The second choice may put us in a class by ourselves – with students avoiding our classes and universities in favor of those who make an effort to understand and attempt to respond to their needs.

There are several options available for creating this learning environment. Perhaps the

most logical online option is the extension of the face-to-face classroom by using classroom management software (CMS). CMS serves as a classroom replacement in strictly online classes. The classroom extension suggested here is to use CMS to create what is known as a hybrid, or blended-learning environment (Osguthorpe & Graham, 2003). There are many types of CMS, including Desire2Learn, WebCT, and Blackboard. Each has an area where lecture notes, syllabi, and other files (and grades) are available to students. The addition of an online learning component to a face-to-face class is the most common way of creating a blended-learning environment (Osguthorpe & Graham, 2003).

By having an area outside the traditional classroom where students can access course documents and information, faculty can provide added opportunities for students to reflect on course material and classroom discussions. In addition to file storage, a CMS has areas for synchronous and asynchronous communication (also known as 'chat' and 'discussion areas'). Though synchronous communication may be useful to replicate the real-time interactive feeling of the classroom in online courses, for supplementing face-to-face courses the asynchronous method is more appropriate, as higher education transitions to a flexible, asynchronous mode (Aggarwal, Adlakha, & Mersha, 2006). By allowing (or suggesting) periodic contributions to an online discussion environment, faculty can provide added opportunities for students to participate in the course and reflect on course topics between face-to-face class meeting times. Though many feel that technology enhancement of the classroom is beneficial, few faculty use web-based CMS to supplement the classroom interaction (Haas & Senjo, 2004). As a result, students' exposure to course material may be limited to class sessions and the times they devote to reviewing the material between class sessions.

As Bush (1994) observed, faculty "live on the brink of change" (p. 2). In order to keep up

with changes, creative faculty members may find it helpful to find innovative ways to keep students actively engaged in learning (Moskal, Dziuban, Upchurch, Hartman & Truman, 2006). The process of *engaging* students, as used in this paper, includes using the benchmarks identified by Smith, Sheppard, Johnson, and Johnson (2005): encouraging achievement by setting high expectations, including activities to promote active and collaborative learning, increasing opportunities for student-faculty interaction, and displaying a focus on learning opportunities, in a supportive campus environment.

A simple way for faculty to engage students in the traditional learning environment is to bring relevant websites into the classroom in real-time. In the alternative, providing the web address for sites in the CMS discussion area would serve the purpose in a blended-learning environment. Websites that have relevance to the material can often be easily located – just before, or during, class – as can videos that are available from public access sites like YouTube.com.

It takes additional time and effort to incorporate technology into the traditional classroom and to establish and maintain a CMS-based classroom extension. This obviously takes a commitment to and demonstration of personal creativity on the part of the faculty member (Bush, 1994). By expending the added effort, faculty demonstrate a commitment to go beyond the minimum, as students will need to do in the real world (Bush, 1994).

Is What We Are Doing Working?

The placement of a classroom supplement in an online environment appears appropriate for most students. Over 80% of 18-34 year olds have an online presence (Sreebny, 2007). By creating an area where students can engage in dialogue about classroom topics outside the classroom, faculty can provide opportunities for students to solidify their understanding of the

course material. In the traditional classroom, students' attention, interest, and potential for interactivity are lost in a relatively short time (Robinson, 2000; Oblinger & Oblinger, 2005). In order to capture and retain their attention and increase their potential for learning, faculty need to know how to reach students in their natural environment (Carnevale, 2006).

Faculty can engage students by providing relevant information using the traditional lecture method. Lectures give maximum control to faculty, but do little to assist the student in developing critical thinking skills (Robinson, 2000). The primary reason faculty use this teaching method is that it is familiar. The exclusive use of this method can hinder the learning environment. Imagine an encounter with someone who speaks a different language. The alternative to learning the language of another is often to speak loudly and slowly in hopes they will somehow be able to understand. The exclusive use of familiar teaching methods is the academic equivalent of speaking louder and slower. Today's faculty has many options available for use in providing information to students. Traditional lecture style can be used, but it should be mixed with activity (Robinson, 2000). Activity in the classroom could consist of brief periods of student discussion, a short video (provided by faculty or a previously identified student volunteer), or even a preplanned collaborative project.

Creating an environment for interaction (also known as *active learning*) provides opportunities for faculty-student interaction, both within and outside the classroom. Faculty should look for and capitalize on opportunities to develop relationships with students (Bush, 1994). Students have been urged to build relationships with professors (Emery & Tian, 2002). Recently, focus groups reported personal relationships with faculty enhance the student's academic experience (Bruning & Ralston, 2001). Osguthorpe and Graham (2003) suggested using learning activities to increase the engagement of students and faculty in both online and

face-to-face environments. That focus allows for (and requires) thoughtful preparation and course design.

Developing personal relationships with students requires an interest and investment in the student's academic and personal well-being (Bruning & Ralston, 2001). If the interest exists, the investment might well come easily. Faculty members set the tenor of the relationship early in the semester (Bruning & Ralston, 2001). By ensuring students know they are available, faculty members can lay the foundation for a more productive learning experience.

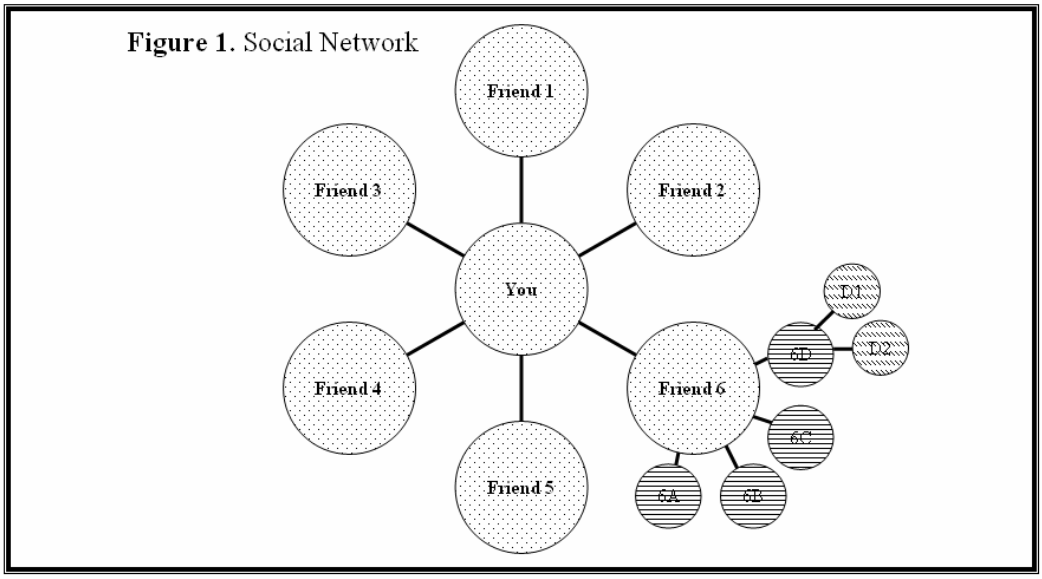
How Can We Do It Better?

Students need active learning methods to help them grasp the complicated and controversial content inherent in the professional community in which they plan to work (Robinson, 2000). Most of our learning, especially in higher education, comes from a secondary experience (Jarvis, 2006). Faculty, when they have professional experience in their discipline, often use that experience as a foundation for explaining concepts and theories to their students. This method, though widely used, is often deemed ineffective, or at least inferior, to primary experience (Jarvis, 2006).

So what can be used in our teaching repertoire that students have primary experience with? One of the recent scholarly contributions of the organizational behavior discipline is in the area of networking. Communities of practice (Millen, Fontaine, & Muller, 2002) and social networks (Gulati & Gargiulo, 1999) are examples of work done recently in this area.

A social network is an "explicit representation of the relationships between individuals and groups in a community" (Finin, Ding, Zhou, & Anupam, 2005). Figure 1 depicts a basic social network. Woods and Ebersole (2003) noted a direct link between optimal learning and social networks where collaborative learning was occurring. Oblinger & Oblinger (2005)

observed that today's students prefer working together and learning in a team environment.



The primary position in the figure is the individual in the center ('You'). From there, connected to the individual, are 'friends' (also known as contacts), depicted here as Friend 1-6. A friend is someone you invite or allow to join your list of friends; though not necessarily someone you have met (Winn, 2005). Connected to each of the individual's friends are their friends (depicted here as 6A-D, to represent your Friend 6's four friends). If you also know and connect with one (or more) of these friends, they could be linked to you, as well. Figure 1 also depicts Friend 6's friend 6D's friends, represented here as D1 and D2. Social networking sites abound on the Internet. The challenge is to find out where, how, and with whom students congregate and find ways to incorporate learning opportunities into those areas – outside the classroom.

Social interaction was one of the six goals of faculty who design blended-learning environments (Osguthorpe and Graham, 2003). It is important for students to understand the potential benefit of interaction and community (Hon & Brunner, 2002; Smith et al., 2005). Faculty should bear in mind that participation in social networks requires an initial introduction. Once in the network, there should be little difficulty encouraging students to interact with each

other (what often comes naturally). This can be accomplished by sharing relevant news articles, commenting or following up on conversations in class, acknowledging student's birthdays, and other common communication starters. Students integrate their personal technology into their educational and personal lives (Moskal, et al., 2006). As a result, students have the right to expect faculty who have a stake in their learning experience to implement technological advances that are useful in higher education.

How do we know it will work?

The learning curve for faculty who are not technological adept may be an issue. Keeping up with technology can be a significant source of stress – comparable to the demands to publish and conduct research (Haas & Senjo, 2004). This becomes especially difficult when combining the power of the internet with the face-to-face classroom. Faculty teaching in strictly online classrooms must show immediacy related to learning (Woods & Ebersole, 2003). Faculty using a blended-learning approach to their traditional face-to-face classrooms should also demonstrate a sense of immediacy when responding to students, though the timeliness of the response may not be as critical as it is in the strictly online classroom. The role of faculty in exclusively web-based education shifts from deliverer to facilitator, while the student's role shifts from receiver to active participant (Aggarwal, et al., 2006). In a blended-learning classroom, the faculty role may alternate between deliverer and facilitator from day to day. Given the above considerations, it appears that faculty should strive to establish a blended role they can maintain throughout the course.

Adapting to Roman Culture

Today's faculty are increasingly considering the need to transition from a traditional teaching style to one more suited for and beneficial to today's students. Academics generally

agree that using techniques like active learning, evidence-based learning, and various technology-based, face-to-face teaching methods is beneficial to the student and the learning environment (Robinson, 2000; Finckenauer, 2005; Haas & Senjo, 2004 – see also Kagima & Hausafus, 2001). The use of technology to facilitate learning presents great opportunities and special challenges (Knowles, Holton, & Swanson, 2005). Technology can be used to facilitate self-directed learning to supplement the traditional classroom experience (Knowles et al., 2005). Technology enables learners to ensure a fit between learning and prior experience (Knowles et al., 2005). In addition, technology provides an opportunity for enhancing the learning environment by using real-world examples (Knowles et al., 2005).

The suggestions and observations in this paper are not tool-specific. The student and the effectiveness of the learning environment are the suggested focus – not the technology used to engage the student and supplement the learning environment. The focus for implementation of these concepts should not be on the tools used, or on the techniques applied. Technology is just a tool for making a course more available to students (Thoms, 2006). The focus should be on the approach to learning (Weimer, 2002). The challenge is to meet students where they are, while being able to straddle old and new teaching and communication methods (Huwe, 2006).

In order to provide students with a valuable learning experience, today's faculty often use collaborative group and teamwork to improve the quality of learning (Sreebny, 2007). Reasons cited for using this technique include the need to prepare students for real life work environments and creating opportunities for increased student-student and student-teacher interaction (Smith et al., 2005; Sreebny, 2007). Group work, when combined with active learning styles, can be used to discuss controversial issues and encourage the development of creativity, decision-making, and critical thinking skills (Robinson, 2000). The use of group work, even when protested

against by students, shows the appropriate commitment of the faculty to the community and future employers. It comes as no surprise that learner-centered approaches may encounter resistance, as they require additional work on the part of the learner (Weimer, 2002).

Social networks are a powerful foundation from which to develop group identity and cohesion. Social networks are often examined in the context of the *small world* phenomenon – everyone in the world is accessible through a "short chain of social acquaintances" (Milgram, S., 1967, as cited in Finin, et al., 2005, p. 422). For a social network to be relevant to the learning environment, it needs to be about something, it needs to have a purpose (Downes, 2005). Many social networks have limited practical use (Downes, 2005). To avoid such limitations, the suggestion here is to use a social network that already has structure, subscribers, and relationships, not the creation or development of a new social network. By capitalizing on the existence of a pre-defined social network, faculty can catalyze the expansion of the learning environment. By gaining access to social networks in which students are comfortable and already established, connections with those students can be cultivated and developed to facilitate the engagement of students in face-to-face classroom discussion.

Many in higher education are using, or to some extent evaluating the use of, contemporary social networking technology such as MySpace or Facebook (Carnevale, 2006; Lamb & Johnson, 2006; Lindenberger, 2006). Though the reasons for such exploration are varied, the essence appears to be that learning always occurs in a social context (Jarvis, 2006). Social networking sites allow users to create a profile and build a network of friends (Lenhart & Madden, 2007). Social networking technology provides a virtual meeting environment for friends to share relatively personal information, thereby getting to know something about each other without expending the time needed to introduce each other and get comfortable discussing

personal issues. Social networking sites allow a personal form of regularly-used communication, much like a mobile phone number or personal email address. With social networking sites, meeting and getting to know people with whom one shares interests or contacts is not limited by time and space. These sites provide the ability to build a trusted community, which becomes useful to facilitate the introductions of others without being present, share one's opinions about specific items and events, and share news and information with a pre-screened and pre-selected group of people – simultaneously. The technology allows groups with similar interests to form and share information and ideas in both synchronous and asynchronous communication. The function is not unlike the party line or CB radio conversations of previous generations, except with social networking sites the individual can choose who "listens in."

So how useful would social networking be in developing relationships in a learning environment? Are our students likely to have access to and regularly use this technology? On the first day of college, 85% of college students have a Facebook account (Sreebny, 2007). By the end of the first semester, 94% of college students have a Facebook account (Sreebny, 2007). A query of the Facebook site on February 22, 2007, determined there were 111 MTSU faculty registered with Facebook. Although some appeared to be duplicates, and a sampling indicated many were inactive, that number represents 12.3% of the 901 full-time faculty members employed at MTSU (personal communication, K. Keene, February 22, 2007).

Faculty who want to develop relationships with students might find it easier (and more likely) if they do so with communication methods used by students. While e-mail is still the most widely-used means of correspondence in the world (Sreebny, 2007), many students prefer messaging on sites like Facebook or MySpace over campus email (Carnevale, 2006). Using preferred methods to communicate with students may mean the difference between instruction

and engagement.

What Will We Get From The Investment?

Universities provide opportunities for students to develop and hone the skills needed for success after graduation. The contribution of the University to the community is a well-rounded college graduate that can provide quality output in their profession (Bush, 1994). Many jobs require teamwork and good communication skills (Robinson, 2000). A well-rounded graduate, then, should be one who can generate innovative ideas in a team environment and convey those ideas to others on their team and in their community.

Virtual communities make an important contribution to an individual's social, educational, political, and business lives (Finin, et al., 2005). Developing and capitalizing on the use of social networks, it appears, would strengthen the ties between students engaged in an active learning process. Social networking sites for professionals are a likely extension into the professional world for use by faculty and alumni to maintain contact. The technology sector has embraced this phenomenon, and many in traditional professions are following suit (Copeland, 2006).

Universities can use technology to help extend their access to the community and their connections with alumni (Bell, Martin & Clarke, 2004). Implementing the use of social networks while students attend college would allow faculty to maintain contact with those students as they go out into the community following graduation. Using social networks to stay in contact with graduates would increase the value of the faculty-student relationship, and might lead to a more loyal cadre of alumni. The perceived value to alumni could be reflected in their loyalty to the university, as demonstrated by a partnership in areas like employment of later graduates, support for athletic organizations, and financial contributions.

Conclusion

Challenges for faculty in higher education include finding opportunities to give individual attention to students, providing timely and thorough feedback, and encouraging problem solving (Aggarwal, et al., 2006). These opportunities may be facilitated using technology-based methods of interaction, as described in this paper. The use of traditional email communication and the tools embedded in CMS indicate the willingness of faculty to communicate with students, and these efforts show a modicum of technology adaptability. They also, unfortunately, appear to display the mindset portrayed when using only those teaching methods that are familiar.

Examination of the issues addressed in this paper indicates that more focused analysis is appropriate. New technology may not have a significant impact on all teaching methods, and the preferences of students need not cause a radical transformation of teaching style. However, the emergence of widely used technology that provides a natural environment for learning while in college and exponential collaborating opportunities in the professional world suggests that continued examination of these developments may be in order.

As the teaching environment adapts to another generation of learners, faculty might better serve the university, the community, and the students by evaluating the methods used for conveying information and knowledge. By making an effort to understand the technology-assisted world that today's students live in, today's faculty displays a level of commitment likely to result in a demonstrated and continued loyalty to the university by tomorrow's graduates.

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Faculty Survey:

Knowledge and Use of Information Technology

In Leadership Education

By: Gary F. Schneider

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Executive Summary

The residency project described below was a research study that explored the knowledge and use of information technology (IT) among faculty members in the Department of Leadership at the University of Memphis in the spring of 2006. The project was established to complement the study being conducted by a fellow student to explore the knowledge and use of IT among graduate students in the Department of Leadership, to consider patterns of use by faculty groups within the department, and to supplement the information provided by the EDUCAUSE Center for Applied Research (ECAR) in its recent annual surveys concerning the knowledge and use of IT among undergraduate populations.

The ECAR survey (done annually since 2004) was the springboard for implementation of this residency project. The most recent document reporting data from that survey identified important indicators that suggested the present study could be of value to the Department of Leadership. In the ECAR survey, the research team determined that, among the undergraduate students who strongly agreed their instructors used IT well, 68.9% indicated greater engagement in their coursework, 85.5% indicated increased interest in the subject matter, and 73.3% indicated increased understanding of complex concepts (Kvavik and Caruso, 2005, pp. 65-66).

Comparisons with the 2005 report by Kvavik and Caruso indicated that over 70% of the undergraduate students interviewed in the ECAR study indicated a preference for at least a "moderate" use of IT as a means of instruction (p. 58). In the present survey, faculty in the Department of Leadership expressed an even stronger preference, with over 80% preferring at least "moderate" use, and the majority of those indicating a preference for the "extensive" use, of technology in the classroom. Although, the DL faculty did not assess the level of impact on their students' learning as highly as was described in the previous paragraph, they did indicate a general liking for IT as an instructional tool, felt it had a positive impact on their teaching, and, for the most part, expressed confidence about their abilities to use IT well. While the ECAR students rated "convenience" as the chief benefit offered through IT, the DL faculty gave their strongest scores to the ways in which IT has helped them communicate better with their students.

The age range of those who responded to the faculty survey was high, with most of the respondents being 50 or over. The graduate students in the Department of Leadership, who responded to the concomitant survey (spring 2006), reported a range of lower ages but still tended to be high, with over 40% of them being 40 or over. The range of teaching experience among the faculty was considerable. While the majority of responses were from faculty who had been teaching at the graduate level for less than five years, there also were several who reported that they had been teaching for more than 12 years, with higher proportions of these among full-time (FT) faculty more than part-time (PT) faculty, and among Higher and Adult Education (HAE) faculty more than Kindergarten-12th grade (K12) faculty. The majority of faculty who responded to the survey was PT faculty more than FT, and HAE more than K12 faculty.

In the concomitant surveys, majorities of both students and faculty reported ownership of a computer. Students, however, reported a higher rate of laptop ownership, and were more likely

to own other types of electronic devices that could be used in relationship to coursework. Both students and faculty indicated that they used electronic devices a fair amount for writing documents for their coursework, but the highest score concerning the use of technology was related to e-mail, for which the faculty scored significantly higher than did the student population. FT Faculty consistently scored higher in this section than did PT faculty and with the exception of word processing (on which they were practically identical) K12 faculty consistently scored higher than did HAE faculty in the use of the various applications made available through IT. Perhaps most important, in the section on the uses of IT, both faculty and students reported that they did not use several features that are available to those who are fluent in the multiple uses of IT. This "non-use" pattern was prevalent in both the students' and the faculty's reports on skills such as creating graphics; creating and editing audio/video; and creating web pages.

In the section in which respondents self-rated their IT skills, the faculty and students were very close in their word processing skills, but for every other application that was reported, the students rated their abilities higher. In this same section, FT and PT faculty displayed a similar pattern – almost identical on word processing, but FT faculty feeling more adept than PT faculty at almost all other applications. The K12 and HAE faculty members also were very similar on their scores for word processing, but K12 faculty rated themselves higher on all other applications. When asked to compare their skills to those of their peers, however, HAE faculty were much more likely to rate themselves as "much more skilled" than were K12 faculty.

In response to the questions regarding broadband access and how they accessed the Internet, faculty members were much more likely than students to depend on school-operated wired broadband service, whereas students were more likely to depend on commercial

broadband service. PT faculty indicated a much higher level of dependence on school-operated wired broadband service, while FT faculty indicated a preference for commercial broadband service. Neither the faculty nor the student groups reported much use of wireless technology as their primary means of access to the Internet. Among the faculty that did report use of a wireless network, however, both FT and PT faculty were most likely to use the school-operated wireless network.

Regarding the use of technology in the classroom, almost half of both the faculty and student populations preferred the "extensive" use of technology (with the faculty reporting a slightly stronger preference). The faculty, however, displayed a decided split in their preferences – with FT faculty expressing this preference at twice the rate of PT faculty, and K12 faculty much more likely than HAE faculty to indicate a preference for using technology extensively.

Whereas only about half of the faculty had used course management systems (CMS) to teach their courses, almost three quarters of the students had taken courses in which a CMS was used. Among those who had used a CMS, both the faculty and student groups expressed very positive feelings about the experience (with students displaying an even stronger liking for the technology). Again, on this concern, faculty displayed a wide range in their preferences – FT faculty were twice as likely as PT faculty to have used a CMS, and were more than twice as likely to have reported positive responses to those experiences. Among the HAE and K12 faculty groups, usage of the tool was about equal, but half of the K12 faculty was neutral in their evaluation of the technique, while a fifth of the HAE faculty expressed a negative impression.

In responding to the question of whether IT had improved their respective roles as teachers and learners, both the faculty and the students groups answered the question very positively. Overall, both K12 and HAE faculty groups displayed high scores on this question,

but K12 faculty generally presented a stronger response. For the most part, both faculty and students in the department appeared to be quite happy about the IT resources available to them. K12 faculty, however, did express some concern regarding the age of their hardware and software, slow or inadequate network availability, and inadequate technical assistance. In spite of the positive feelings about their IT abilities, both the faculty and student groups expressed a desire for more training with respect to how IT can improve their coursework.

In light of the information provided by the faculty and students in the Department of Leadership, the following recommendations are submitted by this writer for consideration by the department.

◊ The department should help make more training in IT available for both students and faculty. For students, this might involve changes in the core curriculum (e.g. requiring a course specific to these skills). For faculty, this might involve various training formats – and a stronger relationship with the Advanced Learning Center (ALC) – to increase both ease and confidence levels in using IT.

◊ The department should encourage faculty to take advantage of the ALC's fellowship program for helping faculty implement IT more fully into the curriculum. On a larger scale, the department should submit an application to the ALC, seeking one of the *Innovation to Excellence in Learning* grants for next year. Please see "TAF Innovation Grants" at this site, http://alc.memphis.edu, for more information related to these grants.

◊ The department should consider hiring a resource person specifically charged with the responsibility of helping faculty become more adept and more comfortable in the implementation of IT resources. Other organizations (e.g. school systems) have experienced

good results by using such a position to accentuate and develop this initiative as a priority within the organization.

◊ The department should provide training with respect to creating graphics, creating and editing audio / video, creating web pages, and use of online library resources. These are IT skills that could add markedly to the educational experience for both faculty and students.

◊ The department should offer training for part-time faculty members in order to help them better understand the various ways in which technology can be used in the classroom – e.g. some part-time faculty may need assistance in learning how to use a course management system effectively. As students develop increased expectations regarding their instructors' IT skills, it will be important that part-time, as well as full-time, faculty are able to feel confident about their abilities.

◊ In order to better measure IT fluency on an ongoing basis, the department should consider implementation of a pre-test / post-test process for students involved in the department's programs.

◊ The department should conduct this survey again. The writer would recommend doing it annually until the department feels it has sufficient data to be able to construct a sound longitudinal view of the multiple issues addressed herein. To improve the response rate among students, it would be good to explore ways that faculty might encourage increased participation among the various student populations.

Knowledge and Use of Information Technology in Leadership Education

The document that follows is a description and analysis of research that was conducted in partial completion of the requirements for the Doctorate of Education degree program in the Department of Leadership at the University of Memphis during the semester of spring 2006.

The history of higher education in America is rich in heritage – a heritage that has developed as institutions of higher learning have established their place in society and in the lives of those who comprise their populace. Higher education today, however, is in the midst of a significant upheaval – one born of at least three related, but distinct, forces. The first of these is the ever-increasing ubiquity of information technology (IT) in society; the second – likely in response to the first – are the changes related to the students who are engaged in higher education; and the third – likely in response to the previous two – are the concomitant changes occurring in the faculty who strive to respond to those influences. The impact of these three forces is causing significant shifts in the nature of how learning occurs across the many venues of higher education. Seely Brown (2002), commenting on this upheaval, averred that the transformation in which higher education is involved is as paradigmatic as was the introduction of electricity to the learning place.

The impact of information technology

In 1987, Chickering and Gamson prescribed a set of principles for good practice in teaching. Nine years later, Chickering collaborated with Ehrmann to expand these principles in light of the growing influence of IT in the educational forum. These principles are summarized as follows:

> IT encourages communication between students and faculty by increasing the avenues for various types of synchronous and asynchronous communication – e-mail, computer conferencing, web access all make new ways of relating possible;

IT fosters reciprocity and cooperation among students – e-mail, discussion boards, and instant messaging present diverse venues for such to occur;

IT promotes active learning techniques by offering students opportunities to engage in simulations, virtual reality, and augmented reality – all of which provide opportunities for active learning;

IT provides increased opportunities for feedback to students by improving the range of communication tools that can be used by faculty;

IT maximizes time-on-task – at the same time that IT can make studying more efficient, it also can draw the student into exploring issues further through the use of hotlinks and the ease of accessing diverse materials;

IT promotes high expectations by fostering improved skills of analysis, synthesis, application, and evaluation;

IT accommodates diverse talents and ways of learning and, thus, can be used to respond to diverse needs and levels of skill (Chickering & Ehrmann, 1996).

In the literature addressing these changes, academicians, with varying points of emphasis, repeatedly have identified benefits that IT brings to the processes of education. Seely Brown (2002) suggested that the changes brought on by IT in the classroom involved the introduction of a new medium that invites mutuality into the learning process. Bollentin (1998) emphasized the flexibility of IT and its contribution in making education more accessible – not restricted just to the classroom, but available in various distance formats. Barone (2003) discussed the ways in which IT can be used to deepen the learning experience by providing an active learning environment that provides a context for what is learned – an environment that is social and

collaborative, that meets the student where s/he is in terms of skills and knowledge, and that is in the student's span of control.

In looking at ways in which IT could contribute to changes in curriculum, Clayton-Pedersen and O'Neill (2005) accentuated how IT can be used to engage students in the construction of knowledge. They stated that opportunities to engage in debates on real-world topics of importance, and the self awareness that comes from assignments related to personal discovery, more likely produce a graduate who is ready to apply him/herself in the world. Rickard and Oblinger (2003) stressed that IT can be used to accommodate different learning styles as well as different learning needs, to adjust the pace of learning for the individual learner, and to provide opportunities for people with special needs (e.g. the disabled and the immigrant populations).

Finally, Perry (2004) emphasized how various tools made available through IT can deepen the educational process. She highlighted course management systems that engage learners on several levels; made note of the web-based modules that are being developed by various publishers; promoted the proliferation of digital based libraries that are making sources of knowledge increasingly available to a broader populace; emphasized the arsenal of tools that IT makes available to enhance learners' engagement; and discussed how IT makes possible better sequencing and alignment of programmatic curricula, as well as cross-disciplinary opportunities for learning.

The impact of changes in the learner community

Rickard and Oblinger (2003), stated that, in the opinion of those who attended a recent symposium for higher education convened by Microsoft Corporation, "learners, not technology, are changing education" (p. 8). They went on to state that these learners exhibit different

characteristics than learners of the past – characteristics for which IT is uniquely situated to make a substantial contribution. Prensky (2001), acknowledging that today's students think and process information differently than students of the past asserted, "Our students have changed radically. Today's students are no longer the people our educational system was designed to teach." (p. 1). This position has been reinforced by several like-minded educators.

In describing today's learners, Dede (2005) emphasized their comfort with using various forms of multiple types of media; their engagement in communal learning and their appreciation for knowledge residing in the community as well as in the individual; their willingness to engage in mentoring and personal reflection as well as experiential learning; and their interest in being involved in the co-design of customized learning experiences. Frand (2000), in noting the characteristics of the information-age mindset, stated that for today's learners: the computer is not exceptional, but rather a part of everyday life; the interactivity of the internet is more attractive than television; the ability to know what is real is more difficult to achieve; what one is able to do is more important than what one knows; trial-and-error is an effective way of learning; the ability to multitask is a commonplace skill; typing is a more useful skill than handwriting; staying connected with others is vitally important; there is an expectation of immediate gratification; and members of this group frequently demonstrate limited interest in distinguishing between who creates, who owns, and who uses information.

Barone (2003) expressed similar observations by describing today's students as learners who want to try things, not just hear about them in a classroom – active, not passive, learners. She pointed out that today's students are both visual and social in their inclinations, desiring a context in which they can shape their understanding. She added that this group is accustomed to using technology both to organize and to integrate various types of knowledge in such a way as

to meet their individual preferences and styles. Oblinger (2003) and Oblinger (2005) echoed many of the observations stated above and added the following portrayal of today's learners: they are drawn to group activities and like staying connected; they feel close to their parents and generally endorse the value system of their parents; they like the idea of being smart and grades are important; their learning style generally is experiential and they like to tinker with new technologies; they are digitally literate and are more involved in house- and homework, less in watching television; they are racially and ethnically diverse; and they generally have a positive attitude and are optimistic and goal-oriented.

The impact of changes in the faculty community

The other side of the transformation in higher education is the faculty members who, historically, have been the purveyors of information in the educational setting. In responding to the changes occurring in the learner population, many educators are identifying a need for change in the faculty as well – perhaps best captured by Frand (2000) when he wrote that faculty need to become, "not just a sage-on-the-stage, but a guide-on-the-side" (p. 24). In order to be able to provide this function, Dede (2005) suggests that faculty require a new set of capabilities – to be able to work with students in several new ways: in co-designing learning experiences; in fostering a communal environment in which students can learn from one another; in employing learning-by-doing pedagogies that capitalize on the use of IT to provide virtual and augmented reality opportunities; and in applying newer forms of assessment that are more diverse than the traditional measures provided by tests and papers.

These changes will not occur without conscious attention and effort on the part of those in higher education. Ayers (2005) discussed the resistance of some faculty members to take advantage of opportunities that are provided for them by the assortment of technology that many

campuses have purchased. Similarly in their consideration of IT in higher education, Rickard and Oblinger (2003) discussed faculty members' fear of failure and their lack of time to develop, not just new lessons, but new forms of lessons – this complicated further by the frequent lack of institutional rewards for making such an effort. Perry (2004) noted the inequities apparent in the huge amounts of money institutions have spent for IT in comparison to how vastly underused these tools are by the faculty for whom they are intended.

The changes being suggested with respect to faculty processes, in many cases, would be paradigmatic. Citing the work of Barr and Tagg (1995), the Teaching Effectiveness Program at the University of Oregon captured many of the elements of this change of paradigms in the schema offered below:

Table 1
A New Paradigm for Undergraduate Education

The Instruction Paradigm—Mission and Purposes	The Learning Paradigm—Mission and Purposes
Provide/deliver instruction Transfer knowledge from faculty to students Offer courses and programs Improve the quality of instruction Achieve access for diverse students	Produce learning Elicit student discovery and construction of knowledge Create powerful learning environments Improve the quality of learning Achieve success for diverse students
The Instruction Paradigm—Teaching/Learning Structures	**The Learning Paradigm—Teaching/Learning Structures**
Atomistic; parts prior to whole Time held constant, learning varies 50 minute lecture, 3-unit course Classes start/end at same time One teacher, one classroom Independent disciplines, departments Covering material End-of-course assessment Grading within classes by instructors Private assessment Degree equals accumulated credit hours	Holistic; whole prior to parts Learning held constant, time varies Learning environments Environment ready when student is Whatever learning experience works Cross discipline/department collaboration Specific learning results Pre/during/post assessments External evaluations of learning Public assessment Degree equals demonstrated knowledge and skills
The Instruction Paradigm—Learning Theory	**The Learning Paradigm—Learning Theory**
Knowledge exists “out there” Knowledge comes in “chunks” and “bits” delivered by instructors Learning is cumulative and linear Fits the storehouse of knowledge metaphor Learning is teacher centered and controlled “Live” teacher, “live” students required The classroom and learning are competitive and individualistic Talent and ability are rare	Knowledge exists in each person’s mind and is shaped by individual experiences Knowledge is constructed, created, and “gotten” Learning is a nesting and interacting of frameworks Fits learning how to ride a bicycle metaphor Learning is student centered and controlled “Active” learner is required, but not “live” teacher Learning environments and learning

	are cooperative, collaborative, and supportive Talent and ability are abundant
The Instruction Paradigm—Nature of Roles	The Learning Paradigm— Nature of Roles
Faculty are primarily lecturers Faculty and students act independently and in isolation Teachers classify and sort students Staff serve/support faculty and the process of instruction Any expert can teach Line governance; independent actors	Faculty are primarily designers of learning methods and environments Faculty and students work in teams with each other and other staff Teachers develop every student's competencies and talents All staff are educators who produce student learning and success Empowering learning is challenging and complex Shared governance; teamwork

(as cited by University of Oregon, 2005)

In spite of problems that could impinge implementation of the necessary changes, many educators express hope for the ways in which IT can improve higher education, and for the unique role faculty can have in forging these frontiers. As the outcome of their study concerning student opinions of what qualities are inherent in good teachers, Hartman, Moskal and Dziuban (2005) reported the following results: the ability to facilitate, not dictate, student learning; the knowledge of how to use both oneself and educational tools in order to communicate effectively; the capacity to be authentic in relationships with students; the ability to organize courses well; the professionalism to be respectful and concerned toward each student; and the commitment to assess and evaluate fairly and effectively.

IT can further each of these goals but, left to itself, cannot realize any of them. In order for IT to be effective in the learning process, faculty will need to know how to capitalize on all that IT has to offer. This likely will require training and institutional support if it is to happen – thus, the impetus for conducting the survey on which this study is constructed.

The survey of faculty in the Department of Leadership

This project was a research study that explored the knowledge and use of information technology among faculty members in the Department of Leadership at the University of Memphis. The project was established to complement the study being conducted by a fellow student to explore the knowledge and use of IT among graduate students in the Department of Leadership, to consider patterns of use by faculty groups within the department, and to supplement the information provided by the EDUCAUSE Center for Applied Research (ECAR) in its recent annual surveys concerning the knowledge and use of IT among undergraduate populations.

By evaluating this issue from the faculty side of the teaching dynamic, the writer is hopeful that this study can help clarify how well the Department of Leadership is responding to a student environment that is rapidly changing. It is intended that the information presented by this survey will be of importance to the department in terms of its charge to prepare educators of the future and to assess its own methods of pedagogy in accomplishing that task. More specifically, it is intended that the information gathered in this study will be of use to the department in its consideration of staffing needs, its provision of opportunities for professional development, and in the development of its curriculum.

Many of the key findings of the recent reports distributed by ECAR (following its surveys of undergraduate students in 2004 and 2005) substantiated the importance of looking at the knowledge and practices of faculty relative to use of IT in the classroom. Since the 2005 survey involved a much larger sample than the one in 2004, the 2005 survey was used as the main undergraduate benchmark for comparing the results of this survey. Some of the key results

presented in the report on the ECAR survey indicated that: (1) students preferred at least a moderate amount of use of technology in their coursework; (2) students saw IT as making a positive contribution to both the teaching and learning processes; (3) seniors and older students tended to prefer the use of more technology in courses; (4) students, overall, gave instructors good reviews in their use of technology; (5) students who perceived their instructors to be skilled in their use of IT reported being more engaged in courses, more interested in subject matter, and more able to understand complex concepts; and (6) in order of priority, participants in the study rated the benefits of technology to be convenience, the ability to communicate better with the instructor and other students (connection), management of course activities (control), and finally improved student learning (Kvavik & Caruso, 2005).

The analysis done by Kvavik and Caruso (2005) suggested several reasons that the present study could be important to those engaged in higher education. Over 70% of the students interviewed in that study indicated a preference for at least a moderate use of IT as a means of instruction (p. 58). Furthermore, as students' perception of their instructors' IT skills increased, so did the students' engagement in the coursework, their interest in the subject matter, and their ability to understand complex matters – at least, as measured by their self-evaluation. Among those who strongly agreed that their instructors used IT well, 68.9% indicated greater engagement in their coursework (p. 65), 85.5% indicated increased interest in the subject matter (p. 65), and 73.3% indicated increased understanding of complex concepts (p. 66). These numbers underscored the importance of developing faculty who both know about, and use, information technology as a pedagogical tool in their instruction.

The present study was conducted by electronically distributing a survey instrument to all faculty members (full- and part-time) affiliated with the Department of Leadership at the

University of Memphis. Faculty response to the distribution of the instrument was voluntary and confidential, with no means for tracking individual responses to the participants, and no material benefit accrued by participation, nor penalty imparted for lack of participation. The instrument that was used for the survey was an adaptation of the one that was used by ECAR in studying the undergraduate population in 2005. Permission was secured from ECAR for the use of its instrument and the appropriate modifications necessary to apply it to the faculty community (See Appendix A). Survey Monkey was used as the online tool for collecting the responses of the faculty. The instrument was distributed from the office of the chair of the Department of Leadership, but was distributed from the desk of the administrative assistant in order to reduce the likelihood of faculty feeling coerced to participate. Faculty members were given a two-week period in which they could respond, with two e-mail reminders sent out during the two-week time frame to remind and encourage full participation.

The analysis of the data gathered in this survey was divided into four sections: (1) a comparison of the results of this survey with the key findings of the 2005 ECAR study; (2) a comparison of the results of this survey with the concomitant survey done of the graduate student population in the Department of Leadership; (3) a comparison of the responses offered by full-time (FT) faculty vis-à-vis the part-time (PT) faculty in the department; and (4) a comparison of the responses of the Higher /Adult Education (HAE) faculty as compared to those of the Kindergarten -12th grade (K12) faculty. It was the hope of this author that these four frameworks would provide the Department of Leadership with valuable information relative to its mission of preparing the educational leaders of the future.

There were a number of good reasons for initiating this study in the Department of Leadership: (1) as the department strives to meet the needs of its student population, it is critical

that it be informed and prepared to engage those students through the use of technology. This consideration may even become a fundamental consideration in choices that are made with respect to hiring of faculty and staff; (2) professional development for present faculty may become the most critical factor in helping them develop and maintain the skills necessary to be able to meet the changing needs of the learning environment; and (3) in its consideration of curriculum development, the Department of Leadership may choose to foster increased use of technology – both as a means, and as a product, of an educational process that encourages meaningful and transformative learning. By engaging in such a transformation itself, the department would help prepare its students for a world which increasingly is shaped by the means, and the impact, of information technology.

Results / Limitations

The results of the study are provided in the ensuing section, divided into four segments: (1) a comparison of the results of this survey with the key findings of the 2005 ECAR study; (2) a comparison of the results of this survey with the concomitant one done of the graduate student population in the Department of Leadership; (3) a comparison of the responses offered by full-time faculty vis-à-vis the part-time faculty in the department; and (4) a comparison of the responses of the Higher /Adult Education faculty as compared to those of the Kindergarten -12th grade faculty.

It is noted that the study was affected by a few important constraints, the most notable of which were those related to limited numbers of respondents:

◊ Of the 42 surveys that were sent out, 21 faculty members replied by submitting a complete survey. If the survey is done again, it would be good to assess what factors might have kept 50% of the faculty from responding.

In the assessment of the results of this survey vis-à-vis those of the student population within the department, the opportunity for comparison was restricted by a limited number of responses from students in divisions other than Higher / Adult Education;

In the intra-department contrast of faculty responses, the sample size necessarily was small due to the size of the department. Although the numbers may have been too small to provide statistically significant data, the writer included the comparisons of these groups in order to provide the department with an anecdotal glimpse of issues it may want to explore more fully in future studies;

In order to assure confidentiality for the respondents, further demographic differentiation within the department was adjudged inappropriate. This restriction prevented further comparisons from being made due to limitations in the information available regarding the make-up of the sample.

Findings – Section I
Department of Leadership Faculty versus
Undergraduate Student Responses to ECAR Survey

Please note:
(On some indicators, no direct comparisons were possible because of the way in which the questions were asked of these two different populations.)
(For all scales that employed point systems to rate the participants' responses, the higher numbers on the scale indicated a stronger, or more positive, response.)

The survey addressed in this paper was conducted among faculty members who teach both at the graduate and the undergraduate level in the Department of Leadership at the University of Memphis. The impetus for this study was the survey done by the EDUCAUSE Center for Applied Research (ECAR) – a study that surveyed a national sample of undergraduate students in both 2004 and 2005 with respect to their use and knowledge of information technology. Although it is probable there are important differences in the degree and the sophistication of IT skills employed by graduate and undergraduate populations, the availability of data from the ECAR study presents a unique window through which to view the results of this study.

The paper that reported the findings of the ECAR survey (Kvavik & Caruso, 2005) offered several key findings that present an interesting backdrop for the present study of faculty in the Department of Leadership (DL faculty). Below are presented a number of the key findings from the ECAR survey, followed by comparisons (in italics) to the responses of the faculty involved in this survey.

With respect to student use and skill with IT, the findings of the ECAR survey (Kvavik & Caruso, 2005, p. 29) included:

Fully 96.1% of seniors and freshmen in these 63 institutions own computers. *DL faculty reported ownership rates of 90.5% for desktop computers and 61.95% for laptops.*

Laptop ownership in the 2005 study is 55.6%, well above the 46.8% ownership of laptops in the 2004 study. Of students in this study who own laptops, 14.1% bring them to class. *76.2% of the DL faculty stated that they do not encourage students to bring their laptops to class.*

Students using modems uniformly report that they have more problems using technology and are less likely to want to take courses that use technology. *On the one hand, DL faculty who relied solely on modem access expressed a positive attitude toward technology and its use in the classroom; on the other hand, DL faculty who primarily used broadband access expressed even more positive scores for each of these indicators.*

Students use technology primarily for convenience and communications, for both their academic and social lives. *DL faculty also rated communication very high – 76.2% of them responded that IT helped them communicate with students. A smaller percentage (47.6%) felt that IT was beneficial for providing convenience.*

Almost 90% of the students have access to broadband. *All of the DL faculty members (100%) stated that they have access to broadband technology.*

Virtually all students report using computers primarily for writing documents and e-mail, followed by surfing the Internet for coursework and studying. 88% use an electronic library resource to complete a class assignment. *DL faculty use technology primarily for e-mail, followed by writing documents and classroom activities. Some*

faculty members also indicated that they use a library resource to design course assignments, but this was not one of the higher scores for faculty.

A student's major is a significant factor in determining his or her use of specialized application such as PowerPoint and spreadsheets. *The only pertinent comparison would be the information provided earlier in this document comparing the different patterns of usage described by the faculty who teach in Higher and Adult Education compared to those who teach in K-12 Education.*

Students report that they use computers on average between 11 and 15 hours per week (excluding cell phone use). *DL faculty indicated a higher pattern of usage – 50% stating that they use the computer more than 20 hours per week.*

Students rate themselves as highly skilled in word processing and use of the operating system. They rate themselves as least skilled in creating graphics and Web pages, and creating or editing video-audio. *DL faculty rate themselves highest in the areas of word processing, presentation software, using online library resources, and spreadsheets. They rate themselves least skilled at creating and editing video/audio and creating web pages.*

36% of the students believe they do not need additional training to use IT in their courses. *The majority of DL faculty either agreed (38%) or strongly agreed (19%) that the school needs to provide more training on how to use IT in coursework.*

Despite the fact that the self-report that they are often more skilled on many applications, older students more often say they need more training that younger students do. *Among the DL faculty, the 50-64 age group expressed the greatest*

interest for more training in IT skills. The younger, as well as the older, faculty members expressed a markedly weaker response to this inquiry.

With respect to the use of IT in coursework, the ECAR report (Kvavik & Caruso, 2005, p. 57) identified several more key findings. These included:

Students prefer a moderate amount of technology in courses. *Per their report, the highest percentage of DL faculty (47%) preferred "extensive" use of technology, followed by 33.3% preferring "moderate" use.*

Students see IT in courses as making a positive contribution to teaching and learning. *DL faculty also gave positive scores to the impact that IT has on both the teaching and the learning processes.*

Seniors and older students tend to prefer more technology in courses than freshmen and the youngest students in the study. *The preference for using technology in courses among DL faculty was evenly spread across the various age groups, with the majority of faculty preferring "extensive" use of technology.*

Engineering, business, and life sciences students prefer more technology in courses than students in other disciplines. *There were no appropriate comparisons to be made in the data gathered from the DL faculty.*

Overall, students give their instructors good marks in their use of technology in courses. Students who perceive instructors' IT skills to be effective report being engaged increasingly in the course, being more interested in the subject matter, and understanding complex concepts better. *52.4% of the DL faculty members believe that the use of IT has improved their teaching. They give the highest scores to the ways in which IT has improved communication between them and their students.*

They appear less convinced that the technology has improved the understanding of complex concepts.

Students who consider themselves more skilled in using IT than their peers also see themselves as more engaged and interested in the course and subject matter. These students also believe that they are better able to use IT to help them understand complex concepts. *DL faculty did not report that they had observed a relationship between their own IT skills and its effects on their students with respect to the indicators of engagement, interest, or comprehension. Although some of the faculty expressed positive feelings about these effects, the primary faculty response to these questions was a neutral one.*

According to survey respondents, the primary benefit of technology used in courses is convenience, followed by communication with the instructor and other students (connection), management of course activities (control), and improved student learning. *DL faculty rate these benefits in a different order – connection, then convenience, then control. The faculty appears to consider these gains as significant toward improved teaching.*

Student concerns and expectations include ready access to and reliability of information technologies, bandwidth, and online resources and services. *Overall, DL faculty seemed to be pleased with the state of IT readiness in the department in which they work. A few, as was indicated earlier, expressed concerns about aging soft- and hardware, slow or inadequate network access, and inadequate technical assistance, but these were not the majority of the faculty who responded to the survey.*

Finally, in a separate section of the report on course management systems (CMS), Kvavik and Caruso (2005, p. 75) explicated these findings:

> Of the 72% of students who report using a course management system, more than 75% report a positive or very positive experience with it. *Just over half (52.4%) of the DL faculty have used a CMS in teaching a course. Of those who have used such a tool, 66.6% of them rate the experience as either positive or very positive.*
>
> The more students use a CMS, the more they like it. *There were no appropriate comparisons to be made in the data gathered from the DL faculty.*
>
> Students most value tracking grades on assignments and tests and accessing sample exams and quizzes in a CMS. *In the scores provided by the DL faculty, tracking grades and accessing sample exams and quizzes were two of the less important benefits offered by use of a CMS. The faculty gave much stronger scores to providing the syllabus, and sharing online readings and other learning materials with students.*
>
> Students least value online discussions in a CMS. *The overall faculty score for online discussions was not high, but the scores were evenly spread from very positive to very negative on this item.*
>
> Perceptions about instructor IT skills are strongly associated with student satisfaction with course management systems. *DL faculty who judged their ability to use course management systems well generally felt positive about the impact of this tool in the classroom..*
>
> Students who agree or agree strongly that courses using IT allow them to take greater control of their course activities have the most positive experience with a CMS.

There were no appropriate comparisons to be made in the data gathered from the DL faculty.

Students report that using a CMS improves their learning. *There were no appropriate comparisons to be made in the data gathered from the DL faculty.*

Findings – Section II
Faculty versus Graduate Student Responses within the Department of Leadership

(Please note that for all scales that employed point systems to rate the participants' responses, the higher numbers on the scale indicated a stronger, or more positive, response.)

In the section of the survey that was related to the respondents' use of electronic devices, a number of interesting similarities and differences were observed between the data from this study and that from the student population in the same department:

Whereas 79.7% of the students reported ownership of a desktop computer; the faculty reported a rate of 90.5%. For laptop computers, however, the prevalence was just the reverse – students at 76.3% and faculty at 61.9%. With respect to other electronic equipment, students were more likely to own personal digital assistants (PDA's) (32.2% versus the faculty's 19%), cell or digital phones (91.5% versus the faculty's 76.2%), and electronic music devices (22% versus the faculty's 9.5%).

Both faculty members and students reported spending significant amounts of time using electronic devices – 50% of the faculty, and 48.3% of the students, reported using electronic devices more than 20 hours per week. For the faculty, however, there was a gradual reduction moving down the scale of hours whereas, for the students, there was a more precipitous decline.

When reporting the numbers of hours per week that they used electronic devices for various purposes, the students demonstrated higher usage patterns. On an 8-point scale, students generated an overall score of 4.63 in describing how much they use electronic devices in their studies, while faculty, in rating their use of electronic devices in the teaching process, scored only 3.59. Both students and faculty reported using electronic devices a fair amount to write documents for their coursework (students – 4.08 versus faculty – 3.59). However,

the highest score in this section was given to the faculty's use of technology for e-mail, for which they showed a score of 5.09 versus the students' score of 4.47.

Regarding the number of hours spent in using electronic devices for various tasks, students and faculty reported very similar patterns of usage. Students reported their highest figure for creating spreadsheets or charts – 2.53 versus the faculty's 2.50 (again on an 8-point scale), while faculty reported the highest use for creating presentations (2.91 versus the students' 2.88). In this researcher's estimation, however, these results likely were skewed by the fact that the survey did not provide a separate line item for using the devices for word processing tasks. Most notable in this section was that both faculty and students reported *not* using several features related to IT capability: creating graphics – 67% of the faculty and 51% of the students reported that they "do not use"; creating and editing audio/video – 95% of the faculty and 87% of the students "do not use"; and creating web pages – 82% of the faculty and 75% of the students "do not use".

In rating their skill levels with respect to various computer applications, the faculty and students were very close in their estimation of their word processing skills (4.64 versus 4.61 on a 5-point scale). However, for every other application that was reported, the students rated their abilities higher than the faculty rated their own. These included such items as the use of spreadsheets (students – 3.90 versus faculty 3.50), presentation software (students – 4.29 versus faculty – 3.82), course management systems (students – 3.18 versus faculty – 2.41), and perhaps most surprising, use of online library resources (students – 4.07 versus faculty – 3.59). Students also reported a higher level of confidence related to issues involving operating systems, computer maintenance, and security issues.

Both faculty and students were rather modest about their skill levels – 50% of faculty members reporting that they were "at about the same skill level" as their peers while 40% of the students made the same estimation regarding their abilities. Among those who rated themselves "much more skilled" than their peers, however, the faculty demonstrated notably more confidence – 22.7% versus the students' 11.7%.

Regarding their reasons for learning various computer applications, most of the faculty reported learning how to do spreadsheets as a result of their own personal interest, and reported learning how to use presentation software to improve their teaching. Students, on the other hand, reported learning both of those types of applications more for employment purposes than for coursework. As indicated earlier, the predominant response for both faculty and students regarding several types of applications was that they don't use those applications (e.g. graphics, creating and editing audio/video, and creating web pages).

Faculty members were much more likely to depend on school-operated wired broadband service (45.5% versus the students' 16.7%) for fast access whereas students were more likely to depend on commercial broadband service (38.3% versus the faculty's 18.2%). Neither group reported much use of wireless technology as their primary access to the Internet.

Both faculty and students reported that their two primary concerns regarding IT were computer viruses (faculty – 2.36 versus students – 2.75 on a 4-point scale) and spam (faculty – 2.68 versus students – 2.63). Notable in this section of the questionnaire was the high degree of "*non-concern*". This was the most selected response for both faculty and students in such diverse areas as: inadequate access to printing, the age of hardware and software available to them, slow or inadequate access to the Internet, and inadequate technical

assistance on campus. For the most part, both faculty and students in the department appeared to be quite happy about the IT resources available to them.

The next section of the survey addressed the use of technology in coursework from the respective positions of the faculty and the students:

- The preferences related to how much technology should be used were remarkably similar between the two groups: 47.6% of the faculty preferring to use "technology extensively" versus 43.1% of the students preferring "extensive" use; 33.3% of the faculty, versus 39.7% of the students, preferring "moderate" use of technology; and 19% of faculty, versus 13.8% of students, preferring little use of technology in their classes.
- Both faculty and students expressed very positive opinions regarding their respective roles in using technology in coursework. In response to a question of whether students are more engaged in courses that use technology, faculty recorded a score of 3.67 versus the students' 3.47 (on a 5-point scale); regarding the faculty's ability to use technology well (faculty – 3.81 versus students – 3.68); and as to whether use of technology has increased the students' interest (faculty – 3.38 versus students – 3.49). In spite of those high scores, both groups expressed interest in more training with respect to how IT can improve their coursework (faculty – 3.62 versus students – 3.27).
- Likewise, both groups expressed positive regard for the various ways in which IT can help students in their work. Again, on a 5-point scale, the scores consistently were positive from both groups on several indicators: regarding whether IT helps students understand complex or abstract concepts (faculty – 3.38 versus students – 3.41); with respect to improved communication with the instructor (faculty – 4.14 versus students – 4.21); improved communication with classmates (faculty – 4.00 versus students – 4.02); and improved

feedback from instructors (faculty 4.24 versus students – 4.00). One other indicator that was reported was whether the students felt more control over their learning as a result of the use of IT. Faculty members gave this a score of 3.62 versus the students' 3.56, indicating that both felt IT does offer students an increased sense of controlling their own learning processes.

- Whereas only 52.4% of the faculty had used course management systems (CMS) to teach their courses, 72.4% of the students had taken courses in which a CMS was used. Among the faculty that had used a CMS, 66.6% of them reported positive feelings about the use of such a tool, while among the student population, the rate was even higher – 78.1%. When asked about the usefulness of various features made available through a CMS, the students reported higher scores for every indicator than did the faculty. Rated on a 4-point scale, some of the most significant of these features included: access to the course syllabus (faculty – 3.00 versus students – 3.26); access to online readings (faculty – 2.80 versus students – 3.26); being able to receive, or turn in, assignments online (faculty – 2.70 versus students – 3.26); and sharing information with, or among, students (faculty – 2.80 versus students – 3.26).
- Faculty and students exhibited a different sense of priorities in addressing how IT had been beneficial to the learning process. Whereas faculty gave the highest score to "helped me communicate with my students" at 76.2%, and scored both "convenience" and "improved my teaching" at 47.6%, students scored "convenience" at 66.1%, "helped me communicate with my classmates and instructors" at 49.2%, and "improved my learning" at only 27.1%.
- Regarding whether IT has improved their respective roles as teachers and learners, 71.4% of the faculty answered that question positively, while 61.1% of the students did so.

- The majority of faculty members do not encourage their students to bring their laptops to class (only 23.8% said they encourage this practice). The numbers for students are very similar – only 22.4% report that they take their laptop to class regularly.

The final section of the survey attempted to gather a demographic overview of those who chose to respond to the survey.

- The gender breakdown among faculty was 52.4% male to 47.6% female, while among students it was 38.6% male and 61.4% female.
- The age range of faculty who responded was high – 80.9% of those being 50 or over. For students, the range was a little lower, but still high: 40.7% of them between 30-39, 22% of them between 40-49, and 22% of them between 50-59.
- The range of faculty teaching experience was considerable, but the most common response was from faculty who had been teaching at the graduate level for less than five years (33.3%). The majority of those who responded were not full-time faculty – 57.1% of those who responded reported that they teach part-time, while 42.9 reported teaching full-time. Departmentally, the breakdown was more toward those who teach in Higher and Adult Education than those who teach in K-12 Education – 61.9% reported their affiliation with HIAD, while 38.1 reported their affiliation with K-12.
- All faculty members who responded to the survey reported that they have broadband access available to them at their place of residence.

Findings – Section III
Full-time versus Part-time Faculty Responses

(Please note that for all scales that employed point systems to rate the participants' responses, the higher numbers on the scale indicated a stronger, or more positive, response.)

There were 9 full-time (FT) and 12 part-time (PT) faculty members who responded to the survey. Although these numbers were small, they demonstrated some interesting differences between the two groups.

In the section of the survey related to the respondents' use of electronic devices, there were several interesting comparisons in the data when comparing the responses of the FT versus the PT faculty.

Whereas 100% of the FT faculty reported ownership of a desktop computer; the PT faculty reported a rate of 90.9%. For laptop computers, FT faculty also showed higher rates of ownership (FT – 88.9% versus PT – 45.5%). FT faculty also were much more likely to have a wireless adapter (44.4% versus 18.2%), but PT were much more likely to have a cell or digital phone (90.9% versus 55.6%).

Both FT and PT faculty reported spending significant amounts of time using electronic devices – 55.6% of the FT, and 50% of the PT, reported using them more than 20 hours per week. For both groups, there was a gradual reduction as they moved down the scale of hours.

When reporting the numbers of hours per week that they used electronic devices for various purposes, the FT faculty demonstrated higher usage patterns. FT faculty generated an overall score of 4.33 on an 8-point scale describing how much they use electronic devices in their studies while PT faculty scored only 3.17. Both FT and PT faculty reported using electronic devices a fair amount to write documents for their coursework (FT – 4.11 versus PT – 3.33),

but the highest score in this section, for both groups, was related to their use of e-mail (FT – 5.33 versus PT – 5.00).

Regarding the number of hours spent in using electronic devices for various tasks, FT and PT faculty reported very different patterns of usage. Whereas PT reported their highest figure for creating spreadsheets or charts – 2.92 versus the FT's 2.11 (again on an 8-point scale), FT faculty reported their highest use of devices for creating presentations (3.78 versus the PT's 2.42). Most notable in this section was that both FT and PT faculty reported *not* using several features related to IT capability: 67% of FT, and 64% of PT, faculty reported that they "do not use" tools for creating graphics; 100% of FT, and 92% of PT, faculty "do not use" devices for creating and editing audio/video; and 67% of FT, and 92% of PT, faculty "do not use" technology for creating web pages.

In rating their skill levels with respect to various computer applications, the FT and PT faculties were very close in estimation of their word processing skills (4.78 versus 4.50 on a 5-point scale). For most other applications that were reported, the FT faculty rated their abilities higher than did the PT faculty. These included such items as the use of presentation software (FT – 4.11 versus PT – 3.58), and course management systems (FT – 3.11 versus PT – 1.92). Both indicated a fair amount of use of online library resources (FT – 4.00 versus PT – 3.25). PT faculty, however, reported more confidence in their abilities related to operating systems (3.50 versus the FT's 2.78) and computer maintenance (2.92 versus the FT's 2.56).

Both FT and PT faculty were rather modest about their skill levels – 44.4% of FT members reporting that they were "at about the same skill level" as their peers while 58.3% of the PT faculty made the same estimation regarding their abilities. Among those who rated

themselves "much more skilled" than their peers, however, FT faculty demonstrated notably more confidence – 33.3% versus 16.7%.

Regarding their reasons for learning various computer applications, most of the FT faculty reported that they learned how to do spreadsheets as a result of their own personal interest and that they learned how to use presentation software to improve their teaching. PT faculty also learned how to use presentation software in order to improve their teaching, but indicated that they learned how to use spreadsheets due to other professional activities. As was indicated earlier, the predominant response for both FT and PT faculties regarding their use of several other types of applications (e.g. graphics, creating and editing audio/video, and creating web pages) was that they do not use those applications.

An interesting paradox was presented in the groups' responses to the question of their most frequent means of access to the Internet. PT faculty indicated a much higher level of dependence on school-operated wired broadband service (58.3% as compared to 22.2% for the FT faculty), while FT faculty indicated a preference for commercial broadband service (33.3% versus 8.3% for PT faculty). Neither group reported much use of wireless technology as a primary access to the Internet; those that did were reliant on the school-operated wireless network (11.1% for FT versus 8.3% for PT).

The two primary concerns regarding IT for PT faculty were computer viruses – 2.67 versus 2.00 for FT faculty (on a 4-point scale) – and spam (2.75 versus 2.56 for FT faculty). Notable in this section of the questionnaire was the high degree of "*non-concern*". This was the most selected response for both FT and PT faculty in such diverse areas as: inadequate access to printing, the age of hardware and software available to them, slow or inadequate access to the Internet, and inadequate technical assistance on campus. For the most part, both

faculty groups in the department appeared to be quite happy about the IT resources available to them.

The next section of the survey addressed the use of technology in coursework from the respective positions of the FT and PT faculty:

- The preferences related to how much technology should be used in teaching their courses were somewhat different between the two groups, with 66.7% of FT, versus 33.3% of PT, faculty preferring "extensive" use of technology; 22.2% of FT, versus 41.7% of PT, faculty preferring "moderate" use; and 11.1% of FT, versus 25% of PT, faculty preferring "little" use of technology in their classes.
- Both FT and PT faculty expressed very positive opinions regarding their respective roles in using technology in coursework. In response to the question of whether their students are more engaged in courses that use technology, FT faculty recorded a score of 4.00 versus the PT faculty's 3.42 (on a 5-point scale); regarding the faculty's ability to use technology well (FT – 4.11 versus PT – 3.58); and as to whether use of technology has increased the students' interest (FT – 4.11 versus PT – 2.83). In spite of those high scores, both groups expressed interest in more training with respect to how IT can improve their ability to use technology in their coursework (FT – 3.67 versus PT – 3.58).
- Likewise, both groups expressed positive regard for the various ways in which IT can help students in their work. Again, on a 5-point scale, the scores consistently were positive, from both groups, on several indicators: regarding whether IT helps students understand complex or abstract concepts (FT – 3.67 versus PT – 3.17); with respect to improved communication with the instructor (FT – 4.22 versus PT – 4.08); improved communication with classmates (FT – 4.33 versus PT – 3.75); and improved feedback from instructors (FT – 4.11 versus PT

– 4.33). One other question was whether they felt students felt more control over their learning as a result of the use of IT. FT faculty gave this indicator a score of 3.78 versus the PT faculty's 3.50, indicating that both groups felt IT does offer students an increased sense of controlling their own learning processes.

- The split between those who use and don't use course management systems (CMS) was notable between the two groups of faculty. Whereas only 33.3% of the PT faculty had used a CMS to teach their courses, 66.7% of the FT faculty had done so. Among the FT faculty that had used a CMS, 83.3% of them reported positive feelings about the use of such a tool, while among the PT population, only 33.3% had a positive impression. When asked about the usefulness of various features made available through a CMS, both FT and PT faculty expressed positive regard for several of the features: Rated on a 4-point scale, some of the most significant of these features included: access to the course syllabus (FT – 3.00 versus PT – 3.00); access to online readings (FT – 2.67 versus PT – 3.00); online discussion board (FT – 2.67 versus PT – 2.00); and sharing information with, or among, students (FT – 2.67 versus PT – 3.00).
- FT and PT faculty exhibited a different sense of priorities in addressing how IT had benefited the learning process. Whereas PT faculty gave the highest score to "helped me communicate with my students" at 75%, scored "convenience" at 41.7%, and "improved my teaching" at 25%, FT faculty scored both "helped me communicate with my students" and "improved my learning" at 77.8% and "convenience" at 55.6%.
- Regarding whether IT has improved their respective roles as teachers and learners, 77.7% of the FT faculty answered that question positively while 64.6% of the PT faculty did so.

- The majority of both faculty groups indicated that they do not encourage their students to bring their laptops to class. FT faculty, however, were much more likely to have encouraged students to do so (44.4% versus 8.3%).

The final section of the survey attempted to gather a demographic overview of those who chose to respond to the survey.

- The gender breakdown among the FT and PT faculty groups was 55.6% male and 44.4% female for FT faculty, and 50% male and 50% female for the PT faculty.
- The age range of faculty who responded was high – 77.7% of the FT faculty, and 83.4% of PT faculty, being 50 or over.
- The range of teaching experience was considerable, but FT faculty reported more experience overall. Whereas 33.3% of both groups consisted of teachers who have been teaching less than 5 years, FT faculty were much more likely to report that they have been teaching for more than 12 years (55.5% versus 33.4% for PT faculty). Departmentally, the breakdown was more toward those who teach in Higher and Adult Education than those who teach in K-12 Education – 55.6% of the FT reported their affiliation to be with HIAD (versus 66.7% of the PT faculty), while 44.4% of the FT reported their affiliation with K-12 (versus 33.3% for PT faculty).

Findings – Section IV
Higher / Adult Education versus K-12 Faculty Responses

(Please note that for all scales that employed point systems to rate the participants' responses, the higher numbers on the scale indicated a stronger, or more positive, response.)

There were 13 Higher / Adult Education (HAE) and 8 K-12 (K12) faculty members who responded to the survey. Although these numbers were small, they demonstrated some interesting differences between the two groups.

In the section of the survey that was related to the respondents' use of electronic devices, there were several interesting comparisons in the data when comparing the responses of the HAE and the K12 faculty.

Whereas 100% of the K12 faculty reported ownership of a desktop computer; the HAE faculty reported a rate of 92.3%. For laptop computers, K12 faculty also showed higher rates of ownership (K12 – 71.4% versus HAE – 61.5%). Both groups indicated some wireless capability (28.6% of K12 faculty had a wireless adapter compared to 30.8% of HAE faculty), but HAE were much more likely to have a cell or digital phone (84.6% versus 57.1% for K12 faculty).

Both HAE and K12 faculty reported spending significant amounts of time using electronic devices – 53.8% of the HAE faculty members, and 50% of the K12 faculty, reported using such devices more than 20 hours per week. For both groups, there was a gradual reduction in usage as they moved down the scale of hours.

When reporting the numbers of hours per week that they used electronic devices for various purposes, the K12 faculty demonstrated higher usage patterns on most of the indicators. K12 faculty generated an overall score of 3.75, while HAE faculty scored 3.62 (on an 8-point scale) describing how much they use electronic devices in the teaching process. Both K12

and HAE faculty members reported a fair amount of using devices to write documents for their coursework (K12 – 3.63 versus HAE – 3.69), but the highest score in this section, for both groups, was related to their use of electronics for e-mail (K12 – 5.00 versus HAE – 5.23).

Regarding the number of hours spent in using electronic devices for various tasks, K12 and HAE faculty reported similar patterns of usage. The activities rated highest for both groups of faculty were creating spreadsheets or charts – 3.00 for K12 faculty versus 2.31 for HAE faculty (again on an 8-point scale), and for creating presentations (3.00 for K12 versus 3.00 for HAE), Most notable in this section was that both K12 and HAE faculty reported *not* using several features related to IT capability: 71% of K12, and 62% of HAE, faculty reported that they "do not use" electronic tools for creating graphics; 100% of K12, and 92% of HAE, faculty "do not use" devices for creating and editing audio/video; and 100% of K12, and 69% of HAE, faculty "do not use" technology for creating web pages.

In rating their skill levels with respect to various computer applications, the K12 and HAE faculties were very close in their estimation of their word processing skills (4.63 versus 4.62 on a 5-point scale). For most other applications that were reported, the K12 faculty rated their abilities higher than did the HAE faculty. These included such items as the use of spreadsheets (K12 – 3.63 versus HAE – 3.38) and presentation software (K12 – 4.00 versus HAE – 3.69). Two areas in which the HAE faculty rated themselves higher were the use of course management systems (HAE – 2.62 versus K12 – 2.13) and use of online library resources (HAE – 3.85 versus K12 – 3.13). HAE faculty also reported more confidence in their abilities related to operating systems (3.38 versus K12's 2.88) and computer maintenance (2.92 versus K12's 2.50).

Both FT and PT faculty were rather modest about their skill levels – 38.5% of HAE members reported that they were "at about the same skill level" as their peers while 75% of the K12 faculty made the same estimation regarding their abilities. Among those who rated themselves "much more skilled" than their peers, however, HAE faculty demonstrated notably more confidence – 38.5% versus 0% for K12 faculty.

Regarding their reasons for learning various computer applications, most of the HAE faculty reported that they learned how to do spreadsheets as a result of their own personal interest and that they learned how to use presentation software to improve their teaching. K12 faculty also learned how to use presentation software in order to improve their teaching, but indicated that they learned how to use spreadsheets due to other professional activities. Again, the predominant response for both HAE and K12 faculties regarding several other types of applications (e.g. graphics, creating and editing audio/video, and creating web pages) was that they don't use those applications.

Both faculty groups reported that the primary means for them to access the Internet was via the school-operated wired broadband service (50% for K12 faculty as compared to 38.5% for HAE faculty), while a number of the HAE faculty also indicated a significant use of commercial broadband service (30.8% versus 25% for K12 faculty). Neither group reported much use of wireless technology as their primary access to the Internet, but those that did were reliant on the school-operated wireless network (12.5% for K12 faculty versus 7.7% for HAE faculty).

The two primary concerns regarding IT for HAE faculty were computer viruses – 2.54 versus 2.13 for K12 faculty (on a 4-point scale) and spam (2.85 versus 2.38 for K12 faculty). Notable in this section of the questionnaire was the high degree of "*non-concern*". This was the most selected response for HAE faculty in such diverse areas as: inadequate access to printing, the age of hardware and software available to them, slow or inadequate access to the Internet, and inadequate technical assistance on campus. K12 faculty, however, expressed a little more concern regarding the age of both their hardware and software, slow or inadequate network availability, and inadequate technical assistance.

The next section of the survey addressed the use of technology in coursework from the respective positions of the HAE and K12 faculty:

- The preferences related to how much technology should be used in teaching their courses were somewhat different between the two groups, with 62.5% of K12, versus 38.5% of HAE, faculty preferring "extensive" use of technology; 25% of K12, versus 38.5% of HAE, faculty preferring "moderate" use; and 12.5% of K12, versus 23.1% of HAE faculty, preferring "little" use of technology in their classes.
- Both FT and PT faculty expressed very positive opinions regarding their respective roles in using technology in coursework. In response to the question of whether their students are more engaged in courses that use technology, K12 faculty recorded a score of 3.88 versus HAE's 3.54 (on a 5-point scale); regarding the faculty's ability to use technology well (K12 – 4.00 versus HAE – 3.69); and as to whether use of technology has increased the students' interest (K12 – 3.88 versus HAE – 3.08). In spite of those high scores, both groups expressed interest in more training with respect to how IT can improve their coursework (K12 – 4.00 versus HAE – 3.38).

- Likewise, both groups expressed positive regard for the various ways in which IT can help students in their work. Again, on a 5-point scale, the scores consistently were positive, from both groups, on several indicators: regarding whether IT helps students understand complex or abstract concepts (HAE – 3.31 versus K12 – 3.50); with respect to improved communication with the instructor (HAE – 4.08 versus K12 – 4.25); improved communication with classmates (HAE – 3.85 versus K12 – 4.25); and improved feedback from instructors (HAE – 4.31 versus K12 – 4.13). One other question was whether they felt students felt more control over their learning as a result of the use of IT. HAE faculty gave this indicator a score of 3.46 versus K12's 3.88, indicating that both groups felt IT does offer students an increased sense of controlling their own learning processes.
- The split between those who use and don't use course management systems (CMS) was very close for both groups – 50% among K12 faculty, and 46.2% among HAE faculty, that use such a tool. Perhaps most surprising in this section was the difference in responses that were gathered: among the K12 faculty that had used a CMS, 50% reported positive feelings about the use of such a tool, while the other 50% was neutral on the issue; and among the HAE population, 80% had a positive impression, while the other 20% expressed a negative impression. When asked about the usefulness of various features made available through a CMS, the HAE faculty expressed more positive regard than did the K12 for several of the features: Rated on a 4-point scale, some of the most significant of these features included: access to the course syllabus (HAE – 3.50 versus K12 – 2.25); access to online readings (HAE – 3.33 versus K12 – 2.00); online discussion board (HAE – 3.00 versus K12 – 1.50); receiving assignments online (HAE – 3.33 versus K12 – 1.75), giving assignments back

online (HAE – 3.00 versus K12 – 1.50), sharing information with, or among, students (HAE – 3.33 versus K12 – 2.00) and providing a record of grades (HAE – 3.17 versus K12 – 1.50).

- HAE and K12 faculty exhibited a similar sense of priorities in addressing how IT had been beneficial to the learning process. Both groups gave the highest score to "helped me communicate with my students" (76.9% for HAE faculty and 75% for K12 faculty). Both groups also gave positive scores to "convenience" and "improved my teaching" – with 38.5% of the HAE faculty and 62.5% of the K12 faculty indicating each of these responses.
- Regarding whether IT has improved their respective roles as teachers, 87.5% of the K12 faculty answered that question positively while 61.6% of the HAE faculty did so.
- The majority of both groups of faculty members indicated that they do not encourage their students to bring their laptops to class. K12 faculty, however, were much more likely to have encouraged students to do so (37.5% versus HAE's 15.4%).

The final section of the survey attempted to gather a demographic overview of those who chose to respond to the survey.

- The gender breakdown among the HAE and K12 faculty groups was 53.8% male and 46.2% female for HAE faculty, and 50% male and 50% female for the K12 faculty.
- The age range of faculty who responded was high – 84.6% of HAE, and 75% of K12, faculty being 50 or over.
- The range of faculty teaching experience was considerable, but HAE faculty reported more experience overall. Whereas both groups consisted of several teachers who had been teaching less than 5 years (30.8% for HAE versus 37.5% for K12), HAE faculty were much more likely to report that they had been teaching for more than 12 years (53.9% versus 25% for K12 faculty). The majority of those who responded to the survey, in both groups, were

not full-time faculty – 61.5% of HAE, and 50% of K12, faculty reported that they teach part-time.

Recommendations for the Department of Leadership

In light of the information provided by the faculty and students in the Department of Leadership, the following recommendations are submitted by this writer for consideration by the department.

- ◊ The department should help make more training in IT available for both students and faculty. For students, this might involve changes in the core curriculum (e.g. requiring a course specific to these skills). For faculty, this might involve various training formats – and a stronger relationship with the Advanced Learning Center (ALC) – to increase both ease and confidence levels in using IT.
- ◊ The department should encourage faculty to take advantage of the ALC's fellowship program for helping faculty implement IT more fully into the curriculum. On a larger scale, the department should submit an application to the ALC, seeking one of the *Innovation to Excellence in Learning* grants for next year. Please see "TAF Innovation Grants" at this site, http://alc.memphis.edu, for more information related to these grants.
- ◊ The department should consider hiring a resource person specifically charged with the responsibility of helping faculty become more adept and more comfortable in the implementation of IT resources. Other organizations (e.g. school systems) have experienced good results by using such a position to accentuate and develop this initiative as a priority within the organization.
- ◊ The department should provide training with respect to creating graphics, creating and editing audio / video, creating web pages, and use of online library resources. These are IT skills that could add markedly to the educational experience for both faculty and students.

- ◊ The department should offer training for part-time faculty members in order to help them better understand the various ways in which technology can be used in the classroom – e.g. some part-time faculty may need assistance in learning how to use a course management system effectively. As students develop increased expectations regarding their instructors' IT skills, it will be important that part-time, as well as full-time, faculty are able to feel confident about their abilities.
- ◊ In order to better measure IT fluency on an ongoing basis, the department should consider implementation of a pre-test / post-test process for students involved in the department's programs.
- ◊ The department should conduct this survey again. The writer would recommend doing it annually until the department feels it has sufficient data to be able to construct a sound longitudinal view of the multiple issues addressed herein. To improve the response rate among students, it would be good to explore ways that faculty might encourage increased participation among the various student populations.

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Integrating the Seven Principles for Good Practice into Online Teaching

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Abstract

In this paper, the seven principles for good practice in undergraduate education that were developed by Arthur Chickering and Zelda Gamson are reviewed, the use of technology, especially web-based online technology, to implement these principles in teaching and learning is examined, and an example of such an implementation in an introduction to computers class, taught online at a community college, is discussed.

Integrating the Seven Principles for Good Practice into Online Teaching

The Seven Principles

The seven principles for good practice in undergraduate education were developed by Arthur Chickering and Zelda Gamson. The principles first appeared in the American Association for Higher Education (AAHE) Bulletin (Chickering and Gamson, 1987). As a result of a two-year research Chickering and Gamson in cooperation with AAHE and a number of higher education faculty and colleagues, concluded that good practice in undergraduate education:

1. encourages contact between students and faculty,
2. encourages cooperation among students,
3. encourages active learning,
4. gives prompt feedback,

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5. emphasizes time on task,
6. communicates high expectations, and
7. respects diverse talents and ways of learning.

The seven principles of good practice have been documented many times in the literature. Fleming (2000) uses them to provide guidance in teaching drivers education and Bradford and Peck (1997) do the same for teaching accounting education by focusing on student motivation and active learning. Bradford and Peck put the seven principles in two distinct categories according to whether a principle addresses student motivation and performance or it advocates active learning. In the first category (motivation and performance) are 4 of the above 7 principles (encouraging contact between students and faculty, giving prompt feedback, emphasizing time on task, and communicating high expectations). The remaining 3 principles (encouraging cooperation among students, encouraging active learning, and respecting diverse talents and ways of learning) are in the second category of advocating active learning.

An interesting study by Caboni, Mundy, and Duesterhaus (2002) examine the student normative support for the seven principles. Caboni et al. findings support that there is observed evidence of student support for only 3 of the 7 principles: faculty-student contact, cooperation among students, and high expectations. The authors continue by suggesting that besides faculty support, student support is also essential if we want to implement all seven principles.

Technology-based Implementation of the Seven Principles for Good Practice

These principles were initially conceived for face-to-face instruction but later with the advent of newer information technologies they were implemented for technology-based teaching in Chickering and Ehrmann's paper (Chickering and Ehrmann, 1996). In this paper, the authors described some of the best and most appropriate ways to use technologies such as video and

computers to advance these seven principles. How does technology facilitate the above seven principles of good practice?

Principle 1: Contact Between Students and Faculty is Encouraged

Technologies like email and the Internet can make the student-teacher contact more personal. They provide a more relaxed atmosphere when the student can safely email the instructor a request at any time without having to wait until the class meets. The student does not need to rely on the teacher's office hours to ask questions or get help. Students also seem to be at ease when they use email to answer a question posed by their instructor. They are more likely to express their honest opinion about some aspect of the course or about their teacher's style of teaching. Electronic communication with the teacher can be done without the fear that the student is embarrassed or is even ridiculed by classmates as is sometimes the case in face-to-face classes. Finally, technology-based communications between a student and a teacher can be more frequent and their interactions can occur both synchronously and asynchronously.

Principle 2: Cooperation Among Students is Encouraged

When computers and computer-related technologies are used, students may form virtual teams and learn how to work together without having to meet physically. In today's information-based society that is frequently driven by email, telecommuting, and videoconferencing, such collaboration skills are very important and should be learned early on.

Principle 3: Active Learning is Encouraged

Chickering and Ehrmann state that learning is not a spectator sport (Chickering and Ehrmann, 1996). Students have to be actively involved in the learning. In other words, the focus of dynamic learning should be on learning by doing. Computer technology and in particular computer simulations naturally engage the student in the learning process. If students want to

gather information about a topic they do not have to rely on the library staff because they can simply gather the information via the Internet.

Principle 4: Prompt Feedback is Given

Computers and the Internet have made prompt communication between students and teachers possible. Feedback facilitated by email and similar tools can be very quick, almost instantaneous. With the press of a button, the teacher's comments travel to their destination with electronic speeds. In addition, computer simulations, tutorials, and computer-based tests can provide instant feedback.

Principle 5: Time on Task is Encouraged

Students who have a busy life at home or at work can cut down the number of trips to the library (and the associated time needed to find a place to park or walk to the library), because they can use their computer and the Internet to find most of the information they need.

Principle 6: High Expectations are Communicated

Computer technology has made working with real data possible. The students can now focus on the logic of solving a problem and let the computer do the number crunching. Computers are ideal for lower level tasks such as the typical "drill-and-practice" activities but they are also well-suited for the more challenging discovery learning activities.

Principle 7: Diverse Talents and Ways of Learning Are Respected

Not all students are the same. They learn in different ways. Some prefer lecture notes others would rather be in group discussions and learn from their peers. Computer technologies offer students the freedom to choose what works best for them. They also allow students to work at their own pace by making tutorials and self-scored quizzes available to them.

Online Teaching and Best Practices

Teaching online has become very common lately. It makes good sense to see if and how these seven principles for good practice can be applied to online teaching, especially if it is web-based as is the case when using tools like Blackboard and WebCT. Published research on the connection between online education and the above seven principles has been scarce.

In one study, the seven principles were used to evaluate online courses and it was determined that these principles were instrumental in the success of online classes (Phips & Merisotis, 2000). In another study, Chizmar and Walbert (1999) describe the preparation and execution of three courses that use Internet technology as an integral part of the delivery of the course. Chizmar and Walbert deal with the pedagogical and technical issues that must be determined to achieve the seven principles.

Suen (2005) discusses how these seven principles can be applied as a guide when teaching a course online. Suen further elaborates on advancing from teacher-centered teaching strategies to learner-centered teaching strategies that are facilitated in online instruction. Suen's discussion focuses in web-based teaching to supplement classroom instruction in an epidemiology course.

Padavano and Gould (2004) have tried to give examples and suggestions of how to implement the seven principles when teaching online classes. Here are some tips based on their published work:

Principle 1: Contact Between Students and Faculty is Encouraged

Email is crucial here. It is never overdone and it is always appreciated. For synchronous interactions with students, make use of chat rooms to discuss issues of interest. Threaded discussions are ideal for asynchronous communication. Post on the web your response time policy.

Principle 2: Cooperation Among Students is Encouraged

Use threaded discussions to engage student to student interactions. Encourage students to collaborate on group projects and allow peer evaluation of these projects.

Principle 3: Active Learning is Encouraged

Ask students to summarize something that has recently made the news and request that they share their summary with their classmates. Ask students to investigate a topic that interests them and discuss it with their peers. Threaded discussions can enhance both activities.

Principle 4: Prompt Feedback is Given

Provide timely feedback to their assignments. Provide both positive and negative feedback. Make every effort to acknowledge receipt of assignments. Do your best to grade assignments quickly and give prompt feedback. The computer and teaching tools such as Blackboard and WebCT can facilitate instantaneous feedback in exams and quizzes. Take advantage of these tools to make scoring of exams and quizzes automatic.

Principle 5: Time on Task is Encouraged

Post a syllabus that includes clear objectives, assessments, and due dates. Explain in detail how each assignment will be graded. Ask students to maintain a time sheet. Do not accept late work.

Principle 6: High Expectations are Communicated

Provide weekly threaded discussions where students will hopefully demonstrate and develop their strengths. Demand excellence in their submitted work, and to make your point, post examples of submitted work by top students from your previous classes.

Principle 7: Diverse Talents and Ways of Learning Are Respected

Include an icebreaker at the beginning of the course where students discuss their learning styles. Make an effort to adjust your teaching style to best meet their needs. Use weekly threaded discussions and encourage diverse points of view.

An Undergraduate Online Course Taught With the Seven Principles in Mind [3]

BT 180C or Introduction to Computer Systems is a 3-hour course and is offered through the Bowling Green Community College of Western Kentucky University. This introductory course is designed to provide an overview of computer terminology and organization with an emphasis on word processing, electronic spreadsheets, databases, and computer programming.

BT 180C is an undergraduate course that was originally developed for face-to-face instruction and has been taught face-to-face for many years. George Kontos (Department of Information Systems) and Linda Todd (Department of Office Systems Technology) jointly redesigned the course for online delivery via Blackboard. Design began at the start of the spring 2003 semester, continued until the end of the semester, and the course was ready to teach in the summer of 2003. It should be noted that the course has gone through some minor and major revisions since the initial online design. The course material had to be updated because of the never-ending advancements of computer technology and also because of newer editions of the textbook.

The first time the course was taught was the summer of 2003. Kontos had other commitments that summer so Todd was the first one to teach this online class. Todd put the course material on Blackboard and kept the students very busy in this fast-paced, five-week first summer session. As she introduced the course to her students, she pointed out that "this course will be fast and furious…" It turned out to be so! Her students worked diligently, non-stop, and

[3]For further discussion on the design and delivery of this online course, see: http://www.bgcc.wku.edu/ics/

they completed the class with an appropriate level of skill and knowledge about computer technology and the Internet. It should be noted that while Todd was the designated instructor during the summer of 2003, Kontos was available, via email, from a conference that he was attending in Europe, and he occasionally communicated with Todd and with her students to help smooth course delivery. The online BT 180C course has been offered most every semester since that summer and Kontos has taught all these sections.

The course begins with an Orientation Project, where each student meets individually with the instructor either in-person or on the phone. Kontos and Todd feel that the orientation a student receives at the beginning of any online course is the key to the success of the students in the course. At the Orientation Session the instructor and the student discuss the course syllabus which communicates to the student the high expectations of the course. The emphasis in this meeting is to clarify course-related issues such as how to login into Blackboard, where to find the assignments, the exams, their grades, and how the students should submit their assignments.

Other issues discussed at this meeting are the class calendar (available in the Announcements section of Blackboard). The class calendar shows when course assignments are due (a motivational tool for time on task!) Also, discussed at the meeting is how to contact the instructor [via email (preferred) but phone or postal mail are other options] and how to use Blackboard's Discussion Board. The use of meaningful "Subject lines" in their email messages that students may send to their instructor or to their fellow students is of paramount importance and it is a requirement in this class. An example of a good subject line would be: *BT180 Jones <Study Guide #3 question>*. This practice of including a carefully written subject line would clearly facilitate email communication among all parties involved in any email.

The Orientation Project will be complete only after the student sends the instructor an email message stating that all the items in the Orientation Form (items discussed in the meeting) have been completed. Failure to successfully complete this Orientation Project will disqualify students from submitting future assignments. This has not been a problem so far, as all students have completed the Orientation assignment timely.

Among the first assignments that the students complete is to tell the instructor what they believe they know about computers (concepts) and computer applications (word processing, spreadsheets, databases, the Internet, computer programming). The short survey is submitted electronically via Blackboard. Data collected can be statistically analyzed and the instructor can learn about the students' background and tailor this class (and future classes) accordingly.

Another related assignment is that each student completes and signs a "Student Information Form" with contact information. The signed form also states that the student has read the Syllabus and that the students understand and agree with the requirements of the course.

The above assignments and forms are helpful in establishing the rules that students need to follow and in clarifying the requirements and expectations of the course. These assignments help the instructor learn about the students taking the class before the class really gets under way. The assignments also help the instructor tailor the course with this particular group of students and also to revise the course for future BT180C classes. The students benefit too, because from Kontos' and Todd's experience in teaching other online classes, it has become evident that the students need to know their instructor early in the class. Students also realize that in case of a difficulty there is a real person, their instructor, who is compassionate and wants to help them in anyway he or she can. This makes a real impact on their motivation to succeed in the course and sets the pace for the course.

Discussion Board activities are emphasized throughout the course. These activities help students in their communications with their classmates. Students are encouraged to reply to a student's posted item. Occasionally the instructor will initiate the discussion or will "jump in," but usually this is the students' territory and the instructor tries to keep it that way so that students will not be inhibited in their communications with other students. This use of the Discussion Board really gives a boost to the cooperation among students.

Some students prefer to pick up the phone and call their instructor. Other students like to send an email message. Students who live in the area have the added advantage that they can drop by and visit with the instructor. There are no restrictions as to how students will get in touch with the instructor in this class. However, due to the nature of the course (it is online, after all) and the usually distant location of the students, most of them choose email which can be done using their email account or using Blackboard's email feature.

Students in this class learn in different ways. Some prefer to use their textbook for most activities and exercises; others prefer to learn by using other resources too. Yet others find heavy use of the textbooks' companion website to be the most valuable resource in their mastering of the course material. There really is a variety of learning tools in this course!

Kontos and Todd realized that telling students how they did in their completed assigned work and doing it in a timely manner is extremely important, more so if the class is delivered online. Therefore, frequent and meaningful feedback is something that their students have always appreciated!

A self-scored midterm exam and a self-scored final exam are given in this course but due to the fact that the instructor is not there to proctor an exam, Kontos and Todd have devised a method whereby students do not have to travel long distances to go and take an exam at a

proctoring center. Students are required to use a proctor (of their choice, within limits of course) provided the student and/or the proctor answer a couple of the exam questions: "Who is your proctor and what is his/her address, phone number, etc." and "Has the student taken this exam without the use of the book or other reference materials?" Kontos and Todd understand that this approach is a matter of trust and may open the door for some "cheating" but they minimize the undesired effects of such behavior by putting little weight on the two exams. Also, students find out that if the instructor has the option to contact the proctor at any time then this is a deterrent for cheating!

Students are required to have (or have access to) a PC with Windows, Internet access, and Microsoft Office (Word, Excel, Access, PowerPoint) and do the assigned exercises using these tools. Todd and Kontos realize that project-based assignments or learn-by-doing is essential in any computer class. They designed and prepared the course with this in mind. To this effect, there are a lot of hands-on practice exercises and activities that the students are required to complete. Sometimes one exercise on a certain topic may not be enough and students complete multiple assignments to master a topic (example, web searches). Students have ample opportunities to learn because there are a lot of learning activities and several practice quizzes and actual quizzes.

The Online Course and the Seven Principles of Good Practice

The online course was designed and taught with the seven principles in mind. Table 1 below shows how these principles were integrated into the course.

Table 1

Implementation of the Seven Principles into the Online Course

Principle #	Principle	Online Course Implementation
1	Contact Between Students and Faculty is Encouraged	Orientation session (by phone or in person) Student Information Form Email (with meaningful Subject lines) Threaded discussions (Discussion Board activities) Response time policy posted
2	Cooperation Among Students is Encouraged	Threaded discussions
3	Active Learning is Encouraged	Assignment to summarize a current technology article that made the news Assignment to investigate a topic about a technology that is affecting our lives A variety of hands-on practice activities Threaded discussions
4	Prompt Feedback is Given	Prompt email feedback Web-based self-scored tests and quizzes that provide ample and prompt feedback Feedback on assignments is prompt and helpful
5	Time on Task is Encouraged	Syllabus that includes clear objectives, assessments, and expectations posted Rubrics posted Day-by-day class calendar with due dates posted Late submission of work discouraged
6	High Expectations are Communicated	Orientation session (by phone or in person) Student Information Form Weekly threaded discussions posted Excellence encouraged and expected
7	Diverse Talents and Ways of Learning Are Respected	Orientation session (by phone or in person) Computer background knowledge survey Weekly threaded discussions posted Variety of tools available: Blackboard, excellent textbook, textbook's companion website, instructor (reachable by phone, email, postal mail, and personal visit)

Conclusion

Online classes are not an innovation anymore. It is probably safe to say that most colleges and universities offer online classes today and the ones that still do not, they soon will. Many of the colleges and universities also offer entire online programs. These online programs

need to be accredited. Accreditation requires that the program is high-quality and first-class. Although the seven principles originally developed by Chickering and Gamson are not a sure way to achieve quality education and assure accreditation, they seem like good common sense principles because many teachers and students have experienced them and because research supports them (Chickering & Gamson, 1987).

One of the problems that distance education has always had is that students may feel isolated and alone. It does not have to be this way. The first of the seven principles emphasizes interaction between students and teacher and the second emphasizes interaction among students. If the online teacher implements these first two principles, then online students will not feel cut off. Computers, especially when online teaching software tools like Blackboard and WebCT are used, provide the necessary tools to accomplish this. They also help to apply the fourth principle (giving prompt feedback) because of the simplicity to create self-scoring quizzes and exams. It is then up to the teacher to stress and implement the rest of the seven principles.

It is not enough that online teachers get involved. Students will also need to familiarize themselves with the seven principles and take control of their own learning. In addition, the administration has to be familiar with the seven principles and be supportive. In short, the seven principles are intended as guidelines for teachers (online teachers too), students, and administrators to improve teaching and learning (Chickering & Gamson, 1987).

Finally, we should be wise to remember that, when we think about implementing new technologies in our teaching, such as the myriad web-based technological tools available, “the pedagogy must drive the choices of instructional technology, not the other way around” Chizmar and Williams (1997, 3). In other words, technology must not be used for its own sake but must instead be driven by didactic considerations (Chizmar and Walbert (1999).

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Let's Knock Down Some Classroom Walls and Build a Web-Based Learning, Interactive Multicultural Environment Among Our Online Students

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Abstract

We are living in a culturally diverse world. Schools are becoming global in scope because of technology. Our world has many cultures and many styles of communication. Education is not just the preparation for life, it is life itself. The paper focus on Virtual Learning and effective outcomes from using technology as a tool in education to help break down all multicultural boundaries between online students coming from divers background. It is essential that schools recognize, respect, and build upon the cultural characteristics and experiences students bring to school. When cultural gaps exist between teachers and students, teachers can misinterpret students' intents, abilities, and aptitudes. In addition, teachers may interact with students in ways that are counter to the students' home and community standards. The result will lower teacher expectations and inequitable educational services, also students will continue to be at risk for academic success.

Purpose

The purpose of this paper is to raise awareness and correct unrecognized biases within online learning environment and assist course instructors to incorporate multicultural perspectives, content, and teaching strategies into their courses to increase students' learning outcomes. Multiculturalism or diversity means different and variety. It is used to describe a wide variety of people and circumstance. Also diversity defined differences based on, but not limited to race, ethnicity, region, gender, language, socio-economic status, age and disability.

My mission in this paper is to raise the bar and close the existing achievement gaps experienced by students from different culture within an online learning environment, and how they will interact to influence their behavior and learning. In other words I will try to answer some of the common questions that are related to the same issue, such as; what are the main differences between usual traditional forms of interaction in on ground classes and new virtual forms in online classes? Where are the main advantages of online classes, and where lies potential danger of the virtual learning? Which principles are crucial for building an online educational organization? Does the online education represent our future?

Methodology

In an online learning environment, the traditional roles of both; the teacher and the student, have been changed, important changes will occur in the area of the control and responsibility for the learning process; the teacher will change from a transmitter to the teacher as a coordinator and facilitator of the student activities in the browsing, analyzing and processing of delivered information, on the other hand the student will change from a passive receiver who very often memorizing not completely understanding content to be as highly competent social actor who is able co-operate and orientate himself/herself effectively in the delivered information.

Let's talk about CD ROM courses, how effective are they in the learning process? The production of CD ROM courses has not reached an adequate effect and success. Some of the problems occurred was the isolation of students in these courses, limited self activity, loneliness in self-study, absence of feedback and live contact with other students, needs of experience exchanging, possibility of co-operation, informal discussions etc., all these factors show necessity of mutual interaction. We need an interaction not only between PCs and individuals or

between individuals and technology but also and firstly among individuals themselves. Human mutual interaction forms an important aspect of human being. Each online student can directly communicate via internet. Virtual interaction is very flexible and co-operative. A further positive of online education is that it facilitates a process of multiculturalism. We can contact each other more quickly than before and often without an explanation of cultural differences in interpersonal relation. Multicultural learning environment should be transformed to virtual learning to eliminate the problem of interpersonal relations. The present-day situation shows that this problem is the core one.

Computers have been used for learning purposes for a long time, but when using the computer for teaching purposes as in online courses, it is important to create the online education system in such a way to be adaptive with the student capability and overall performance, not just showing the web pages, links, quizzes, and other teaching material as if we are browsing a book, without any response and adaptability to the student performance and capability.

According to the statistics of diversity in USA population (from the national multicultural institute), many changes happened nationwide demographically, for example 18.7% of the total U.S. population speaks a language other than English at home, and over 50% of that population speaks Spanish. Also by the year 2050, the White, non-Hispanic population will comprise only 50% of the population. Hispanic/Latinos will make up 25% of the U.S. population, followed by African Americans with 14.5%, Asian Americans 8%, and all other races at 5%. Another research shows the top 15 countries in internet usage in year 2000.

Rank	Country	Internet Users in Millions
1	U.S.	132.3

2	Germany	22.9
3	Japan	21.9
4	United Kingdom	17.0
5	France	12.6
6	Canada	11.6
7	Italy	10.6
8	Australia	8.0
9	Netherlands	5.4
10	Brazil	5.2
11	Russia	5.0
12	Spain	4.4
13	China	3.8
14	Sweden	3.7
15	South Korea	3.2
	Top 15 Countries	267.5
	Europe	102
	Worldwide	327
Source: www.c-i-a.com/199809iu.htm		

http://www.interculturalrelations.com/v1i4Fall1998/f98hart.htm

So, it is obvious that people feel a lot comfortable using this technology, so why not benefit from this opportunity in the education system. Online learning will give students the opportunity to access and interact with each other even if they were at a great distance, both geographic and cultural. A diverse online class brings a wealth of experiences and ideas to students and teachers, thus sparking the innovation and creativity needed to succeed in education delivery process.

Over the last few years as I was teaching online courses, I compared the usage of communication tools that the diverse students were using to communicate with each other; I found 95.4% of my divers students prefer to use the email tool for communication whether they are enrolled in the online or the on ground class. As a result why not widen the use of this technology and offer the online education for all of our students; it is the most powerful tool in learning process among all students especially the ones coming from different cultural background.

Our biggest challenge is convincing folks in the face- to- face world that online learning is an excellent method of instruction...How?

Online Education…

Could be a solution for overcrowded schools.

It is a tremendous opportunity for bringing school communities together.

Seemed to be the perfect solution to leveling the playing field for many students, also serve and support their learning process. These students could be:

- Students in high-need areas who did not have the same resources as others in the class, or came from different cultural background.
- Adult learners who can not attend traditional classes because of work schedules or child care issues
- Students coming from different cultural background
- Home-schooled students
- At risk students
- Homebound or hospitalized students
- Students in ruler districts.

Tell us that other people, with their differences, can also be right.

Encourage students across the world to become active, compassionate and lifelong learners

In a multicultural setting traditional class there could be students who usually speak (write) more prolifically, forcefully, and with greater confidence, whereas students of different cultural backgrounds tend to speak less, more differently, and with greater caution, where in an online class with the same multicultural setting all students will perform the same.

One of the advantages in teaching online course, online has to do with individual participation in group discussion. In the online classroom there is virtually an unlimited amount of classroom time, most of which is asynchronous so students do not have to compete for "airtime" like they would during a 55-minutes traditional class.

Distance courses are convenient, efficient, and useful. Some students would not have been able to earn a degree if traveling were required. They used time they otherwise

would have spent driving to complete course work instead. In an online course students will be on their own time work through course material in their own ways, at their own pace, on their own schedule, they will be allowed to gain contrast, alternate sources, explore concepts in new ways, in a location amenable to their learning; at home in soft light, at job locations while working, while driving, while exercising, at night in bed, good learning takes place; learners are not expected to do all of their learning in the classroom. In theses online setting away of classrooms, students will learn in setting of their own choice not limited to geographic dispersion of learners due to the ties of the lecture hall, while students who are tied to campuses where lectures or specialized laboratory equipment is located, they are expected to learn beyond the lecture hall or laboratory.

Online classes will afford flexibility to students who find it difficult to commit to the rigid schedule of a long-term, face-to-face class.

Within online learning environment students will get to know each others personally, they may have something in common. E-mail or call each other outside of class time, and outside of class-related interactions, helped participants feel connected and allowed them to work through their programs together.

If students do not agree with comments a professor gives on an assignment, they will not be afraid to challenge the professor--as long as the student has cited sources to back up his or her ideas. Remember, however, that the faculty member is an expert in the subject matter and sees a range of student work on each assignment; he or she uses a set of standard criteria, and gives each grade based on the quality of the assignment.

When using the discussion board, one participant pointed out the importance of students being sure of their facts. Because the discussion is in writing, other students have more opportunity to challenge what is said, so students should think carefully before posting a message.

Sometimes students are required to complete group projects. E-mailing one another on group projects can be a good process and scheduling time to work together in a chat room to accomplish their goal before deadlines can approach quickly.

Students will always be encouraged to do as much networking with other as possible, support and help one another with course concepts and tasks, not to be afraid to ask questions.

For some participants, a lack of face-to-face interaction was the biggest drawback of an online program. However, many participants said there are ways to connect with others, and have even made close friends through their programs. Multicultural students will participate in chat rooms, message boards, e-mailing, and calling one another, which helped them feel connected to class members.

The tools offer a great methodological resources in its learning, and students will feel the international boundaries are falling down as seeing each other as a web characters grow similar faces, wear same uniforms, and they will develop interactive learning platform and environment where all their main focus will be learning, solving problems, and sharing knowledge. Technology tools developed to support the education process will focus on high expectations and cooperative learning, which will effectively improve student achievement and closing the

achievement gap created because of cultural differences between students and between students and teachers.

There are many exciting ways to enhance teaching & learning, we should explore them, to help us integrate technology successfully and achieve our educational goals. Briefly; well-managed diverse classroom create a competitive advantage within the whole class, this will lead to a very important question, and how can an online instructor support and encourage students in a diverse online environment.

The instructor should emphasize the positive whenever possible and provide resources to do better if needed. For example, if a student has developed a good argument, the instructor could take the time to give references for follow up.

Avoid negative remarks–students remember them and play them back in their own minds along with all of the self-doubts they already have which may cause tension, isolation, and social distance–if not some kind of over reaction.

Aware your students about ethnic, racial, and cultural issues.

On the first online class meeting, Create a discussion for diversity, where students and faculty had a chance to hear different perspectives, for example:

- "One thing you have to know about me to understand who I am is..." students will introduce themselves to each other.
- Instructor and students will write down two things that make the online class a welcoming and comfortable place in terms of being who you are at the school and two things that make the online class unwelcoming and uncomfortable. Students and faculty then shared their perspectives.

Engage your online students in a one-on-one project, to work together especially if they are from different culture, they will still work together and the diversity gap between them will not exist.

An important issue we can use as target to increase the outcome of a diverse online environment is faculty training and development on diversity issues.

Instructors must develop the awareness, knowledge, and understanding of their own culture and the beliefs, values, and assumptions that frame the educational practice of individuals and institutions.

Understanding the cultural characteristics, perspectives, and strengths of students from diverse groups will allow instructors to engage in asset thinking instead of deficit thinking when planning, delivering, and evaluating instruction.

Instructors must develop the knowledge and skill to modify instruction so that all students have equitable opportunities to learn and succeed in an online environment.

Instructors should focus on improving teaching actions by building teacher capacity to implement a range of teaching strategies to meet the needs of online learners.

Being a vital part in a group discussion or dialogue with students, will continually increases perspective talking, knowledge, and understanding ideas, information, and different ways of learning.

Improve cross-cultural verbal communication and avoid misunderstanding, by making an effort to reduce or avoid the use of jargon, idioms, ambiguous or cute humor, and acronyms.

It is desirable to design more fun and interesting procedure in the learning environment, though combing games and tests could be a good idea so students will not see an enormous sea of letters, and this idea will improve student's learning outcomes.

Result

New technologies make the education delivered to our online students easier, and academic organizations realize their effectiveness in education depends on employing workers who can relate to diverse cultures and students, online instructors should become aware of the differences among students, and being willing to accept these differences as a positive factor within an online class, and it all starts with you- the instructor, who should be able to build constructive and beneficial relationships by learning how to analyze situations, select and use productive communication strategies with students from all different cultures, using strategic management of diversity can drive innovation, create competitive advantage and increase students' achievement. As an online teacher I believe that providing professional assistance related to the cultural differences and coordinating the bridge to and from the student is the key of success of any online environment. The online learning system brought to us many students from different cultures, and as professionals we will take advantage of that to break all boundaries of cultural differences and bring up a highly interactive learning environment, this fact dependent on the teacher personnel's skill, effort, and willingness to know about other cultural differences.

Conclusion

Our PCs are not only instruments for our personal utilization, but they are also means of mutual interconnection, communication and various types of interaction, so why not use them as an educational tool world wide. As we can see in the virtual world we have more possibilities to

meet each other online and to form new kinds of mutual relations. The teaching process of online classes will always need some dynamic improvement; one of the important features needed to be added to the computerized system is the capability of self-improvements. Any human teacher, improves his/her performance, and learns from the students responses; so we need to apply the same philosophy to the online learning. The idea of self-improvement can be guided, either by achieving higher standard, skilled students (given a certain amount of time to the teaching process), or by reducing the time used to achieve a certain limit of student's standards.

I strongly believe that the Online Learning will help students from diverse groups to succeed in receiving a high quality and quantity of learning.

Recommendations

- Make the Magic Disappear by *Jeff Penfold and J. Kelly Flanagan*

  Brigham Young University, Provo, UT 84602
- Blended Learning: Research Perspectives*, Anthony G. Picciano - Hunter College and the Graduate Center at the City University of New York*
- Journal of Asynchronous Learning Networks - Volume 10:1 - February 2006*
- Growing by Degrees: Online Education in the United States, 2005
- http://www.sloan-c.org
- A Frame Work for E-Learning, by *Badrul H. Khan*
- Online Learning: Personal Reflections on the Transformation of Education.

  Edited by *Greg Kearsely.*

Student Reaction to Podcast Learning Materials: Preliminary Results

By: James Janossy

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Abstract

Portable sound playing devices for playing web-distributable .mp3 sound files have become accessible to 10% to 30% or more of the student population. It has been suggested that audio files of learning materials, playable on these devices in the form of "podcasts," may be capable of enhancing student learning experiences. This paper documents a test of this suggestion and describes how original reading materials for an introductory course in information technology were created specifically to be provided in podcast form as well as traditional published form, and the receptivity of a population of 92 community college students to their use. The study reveals that a small but measurable subpopulation of late teen and adult students may be benefited by the technique of listening to text being read while reading the same text themselves, a finding parallel to that of prior research in reading fluency conducted among grammar school children. Additional findings allude to the desirability of expanding the study to a wider range of four-year college students.1

Background

Podcasting involves the provision of sound files via the web in a compressed format such a .mp3 for listening on a computer or portable sound player. The technology to record sound digitally is several years old and is not in itself the major new feature of podcasting. The

phenomenon is instead centered on the distribution mechanism, which provides the means for interested parties to subscribe on the web to downloading services that can make newly created sound files readily available on personal computers connected to the Internet. Small portable battery-operated audio listening devices such as the Apple iPod and other .mp3 players that allow sound playback "on the go" became popular by 20052, and sound files are readily copied to a portable player from a computer. Originally designed for music listening, these portable sound devices play back any audio content. "Podcast" is a play on the words "broadcast" and "iPod," Apple's premier portable audio playback device. Appealing design and pervasive marketing has helped Apple garner a large share of the portable sound player market.3 But many other manufacturers produce under $30 flash memory .mp3 players that double as USB storage devices and perform nearly identically to the iPod as far as sound reproduction is concerned.4 Cost is approaching negligibility as a factor in access to portable sound reproduction devices.

Apple popularized the sale and downloading of music to personal computers and portable sound playing devices via its iTunes web site. Sharing of music in the form of .mp3 files via the web has become widespread. While the audio recording of lectures, presentations, and speeches on audio cassettes has been done for decades, making these types of recordings available in the convenient .mp3 format via the same web distribution mechanism is a new and fairly recent development, enabling convenient "on the go" listening.

Study purpose

In the December, 2005 issue of *Educause Review*, Gardner Campbell paints a scenario in which Jenny, a student at Anywhere State University,

> "...rolls out of bed at about nine a.m., as usual, and thinks about breakfast and her first class. As she's dressing and getting ready to go out, she fires up iTunes on her laptop and checks her podcast subscriptions. There's a new show from Adam Curry at Daily Source Code, another from Cody at Vinyl Podcast ("fair use of forgotten music"), and three audio feeds from her classes. She doesn't notice that the classroom material and the leisure-time entertainment are coming through the same medium and desktop utility; for her, it's natural that school stuff would mingle with other aspects of her daily life."[5]

Gardner proceeds to develop this scenario in describing how the provision of audio capture and .mp3 file downloads positively affects many other aspects of Jenny's participation in classes and her interactions with other students. Would this scenario actually play out? Would course-related portable audio content be accepted by students in the same manner as is entertainment? A further speculation by Gardner riveted our attention:

> "Imagine a busy commuting student preparing both emotionally and intellectually for class by listening to a podcast on the drive to school, then reinforcing the day's learning by listening to another podcast, or perhaps the same podcast, on the drive back home."[6]

Of DePaul's roughly 15,000 undergraduate student population, more than 70% commute. Among the community college “feeder” schools supplying transfer students to DePaul, all students are commuters. If learning materials were provided in a form that could be listened to on a portable sound player while commuting, would learning benefit? This study was formed to

explore if, in fact, Gardner's speculation had merit, and if so, to what extent the provision of audio materials closely tied to course content would be utilized by students, and how.

Preparatory infrastructure

IT-201, “Introduction to Information Systems,” is a 10-week, four quarter credit hour course offered every term by the School of Computer Science. It is one of dozens of courses offered by DePaul that fulfill a Liberal Studies Program science learning domain requirement applicable to all undergraduate students. About half the enrollment in IT-201 is typically made up of computer science majors early in their program of study; the remainder are business or liberal arts majors. IT-201 is offered in two or three sections each term, with an enrollment of 30 to 70 students. As a part of an effort that was initially unrelated to our exploration of podcast utility, I initiated the replacement of the existing assigned text with a locally-developed workbook supported by a web site with web link readings. The intent was twofold: to provide material suited to the intent of the course, and to reduce textbook cost to students.7 The effort to locate content in freely-available web sources was already well underway in the Winter, 2006 term and the workbook in development, when I and another faculty member, Laura McFall, began a collaboration to compose the original writings.

Since McFall and I were already developing writings to summarize assigned web link readings, we let our intention to provide learning materials in dual text and audio format dictate the format of the writing. We developed each unit of writing to produce about 500 to 1000 words; if a topic required more coverage, we divided it to maintain units of this size. The completed workbook contains ten chapters, matching DePaul's 10-week terms. Each chapter contains between 7 to 10 units of writing; we gave each unit both a text title and a "podcast

number." The workbook contains a total of 79 units of writing, each of which is actually the script for an audio file. Although we borrow the term "podcast" for these units of writing, simply because it is contemporary and identifies web-based audio distribution, we intended to develop the 79 .mp3 files and make them all available by the start of the Autumn 2006 term. During that term, it was our intent to make students aware of this additional learning resource, and to observe their usage of it to see if Gardner's speculation would in fact prove accurate. We intended to use a combination of informal and formal surveys and focus group discussions to learn about student utilization of these audio materials.

Conducting the study

McFall and I met the publisher's writing deadline for the ***Information Technology Workbook*** in July 2006. The published workbook became available for Autumn 2006 term classes, and the audio files were produced on a rolling basis, to make them available by the time that classes reached each chapter.8 Rather than reading the material into a microphone, we used a text-to-speech program and high-quality digitized voice to produce the audio from the actual word-processed files.9 Part of the intended research was to focus on student reaction to the quality of this type of software-generated sound. We performed informal surveys aimed at adjusting course pacing in the autumn term across the two sections of IT-201, involving about 50 students, and evolved a survey which we had intended to use in the Winter term when both in-class and distance learning sections would be active.

Shortly after we completed all audio files for use in the Autumn term, an unforeseen licensing issue with the supplier of the first digitized voice we had employed made it necessary for us to remove the files from access, prior to our winter term. The effort needed to recreate these 79 files

using an alternative method has delayed the conduct of our survey at DePaul. However, the workbook had been adopted at a community college in Florida and was also in use during their Autumn term, in an innovative program conducted jointly with a local high school. The 92 students enrolled in this program made extensive use of the web links at the course web site and the workbook, and had access to the audio files prior to their removal from web access. Luckily, these students had actually completed the pilot version of our survey at the request of their instructor. These students were between 15 and 17 years of age, and many will be continuing on to college within 18 months. This population of respondents to the pilot survey provides the basis for the tentative conclusions presented in this paper.

Methodology

A total of 83 of the 92 students to whom the 79 podcasts of textual material were provided for use in a course at a community college responded to the pilot survey, which is listed in Appendix A.[1] The intent of the 22 questions on the pilot survey was explore these issues:

the relationship of employment to the time allocated to out-of-class study

the proportion of fixed desktop computer usage to portable laptop computer usage

the proportion of study time expended in podcast listening as opposed to reading

the purposes to which students put podcasts

where students listened to podcasts

student length and voice preferences for podcasts

the extent to which podcasts were listened to on a portable sound player

self-reported learning effects of podcast listening on factual understanding and performance.

In addition, a question was included to determine how much students thought it would be worth to provide all 79 audio files on a CD in .mp3 form, for immediate loading to a portable sound device, as an alternative to having to download podcasts from a web site or subscribe to them. Finally, a question was included to judge student opinion about the workbook itself, as well as a free-form "suggestions" question.

A survey program provided by the Instructional Technology Group of DePaul's Information Service Division was used to make the pilot survey web-accessible. Respondent identities were not captured, and whether or not students in the course at the junior college responded was not known to their instructor or the researchers and had no bearing on their grade in the course.

Results

The results of this pilot survey are presented in raw tabular form in Appendix B, which also provides a listing and categorization of freeform comments and suggestions best suited to qualitative analysis[1]. Caution, however, is required in considering the results, since the size of the sample represented here, with a few exceptions, did not produce statistically significant results.10 Some cursory insights into study habits can be drawn from the pilot survey, at least for the community college audience enrolled in the course involved.

The vast majority of students in the course (78%) reported that they studied outside of the classroom less than two hours per week, and over 85% have access to a laptop computer, presumably a non-school computer, implying some degree of portability. This is consistent with

the nature of the program in which the workbook was used, which focused on use of a classroom equipped with a computer for each student, and heavy reliance on the www.ambriana.com supporting web site during class study times.

About half the students responding reported that they had made some use of the podcasts, but only 10% of students indicated that they used podcasts for more than 25% of their study time. This is actually less information conveyance than it might appear, since words are spoken at about two words per second, but can be read at a much higher rate. This easily-overlooked factor seems to be an inherent limitation on the usefulness of audio files for learning, whether delivered via podcast distribution or provided in a more traditional manner such as cassette audio tape. The low utilization rate of podcasts seems to refute some of Gardner's speculations as to student receptivity of them as a learning medium.

An interesting outcome became evident in responses to the question "in what ways did you use the podcasts?" The 48 respondents who provided information for this question could select as many usage manners as applied; 25 of the respondents selected two or more categories. Responses were tallied across all categories, with the result:

respondents n=48, usages n=78		
Q09: how respondent used podcasts	**Respondents**	**Percentage**
To go over material before reading it	26	54.2
After the class lecture on a given topic	15	31.3
For review before a quiz or exam	15	31.3

While reading the matching printed material in the workbook	**12**	**25.0**
Before a class session to get ready for a topic	10	20.8

Some of the respondents indicated that they listened to the audio files while reading the matching text. Inspection of the raw survey data reveals that of the 12 respondents indicating some usage of this type, 7 respondents (14.6%) indicated that this was the only way in which they used the audio material. While several results from much of the survey were not statistically significant, the result for this specific use of podcasts does appear to be, albeit with the wide confidence interval of plus or minus 13%:

Q09 response: listening to podcast while reading the matching material

Test of p = 0.5 vs p not = 0.5

Sample X N Sample p 95% CI P-Value

1 12 48 0.250000 (0.136372, 0.395959) 0.001

The result for students whose only use of the podcasts was to listen to them while reading the matching textual material was even more significant, with confidence interval plus or minus 10.5%:

Q09 response: listening to podcast while reading the matching material, their only use of podcasts

Test of p = 0.5 vs p not = 0.5

Sample	X	N	Sample p	95% CI	P-Value
1	7	48	0.145833	(0.060704, 0.277638)	0.000

We had been unaware of this possible usage until three students in our own IT-201 courses mentioned it in a class discussion on podcasting, stating that hearing the spoken word while looking at it in print helped them to understand the material. We included the usage question in the pilot survey surrounding the "while reading" category with other possible usage categories to further explore this. This results indicate that although audio files do not seem to be generally accepted by students as a primary learning medium, they can fulfill an important role for students with specific reading styles or with reading impediments. This presents an unforeseen opportunity to improve the learning experience for a subpopulation of students and bears further investigation.11

Of those respondents who listened to the podcasts, more than half did so at school or home. Only 3 (6%) listened while using public transportation, perhaps a reflection of less public transit commuting occurring in the small town in Florida where the community college is located, and one student indicated listening while driving. Interestingly, only one listened while walking, and none while exercising or jogging, refuting one of our likely usage speculations, and in stark contrast to observed widespread portable music device usage for entertainment purposes. In this study, this is no doubt related to the fact that only 16 of the respondents (20%) indicated that they had access to a portable sound player, consistent the Pew survey discussed in note 1. Usage of this type might be higher in populations where greater access to portable sound players exists.12

A total of 53 students responded to questions 11 and 12, which were Likert scale questions exploring whether respondents felt that the use of podcasts aided their learning and performance. For analysis purposes here we took as a baseline the value of 42, the number of students who in response to question 8 had previously indicated an actual percentage of study time that they accessed podcasts. We then combined the two response values indicating agreement with the statement together and arrived at 15 students who indicated they felt podcasts had helped them understand and remember facts and concepts. These results were not statistically significant:

Q11: 42 used podcasts, 15 felt at least to some improved ability to learn

Test of p = 0.5 vs p not = 0.5

Sample	X	N	Sample p	95% CI	P-Value
1	**15**	**42**	**0.357143**	**(0.215508, 0.519739)**	**0.088**

We used the same approach to handle question 12, which explored if students felt that the use of podcasts helped them perform better on quizzes. Here, a total of 10 students agreed with the statement. In this case the results did appear statistically significant:

Q12: 42 used podcasts, 10 felt the podcasts helped their performance to some degree

Test of p = 0.5 vs p not = 0.5

Sample	X	N	Sample p	95% CI	P-Value
1	**10**	**42**	**0.238095**	**(0.120516, 0.394502)**	**0.001**

Both of these did, however, have very broad ranges of confidence interval. We are simply interested in determining if these podcasts were worth producing, that is, do they help to any degree in accomplishing learning for at least some students. As one student pointed out, even if only a few students felt aided by the use of the podcasts, perhaps they are worth the effort to create. The results here do seem to indicate that a non-trivial percentage of students feel that the audio materials benefited their learning, so the creation of these audio files appears worthwhile.

In terms of access to CD-stored .mp3 files, over 60% of respondents indicated that they felt it would be reasonable to pay slightly more for the workbook were it to be provided with such a CD, and a sizable proportion (over 26%) felt that this would be worth as much as several dollars more. We may infer from this that, at least for this population, access to the podcast distribution of the audio files is not as convenient and widespread as imagined by its proponents, and the alternative of immediate access not requiring the web overcomes a threshold of difficulty. The publisher indicates that providing a CD would actually add only $2 to $3 to the cost of the workbook.

Slightly more than half of the students (52.8%) responding to question 21, asking if the workbook met with their expectations, indicated that they felt it met their expectations. Only three respondents not satisfied with the workbook, web site, and podcasts chose to express specific comments in the final free-form question.

The 28 responses to the free form final question were illuminating. Based on what students indicated, we developed nine response categories ex post facto and tabulated the results, leading to this table:

Category	Number of responses
Positive	2
Not pleased with the voice	7
Podcast content "boring"	15
Not pleased with the published workbook	1
Not pleased with the organization of the web links on www.ambriana.com	2
Put more information depth into the podcasts	1
Use video podcasts	1
Make podcasts more fun	1

The most significant comment provided by 15 respondents (35.7% of total of 42 respondents we took as the baseline of podcast users) was that the podcasts were “boring.” These same respondents may have felt similarly about the printed rendition of the same content. Question 13 may be related to the question of the interest of the content; this question dealt with the preferred length of a podcast. Of the 52 students responding to question 13, 36 felt that each podcast should be 5 minutes or less in duration, and this result was statistically significant, albeit with an inordinately large confidence interval that spans 54% to 81%:

Q13: 52 responded, 36 indicated they preferred podcast length less than 5 minutes

Test of p = 0.5 vs p not = 0.5

Sample	X	N	Sample p	95% CI	P-Value
1	36	52	0.692308	(0.548976, 0.812827)	0.008

A total of 7 of the 42 (16.6%) respondents using podcasts were not pleased with the original digitized voice, which had a British inflection. In an earlier question regarding voice preferences by categories of human or machine, instructor or other person, almost half of respondents preferred the instructor's voice. It would appear that our use of a software-generated voice may be counterproductive, and that recording of audio files with a human voice in the traditional manner could assist in podcast acceptance.

Conclusions

Gardner's speculations about course-related audio blending in student's minds with entertainment programming may conceivably materialize at some point in the future, but podcasting and portable sound player access is not yet ubiquitous. Perhaps 20% to 30% of the students we surveyed who used audio files related to course content (10 to 15% of our total responding population) feel that their understanding of material and performance on quizzes is improved by them. This applies to audio materials that are optional for student use, as was the case here. Audio materials capturing speeches, events, or content upon which assignments are based, where the content is not otherwise available, will no doubt exhibit a higher rate of access if only because their use is made mandatory.

But freeform comments submitted in this survey and gathered from anecdotal sources in conversations with DePaul students point out several potential problems with the audio transfer of new facts and concepts:

1. A significant limitation exists in the audio transfer of information. Speech is usually done at about 2 words per second. This is only about 120 words per minute, or about 600 to 800 words in a 5 to 8 minute audio file. This is a much slower rate of information transfer than the rate at which some people can read.
2. Since the information transfer occurs at rate dictated by the speaker, the recipient cannot linger longer on elements that are puzzling or move along faster on readily understood material.
3. In many cases, understanding a concept requires understanding of supporting facts which are presented in a sequential, linear manner in text. But if a listener misses a supporting point in an audio presentation-for example, by being distracted, by sound being obscured by surrounding noise, or difficulty in understanding the voice-the presentation continues regardless, and material subsequent presented can become frustratingly less understandable. Not all sound players conveniently allow scanning backward to review material already passed in the discussion. Even with sound players that do support scanning backward, doing it may be awkward or inconvenient, depending on what else the listener is doing at the time, and the guesswork nature of the scanning back process.

These factors would seem to severely inhibit the perceived usefulness of audio materials “on the go” for the initial learning of new facts and concepts. Unless these factors can be overcome,

the ability for podcasts of learning material, especially for technical subject matter, to be accepted by students using portable sounds devices may be inherently constrained.

Recommendations

Based on the results of this pilot study, we are encouraged to proceed with research efforts in the use of audio materials to enhance the learning experience. We intend to refine the survey instrument and expand the scope of the populations covered by the study, and to investigate possible correlations between factors and student characteristics which were not ascertained for the pilot population. Expansion of the study should include a focus on identifying students who find it helpful to listen to the audio materials while reading, and to convene focus groups to explore this phenomenon.[13]

The results of this pilot study have caused us to revisit our thinking in regard to the ***Information Technology Workbook*** and our ongoing efforts to make it as useful as possible to students. In particular, we are inspired to take these steps:

> In revising our workbook for the second edition, we will concentrate on even more concise written expression, and set a target of 500 words per topic (podcast script). This will create podcasts of 5 minutes or less duration.
>
> We will abandon the use of a software-generated voice from text, and revert to using humans to read text into audio files. One feasible approach may be to secure a small grant or budget allocation and employ students studying communications and broadcasting to make the readings, since they will already have learned many diction and announcing skills.

We will proceed to lower the threshold of effort needed to place the audio material on portable audio devices by providing all .mp3 files on a CD included with the workbook, in addition to posting the podcasts at the www.ambriana.com support web site and at the DePaul page at iTunes University.

In order to increase the subject matter interest level, we will investigate the means to create audio-annotated slides more closely coupled to the original writings, and will shift the focus of the web links to illustrate what the readings discuss, rather than to try to use the readings to summarize the web links.

We have already begun to expand the coverage of IT-201 podcasts beyond simply providing spoken versions of text material, to providing support for a business case in the form of mock systems analysis interviews. Since completion of the workbook we have begun issuing a simple business case at the beginning of the term, and requiring students to use the knowledge gained from the course to make a recommendation for automation of the business in a paper due at the end of the term. A series of ten or more podcasts scripted as interviews of the owners and key personnel in the hypothetical firm could give students the flavor of participating in a real systems analysis effort. These podcasts could be released in stages, giving the sense of an ongoing analysis effort throughout the course.

Exploring the feasibility of video as well as audio capture and distribution via the web, we've recently begun to use the “movie making” capability of ordinary digital cameras to record two-minute introductions to topics and posting these as a preface to chapter material. These appear to hold great potential for opening a new channel of connection between instructors and distance learners in particular. Initial experiments indicate that

> tripod-mounted cameras costing as little as $150 can record video and sound well enough in ordinary surroundings to be workable. A two-minute video captured in this way may result in a file of 60 Mb., which when processed through "free" software such as Windows Movie Maker or similar Mac software can be output as a file of 320 x 240 pixel video less than 4 Mb. in size, comparable to the size of a voice-only podcast of 5 minutes recorded monaurally at a sampling rate of 22.5 K bps. By outputting these short video productions as .mp4 files, they become playable on all computer platforms.

We are also encouraged to realize that speeches, recorded panel discussions, and audio materials we have located on the web are also available to provide audio variety relevant to many courses. As awareness of the podcasting phenomenon has developed, various organizations at DePaul, such as the DePaul Humanities Center, have undertaken to record and make podcasts available of noted authors and lecturers who visit and present talks. Podcasts of these events now make them available to a much wider audience and support their use as the basis for class assignments far beyond the original event date. External sources of audio materials are also becoming accessible. For another computer science course, CSC-208, "Computer Ethics and Social Responsibility," we have identified a series of 45-minute panel discussions conducted by Melvyn Bragg of the BBC as superbly relevant and of great interest. Audio resources such as these are becoming available for a variety of subject matter, to enhance the learning experience in the same way we hoped to accomplish with our workbook-related podcasts.[14]

Finally, none of our research efforts have touched on student created podcasts, which may open a whole new venue of learner engagement. It is conceivable that audio captured from exercises involving active learning techniques could be made available in podcast form as a course progresses, and aid in maintaining a higher interest level. Study should be directed toward

dampening factors, however, such as the intimidating effect of recording. This inhibiting response can affect people when they know they are being recorded, and therefore choose their words more carefully and are guarded in what they will even venture to say.

It appears highly likely that the population of students already equipped with portable sound playing devices will continue to increase. Our research gives us reason to suspect that it may be possible to leverage the capability of these devices to enhance the learning experience. To do this wisely, it is essential that efforts be made to experiment with and evaluate the effect of various approaches, and to disseminate factual information about the results. It has been our intention to contribute to this ongoing effort in a perhaps limited and focused but potentially insightful way.

Notes

1 This paper as well as appendices A and B are available in .pdf form in one zipped file at the author's web site at www.depaul.edu/~jjanossy/janossy_etl_paper_and_appendices_april2007.zip

2 According to a Pew Internet and American Life Project survey conducted in February, 2005, "Almost one in five (19%) of those under age 30 have iPods/MP3 players. Fully 14% of those ages 30-39 have them; and 14% of younger Baby Boomers (ages 40-48) have them… iPods/MP3 players are gadgets for the upscale. Fully a quarter (24%) of those who live in households earning more than $75,000 have them; 10% of those living in households earning $30,000 to $75,000 have them and 6% of those living in households earning less than $30,000 have them." Retrieved March 22, 2007 at http://www.pewinternet.org/PPF/p/1047/pipcomments.asp .

3 According to an April 19, 2006 entry in MacWorld magazine, "'Apple has cumulatively shipped more than 50 million iPods now', said Apple CFO Peter Oppenheimer... The company

also generated $485 million in music revenue; this was driven by iTunes Music Store sales, iPod accessories, and the iPod Hi-Fi. The company noted that the iTunes Music Store now accounts for 87 percent of all legally purchased and downloaded music in the United States, offering more than 2.9 million songs and 70 television shows." Retrieved March 22, 2007 from http://www.macworld.com/news/2006/04/19/financial/index.php .

4 For example, see http://www.geeks.com/products.asp?cat=MP3 for a variety of USB devices providing 1 Gb of flash memory storage accessible for music or data storage and retrieval, and the ability to play .mp3 sound files, priced at under $30 as of March 21, 2007.

5 There's Something in the Air: Podcasting in Education. Educause Review, December, 2005, p. 33. This article is available online at http://www.educause.edu/er/ERM05/ERM0561.asp?bhcp=1 . In a refreshing dose of the doctor following his own advice, Gardner put in the effort to record his article and also post that as a podcast, which is available at http://www.gardnercampbell.net/blog1/?p=263 . The web page at which the podcast is available provides some insight into the reality that creating a podcast is not a veritable piece of cake, in spite of the fact that as Gardner explains, he has 13 years experience in broadcast radio! Similar concerns, and not merely convenience, shaped our initial intent to use software to generate sound files through text-to-sound, rather than trying to read our material for the Information Technology Workbook into audio form.

6 Although, contrary to Gardner, we felt it was inadvisable to suggest that students listen to any materials we would provide while driving, with the possibility of distraction leading to an accident. Instead, given the litigious nature of American society, it seemed wise to admonish students not to listen to these learning materials while operating a motor vehicle. We had in mind

that students might listen to learning materials while riding the Chicago commuter train, subway, and bus systems, or while walking, jogging, exercising, or otherwise performing some unrelated solitary activity.

7 The assigned text, Information Systems Technology by Ross A. Malaga, provided more coverage than needed for the course, was three years old (obsolescent in the rapidly changing computer environment) and, in addition, was priced at $125. The effort to replace it had already moved in the direction of using web links at a web site, arranged in chapter and section format, and a locally-developed workbook providing learning goals, original summary readings, copies of lecture slides, assignments, and a sample final exam for study purposes. The workbook was published in August, 2006. It is 334 pages in length and costs students $35, and is the only required text for the IT-201 course; access to the web link web site, www.ambriana.com, is entirely free to everyone, independent of the workbook.

8 The Information Technology Workbook, ISBN 1-58874-618-6, was published by Stipes Publishing, LLC, of Champaign, Illinois (www.stipes.com). The podcasts and web links are freely available at www.ambriana.com . The contents of chapters 1 and 2 in .pdf form, and slides for these chapters, are also freely available at this web site. The complete set of slides for all 10 chapters of the workbook for lecture use are posted for instructors at this web site in a self-decrypting file. If you are an instructor and would like to obtain the password for the complete file of slides, send an e-mail to the author at jjanossy@depaul.edu with a brief description of your teaching activities.

9 Specifics of the process of using the TextAloud text-to-speech software, Cepstral digitized voice, and shareware Audacity sound editing software were discussed and demonstrated in a pre-

conference workshop entitled “Creating and Sustaining a Podcasting Infrastructure using Direct Digital Recording and Text-to-Speech Software” at the Instructional Technology Conference conducted at Middle Tennessee State University on April 1, 2007. See www.mtsu.edu/~itconf for material related to that workshop, and visit www.ambriana.com at the IT Workbook button to hear the podcasts (Caution! Some pages of this site serve midi files and play music when accessed!).

10 The confidence intervals of all correlation cross tabulations are plus or minus 10% or more, and the p-values are far in excess of levels at which confidence can be placed in the results. At best, the results hint at possible relationships that may warrant further investigation. The cross tabulations are not presented in this paper, but tabulations that are close to or meeting statistical significance levels are discussed.

11 Why not, for example, provide a special learning area where reading material might be scanned and “read out” by text-to-speech software? A student with a reading impairment could be aided by hearing the words spoken as he or she read them. As more study materials become available in electronic form, the relatively inexpensive text-to-speech software and digitized voices could make this capability available to individuals.

12 Informal discussions with students in the DePaul IT-201 classes indicate that more than half of these student have access to portable sound players. This seems to be roughly double the level of iPod and .mp3 players reported in by the Pew Internet & American Life Project in their February-April 2006 survey, in which 20% of American adults and 26% of Internet users reported owning a portable sound player. However, as the Pew survey notes, rates of sound

player usage by computer and Internet-skilled individuals are higher than for the population in general. See http://www.pewinternet.org/pdfs/PIP_podcasting.pdf , retrieved on March 21, 2007.

13 Interestingly, a study by Hollingsworth (1970) discovered that children reading at below-grade level were aided by "assisted reading" in which they listened to passages being read while they attempted to silently read the same material. As paraphrased by Kuhn and Stahl in terms of increase in reading fluency, "In real terms, students using the assisted reading technique made one year's growth over the course of a semester, whereas the other students made only .04 year's growth during the same period." See Fluency: A Review of Developmental and Remedial Practices (Kuhn and Stahl, Center for Improvement of Early Reading Achievement Report #2-008, March 31,2000), p.14. We may be observing a similar phenomenon in late teen and early adult students whose current focus is the acquisition of information rather than the improvement of reading skills, but reading skills may improve as a byproduct of this use of podcasts. Such a byproduct would be truly serendipitous.

14 For example, see http://www.bbc.co.uk/radio4/history/inourtime/inourtime_archive_home.shtml to access the BBC's web site and archive of the “In Our Time” panel discussions and other audio programs available for streaming listening and .mp3 download.

Technology Use and Skills of Graduate Students

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Abstract

The faculty of the Department of Leadership at The University of Memphis is interested in the impact of information technology on graduate study. This interest has led to the formation of a Technology Committee in the department. The committee recently set two goals for itself. First, the committee wishes to define appropriate interaction with information technology which might be necessary for graduate study in the Department of Leadership. Secondly the committee wishes to investigate the impact of information technology use and skills on its graduate students. The committee requested recommendations concerning technology use and skills in the department. Students with an information technology course in their required curriculum responded at a higher rate, and expressed use and skills of information technology consistent with fluency. Half of the students responding perceived that they needed additional assistance to use information technology effectively. Ultimately the faculty would like to prepare its students for a world which increasingly is shaped by information technology.

Purpose

The faculty in the Department of Leadership at The University of Memphis is concerned that graduate students use information technology effectively and productively. The National Research Council Committee on Information Technology report, Being Fluent With Information Technology, (National Research Council, 1999) suggests that technology has becoming an increasingly important part of our work and personal lives, and that there are many people who recognize the potential value of information technology for their everyday lives and who realize that a better understanding of Information Technology will be helpful to them (National Research Council, 1999).

Information Technology Fluency

The Technology Committee in the department of Leadership has adopted fluency with information technology as a concept to frame decisions concerning technology use and skills in the department. Fluency with information technology (FIT) exceeds the traditional notions of computer literacy.

> "Literacy about information technology might call for a minimal level of familiarity with technological tools like word processors, email, and Web browsers. By contrast fluency with information technology (FIT) requires that person understand information technology broadly enough to be able to apply it productively at work and in their everyday lives" (National Research Council, 1999, 15).

Fluency with information technology is personal, graduated, and dynamic. Individuals must learn and use technology as is appropriate for their own purposes. Conceptually, fluency with information technology is constructed of intellectual capabilities, fundamental concepts, and

contemporary skills. Intellectual capabilities are one's ability to apply information technology in complex and sustained situations. Fundamental concepts refer to the foundational computing knowledge that may be added to rather than replaced. Contemporary skills is that ability to adopt products and services (and change as new products and services emerge) that may be described in the phrase "knowing how to use a computer" (National Research Council, 1999, 18). (See Appendix 1)

Higher education institutions must concern themselves with student use of information technology. "Our culture has changed from industrial economy in which knowledge is absorbed and recalled to an information-based economy in which wisdom is required to manage knowledge" (Van Weigel, 2002, 61). Managing knowledge will require managing the technological tools by which that knowledge is multiplied. Regardless of academic field or employment environment, students leaving higher education institutions will face an information-based workplace.

Higher education institutions should concern themselves with student use of information technology. In a landmark articles concerning learning and information technology, Arthur Chickering and Stephen Ehrmann make connections between the use of information technology and the Seven Principles of Good Practice in Undergraduate Education (Chickering and Ehrmann, 1996). Their purpose is to explore the capabilities of information technology to assist with learning.

> "Technological resources can ask for different methods of learning through powerful visuals and well-organized print; through direct, vicarious, and virtual experiences; and through tasks requiring analysis, synthesis, and evaluation, with applications to real-life situations. They can encourage self-reflection and self-

evaluation. They can drive collaboration and group problem solving. Technologies can help students learn in ways they find most effective and broaden their repertoires for learning. They can supply structure for students who need it and leave assignments more open-ended for students who don't. Fast, bright students can move quickly through materials they master easily and go on to more difficult tasks; slower students can take more time and get more feedback and direct help from teachers and fellow students. Aided by technologies, students with similar motives and talents can work in cohort study groups without constraints of time and place." (Chickering & Ehrmann, 1996, p. 5)

Today's student population is changing as a result of the proliferation of information technology. The field of education must adjust accordingly (Dede, 2005, Frand, 2000, Oblinger, 2005, Oblinger & Oblinger, 2005, Prensky, 2001). The manner in which knowledge is constructed has changed in the midst of this proliferation. Rickard and Obliger (2003) comment concerning the construction of knowledge with students in the millennial generation:

> "If higher education is to successfully educate this generation, it must be prepared to invest in learning environments that are by definition not one size fits all, that support learning as socially constructed and contextual, that are structured yet self-paced, and that are more outcome oriented than ever before. Perhaps even more than their parents, instructors, and guidance counselors, millennials want to see the connection between where they are and where they're going when it comes to their education. They're high achievers, and they take their learning environments seriously" (Rickard & Oblinger, 2003, p. 4).

Key findings of a recent report distributed by the Educause Center for Applied Research (ECAR) following its survey (on which the survey in the present study was based) of

undergraduate student in 2005 measure the impact of IT on the undergraduate educational experience. Kvavik and Caruso report (2005) report that: (1) Students preferred at least a moderate amount of use of technology in their coursework; (2) Students saw IT as making a positive contribution to both the teaching and learning processes; (3) Seniors and older students tended to prefer the use of more technology in courses; (4) Students, overall, gave instructors good reviews in their use of technology; (5) Students who perceived their instructors to be skilled in their use of IT reported being more engaged in course, more interested in subject matter, and more able to understand complex concepts. and (6) Participants in the study considered the primary benefit of technology used in courses to be convenience, followed by the ability to communicate with the instructor and other students (connection), management of course activities (control), and improved student learning (Kvavik & Caruso, 2005).

Student perception of information technology in the learning environment may be a product of time spent using technology. More time spent may produce greater perception of increased learning. "Students who spend more time on the Internet based course are more likely to be satisfied with the experience and take more ownership of the learning process thereby increasing their own learning" (Arbaugh, 2000, p. 15).

This study investigates the technology use and skills of graduate students in a graduate department of leadership at a large urban research university. The purpose of the study is to investigate the technology use and skills of graduate students in the department's graduate programs.

Methodology

This report is based on data gathered in an investigation of the impact of information technology use and skills among graduate students in the Leadership Department, College of

Education, at The University of Memphis in Memphis, Tennessee. Using an adaptation of the Survey of Students and Information Technology in Higher Education published by Educause Center for Applied Research ("Study of Students," 2006), all graduate student in the department (152 total) were invited to participate in the study. The instrument was originally developed for a survey of undergraduate freshmen and seniors. The adaptations included changes to the list of possible majors and degree programs, as well as minor changes to grade point average ranges.

The survey instrument was available to students as a hyperlink in an email written and signed by a graduate student in the Department of Leadership. The web-based software used (SurveyMonkey.com, 2006) to provide the online survey allowed students to complete the survey in one sitting or to stop, mark their place, and resume the survey at a later time. Students had approximately 2 weeks to complete and return the survey. The online survey remained open and available for a few days after the deadline date. Responses were collected between February 21, 2006 and March 10, 2006.

Results

Out of the 152 possible participants, 71 students chose to respond yielding a total response rate of forty-seven percent. The students responding were 39% male and 61% female. Forty-one percent of those responding were age 30-39, 22% age 40-49, and 22% age 50-59. Seventy three percent of student responding report a grade point average over 3.75 on a four point scale. It should be noted that graduate students at The University of Memphis must earn grades of "A" or "B" in graduate courses in order successfully complete a requirement, so high grade point average is expected.

The majority of students responding were doctoral degree candidates (78%) with master's degree candidates comprising 22% of the sample. Eighty-one percent of the students

responding pursue their education on a part-time basis (less than 12 hours per semester) and 19% go to school full time. The sample of 71 students contains 60 whose program can be identified. Of those students, 36 are majors in Higher and Adult Education. The other 24 students responding to the survey are majors in Policy Studies or pursing one of the programs for school principals through the Center for Urban School Leadership.

The group of students who responded to the survey was statistically similar to each other in almost all measures. The population and the sample are similar in many indicators including gender breakdown (35% male, 65% female) and age breakdown (forty-one percent of those responding were age 30-39, 18% age 40-49, and 14% age 50-59). In this way the sample is representative of the population.

However, it is important to note that more students in the population from which the sample was drawn are majors in Policy Studies or some other K-12 graduate program than majors in Higher and Adult Education. Spring 2006 enrollment figures for the department obtained from the Office for Institutional Research at The University of Memphis indicate that 93 students are majors in Leadership and Policy Studies or some other K-12 program, and 49 students are majors in Higher and Adult Education, with a total of 152 graduate students in the department. Taken at face value, this means that 72% of the population of Higher and Adult Education majors responded to this survey, and 26% of the population of student pursuing studies in a K-12 area responded to the survey.

These differences between population and sample may be the most important discovery in this study. Given adequate assurances that all students in the population had access to the survey, it may be concluded that more students majoring in Higher and Adult Education were inclined to respond to the survey of Information Technology Use and Skills. Though it cannot be

investigated using these data, there may be a difference between Policy Studies majors who responded and those who did not.

As a group, graduate students in this department of leadership report using electronic devices (other than cell phone) more than 20 hours per week. This time is spent primarily on classroom activities and studying, using library resources to complete a course assignment, surfing the internet for information to support coursework, writing documents for coursework, and creating and sending e-mail. Students prefer moderate to extensive use of technology in courses. Moderate use of technology is defined as use of e-mail, several Power Point presentations, some online activities or content, whereas extensive is defined as class lecture notes online, computer simulations, Power Point presentations, streaming video or audio.

Students perceive that have "about the same skill level" or "more skill" with information technology as compared to other students on campus. They report fewer hours spent on using electronic devices for personal or pleasure purposes than for activities related to courses (see Table 1).

Table 1. Software/internet usage

N=71	Do not use (1.00)	<1 hr (2.00)	1-2 hrs (3.00)	3-5 hrs (4.00)	6-10 hrs (5.00)	11-15 hrs (6.00)	16-20 hrs (7.00)	>20 hrs (8.00)
Excel-creating spreadsheets or charts	17%	43%	20%	13%	5%	0%	2%	0%
PowerPoint-creating presentations	8%	32%	32%	17%	10%	0%	0%	0%
Photoshop-creating graphics	51%	30%	9%	11%	0%	0%	0%	0%
iMovie-creating video/audio	87%	2%	8%	3%	0%	0%	0%	0%
Dreamweaver-creating webpages	75%	12%	5%	7%	0%	0%	0%	0%
Course Management System (CMS) WebCT-learning activities	35%	13%	17%	22%	7%	3%	0%	3%
IM-creating instant messages	55%	20%	8%	3%	7%	7%	0%	0%
Playing computer games	53%	25%	8%	5%	5%	0%	0%	0%
Surf the internet for pleasure	10%	42%	12%	20%	8%	5%	2%	2%

Most students learned software applications because of an employment requirement, although 14 students (24%) report that they learned Power Point as a class or major requirement. Students reporting that they had not taken a class that used a course management System. (CMS) described their overall experience using a course management system as very negative. Students reporting that they had taken a class that used a course management system

(CMS) described their overall experience using a course management system as positive. However, this lack of experience with CMS does not significantly impact a student's perception of the benefits of information technology in graduate education. All students report that the most valuable benefit experience from information technology and the use of electronic devices is convenience. All other possible benefits (communication, improved learning, and improved planning) are valued equally. Students who have used a CMS reported slightly higher benefits in communication with classmates and instructors than students who had not used a CMS. Students do not have significant concerns about information technology, reporting that inadequate access to printing, old computer, slow networks, and inadequate technical assistance was not a concern. Thirty three percent of students (20) indicate that viruses and spam are a small concern.

Students responding perceived that information technology in courses probably has helped them. They are more engaged in courses that require use of information technology (55%), give faculty positive feedback on the overall use of technology in courses (68%), feel that technology has probably increased their interest in the subject matter (55%), and that IT improves the presentation of their work (77%) (see Table 2). Overall, more than 60% of students agree that information technology in their courses has improved their learning. A contrasting 14% disagree with this overall assessment. Additionally, fifty percent of students agree that they need more training on the information technology that they are required to use in courses.

Table 2. Experiences in courses with Information Technology

N=71	Strongly agree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Response Mean All groups
I am more engaged in courses that require me to use technology.	2%	17%	27%	41%	14%	3.47
Overall my instructors use information technology well in my courses.	3%	5%	24%	56%	12%	3.68

The instructors' use of technology in my courses has increased my interest in the subject matter.	2%	15%	24%	44%	14%	3.49
I primarily use information technology in courses to improve the presentation of my work.	2%	5%	17%	53%	24%	3.92
My school needs to give me more training on the information technology that I am required to use in my courses.	12%	12%	27%	36%	14%	3.27

Students were asked several questions about instruction with information technology. Group responses to these items do not indicate any strong negative or positive tendency, but rather one that would be characterized as neutral. Thirty-four of the 42 HIED students responding said that they had used a course management system. These students perceived that their instructors are using technology well in courses (M=3.59). Thirteen of the 31 K12 students responding said they had used a course management system. These students had an even more positive opinion of their instructors' use of technology in courses (M=3.85). The students who indicated that they did not use a course management system responded similarly to questions about instructor use of technology (M for HIED=4.00, M for K12=3.94).

Simple comparisons between student groups did not yield any statistically significant differences in attitude, skill, or use patterns.

Conclusion

Difference in rate of response

As noted earlier, the department enrolls more Policy Studies or some other K-12 (LEAD) students than HIAD students. Spring 2006 enrollment figures for the department of Leadership obtained from the Office for Institutional Research at The University of Memphis indicate that 93 students are LEAD majors, and 49 students are majors in Higher and Adult Education (HIAD), with a total of 152 graduate students in the department. Taken at face value, this means that 72% of the population of HIAD students responded to this survey, and 26% of the LEAD students responded to the survey. This difference between respondents and the population of the department is troubling, indicating possible survey error.

There are four sources of survey error that reduce research accuracy, namely coverage error, sampling error, non-response, and measurement. (Groves, 1989) *Coverage error* is defined by Groves as a mismatch between the target population and the frame population which results in a difference between those surveyed and those not surveyed. *Sampling error* arises when not all members of the frame population are measured. Differences between respondents and non-respondents, and the rate of non-response are included in the concept of *non-response error*. *Measurement error* is deviation of the answers of respondents from their true value on the measure. Aspects of each of these types of sampling error may be found in the survey done in this study, particularly non-response error. There is a difference between those surveyed and those who responded.

There is a variety of evidence to indicate that respondents to web surveys have common characteristics that make them different than non respondents, contributing to non-response error. "Possibly those who are willing to complete online surveys have stronger feelings which

they wish to register." (Grandcolas, 2003, 552) Grandcolas, et. al. compared paper survey to web survey, finding that there were differences in responses. "The findings of this research suggest that although web surveys may elicit different responses, this is due to sample bias and not administration mode. What, at first sight, appears to be a mode effect is due to the self-selection of the web sample, producing a group of respondents with more internet experience and different attitudes to market research and to the internet." (Grandcolas, 2003, 552) Grandcolas' experience with Kingston University students indicates that students who choose to respond to an online survey differ from students who do not choose to respond.

Additional difference between these groups of students may be found in their required curriculum. Students in the Higher Education concentration, the Adult Education concentration, and the certificate program in Community College Teaching and Leadership take at least one course (Information Technology Trends and Issues, HIAD8415) that is designed to expose them to information technology in education. This course is not required for students with majors in Leadership and Policy Studies.

It is possible that since a higher education graduate student was conducting the study as a residency project more HIAD students were inclined to participate. However, not knowing the researcher may not account for low participation by LEAD graduate students. Certainly successful survey response is possible without being acquainted with all the possible participants, since numerous surveys are conducted successfully without participants having any association with the researcher.

One participant in the survey remarked that the subject line in the email that provided the invitation to participants read: "Survey of Information Technology in Higher Education." This participant, a graduate student in a HIAD program, proposed that the words in the subject line of

the email might have indicated that only HIAD students were to respond. It is possible that using the words "higher education" in the subject line might have persuaded LEAD graduate students that their participation was not required or requested.

The delivery of the survey invitation in an email may account for some lack of response. The hyperlink for the survey was provided in an email sent to all participants at least twice during the time when the survey was available, but was only distributed by way of email. Students with less experience with information technology might not have accessed their e-mail accounts during that time. Because the University has warned graduate students about opening e-mail from unknown senders, the e-mail hyperlink might have been cause for caution for students who did not know the researcher or the sender of the e-mail. These suppositions cannot be explored with the information collected in this survey, but might be taken into account in future surveys of these graduate students.

Recommendations

The information in the study can be helpful to the Technology Committee in the Department of Leadership at The University of Memphis. Students surveyed have given valuable information concerning their preferences. However, more information should be collected to determine how the survey results might change if the sample more closely represented the population of students. Though one hundred percent participation is difficult in any survey, such a "lopsided" response is cause for concern.

Further research should be conducted to collect information from all students in the department, targeting a higher response from students in Policy Studies and other K12 programs. To protect against suspected non-response error, the survey should be available to students in a variety of modes. This survey could be conducted by an interviewer, completed in paper mode,

or done over the telephone. These less anonymous methods of gathering data would require measures to protect student identity.

It would be dangerous to proceed with decisions concerning the impact of information technology use and skills on graduate students in the department without taking measures to gather a sample that represents the population of majors. There is evidence to indicate that students who responded to the online survey differ from their non-responding classmates. This difference deserves investigation.

Depending on the results of that additional participation, different departmental responses may be appropriate. Without changes in participation, the data indicate that student expectations in the classroom include moderate to extensive use of technology. Students who participated in the survey respond well to information technology use in their courses. They perceive IT engages them in their coursework and helps them to understand complex concepts. IT helps these students manage the complicated task of earning an advanced degree. IT assists students with communication among themselves and with the faculty in their respective programs.

The survey does include some concern on the part of students about computer viruses, worms, spam, and inadequate technical assistance. Efforts to increase student awareness of the assistance available to them may be warranted. This type of information often seems hidden from students who have limited access to campus beyond attending classes. An effort on the part of faculty to assist students with integration of technology into their graduate studies is needed.

Motivating faculty to consider this role may be a challenge. Faculty must first be encouraged to adopt technology as a resource. Convenient access to resources that encourage a change of teaching behavior and reward for the behavior change are necessary (Rogers, 2000). But according the Dean (1998) and Neil (1996) many faculty fail to adopt technology simply

because they are not convinced that technology can improve their students' learning (as cited in Rogers, 2000). Graduate students may well respond to the same type of incentive.

There is more to be learned about the impact of information technology on the experience of graduate students in the Department of Leadership. The same study has been conducted with faculty in the department and with undergraduate freshmen and seniors at the same institution. The information from these studies might yield additional insights concerning the similarities and differences between graduate students, faculty, and undergraduate students. In addition, it is recommended that the study be repeated in a year, and that an attempt be made to gather a sample that reflects the graduate student enrollment in the Leadership of Department.

A good understanding of all skills, concepts, and capabilities of fluency are necessary for graduate students to access the full power of information technology. The Department of Leadership must decide the extent to which it values fluency with information technology, and the vehicles by which changes in current levels of use and skill will occur. The results of the survey indicate that varying degrees of use and skill are perceived in the graduate students in the department. If an effort to standardize fluency with information technology is adopted, a combination of initiatives may be required to impact graduate student use and skill.

Curricular changes are often a first step. "One common reaction to calls for proficiency in *X* is to promulgate required courses on *X*. For example, in response to concerns about the writing ability of students, many universities require all students to enroll in (or place out of) a writing course" (National Research Council, 1999, 57). Current department curriculum includes such a course, HIAD8415, Information Technology Trends and Issues. This course is currently required in both Higher and Adult Education concentrations, but in no other concentration in the department. An effort to measure the impact of this course on information technology use and

skills among Higher and Adult Education students might influence the department's decisions concerning curriculum for other concentrations. "With such a foundation in place, pedagogical efforts involving information technology should be easier and more efficient to undertake in subsequent courses. A better approach to FITness draws on the idea that information technology is pervasive. That is, when properly integrated, FITness will benefit the study of any subject, much as the ability to write well benefits students of any subject" (National Research Council, 1999, 57).

Half of the students responding perceived that they needed additional assistance to use information technology effectively. Student comments (see Appendix 2) outline the need for a variety of types of assistance. However, it is clear from these narrative responses that no student posting comments objected to the use of technology in the graduate programs of the department of Leadership. There is a hint that competition to use technology more or more effectively exists among students. "For a course in which participation on the [discussion] board [in WebCT] was required based on average use of all participants, I found it inhibiting. I didn't like being forced to participate based on other's use."

The faculty of the department has taken responsibility for making the initial steps to integrate information technology into courses, curriculum, and culture in the department. As the faculty seeks to move toward an assurance of fluency with information technology among its students, resources of the campus may be of great assistance. The University's Advanced Learning Center has announced several fellowship and grant programs that are designed to help individuals and groups make strides in their use of information technology to foster learning. Information concerning these programs is included following the Appendices. The grant

program titled Innovation to Excellence in Learning (IEL) is "designed to create funding opportunities for large-scale departmental classroom technology initiatives."

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Using the Worldwide Instructional Design System (WIDS) to Create an Integrated Nursing Curriculum

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Abstract

In 2005 Madisonville Community College (MCC) was awarded a second Title III grant targeting the revision of technical degree and diploma programs. These programs were the product of the former Technical College when the Kentucky House Bill 1 merged the state's community colleges and technical colleges in 1998. In the grant proposal accepted under the Title III program, the technical programs were described as being long in need of curriculum revision and streamlining.

A curriculum revision timeline was established by the Title III Leadership Team, including the Curriculum Specialist, a half-time Activity Director, a half-time Title III Coordinator, and an Administrative Assistant. Nursing and Surgical Technology were the first two programs to undergo revision through weekly meetings. Faculty members were appointed to the Curriculum Revision Committee in the spring semester of 2006.

Due to the long-term process involving curriculum revision of twelve technical programs and the requirements of these programs in their accreditation process,

Madisonville Community College actively sought out technical assistance with the revision. The Worldwide Instructional Design System (WIDS) stood out from the beginning in the practical application for technical programs. After touring the website and meeting with representatives from WIDS, MCC administration chose to purchase and use WIDS.

The first technical program scheduled for curriculum revision was that of Nursing. MCC had two separate programs—Practical Nursing and the Associate Degree of Nursing. The coordinators of the two programs decided to promote the creation of an integrated nursing program.

WIDS has provided a comprehensive tool to assist the faculty in the development of the new nursing courses. It is founded on performance-based learning, which underlies all technical education. There are four essential features of performance-based learning, according to the WIDS program. They are: Identification of who is responsible for the performance, Statement of what competencies are required in advance of the teaching process, Development of when the performance standards must be met, and Provision of how the learners will develop the desired competency in the form of a learning plan.

The WIDS software creates the necessary documents to develop each of the four essentials: who, what, when and how. The faculty members learn to create the following documents in the WIDS software: a course syllabus, a course outcome summary (a document unfamiliar to MCC faculty prior to WIDS), learning plans, teaching notes for the learning plans, and performance assessment tasks. In the creation of these documents, they also link program standards, external standards (such as the National

League for Nursing), and general education competencies to the course competencies they have written. This creates a pathway in the software to enable students, faculty, administration, and accrediting personnel to make the logical connections that are important to course and program development.

Finally, the WIDS program contains an analyzer function to allow faculty and administrator to show those linkages between course content and the standards determined externally and within the institution. This demonstrates to accrediting bodies how the curriculum makes sense. The analyzer function can also be used within one course to critique the course for essentials of good teaching practice, such as levels of Bloom's taxonomy, types of multiple intelligences, group size, and other aspects.

Currently, nine new courses have been developed in the WIDS system for the MCC nursing curriculum. The implementation date is fall of 2007.

Purpose

The Kentucky Postsecondary Education Improvement Act of 1997 created the Kentucky Community and Technical College System (KCTCS) and transferred governance of the state's community colleges and vocational-technical schools to the KCTCS. The legislation's intent was to improve program efficiency and increase postsecondary participation rates. It also necessitated the consolidation of Madisonville Community College (MCC) and the Kentucky Tech-Madisonville (KTM) vocational-technical school (Task Force on Postsecondary Education, 1997). As a result of the legislation and the consolidation, it necessitated a substantial restructuring of technical programs and courses for both institutions, but particularly for the Kentucky Tech-Madisonville institution.

The Technical Campus of MCC was begun in 1962 with program offerings such as auto mechanics, electricity, drafting, and machine shop. In 1971 health programs were added to the offerings on a separate campus, known as the Health Campus. The health technical programs fared well, due to an emphasis on health-related careers in Madisonville. In fact, the Health Campus became well-known in the state for quality education. The other technical programs offered on the Technical Campus experienced problems, including job losses due to decline in the local mining industry in the 1980's and closing of large manufacturing plants, low enrollments, and inflexible scheduling of courses.

With the legislation of the Kentucky Postsecondary Education Improvement Act of 1997, Kentucky lawmakers mandated the effective and efficient use of resources in higher education. In the early twenty-first century, several negative factors began to turn around in the local area. The coal mining industry, which had been long thought of as dead, revived due to the expanded use of high sulfur coal. Several light manufacturing plants were established in Hopkins County. The health care industry, already well-known as Trover Foundation in Madisonville, continued to expand. All of these factors, along with the low educational levels of western Kentucky citizens, conspired to emphasize the necessity of revision of the technical programs in order to provide for the workforce required.

A Title III grant proposal was submitted to the Office of Postsecondary Education in the United States Department of Education for the purpose of Technical Curricula Revision in 2004 (Madisonville Community College, 2004). Its intent was to assist technical faculty in the implementation of curriculum best practices across the spectrum

of each of the twelve technical programs. In 2005, Madisonville Community College was notified of the award of $1,900,000.00 for a "Strengthening Institutions" grant.

Methodology

As a result of obtaining the Title III grant, three separate processes were started. The first involved hiring of the necessary staff to work on the grant. The following positions were filled from October of 2005 through January of 2006: half-time Coordinator, half-time Activity Director, Curriculum Specialist, and Administrative Assistant. It was determined that the work of the Activity Director would begin the revision process by assisting the technical faculty to locate "best practices" sites and implement appropriate techniques, while the Curriculum Specialist would provide training in educational practices and development of the competencies, objectives, and courses to build the program.

The second process mandated was a timeline of technical programs to be revised over the course of the five-year grant. This was developed by the Coordinator of the grant. It was determined that the practical nursing program (a product of the Technical Campus) and registered nursing programs (a product of the community college) were worthy of the first round of curriculum revision work. The selection of these two programs occurred for several reasons.

First, the coordinators of the two separate nursing programs had come to the conclusion that a new and innovative education program for nurses was needed. They had communicated on numerous occasions the virtues of creating a "seamless" pathway from beginning nurse aid to becoming an Associate Degree nurse. They also lamented the lack of transferability of coursework from the practical nursing program into the

registered nursing program, taking a minimum of seven college semesters to complete. Discussions with top nursing educators in the country at various conferences also stressed this need for innovation. Therefore, nursing appeared to be a ripe field for revision.

Finally, the work of the revision process necessitated a method of addressing the educational requirements for the technical program and also meeting requirements of accrediting bodies, such as the National League for Nursing. Technology software programs for curriculum development were investigated for the grant personnel and administrators of Madisonville Community College. This search led to the Worldwide Instructional Design System (WIDS) (Mashburn & Neill, 2002).

WIDS was selected for the project because it comprised a comprehensive computer package for curriculum design. Performance-based learning is the foundation of WIDS, made up of four essential features: 1) identification of who is responsible for the performance, 2) a statement of what competencies are required from the beginning of the course, 3) a clear picture of when the performance standard must be met, and 4) the learning plan which relays how the learner will achieve the standard. It incorporates well-established educational principles, including Bloom's taxonomy, learning styles, and multiple intelligence theory. As a part of the package, instructors build courses to form a program or create just one course, produce syllabi and course outcome summaries for students and design learning plans for students and teaching plans for instructors. The analyzer portion of the WIDS package creates for the faculty member a grid which shows the match of competencies to external and internal standards. This can be employed to show accrediting bodies required information about the curriculum, courses, and competencies. Additionally, WIDS contains Wizards, which can be used to quickly

produce the documents listed above with all required components (Mashburn & Neill, 2002)

A Nursing Program Revision Committee was established in January of 2006 with seven nursing faculty selected from the practical nursing and registered nursing programs and four persons from the Title III grant. The committee met weekly during the spring semester of 2006. The first topic undertaken during the semester was the common areas and depth of instruction in the two programs. The old curricula and the new, tentative curriculum were printed on large wall sheets around the meeting room. This facilitated discussion and documented progress. Other faculty members were encouraged to give input anonymously if they chose to do so by writing on the wall sheets.

The committee then chose a nursing theorist, Betty Neuman (1989), whose theory would be the basis of the curriculum and content threads relating to the external standards of care as set forth by the National League for Nursing (National League for Nursing's Council of Associate Degree Nursing, 2000). During the initial work of the committee consultations with many others occurred. The Division Chair of Nursing consulted with Donna Ignatavicious, nationally renowned nursing educator and textbook author, and with four-year regional universities in MCC's area (Murray State University, Western Kentucky University, and the University of Southern Indiana) about transferability of the A.A.S. Nursing Degree Program. The Kentucky Board of Nursing was also contacted and offered resounding support for the curriculum. Other nursing coordinators within KCTCS were presented with the proposed changes and gave overall support. A visit to another career pathway program in nursing was made to Olney Central College (OCC) in

Olney, Illinois by committee members. The faculty of OCC shared their 1 + 1 program and related their successes and concerns. It was a very helpful experience.

The final work of the committee produced the program shell, which outlined content to be covered in each semester, general education courses and prerequisites, and technical support courses. Specific courses were given to teams of faculty to write course descriptions including the credit hours and components, competencies, and produce outlines. These key elements are the essential parts required for the KCTCS curriculum forms, which are required to propose a new curriculum. Four exit points were designated for the student.

The entire curriculum was presented to the Nursing Division in a meeting before the beginning of the 2006-2007 academic year. Nursing faculty members divided into teams and were assigned courses from the new curriculum to review. Changes were discussed by the entire group. These revised course documents were the final product to be submitted to the local MCC Curriculum Review Committee and the KCTCS Curriculum Review Committee during the fall semester of 2006.

Results

The Nursing Integrated Program developed by Madisonville Community College is shown in Appendix A. The new nursing program incorporates a career pathway with four exit points for students: certified nursing assistant, Medicaid nurse aid, licensed practical nurse, and registered nurse. At any of the exit points, students may reenter the program to continue on to the next level.

Although some general education and technical faculty in the KCTCS group opposed changes in the new curriculum, such as contextualized learning through a

nursing pathophysiology course, the local Curriculum Approval Committee at Madisonville Community College passed the new program with substantial support. The Kentucky Board of Nursing gave the MCC group a standing ovation in its education committee and the Board passed the curriculum at its meeting in December of 2006. Work was begun in the spring semester of 2007 to work with four-year universities on a specific transfer agreement for the program.

Conclusion

The finished product of the curriculum revision process is a fully integrated educational program for nursing. Although change is always difficult, the result of the curriculum revision has been a positive force for innovation at Madisonville Community College. Nursing faculty members who had not worked together previously have collaborated to work on new courses. They have "bought into" the new curriculum. In several instances, energy that was not previously seen has become obvious to discuss competencies, to select textbooks and learning materials, and to plan lecture and lab outlines. It does appear that a new era of nursing education has begun with the new curriculum.

The successful revision of the nursing program has also inspired other technical programs to "think big." As those program coordinators look at their courses and curricula, they now talk about making real and substantial improvements, because they know that the nursing faculty achieved this.

Recommendations

Several nuggets of knowledge have been gleaned from this monumental task of curriculum revision in nursing. The first is the value in having someone knowledgeable in educational principles to direct the process of revision. The Curriculum Specialist, although technically not an expert in the revision of education curriculum, has taken education courses and learning theory courses which gave assistance in working with competencies and the use of the WIDS program.

Secondly, there is great value in encouraging people to work on a collaborative effort, reminiscent of the jigsaw classroom technique. Most of the two nursing program faculty had little experience in working together until they were assigned to the committee. Committee homework also required them to collaborate between committee meetings.

Technology to assist the revision process was invaluable to the committee. The WIDS software provided a structure to understanding courses and how they should be built, as well as the documentation provided to students, administration, and accrediting bodies. WIDS also provided much assistance for faculty members with assessment techniques and learning principles because of the libraries build into the WIDS software. However, working actively in the WIDS software while building individual courses may be a more beneficial way to produce results in future revisions of curriculum. Because nursing faculty had been trained months before in the WIDS software before they actually wrote new courses and, finally, set them up in WIDS, several faculty members expressed frustration in remembering the intricacies of WIDS when they used it at the

end. It is believed that WIDS input by faculty members should occur as they are constructing the courses along the way.

Finally, it was advantageous to have success in your first curriculum revision project! It was lucky (or smart) to select the nursing program as the first for curriculum revision because the faculty members as a whole are energetic and innovative.

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Using the WIDS (Worldwide Instructional Design System) Learning Design Software to create an Integrated Nursing Curriculum

Presenters: Beth Moore, Curriculum Specialist,
Title III grant
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Challenges and Collaboration

- Identify the need for career pathway
  - PN curriculum- 3 semesters (64 credit hours)
  - RN curriculum – 5 semesters (71 credit hours)
- Identify a committee with equal representation from PN and RN faculty
- Collaborate with outside sources to identify nursing role of the future

Practical Nursing (PN) Curriculum

- FIRST SEMESTER
- NPN 100 Intro to Nursing & Health Care System
- NPN 105 Development of the Care Giver Role
- NPN 110 Pharmacological & Other Therapeutic Modalities
- AHS 100 Human Growth & Development **OR**
- PY 110 General Psychology AND PSY 223 Developmental Psychology
- BIO 135 Human Anatomy & Physiology with Lab **OR**
- BIO137 Human Anatomy & Physiology I AND
- BIO 139 Human Anatomy & Physiology II
- SECOND SEMESTER
- NPN 120 Childbrearing Family
- NPN 125 Mental Health
- NPN 130 Pharmacology II
- NPN 135 Introduction to Health Deviations
- CIS 100 Introduction to Computers
- THIRD SEMESTER
- NPN 200 Med-Surg I
- NPN 205 Med-Surg II
- NPN 210 Practicum
- NPN 215 Nursing Trends & Issues
- ENG 101 Writing I **OR** COM 181 Basic Public Speaking **OR** COM 252 Intro to Interpersonal Communications

Registered Nursing Curriculum

- FIRST SEMESTER
- BIO 135 Anatomy & Physiology I
- MT 110 Applied Math **OR** MT 150 College Algebra & Functions
- PY 110 General Psychology **OR** PSY 100 Intro to Psychology
- SECOND SEMESTER
- Nsh 101 Nursing Practice I
- BIO 139 Anatomy & Physiology II
- CIS 100 Intro to Computers
- ENG 101 Writing I
- THIRD SEMESTER
- NSG 202 Nursing Practice II
- PSY 223 Developmental Psychology
- COM 181 Basic Public Speaking **OR** COM 252 Intro to Interpersonal Communications
- FOURTH SEMESTER
- NSG 203 Nursing Practice III
- BIO 225 Medical Microbiology
- ENG 102 Writing II
- FIFTH SEMESTER
- NSG 204 Family Nursing
- NSG 205 Transitions to Professional Practice
- Humanities course

Curriculum Revision

- Establishment of committee for curriculum development
- Designation of curriculum specialist and activity director from Title III funds
- Developed vision for integrated nursing program

The Beginning of a Nursing Career Pathway

- Work of the committee
  - Examine R.N. and P.N program components and course competencies
  - Determine nursing theorist, program threads, conceptual framework
  - Outline general education requirements, technical support courses and nursing content division.
  - Evaluate input from collaborative sources
- Best Practice visit to review existing career pathway program in Illinois.

Work of the Committee

- Development of courses
  - General Education requirements
  - Technical support requirements
  - Nursing courses required and placement
  - Kentucky Board of Nursing requirements
- Ongoing collaboration with:
  - 4 year Universities,
  - KY Board of Nursing,
  - Kentucky Community and Technical College System (KCTCS) nursing programs,
  - National nursing experts,
  - Local healthcare employers.

Build Career Pathway

- Four exit points in the Pathway
  - 1. Certified Nurse Assistant
  - 2. Kentucky Medication Aide
  - 3. Licensed Practical Nurse
  - 4. Registered Nurse

Technology to Support the New Curriculum

- WIDS
  - Faculty training by WIDS consultant
  - Customization of WIDS package to fit MCC terminology
  - Wizards for:
    - Syllabus
    - Course Outcome Summary
    - Learning plans
    - Performance assessment tasks
  - Analyzer component

Focus of WIDS

- Performance-based learning
- WHO – *Students* need to know what is expected before it happens
- WHAT – *Competencies* need to be stated, verified, and made public up front
- WHEN – *Performance standards* measure student achievement according to pre-stated criteria and conditions
- HOW- *Learning plans* clearly tie learning activities to intended outcomes

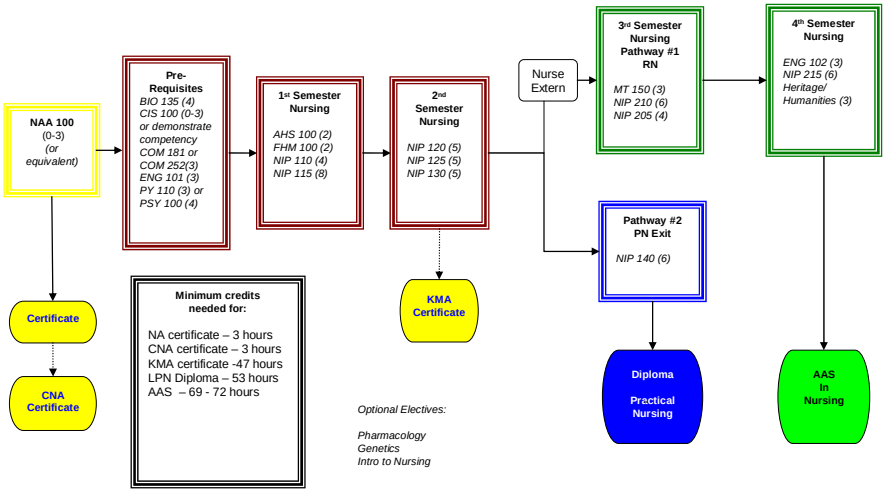
Advantages of Using WIDS

- Program standards and course competencies with demonstrated link to
  - external standards
  - general education competencies
  - program outcomes
  - learning objectives
- Student activities demonstrate course competencies
- Quick access to analyzer reports for courses or program

End Result of Process

- Innovative nursing curriculum
- Technology implemented to support curriculum revision
- Document consistency across all semesters of program
- Easy access to Analyzer reports for program and courses needed by accreditation agencies

Integrated Nursing Career Pathway



Technical Requirements for WIDS Software

- Pentium II or better
- Windows 95, 98, ME, 2000, XP or newer
- WIDS 7.5 software program with latest updates
- For more information contact www.wids.org

Graduate Students and the e-portfolio:
Practical Strategies for Successful Implementation

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Abstract

As adult graduate students take up the challenge to earn higher degrees they may return to school less prepared in the area of technological skills as compared to those students who have recently left the university. One of the requirements to complete the Graduate Education programs at Trevecca Nazarene University is the creation of an e-portfolio. While the benefits of e-portfolios are understood by their users, the actual implementation of this technology can prove problematic for many graduate students. This paper presents the authors experiences in working with diverse graduate students in understanding and implementing the e-portfolio tool, LiveText. A corporate effort between the program coordinators and appointed "specialists" has produced practical strategies that have helped to develop a successful learning environment where technology challenged graduate students thrive. These strategies include the development of program specific templates, in-depth training sessions, and the availability of dynamic technical support and mentoring.

Graduate Students and the e-portfolio:
Practical Strategies for Successful Implementation

Graduate students in this millennium use technology in many unique ways as part of their standard curriculum. From online course delivery programs such as WebCT or

Blackboard, to use of Wikis and blogs as communication tools, to creating and maintaining e-portfolios. Each of these technologies require skills and knowledge that many adult graduate students may find challenging and yet in the long run, rewarding.

Trevecca Nazarene University, founded in 1901 is a fully accredited comprehensive institution of higher education located in Nashville, Tennessee. There are 47 undergraduate majors and 5 associate degree majors in 4 schools- Business, Education, Religion, and Arts and Sciences. Graduate degrees are available in religion, education, management, physician assistant, a library and information science, and counseling psychology. A doctorate in education is offered. The School of Education graduate programs have a current enrollment near 500. "Students come to Trevecca's graduate program from all over the world from a variety of professions including business, management, medical and education. The cohort-based organization of Trevecca graduate education programs provide significant support from peers and faculty throughout the duration of the program. The diverse experiences of the TNU faculty results in classroom instruction that reflects quality thinking, creativity and demonstrations of best practices (Trevecca vi)."

Professional Portfolios have long been a requirement for course completion at Trevecca Nazarene University. The professional portfolio as described by media specialist Marilyn Heath is "an organized collection of self-selected artifacts and self-generated reflections, developed for a specific purpose and audience that demonstrate the author's professional knowledge, skills, dispositions, and growth over time (2)." In 2002 it was decided by the Dean of the School of Education, Dr. Esther Swink and others, that

Trevecca would pursue NCATE accreditation. This decision was the impetus for the university to move from print to electronic portfolios.

The accreditation management system provided by the company LiveText was chosen to provide the platform for creating the electronic portfolios. While this company provides a number of online tools and services the following key features are utilized at Trevecca: e-portfolio templates framed by program requirements, online sharing which allows peer-to-peer viewing capability and faculty review and assessment. An additional feature is that the purchase of LiveText accounts by students provides web space outside of the university network. Also, the accounts remain active for one year after the student's completion of the program allowing the candidates to present their e-portfolios when interviewing with principals. This marketing feature works as a motivational tool for the candidates.

It was decided that not all of the graduate programs would migrate from the print portfolio to the e-portfolio at the same time. The Masters of Library and Information Science program was the first to make the change which included creating a template for the students. With this program and in those to follow the tendency of the Program Coordinators was to try and emulate the print version. Attempts in several programs to make this work for the students revealed that a break from the previous model was necessary and that a new approach would be beneficial for the students. Each program now has a uniquely formatted template that has been created under the direction of the Program Coordinator and placed in LiveText by the specialist to be copied by the students. The new format helps the students in organizing and presenting their work in a manner more logical for the electronic interface.

The main difference in the format between the programs lies in the candidates' placement of artifacts. Some of the programs templates are designed with sections delineated by courses. The candidate works in a section which is headed by the course title and then from that course selects artifacts. Once artifacts are attached the candidate then must identify the standard or standards which have been evidenced by their work. In another program the student begins with a specific standard and is allowed to select artifacts that have been completed at any time during the program. In either format students must write a reflection on the standard.

Reflections are a major component of the e-portfolio. John Dewey is accredited as one of the early educators who identified the importance of reflective thinking. He identified the process as "definitive units that are linked together so that there is a sustained movement to a common end (5)." By reflecting on standards candidates have the opportunity to link newly acquired knowledge to practice in the classroom. They can also express their own understanding of standards and give evidence of their professional growth.

There are a number of elements which help to create a successful learning environment for Trevecca's graduate students. In working with graduate students it is recognized that there will most likely be a number of students in each group who lack proficient computer skills. As recognized by Jane Manner, "Many of these nontraditional students did not grow up with computers, and may even have resisted the wave of e-participation that has surrounded them. It is not uncommon for them to admit (with simultaneous pride and embarrassment) that their children or grandchildren know all about computers while they know little" (32). This barrier for some graduate students is

illustrated in a study reported in the journal Educational Psychology. A survey of teachers who had little experience with computers, report that their greatest source of computer anxiety came from the fear of "getting stuck and not knowing what to do next". The second greatest fear was "not understanding the computer jargon and the messages it gives (Bradley par 39)". These facts helped to drive the development of what is called "LiveText trainings".

At Trevecca the undergraduates are introduced to the e-portfolio early in their program as part of the Technology for Educators course and then are expected to build those on their own over the four years in the program. In contrast, the graduate students are given an initial training and follow-up sessions throughout the duration of their programs which range from 15 to 18 months. The initial training is an in-depth look at the tools and functions used in building the e-portfolio. Special attention is given to help them understand the "jargon" used. A tips sheet is distributed which addresses the most frequently identified areas where students might find themselves "stuck".

Weitzenkamp and Heckathorn's research study revealed that instructors might not adapt to new technologies "until they perceive that it will improve the potential for student learning." Suggesting that "perhaps initial technology trainings are not immediate enough, or do not provide the personal meaning significantly enough, to be effective; therefore, an instructor may need to be paired with a technical advisor to serve as a mentor… (12)." This has been Trevecca's experience and resulted in the appointment of several LiveText specialists who work with each Program Coordinator in the creation of the template as well playing key roles in training students and providing technical support to students as needed.

Research done by Garrells entitled "Dynamic Relationships: Five critical elements for teaching at a distance," identified vital components for successful online teaching. These included instructor enthusiasm, familiarity with the technology used, and critical support personnel (Weitzenkamp 4). These specialists are available for the students in their programs on a formal basis (scheduled training and follow-up sessions) as well as informally - by email, phone or even the scheduling of a small group working session in which the specialist is readily available for assistance if needed. The LiveText specialist has been the bridge needed for faculty and students as they create and maintain their e-portfolios.

The cohort model itself has lent support to this program's success. As the students begin and end as a group a rich and trusting environment is created for students that encourages collaboration and fosters peer support. Peer support has proved very beneficial as students assist each other in overcoming technology issues. Also, as they share completed elements of the e-portfolio students build on peer's know-how that results in a better quality end product. This peer support is encouraged by the faculty and the specialists.

A study completed by Quitadamo and Brown entitled Effective Teaching Styles and Instructional Design for Online Environments concluded that "it is the quality of human interaction that determines online learning success (7)." Trevecca has a unique and strong held commitment to face-to-face human interaction that permeates all aspects of the university. While students are introduced to and encouraged to make the most of technology in diverse ways, the commitment by Trevecca to provide the "human touch" in their learning environment has contributed strongly to student success. Commitment

to student success at Trevecca can be summed up by Trevecca's motto "To be, rather than to seem" - the driving force to successful learning environments for our students.

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Don't Make Me Collaborate

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Abstract

Instructors can integrate one or two different collaborative learning tools in order to enliven and enrich their learning environments as well as encourage group participation with greater success than traditional collaborative methods. After the definition of the technologies and some history, the work will define best practices and practical uses in collaborative scenarios for class work. The work will show some real examples using these technologies and talk about best practices for using the new collaborative technologies. New collaborative technologies such as wikis, blogs, vlogs, podcasts, and discussion boards are beneficial because the new collaborative methods provide active and engaging content creation in asynchronous environments. Instructors can integrate one or two different collaborative learning tools in order to enliven and enrich their learning environments as well as encourage group participation with greater success than traditional collaborative methods.

What if I told you that there is a whole group of learners who like to share and work together? What if I told you the group of learners I am referring to are already sitting in your classrooms waiting for you to come share with them?

When beginning a conversation about collaboration in the classroom, traditionalists will think of the tried and true method of hand pairing students to complete an assignment in which the grouped students research and then present the material to the

rest of the class. The same traditionalist will look at you and say, "I do not include discussion boards or group projects because students hate them!"

You want to know a secret?

Students do not hate collaboration! What they hate is the traditional methods of collaboration that are flat and lifeless compared to the methods that Net Gen is already employing in their online life (Tapscott and Williams, 52).

Online life? Yes, online life. The students that you are teaching are typically part of Net Gen (Network Generation), a generation of students born between 1977 to 1996. (Tapscott, 37) To quote Tapscott and Williams, ". . . this new generation of youthful users is bringing the same interactive ethos into everyday life, including work, education, and consumption." These students have never known a world without computing power, and most do not remember life before the World Wide Web explosion of NCSA's Mosaic/Netscape of early 1990 (NCSA).

These students have gone from Web 1.0 (passive content that you read) to Web 2.0 without missing a beat.

Web 2.0 refers to the current generation of web content. The content in Web 2.0 is active content. Active content involves on some level, the participation of the viewer and, often times, actual shared content creation among groups (Tapscott and Williams, 19).

Collaboration!

Many of you have been participating in active content use and creation without ever realizing that you are doing so. The same lack of notice applies to Net Gen. Most do not know what Web 2.0 is, and most will not care if you ask them. As far as they know, this is the way the network is and has always been (Tapscott and Williams, 19).

Most of your students are already collaborating using technologies such as blogs (personal online journals or web logs), podcasts (similar to a blog but in audio form), vlogs/vodcasts (the same as a blog or podcast but done with video) and wikis (hypertext content that is created and editable by anyone) (Wikipedia).

What makes a blog a blog and not a journal? What makes an MP3 a Podcast and not a music file? What makes a vlog or vodcast not just a video? Really simple. Really Simple Syndication that is! RSS technology provides a user the ability to subscribe to a feed (information used to direct the viewer or aggregator to the content sought) with an aggregator or reader of feeds. RSS has become a popular method for content retrieval and tracking and can be found even in Internet Explorer 7.

RSS 2.0 is the current version of Really Simple Syndication. Earlier versions include RDF, RSS .90 and .91. RSS 2.0 and Atom are the most recent versions of this technology that use the hypertext language XML as its basis. Using an XML script, content is tagged and marked for aggregators or readers to reach out for updates. These readers take the directions from the XML or RSS feed on where to look for new content. The reader, on a schedule preset by you, goes out to all the sites that you have requested and gathers up any new info on the site you have marked and brings it to you (Finkelstein, 14-16). Kind of like a shopper. You only have to control how often you wish to see the updates and which updates you wish to see. A great example that you probably have used would be iTunes.

Let us take a moment in this discussion to thank David Winer (a software developer) and Adam Curry (a former MTV video jockey) respectively for the leap forward from 2000 to present in which RSS was honed, refined, and released with the

capability of enclosing feeds that contained not just text, but audio. Winer worked first on pulling hypertext from sites into an aggregator for news readers, but Adam Curry saw another use for RSS, pulling music. Curry helped to develop iPodder the predecessor of the mammoth music store that is iTunes. (Curry)

Thanks to sites like iPodder and iTunes, it is now possible to enclose multimedia such as MP3s (audio) or MP4V (videos) for pulling into aggregators and uploading to your multimedia player. Note that the term iPod was not used. Why? Because there are all sorts of players out there from Blackberry phones to PDAs. All of them are capable of using RSS technology and usually have free readers installed on them. If there is not an RSS reader on your device, all you have to do is go look at sites like iPodder for fee options. If you want a reader with more features you can spend around 29 dollars for software like FeedDemon on NewsGator (Finkelstein, 250,252)

Active sharing of open collaborative technologies involves exchanging content, commenting on content, and creating new content together using one of the previously mentioned media types and sometimes more than one of the previously mentioned media types. They are actively engaged in the process of learning and sharing their learning with each other (Tremblay, 1-2).

Students are often turned off by the passive content creation of typical collaborative projects. They do not want to gather materials about a chapter and just give you a report. They want to do something with it!

Tapscott and Williams illuminate modern collaboration with the following, “The new art and science of wikinomics (term applied to collaborative technologies in

education and the workplace) is based upon four powerful new ideas: openness, peering, sharing, and acting globally."

He is referring to openness as open source or collaborations where anyone can make contributions or edit content as well as referencing the trend of corporations opening up content for outside contributors (Tapscott and Williams, 20).
Peering is the abolition of hierarchy in favor or horizontal organization, all contributors have equal importance. (Tapscott and Williams, 25)

Sharing in Tapscott and Williams' definition covers the sharing of created content and the release of that content into collaborative environments for editing, contribution, and comment. Sharing also refers to creating a mass shared computing platform in which users link their computers together physically to share computational power to solve a problem (Tapscott and Williams, 25-27)

Finally, acting globally in Tapscott and Williams' definition, ". . .has no physical or regional boundaries. It builds planetary ecosystems for designing, sourcing, assembling, and distributing products on a global basis." (Tapscott and Williams, 29-30). If one explores some of the more popular sites for collaborative content creation, one will immediately notice that it is not dull and dreary content. It is vibrant, has life, and, most importantly, creative personality. Your students want to express themselves and they have an amazing set of new tools and languages to do so. Your students are already following Tapscott and Williams' principles of Wikinomics!

Social sites such as Myspace (http://www.myspace.com) , YouTube (http://www.youtube.com) , and second life (http://www.secondlife.com) are great places

to go to start to understand the mindset of the Net Gen student. You will find that most students have an alternate life on the web, an alter ego of sorts.

In fact, second life touts that it is for creating the life that you want to live. You create an Avatar or digital representation of yourself in Second Life and then proceed to "get a life" so to speak. You can buy land for your digital self, you can create furniture and other items, and you can even buy and sell digital goods for REAL money (Rymaszewski, 6-21).

The virtual realm of second life is fast becoming an alternate classroom space for universities to engage students who walk in both the real class space and the digital forum.

Charles Nesson and his daughter Rebecca Nesson of Harvard Law School have, perhaps one of the best examples of the incorporation of a second life classroom in practical use. If you are curious, you can visit via a SLurl (second life url) from www.secondlife.com/education. You can also visit http://blogs.law.harvard.edu/cyberone/ for a video detailing their second life classroom experiment.

You can create a second life account for free, but if you want to own land or be able to store your creations on that land, you have to pay at least $9.95 a month in US dollars. Linden is the money exchange with in Second Life and can be purchased by "exchanging" US dollars. The exchange rate is on your side at around 250 Linden for US dollar (Rymaszewski, 19-21). As an educational institution you can buy an island or parcel of digital land that cannot be accessed by adult rated content creators for a start up cost of the island price and 1 year of maintenance fees which is a total of $2680 US

dollars. After that your institution would need to set aside $1750 US dollars per year for maintenance of your island (www.secondlife.com/education).

The virtual world of second life may not be for the professor who is not a digital native: yet. It takes an understanding of three dimensional creation and scripting for adding audio or animations to make the spaces vibrant and interactive. However, think of it as a collaborative effort that could cross more than one class space. Computer Science students in conjunction with graphic arts/digital arts students could create the classroom together. Students from language arts might come every Friday into the space to do poetry readings and critiques. Again, this takes true collaboration, but it is the kind of collaboration that will excite your students, and you may find them putting in extra time because they LIKE working with others to get the project done. Check out the educational forum of Second Life at: www.secondlife.com/education

Now, onto blogs. A blog is a type of online journal or web log that others can read and comment on. The first blogs were initially generated from discussion boards and web pages maintained by those who devoted hours of time to update them and post them out to others to read via email. With the advent of RSS technology, these first small steps have become a mountain of content known lovingly as the blogsphere (Tapscott and Williams, 40).

Examples of current blog sites include:

-Myspace (http://www.myspace.com)

-Friendster (http://www.friendster.com)

-Blogger (http://www.blogger.com)

-Technorati (http://technorati.com) .

Myspace is a social networking site that was created to keep up with the underground L.A. music scene. It was an open source networking site. Basically you made your page and could link to anyone else's page. It now has over 100,000,000 users of all ages. (Tapscott and Williams, 48-50)

The open type of technology used in Myspace is in direct contrast with other social sites like Friendster which only allowed you to network to people you knew or knew their addresses. Myspace was and is searchable. You can become friends with anyone. The loss of Friendster's following to Myspace is a prime example of open or group work versus closed sites (Tapscott and Williams, 48-50). The take away lesson for an educator is that open is good and closed is bad. If there is not enough freedom to create the students will not collaborate.

In plain terms, this means that collaborative works in which there is too much control and little room to mash is not favored. Students want growing room. Mashing is the combination of one or more specifically focused soft wares or programming languages to accomplish a new objective (Tapscott and Williams, 38).

Yes, set parameters, but leave an x factor. Quite often students will surprise you with how they take your directions and run with them. You may start out with a project to identify rocks and come out with new software for scanning them in and matching them to a database your students have compiled!

Myspace, Blogger, and other blog (web journal) sites typically cost nothing to join, but if upgraded will give you more features. If you own a server, software can be obtained from places like Blojsom for free to create a blog service. (Winkler)

If you have a blog, it typically has the ability to send an update to an aggregator. For example in Blogger you can subscribe to the blog of someone who writes about something that interests you by clicking on the RSS feed button with in their journal. Your internal aggregator in Blogger will show you the updates or comments posted to that subscription (Tapscott and Williams, 40).

A step up from the journaling or blog sites like Myspace or the more serious Blogger, one will find the technology of podcasting.

Podcasting is an audio form of journaling or blogging that uses the MP3 file type to broadcast over the internet or publish to RSS aggregators. (Curry)

Now more popular, and certainly on everyone's tongues at the moment is YouTube. You Tube was recently purchased by Google to add to their searchable content. YouTube has some of the most active and interactive content out there! Your students are making vlogs (video blogs) already.

They surf around and look at each other's vlogs and comment with their own vlog. Sometimes they create content such as animations of poetry or short films to share. They then comment on them, make replies with other animations, or start a new conversation with another piece of content. (Tapscott and Williams, 143-145) Sometimes these vlogs get so popular that they have hundreds of thousands of viewers. Occasionally a piece will be so well received it goes viral.

Huh? Viral? Viral video as it is called, consists of a video that is so popular that it gets emailed, posted on other sites, and sometimes makes it onto the television news broadcast (Wikopedia, Viral_video). Please keep in mind that popular is not always tasteful, or good. The video of Sadam's execution is an example of a viral video.

"Well that is wonderful," you say.

"But, how do I use this?"

Imagine having your students work together to create a short film essay about a topic or maybe cross collaborate with another class. Grab a few anatomy and physiology students and put them in touch with a couple of communication students and you might come up with study guides that are visual, verbal, and humerous (pun intended). Perhaps your acting students need a creative outlet for their abundant talent, why not pair them up with marketing students for creating short commercials.

Do you see how powerful this tool is? Students love to make things that are impressive, helpful, and most of all fun. All you need to do is direct their focus.
Other traditional collaborative technologies are currently spiced up in Web 2.0 include the wiki. Do you remember Hypercard (Wikopedia, HyperCard)? Well the wiki is a collaborative environment that has its basis in the hypertext programming language of traditional Hypercard stacks. A wiki is editable by anyone. It is not the product of one person, but of many. A wiki is another example of open source versus closed in which open is the magic that allows easy collaboration with actively changing content (Tapscott and Williams, 71-72).

Wiki is defined by Wkipedia.org as:

". . .a website that allows visitors to add, remove, edit and change content, typically without the need for registration. It also allows for linking among any number of pages. This ease of interaction and operation makes a wiki an effective tool for mass collaborative authoring. The term wiki also can refer to the collaborative software itself (wiki engine) that facilitates the operation of such a site, or to certain specific wiki sites,

including the computer science site (the original wiki) WikiWikiWeb and online encyclopedias such as Wikipedia."

In Hypercard one can visualize content on virtual note cards. Each note card can link to another note card. In a wiki each virtual card or content area can link to another content area in a seamless and much easier process (Wikopedia, HyperCard).
When you create a wiki with your students you are in essence creating a virtual book. Each content area can be linked to another student's content area for a seamless reading on a topic or multiple topics with clickable words (hyperlinks) that lead you to more info on a new topic (Wikopedia, Wiki_Wiki_web). Wikopedia, though a good example, is not the only example of wiki technology at work.

Wiki software can be purchased to run on an ASP or Java server. The new Leopard for Xserve by Apple will include both blog and wiki software for creating your own wiki and blog servers (Apple).

If you do not have your own server, Wikispaces.com is a place to start your own wiki. For free you can obtain 2GB of space to share with your group or for 100 dollars a month you can buy 40GB of space with unlimited edits and users. Other companies such as Learning Objects offer services that can be integrated with your Learning Management System to offer wiki software to students.

The most common tools for collaboration are wikis, blogs, vlogs, podcasts, vodcasts, as well as discussion forums. I have saved discussion forums for last, with good reason.

Discussion forums are built into every LMS and are readily available for use. They are intended to be an area for users to post discussions or conversations in text

form. They have their roots as far back as the late 80's and early 90's with bulletin boards and newsgroups (Wikipedia, Internet_Form). In these early forums content was posted or an idea posted and others would respond to that content. Lively debates and friendships were formed around common interests among those posting in the discussion forums. Unfortunately, in the LMS environments, discussions are not always used to their maximum potential. Most instructors seem to use them as drop boxes for short essay type assignment. Then, they compel their students with loss of points to respond to short essay type answers from their classmates. Students hate doing them and I cannot tell you the countless times I have seen the words, "…less discussion boards would improve the class."

Are they wrong? Yes and no. It is not about how many discussion boards you use, it is about the type of work you ask for. The new LMS discussion boards in Blackboard, Desire 2 Learn, and even Moodle allow you to post content other than text. You can attach whole documents, put in website links, and even a shot of your favorite pet. So then why do we insist on just writing? Should this not be a lively exchange of ideas that can get students excited to talk to one another?

Discussion boards can also be used to answer questions about material in the readings, or as a way to carry on a further discussion with questions that draw the readings together for students.

Some face to face professors use enhanced online class spaces for discussion boards to prepare for the next class or to continue talking about the last lesson and answer questions that came up. Students often post for clarification or to talk about the conclusions they have come to (Tremblay, 1-6).

Instructors may put up images, scanned in articles, web links, and other multi media to engender curiosity and exploration. You could find a video on YouTube about a hot topic and get a class response. You could also link to a Podcast or Vodcast and have students comment on the opinions or research of another person in your field.

A best practice for Discussion Boards, however, is be specific to include the requirement that they use terms and concepts from their readings to frame the conversation so that the content they are giving you shows their understanding of the material (Tremblay, 1-6). It also saves you from reading three paragraphs of a rant, a long and often negative speech (Wikipedia, Rant), and helps with prevention of flaming or aggressive posts towards another student's post, by making the discussion at least semi formal (Wikipedia, Flame_War).

There are also discussion forums out there for just about every discipline you can imagine. Physics, math, K-12 Educators, and even Dali lovers. Most all of them are free services. You can have your students subscribe for a semester and post with in one of these forums. You can monitor the content there and possibly bring some of the discussion back into the Learning Management System that your class is in.

Collaborative online technologies are all available in price ranges from free (Moodle) to a higher end of 15,000 to 20,000 dollars a year (Horizon Wimba Live Classroom). It is up to you as the educator to decide which ones have the most value for your classroom. As with any use of technology, do not let the technology drive the lesson, but let the lesson drive the technology.

Tapscott and Williams give a few good rules on pages 286-289 of Wikinomics for using collaborative technologies in the workplace, a sort of business best practices. Though intended for business, they can be adapted to educational best practices as well. The first of them is, "Take cues from your lead users." Though they apply it to a social site collaboration, educators can translate this idea to mean allowing students to create the rules of their learning community together. Let the students, or users, who use the technology help to monitor the system and set rules. Most students already have learned best practices within the social environments that they naturally carry over to the online learning environment.

The next is, "Building critical mass." In order for a collaborative environment to be successful, you must have a large enough group to interact. If there are only two people posting, you may not have enough attraction to cause interaction among the rest of your students. This does not mean force them to post, rather, it means you should create discussions or projects they can not RESIST posting or adding to.

"Supplying an infrastructure for collaboration," involves choosing the correct technology, whether it is blog, vlog, wiki, or discussion forum to build critical mass. It is the nuts and bolts part for the educator to pick the most appropriate technology for the learning outcome sought.

"Take your time to get all the structures and governances right." Every society needs rules in order to change chaos into order. Anarchy is not appreciated by anyone involved. Clearly define for those using the technology what can be expected from them and lay out rules for engagement. Unfortunately as in all societies, one must also create

penalties for those who break the rules. What constitutes "getting voted off the island" to use the popular television phrase from Survivor.

"Make sure participants can harvest some value." One might think of this as, "What's in it for me?"

Make sure that your students have a reason to engage. Sometimes it might be social, sometimes it may be points, and sometimes it might simply be a hunger for philosophizing with peers. Be creative and think about what might engage you to complete the task.

Students do not like too much ambiguity about the expected outcome. "Abide by community norms," might be used as a way to create examples of the kinds of things you expect to see. Give them average points expected for the examples. It does not mean you have to tell them word for word what to do, but give them a concrete base. The students who are more creative will go beyond the example, and the students who work by the book will feel comfortable as well.

"Let the process evolve." A most important rule of thumb for any educator is that every student and every group of students do not learn the same way or interact the same way. When collaborating, remember that sometimes you may have to look at the project or assignment and gear it towards the group you have. It will by that nature evolve over several semesters or even years!

"Engaging in collaborative communities means ceding some control, sharing responsibility, embracing transparency, managing conflict, and accepting that successful projects will take on a life of their own." (Tapscott and Williams, 289)

The above quote is in reference to the last of our defining principles, “Hone your collaborative mind.” It is hard for anyone to allow others to take control of a situation, and as an educator, sometimes harder. Tapscott and Williams go on to say, “It means learning new skill sets that emphasize building trust, honoring commitments, changing dynamically, and sharing decision making with peers.” As an educator, remember that students learn by example. Place trust in your students so they will in turn trust you and each other in your collaborative environment. If an educator shows no fear or resistance to the use of technology in collaboration, the students will ease into its use and often excel in its use!

The application of educational best practices was achieved through applying the ideas in “Technical Evaluation Report: 55. Best Practices and Collaborative Software In Online Teaching” by Remi Tremblay to the business best practices in Wikinomics by Tapscott and Williams.

In conclusion your students are already collaborating using technologies such as blogs, podcasts, vlogs/vodcasts, wikis, and discussion boards or forums in a social context. The challenge the educator faces is how to pull the technology into the classroom in a way that the students will respond to the educational content as they do to the social content. The secret to engaging your waiting collaborators is to make the content open, active, and engaging. A little exploration into their social collaborations and online lives will help you apply learning outcomes to tasks they are already doing. Creation of valuable, meaningful, and collaborative content can be created if an educator can shape a project but be flexible, allow for the fun factor, and create surmountable challenges.

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