The value of video in online instruction

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ABSTRACT

Online educational instruction has become more prevalent in American and international educational institutions and is increasingly the chosen format for many academic programs. The use of web conferencing, virtual classrooms, and computer-based training are becoming the common platform in which schools provide education in online teaching. This paper will review the use of synchronous and asynchronous video in online classes and identify the value in using this form of media as an instructional method. Appropriate specific studies have been examined to determine the effectiveness of the format and resources implemented. Conclusions based on research indicate that different uses of video are effective in online education, but educators need to be prepared for many technological hurdles they and their institution must overcome.

Keywords: video, web conferencing, virtual classrooms, video conferencing, online

INTRODUCTION AND PROBLEM STATEMENT

Online education is an increasingly common format for students to participate in their courses and with over 570,000 new students added to college and university enrollments in 2013, the total for students taking online courses has reached a new high of 6.7 million (Allen & Seamen, 2013). It is estimated that over 30% of all college students have attended at least one or more online courses (Friedman & Friedman, 2013). As a result the massive explosion in online learning, more creative and engaging methods must be employed to transition students into a different type of classroom. Educators need to take on new responsibilities and learn unique skills to address remote students.

The use of video in online education has become progressively more important in providing varied and interesting pedagogical opportunities for educators, and parallels students' needs for interactive and engaging lessons in a changing classroom. Virtual classrooms, web conferencing, and streaming, self-paced content provide both students and teachers with dynamic and visual resources that have now been accepted as a framework for successful learning (Anne-Louise & Andrews, 2009). The following research attempts to answer questions about the value of video in online instruction and identify the formats used in education settings.

SYNCHRONOUS AND ASYNCHRONOUS FORMS OF VIDEO

When using any form of video in a classroom setting, there are two general classifications: synchronous and asynchronous. These can be furthered classified into two, instructional video formats: web conferencing/virtual classrooms and CBT videos (Computer-Based Training).

Synchronous learning is instruction through technological tools that offer real time or live interactions within the classroom. Tools like an instant message system, quiz generators, polling, chat rooms, and web conferencing, that include audio/video broadcasting and whiteboards, are often tied to synchronous learning environments (Huang & Hsiao, 2012). Synchronous video can be described in a similar manner. Video feeds from instructor to student and student to instructor that occur simultaneously fall into a category of online video. Students have an opportunity to see the teacher, read non-verbal cues, and simulate a traditional classroom environment. Live video feeds that are part of a virtual classroom or web conferencing system provide immediate interactions between student and teacher and offer comparable interactions to traditional lecture-based formats (Hatsell & Yuen 2006; Lonie & Andrews 2009).

Asynchronous learning includes interactions that are provided over time (Moore & Kearsley, 2012). A forum platform is commonly used to create a participatory environment for students. Teachers post question, discussions, and other forms of exercises and students respond to these activities over a specific period of time. (Zingaro & Oztok, 2012). Computer-Based Training (CBT) represents an example of asynchronous online video. CBT is, by its very design, self-paced and occurs over time. Prerecorded software demonstrations, recorded classes, and lectures represent the most common asynchronous videos. A variety of sources indicate video in this format can have positive impacts on learning and retaining simple to complex information (Borup, West, & Graham, 2013; Moridani, 2007).

VIDEO FORMATS IN ONLINE INSTRUCTION

Web Conferencing

Web conferencing provides a synchronous online platform for instruction. Two-way video/audio, chatting, and desktop sharing offer a robust toolset for educators and are common in most web conferencing environments. Students and teachers often access this system through a web URL and secure login. Both groups would need a computer, camera, and microphone to effectively participate in the learning (Ellingson, Notbohm, & , 2012).

Because web conferencing has so commonly been associated with business environments, academia is now beginning to see the benefits of using these increasingly wide-ranging tools in the classroom. In a study by Loni and Andrews (2009), two traditionally paper-based distance education courses were converted to online classes using web conferencing software. The courses were converted due to difficulties in reaching isolated students in the School of Natural and Rural Sciences Management program at the University of Queensland in Australia. Using Centra and Wimba students participated in these courses using video/audio, interactive chat, and a variety of other collaborative features. Qualitative results of the study showed using web conferencing tools enhanced collaboration and provided real time student to teacher interactivity. What is thought-provoking is the supplemental nature of video in the class. Although video was specifically identified as a positive factor in the instruction, it was only referred to as a way to personalize the experience. Video only took up a small portion of the web conferencing interface. The other tools such as polling, desktop sharing, file sharing, and breakout groups appeared to be just as impactful on the student experience.

Another study by Ellingson and Notbohm (2012) was conducted using Adobe Connect to teach MBA Accounting courses. Instruction had previously been conducted using video conferencing rooms to create virtual classrooms. Adobe Connect allowed students, in many disparate locations with simply a computer, headset, camera, and microphone, to fully engage in the class. The web conferencing capabilities of Connect were extensive, inexpensive to implement, and installed on virtually any computer. The study offered insight into the benefits using web conferencing in higher education business department curriculums. Students who completed evaluations expressed positive feedback about the format of the course, and identified the video feed as a way to see and hear the instructor like a traditional lecture format. The authors identified increased levels of motivation, participation, preparation, and improved use of technology in students who participated in the online courses.

Despite all the positive results, both studies did expose challenges in conducting classes using instruction via web conferencing. Internet connectivity, technical knowledge, lack of support, proper training, and limited resources were cited as variables that can impact success. What can't be overlooked are the many benefits to the learning process if technology and video are used appropriately in the classroom.

VIRTUAL CLASSROOMS

Virtual classrooms first included communication through two-way video between one or more classrooms, but have evolved into broader systems. Web conferencing and virtual classrooms have now become interchangeable as terms for online distance learning (La-

volette, Venable, Gose, & Huang, 2010).What used to cost thousands of dollars for equipment capable of transmitting high resolution video is now only a fraction of the cost and includes a full suite of tools to improve interaction and collaboration. Virtual classrooms are often remembered in the context of international elementary schools participating in distance education with United States schools to exchange ideas and cultures through video conferencing. Now, however, any institution in higher education with online education will likely use some form of video transmission (Hartsell & Yuen, 2006).

Research conducted by Fernandez, Balsera, Huerta, Montequin (2012) addressed the development of virtual classrooms between three Spanish Universities. The first virtual Master degree program in Project Management between the universities was designed and conducted through the use of a high-tech video conferencing system, asynchronous communication resources, and live instruction with projection to each classroom. Technical aspects of delivery, differences between traditional and online learning, and the importance of adapting teaching techniques were explored. Researchers uncovered some interesting results through the use of surveys during and after the course. Audio and video, teaching and learning activities, material resources, and activity comparisons were all rated on a 5-point Likert scale. All areas were rated with high percentages indicating students enjoyed and found value in their experience. What was most interesting was the ratings on comparisons between perceptions of effectiveness in traditional lecture and online activities. Students rated online instruction as more effective than traditional lectures and concluded this was due to the variety of interactive exercises and engaging activities between the three classrooms. More students created greater and more in-depth discussions which provided better learning experiences. These virtual classrooms were successful in creating a unique and engaging educational opportunity for students to participate in a 21st century learning environment.

There are tools now like Adobe Connect, Elluminate Live, and Cisco WebEx that blur the lines between virtual classrooms and web conferencing; while both use video streaming to personalize the experience, web conferencing has often been associated with businesses and virtual classrooms education. Software is getting more and more sophisticated and options administrators can select from are numerous, and as a result both virtual classrooms and web conferencing have become synonymous with one another (Bower, 2010). Because there are so many options like free software, subscription-based services, and fully featured video conferencing systems educators need to investigate and determine the best solution for their student environment.

COMPUTER-BASED TRAINING

Computer-based training videos can now be accessed from anywhere on the planet where an internet-enable device is located. Mobile devices make portability almost too easy. An investigative study done by Dubrowski and Xerioulis (2005) looked at first-year medical students' use of self-paced, computer-based training videos. Special suturing and knot tying techniques were recorded and stored in a media platform delivery system. Students were given access to these videos and the technology tracked their total time viewed, most frequent video accessed, and most frequent time spent in a section of a video. Authors were able to make recommendations for curriculum changes based on what surgical techniques in the media were viewed the most. This format for video learning was determined successful by stu-

dents. Basic procedural steps can be effectively studied through the use of online videos. Despite the fact that the videos were deemed effective, the study did mention in-person instruction was provided in addition to the video training. In this case, video served as a supplemental resource that was also used to indicate areas deemed important by students.

A second study on computer-based training videos by Tan, Tan, and Wettasinghe (2011) investigated video and self-reflection through blogs in a science pre-service professional development program. Twenty-six teachers were asked to participate in research on the effectiveness of computer-based training videos in teaching best practices to novice teachers. Blogs were used to provide teachers an outlet to share and communicate with their peers for enhanced collaboration. Results showed teachers perceived they gained new knowledge and techniques for classroom instruction. Granted video was the main focal point for instruction, but a second means of learning was included. Collaboration within the blogs was determined highly effective in educating new teachers in best teaching practices.

These two studies illustrate the value of computer-based training videos. Even though video was considered supplemental or of equal value to other instructional methodologies, students had improved acquisition and retention of new knowledge. Educators should consider using online or mobile CBT videos to supplement traditional lecture and online teaching, opening the door to even greater use and access to learning.

ADVANTAGES AND DISADVANTAGES

There are significant advantages to online video that have been illustrated in all the studies. Better collaboration between students and teachers (Bower, 2011), increased knowledge and awareness of technology, (Anne-Louise & Andrews, 2009), positive perceptions of online learning (Ellingson, Notbohm, & , 2012), and application of instructional objectives to job-specific skills (Tan, Tan, and Wettasinghe, 2011). Video was a piece in each of the studies and certainly proves it can be a valuable option for teachers in online training. Teachers have an opportunity to boost student achievement through the use of online video, but must be cautious and fully understand the technology and platform before attempting to simply add media to a class.

With that said, there are many disadvantages to online videos which are also well documented in research. Proper training on the technology is critical to success and without it the opposite effect on learning occurs (Lonie & Andrews, 2009). Technical issues can also impair the quality of the experience. Glitches in software, bandwidth, and connectivity can turn an otherwise flawless lesson into a nightmare (Hartsell & Yuen, 2006). Planning online instruction that uses video and other resources requires a strong infrastructure and support system to provide guidance and troubleshooting. Personnel to support the system, experts to manage, and instructors to teach are essential to make video and online learning as effective as possible.

CONCLUSION

Both synchronous and asynchronous video formats have proven to be a valuable asset for teachers, and teachers have access to low cost and sometimes free technology that keeps getting ever powerful and fully-featured. Research on the three most common video formats

showcased the value and importance of video as a form of online instruction. The studies indicated students perceive effectiveness in streaming video as a component of web conferencing/virtual training. Students also found using video to personalize the classroom experience helped to bridge the gap between traditional forms of instruction and online instruction. Furthermore, video is most effective when paired or grouped with other instructional tools (blogs, chatting, screen sharing, file sharing, and a host of others). This research is valuable to new and experienced instructors in that they can learn to enrich their classes and engage their students more in online classrooms. With proper training, support, and innovative lessons, continued success in video training is feasible for any educational institution.

While younger generations are familiar with new online forms of education, previous generations still find it challenging to move out of the brick-and-mortar model of learning. With online education becoming more popular and more schools offering some form of web-based teaching, teachers and students will need to prepare for a drastically changing academic landscape.

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