

Utilizing The Internet To Facilitate Classroom Learning

Jan Tucker, Kaplan University, USA
Bari Courts, Northcentral University, USA

ABSTRACT

Traditional theories on classroom learning focus on fixed curriculum, static learning tools and believe learning is achieved through repetition and rote memorization. The instructor's role in a traditional learning environment focuses on providing direction to the student versus facilitating learning. As the technology age becomes more prevalent in educational institutions, it is time to approach teaching and learning from a technological point of view. Due to the extensive and diverse technologies available to higher education institutions, many are considering and implementing initiatives to take advantage of the coverage and the return on investment features of these technologies. This adaptation often involves the use of multimedia and the transfer of course content over the Internet. A detailed look at applications on the Internet can identify multimedia items, such as animation, slideshows, announcements, blogging and even instant messaging, which can be implemented successfully in the college classroom. Multimedia, which uses the Internet as its transfer mechanism, should be a consideration when designing an effective and dynamic college classroom experience.

Keywords: technology, higher education, Internet, dynamic classroom, curriculum

THE INTERNET AND CLASSROOM LEARNING

The Internet has changed how we gather and share information. Today's students are more familiar with Wikipedia than World Book encyclopedias. Even elementary age children are uploading videos to YouTube and downloading songs from iTunes. College students use social networking sites, such as Facebook and Twitter, to share lecture notes and homework problems. The traditional model of education is static and slow to change, but the availability of online resources allows us to consider a new model of education which serves more students in a quicker, less expensive and more efficient manner than ever before (Kamenetz, 2009).

A quick search on the Internet will reveal class syllabi from all over the world, lecture notes, homework problems (and answers), test questions, video lectures, and announcements all readily available for free. Massachusetts Institute of Technology (MIT) offers free lectures, exams and videos via open courseware for anyone to view without registration and at no cost. Currently, over 1900 courses are available on MIT's website, including courses in everything from aeronautics to foreign languages and music and theater (MITOPENCOURSEWARE, 2009). Cathy Casserly, a partner at the Carnegie Foundation for the Advancement of Teaching, indicates that the "advent of the Web brings the ability to disseminate high-quality materials at almost no cost, leveling the playing field" (Kamenetz, 2009, par. 3).

The climate that supports learning and the sharing and ownership of knowledge is changing. The technology to support learning already exists as does the ability to bring this technology to the classroom. The challenge is to find ways to utilize the technology to facilitate and enhance learning in the college classroom. Institutions that are already implementing technology in the classroom may fall short of what today's learner expects. PowerPoint slides and hyperlinks embedded in a course shell are already considered outdated. Generation Z, or the technology generation, has never known a world without the Internet and the World Wide Web. Generation Z are those who were born after 1990 and currently make up 18% of the world's population (Age group, 2009). This generation is technically savvy, well adapted at communicating via the Internet, and used to instant action due to the

Internet technology they have always known. The traditional education model has been slow to adapt to the learning styles of these students. Curriculum that embraces the technical knowledge and interest of today's technologically savvy student may help bridge the gap between student expectations and course delivery outcomes.

DOES TECHNOLOGY ENHANCE LEARNING?

Agodini, Dynarski, Honey, and Levin (2003) set out to answer the question "Is educational technology effective in improving student academic achievement?" (p.4). The researchers concluded that the answer was yes in schools where teachers demonstrated an interest in using technology and the schools had the infrastructure to support technology initiatives. In June of 2009 the U.S. Department of Education released their analysis of over 1,000 studies of traditional and online learning institutions and concluded that effective teachers were those who incorporated digital content into their classes both online and on-ground (U.S. Department, 2009).

As we shift from an educational system which promotes teaching to one that supports learning, additional methods of accessing education will be required (Shimic, 2008). The Internet is a fast, efficient, and readily available modality for promoting technology based learning thus increasing educational access. The learning process is changing in all organizations. Collaboration, intercultural communication, accessibility and relevancy are all concepts promoted in organizations, including higher education institutions. There is push to increase the efficiency of learning and the transfer and facilitation of knowledge. Technology enhanced learning environments improve the learning experience by promoting cooperation, collaboration and self-sufficiency in learners.

THE PREVALENCE OF INTERNET

The Internet was once solely used for the distribution of information by the military. Scientists, governments and universities used the Internet to share information on research and development. Today, this global computer network acts as a conduit of information for all different types of businesses and for personal use. In 2005, approximately 70% of people in the United States reported they use the Internet on a regular basis (Joiner, Gavin, Duffield, Brosnan, Crook, Durndell, et al., 2005). In 2008, the number of Internet users had increased to 72.5% affording the United States a second place ranking in the number of Internet users in the world behind China (Internet world stats, 2008). Not surprisingly, 86% percent of college students consider themselves frequent Internet users and 76% report they are using multimedia while on the Internet (Hughes & Dennison, 2008). The Internet is where college students are and what they are using to interact, socialize and assimilate information. As educators, we should design and administer curriculum which appeals to the visually oriented student of today.

Harkin (2009) states that "the internet is one of the most dazzling inventions of the past 50 years; indispensable to the way we live today" (p.22). Due to the extensive and diverse usage of the Internet, businesses in all industries are implementing communication and work flow initiatives to take advantage of the Internet. Higher education institutions can utilize the broad coverage and the significant return on investment features of the Internet to deliver a wide range of topics quickly to their end users (i.e. students). This change of processes for content delivery necessitates the conversion or transformation of conventional media to a digital format that can be used in a particular computer environment and transferred efficiently over a network. This adaptation can involve the use of multimedia and exposes students to real-world technology skills within their classroom.

INTEGRATING MULTIMEDIA

The Internet by itself is just a network of interconnected computers. Multimedia on the Internet uses a multitude of applications to transfer information such as animation, slideshows, podcasts instant messaging, and video simulations; anything that integrates text, graphics, animation, sound, or video. Research has shown that multimedia has a positive influence on the effectiveness of the Internet (Ko & Ho, 2003). As technology continues to advance, integrating multimedia in the college classroom is not just a consideration but a must for curriculum developers as they design courses for the 21st century student. Learning how to incorporate multimedia expands the boundaries of the classroom (Simkins, Cole, Tavalin, & Means, 2002). Students are no longer confined to learning material from static sources such as text books or stagnant websites. Multimedia and the Internet allow students to experience a learning environment rich in knowledge and experiences.

There are numerous multimedia methods of enriching the learning experience in the college classroom. Audio, VoIP, video and streaming are simple, yet effective techniques easily intergrated in the college classroom. Several options for beginning the process of integrating multimedia in the classroom are presented in the remainder of this section.

Audio

Traditional uses of audio on the Internet depended mostly on out-dated transfer techniques. Traditional audio transfer consisted of a file being downloaded from a server, usually via FTP or electronic mail, before one could hear it. Today the functions performed by separate electronic devices such as fax machines, CD/MP3 players, telephones/answering machines, televisions/VCRs, and radios have been integrated directly into the personal computer. The functions that require audio input/output are easily handled by a computer with some additional audio circuitry, a microphone, speaker(s), and inputs for audio media.

There are many multimedia technologies available involving audio. Some of the more recent technologies include: “Streaming audio over the Internet, Digital Radio Mondiale (DRM), Digital Audio Broadcasting (DAB), VoIP (Voice over Internet Protocol), mobile phones, as well as compression algorithms for digital audio” (Campbell, Jones & Gavin, 2009, p. 1489). All of which may be incorporated into the classroom experience. Audio files in the form of a podcasts placed on the Internet for students to download are an example of how this technology is being incorporated in both online and on ground classrooms. Apple’s iTunes has thousands of podcasts on a wide variety of subjects readily available for free download. Podcast Alley (www.podcastalley.com) is just one of numerous free podcast websites where student can download podcasts for free. A quick search on the Podcast Alley website for podcasts pertaining to technology brings up 4626 podcasts available for free download. In addition, educators can create their own podcasts with a simple microphone and free podcast publishing tools such as QuickTime and push their audio content directly to their student’s iPod or other audio player.

McGlenn (2007) and Tanner (2009) found that integrating audio resources in the classroom helped foster interest and participation in the classroom. Student’s attitude and interest in subjects they previously considered irrelevant, outdated or uninteresting were enhanced when audio resources were introduced in the classroom. The researchers concluded that many of the students they studied were part of the media generation where video games and cell phones are part of their everyday lives. Integrating audio enhancements in the classroom is an effective tool to help capture the attention and encourage active learning in the classroom.

Telephony

Considering the relatively low quality of telephone audio it occupies little bandwidth. There are several implications for telephony use in the classroom including teleconferencing, telephone interviews, group projects and one on one or group tutoring. The great advantage of conferencing over traditional telephony is the ability of several parties to simultaneously communicate with each other. Teleconferencing multiple users requires only small additional uses of bandwidth, making it a very efficient way of communicating across large distances. The technology is currently available for high quality teleconferencing, and many institutions have made this latest technology available to their instructors. Low-cost VoIP services such as Skype (www.skype.com) and Vonage (www.vonage.com) can be used for research and collaboration in the classroom by simply installing on a computer and connecting the computer to the classroom (Branzburg, 2007). Many students use Skype to contact their instructors for help with their homework. Skype even has a tutoring and homework directory listed on their website. Hargis & Wilcox (2008) found that simple and intuitive voice tools such as Skype enhanced education in both the distance learning and on ground campuses by creating a more collaborative environment for the students.

Video on the Internet

There are many applications that would benefit a reliable and fast system of video data over the Internet, not only for the obvious purposes of entertainment, but for many other applications such as video conferencing, video archives and libraries, remote learning, multimedia presentations, and video on demand. Interactive video games where the user or player can choose the outcome from a number of possible scenarios are one area currently

being integrated in the curriculum at Florida Virtual School. Students earn high school history credits while piecing together historical clues in a multiplayer online role-playing game called Conspiracy Code (Solocheck, 2009). For many years educators have been trying to figure out a way to compete for student's attention with digital content. Integrating the digital content in the classroom not only captures the student's attention but also maintains it.

Personal communications applications such as video conferencing, video storage for viewing video later and multimedia email that allow the sending of electronic mail with attachments of video are additional methods which can be used to enhance student learning. There are database services and archives which call up video clips from a library or archive in the same way a user might get a file or book from a library.

There are a variety of ways to use these applications in the classroom. A quick search for videos on youtube.com which discuss multimedia brings up over 60,000 hits. Classroom instructors are finding creative ways to integrate videos into their once static lectures. Imagine a science teacher demonstrating a chemistry experiment on video and posting it on MySpace or YouTube for their students to view. A lecture on the differences between symbolic interpretive and post-modern organizational theories could be enhanced by showing video clips from movies which visually demonstrate the differences in the theories. A marketing instructor could use Internet video clips of television commercials in their classroom to begin a discussion on advertising effectiveness. A business law class could view a video clip from a surveillance camera and discuss the differences between ethics and legality in a given situation. The Chicago public school system has found that using videos in the classroom has improved their state assessment scores as the videos allow students to visualize difficult concepts such as isosceles triangles (Gillespie, 2007). There are countless methods of effectively integrating multimedia applications into the classroom. Today, instructors are limited more by their imagination and creativity than by accessibility of technology.

Streaming

The large amount of data associated with multimedia files means that new methods need to be found so that people can view/listen to them without the need to spend a lot of time waiting for a download. The process of playing a file while it is still downloading is known as *streaming*. While playing a streaming multimedia file, the file resides on the host server and is not downloaded to the client computer. The benefits of streaming include faster playback, smaller file size, easy updating because the file is only on one server and flexible playback as the file can be stopped and started on demand (Larson-Kelley, 2008). Although it is possible to stream some multimedia files without the need to encode them into a special format, it is usually more efficient to put them into a format which was designed for streaming.

A popular form of multimedia streaming on the Internet is live sporting events (Broida, 2009). For example, Major League Baseball offers an audio program that feeds local radio broadcast of all Major League baseball games through the Internet. A user can listen to the radio broadcast of any game over the Internet from anywhere in the world. In addition, the games are archived and made available for playback later. These archives are also streamed and allow a user to start and stop a broadcast at anyplace in the game. The actual archived file is kept only on the server at MLB and is streamed on demand to users. This same concept can be utilized in the classroom to allow student access to classroom material around the globe.

The Philadelphia College of Medicine integrates streaming video in their anatomy courses, for example, they offer a visual demonstration of a dissection. The college has found that since the integration of the streaming video not only has the quality of their anatomy courses increased but so has student performance (DiLullo, C., Coughlin, P., D'Angelo, M., McGuinness, M., Bandle, J., Slotkin, E., et al., 2006).

Instructors can embed PowerPoint presentations with streaming video or teach students how to enrich their projects by incorporating streaming video. The University of Washington has a streaming television website called UWTV which is accessible to faculty, students and the general public. Lecture series, news broadcasts and human interest stories are all accessible via streaming video. CNN and the New York Times, along with most major news stations across the country also provide streaming videos via their websites. Capture programs such as Keepvid.com allow any video on the Internet to be captured, downloaded and easily integrated into classroom lectures or assignments.

MULTIMEDIA AND ACCESSIBILITY

Addressing Internet accessibility as it pertains to classroom users of multimedia is a consideration for curriculum designers. Use of audio excludes the hearing impaired and people who have vision disabilities are not able to fully utilize video and graphics. There is not easy answer to solving these problems, which makes judicious use of multimedia even more important.

There are some accommodations that can be made to make curriculum with multimedia more accessible to students with disabilities. One option is to plan an alternative version that is text only or augments the graphics with text. Many of the visual appealing aspects of the information might be gone, but the content will still be mostly intact. Closed caption technology, which already works well in the television industry, is being adapted to video on the Internet. Massachusetts Representative Edward Markey introduced a bill in Congress which would extend close captioning to some public videos distributed over the Internet (Lasar, 2008). The new bill would increase the accessibility of Internet video to visually impaired individuals.

MULTIMEDIA, THE INTERNET AND THE CLASSROOM

The onslaught of new and emerging technologies means changes in the classrooms and the students who occupy them. Curriculum and instruction need to be developed which allows teaching and learning to be diverse and interactive. Current technology allows students to access presentations, training, lectures, home work assignments, grade reports and other documents from their personal computer. Multimedia allows students to become directly engaged in their learning. As the market for multimedia in the classroom continues to grow, pressure for manufacturers to produce multimedia projectors specifically for classroom use versus adapting a business multimedia projector has also grown (de Groot, 2002). Many classrooms are now outfitted with high performing multimedia projectors which accommodate multiple connections for long periods of time. The current generation of college students is more visually oriented than their predecessors. Multimedia may help this group comprehend abstract concepts by adding a visual component.

Classroom instructors who are used to relying solely on text books as their instruction delivery method may find that the integration of multimedia in the classroom increases student awareness and attention which might lead to increased satisfaction on the part of both the student and the instructor. Research has shown that there is very little *perceived* difference in the learning achievement by students in a multimedia classroom versus a traditional classroom but the students in the multimedia classroom rate the instructor's teaching effectiveness much higher in the multimedia classroom than the traditional one (Deng & Zhang, 2007).

It is important that pedagogies change in tandem with changing technologies. Many higher education institutions continue to focus on the traditional pedagogical teaching skills of their instructors by ensuring instructors have specialized knowledge in their subject areas. While content knowledge is certainly a major component of teaching, effective teachers also need to create a classroom environment which facilitates learning. In today's college classroom, that means integrating technology. Technology training for educators is most often a demonstration of how to use a new technology but rarely provides strategies for the educator of how to utilize these technologies in the classroom to facilitate learning.

Multimedia on the Internet can be used across the curriculum to add clarity and provide guidelines to students (Lachs, 2002). Classrooms today are often integrated computer classrooms or contain a self-contained mobile presentation system such as a Smart Cart. Curriculum which can encourage students to integrate text, images, sound and animation into their assignments will help prepare today's students for the technologically demanding careers they will face in their future.

CONCLUSION

The idea of integrating technology into the classroom is not a new concept. As new technologies emerge, educators are often eager to find methods of assimilating these technologies in their classrooms. These same educators often find it difficult to connect new technologies to the traditional view of classroom learning that

concentrates on a fixed curriculum which focuses on learning through repetition and memorization. In order for the integration of technology into the classroom to be successful, teaching must be viewed as a way of facilitating learning, and view learning as series of processes which lead us to adapt behavior in a quest to acquire new knowledge. Using the Internet as a transferring mechanism to deliver multimedia rich content from the facilitator to the learner is one method of designing a dynamic classroom experience.

AUTHOR INFORMATION

Jan Tucker earned a PhD in business management from Northcentral University and is an online course writer and instructor. Her specialties include Organizational Behavior, Leadership and Human Resource Management. In addition to serving for over 20 years as an instructor and curriculum developer in higher education, she is also a Human Resources consultant for several Fortune 500 companies.

Bari Courts holds a PhD in ecommerce from Capella University and in addition to teaching and developing online courses he also conducts eBay data analysis for his consulting company. He also holds several certifications in both the insurance and information technology field.

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