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VCU Memo

Virginia Commonwealth University

Office of Research Subjects Protection
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DATE: November 15, 2011

TO: Jonathan D. Becker, JD, PhD
School of Education, Educational Leadership
Box 842020

FROM: Lisa M. Abrams, PhD
Chairperson, VCU IRB Panel B
Box 980568

RE: **VCU IRB #: HM13999**
Title: An Analysis of the Effect of Lecture Capture Initiatives on Student-Athletes at an NCAA Division I Institution

On November 14, 2011, the following research study was ***approved*** by expedited review according to 45 CFR 46.110 Category 7. The approval reflects the revisions received in the Office of Research Subjects Protection on November 14, 2011. This approval includes the following items reviewed by this Panel:

RESEARCH APPLICATION/PROPOSAL: None

PROTOCOL (Research Plan): An Analysis of the Effect of Lecture Capture Initiatives on Student-Athletes at an NCAA Division I Institution, received 11/14/11, version 2
- VCU IRB Study Personnel Roster, received 10/18/11, version date 9/28/11
- Survey, received 10/18/11, version 2, dated 10/14/11

CONSENT/ASSENT (attached):
- Consent to Participate (Consent contained within first 2 pages of survey), received 10/18/11, version 2, dated 10/14/11, 2 pages
- Waiver of Documentation of Consent for Online Survey: One of the conditions set forth in 45 CFR 46 117(c)(2), for waiver of documentation of consent has been met and the IRB Panel has waived documentation of consent.

ADDITIONAL DOCUMENTS (attached):
- Emails: Initial, Second, and Final, received 10/18/11, version 1, dated 8/26/11

This approval expires on October 31, 2012. Federal Regulations/VCU Policy and Procedures require continuing review prior to continuation of approval past that date. Continuing Review report forms will be mailed to you prior to the scheduled review.

The Primary Reviewer assigned to your research study is Salvatore Lupica, JD. If you have any questions, please contact Mr. Lupica at salvatorelupica@comcast.net; or you may contact Jennifer Rice, IRB Coordinator, VCU Office of Research Subjects Protection, at irbpanelb@vcu.edu and 828-3992.

[Attachment – Conditions of Approval]

Conditions of Approval:

In order to comply with federal regulations, industry standards, and the terms of this approval, the investigator must *(as applicable)*:

1. Conduct the research as described in and required by the Protocol.

2. Obtain informed consent from all subjects without coercion or undue influence, and provide the potential subject sufficient opportunity to consider whether or not to participate (unless Waiver of Consent is specifically approved or research is exempt).

3. Document informed consent using only the most recently dated consent form bearing the VCU IRB "APPROVED" stamp (unless Waiver of Consent is specifically approved).

4. Provide non-English speaking patients with a translation of the approved Consent Form in the research participant's first language. The Panel must approve the translated version.

5. Obtain prior approval from VCU IRB before implementing any changes whatsoever in the approved protocol or consent form, unless such changes are necessary to protect the safety of human research participants (e.g., permanent/temporary change of PI, addition of performance/collaborative sites, request to include newly incarcerated participants or participants that are wards of the state, addition/deletion of participant groups, etc.). Any departure from these approved documents must be reported to the VCU IRB immediately as an Unanticipated Problem (see #7).

6. Monitor all problems (anticipated and unanticipated) associated with risk to research participants or others.

7. Report Unanticipated Problems (UPs), including protocol deviations, following the VCU IRB requirements and timelines detailed in VCU IRB WPP VIII-7):

8. Obtain prior approval from the VCU IRB before use of any advertisement or other material for recruitment of research participants.

9. Promptly report and/or respond to all inquiries by the VCU IRB concerning the conduct of the approved research when so requested.

10. All protocols that administer acute medical treatment to human research participants must have an emergency preparedness plan. Please refer to VCU guidance on http:/www.research.vcu.edu/irb/guidance.htm.

11. The VCU IRBs operate under the regulatory authorities as described within:
    a) U.S. Department of Health and Human Services Title 45 CFR 46, Subparts A, B, C, and D (for all research, regardless of source of funding) and related guidance documents.
    b) U.S. Food and Drug Administration Chapter I of Title 21 CFR 50 and 56 (for FDA regulated research only) and related guidance documents.
    c) Commonwealth of Virginia Code of Virginia 32.1 Chapter 5.1 Human Research (for all research).

010507

AN ANALYSIS OF THE EFFECT OF LECTURE CAPTURE

An Analysis of the Effect of Lecture Capture Initiatives on Student-Athletes at an NCAA Division I Institution

by

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April 2012

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Abstract

Student-athletes often miss class due to travel and competitions (Diersen, 2005; F. Wiseman, personal communication, September 30, 2010; Hosick, 2010; NCAA On-line, 2008; Rhatigan, 1984). Missing class is negatively associated with grades (Park & Kerr, 1990; Romer, 1993; Schmidt, 1983). Therefore, as classroom instruction time is replaced by athletic-related commitments, student-athletes may be negatively affected academically. As technological advancements continue to evolve, it is possible to mitigate the effects of missed class time. One such technology being employed in 2012 is lecture capture. This case study examined the academic effect of lecture capture on student-athletes at Big Time University using a mixed-method approach with an online questionnaire, individual interviews, and a focus group. Findings indicate that 52.7% (n=19) of student-athletes who participated in the questionnaire are accessing recorded lectures, 60% (n=18) reported lecture capture had made learning more enjoyable and 92.9% (n=39) reported that their grades had improved since having had access to recorded lectures. Additionally, participants reported preferring to have class recordings available, even if they choose not to watch them, as they provide a sense of security. Lastly, student-athletes reported to prefer physically being in the classroom and that recorded lectures should only be used as a supplement, not a replacement, for classroom lectures. Themes, implications, and areas for future research are discussed.

CHAPTER I

Introduction

The first intercollegiate athletic competition took place on the waters of Lake Winnepeaukee, New Hampshire in August of 1852 as Harvard and Yale met for a two mile crew regatta (Benford, 2007; Veneziano, n.d.). In 2011, college athletic programs represent a significant portion of the sport industry, an industry valued to be worth over $400 billion (Plunkett Research, 2010). With the growth of intercollegiate sports, the responsibilities of student-athletes have increased. Wiseman (2010) reported that 30 percent of class time can sometimes be missed in a single semester due to athletic-related responsibilities. Advancements in technology, including lecture capture capabilities, provide an opportunity for missed class time to be less problematic. Reducing the impact of missed classes may help student-athletes.

Statement of the Problem

Student-athletes often miss class due to travel and competitions (Diersen, 2005; F. Wiseman, personal communication, September 30, 2010; Hosick, 2010; NCAA On-line, 2008; Rhatigan, 1984). Missing class is negatively associated with grades (Park & Kerr, 1990; Romer, 1993; Schmidt, 1983). Without physically being in the classroom, student-athletes may be less likely to participate in educational interactions with other students and instructors. Interactions have been shown to produce positive effects with regards to academic performance and perceived satisfaction levels (Kuh, 1995; Kuh & Hu, 2001; Pascarella, 1980; Pascarella & Terenzini, 1976, 1977; Tinto, 1993). Therefore, as

classroom instruction is replaced by athletic-related commitments, student-athletes may be negatively affected.

With student-athletes missing class due to official athletic activities, the National Collegiate Athletic Association (NCAA) published policies to encourage a continued emphasis on education. Two specific policies are Bylaw 17 and the Academic Progress Rate (APR). Bylaw 17 specifically limits the amount of time a student-athlete may be required to participate in athletics-related events based on the specific sport, time of year, and many other variables (NCAA Division I Manual, 2010-2011). The APR, a metric designed to measure the success or failure of collegiate athletic teams in moving student-athletes towards graduation, provides a real-time assessment of student-athletes' progress (NCAA On-line, 2010a). Failure to meet APR standards can render student-athletes ineligible. Recent NCAA reports show these policies are having a positive effect on student-athletes and institutions as a whole as institutions in greater numbers are complying with the minimum APR of 925, and as a result, more student-athletes are graduating (NCAA On-line, 2010b).

Technology's impact on education

One of the most distinguishing features of society at the beginning of the 21st century is the rapid rate of technological innovations and the subsequent social change caused by those technologies (Peters, 2007). Technology is enhancing learning by extending the classroom and by making learning possible anytime and anywhere. For example, traditional note-taking from lectures was first replaced with audiocassette and

videocassette recordings (Powers, 1999). From there, televisions became a common element in most college classrooms as they began to be used as educational tools (Timm & Junco, 2008). The authors reported that television improves the quality of learning as the student experience is enhanced through the information being conveyed. Newer technologies have made the dissemination of classroom lectures available to anyone, anytime and anywhere.

M-learning (m standing for mobile or multi-media) is currently providing increased opportunities for learning. M-learning evolved from e-learning where a stationary computer was primarily used to collect and transmit information via the Internet. M-learning is defined as the supply of electronic information containing educational content to a learner, meant to provide knowledge, regardless of location and time (Lehner & Nosekabel, 2002). M-learning has noticeably grown in significance and visibility within higher education (Traxler, 2007). M-learning technology currently offers student-athletes the opportunity to utilize the technologies they already own (e.g. personal cell phone and/or laptop computer) to continue learning while away from the classroom.

Student-athletes have reported having little time available to take advantage of institutionally provided programs due to their time constraints (NCAA On-line, 2008). Additionally, student-athletes recently reported viewing themselves more as athletes than as students, with some reporting spending over 40 hours a week on official athletic activities (NCAA On-line). Potuto and O'Hanlon (2007) reported that the majority of

student-athletes surveyed wished they had more time to pursue educational opportunities available at their universities. Some of the time demands for student-athletes are a result of athletic training commitments, competition, media-relations, and strength and conditioning programs (Pope & Miller, 1996).

Lecture capture technology, designed to record classroom lectures and make them available for students electronically, is being implemented to help reduce the impact of student-athlete time demands. Meeting the demands for increased academic-related interaction may increase the satisfaction and overall graduation rates of student-athletes (Kuh, 1995; Kuh & Hu, 2001; Pascarella, 1980; Pascarella & Terenzini, 1976, 1977; Tinto, 1993). Research has indicated that students participating in online instruction have greater collaborative discussion participation compared with students in traditional classrooms (Hiltz, 1986; Jaeger, 1991; Riel, 1994). Harasim (1990) concluded that one reason for increased student participation and involvement in online discussions was a result of the 24-hour access which provided additional time for formulating and posting responses. Without having to formulate a response quicker than all other students in the class, students listening to lecture recordings can submit questions based on their own pace and regardless of the questions or comments that other students have posited.

Big Time University initiated a program in 2009 designed to record classroom activities so student-athletes who are unable to attend class due to official athletic responsibilities could continue learning while away from the classroom (Hosick, 2010). The program uses lecture capture technology and has grown to include 50 faculty

participants recording 445 classes each semester. While the lecture capture initiative is designed for student-athletes, Dr. Wiseman indicated that any student can request the service for a university approved absence (F. Wiseman, personal communication, September 30, 2010).

In 2011, a paucity of research specifically concerning student-athlete use of recorded lectures exists, in part, due to the relative newness of the technology needed to provide the proposed service. Therefore, further examination is required to fully understand what effect the access, and subsequent use, of recorded lectures is having on student-athletes.

Purpose and Research Questions

The purpose of this study is to document the effect that access to recorded lectures has on NCAA Division I student-athletes. The variables to be examined are student-athlete use of recorded lectures, academic satisfaction, and academic progress. The following research questions will guide this study:

RQ1 To what degree are student-athletes accessing recorded lectures?

RQ2 To what degree is access to recorded lectures affecting the self-reported academic satisfaction of student-athletes?

RQ3 To what degree is access to recorded lectures affecting the self-reported academic progress of student-athletes?

RQ4 To what degree do the effects of lecture capture initiatives vary according to student-athlete characteristics?

Need for the Study

The rationale for this study is the need to better understand the effect of educational technology, specifically recorded lectures of real time on-campus classes, on NCAA Division I student-athletes. Student-athletes often miss class due to athletic-related commitments (Brett, 2005; Diersen, 2005; Fletcher, Benshoff, & Richburg, 2003; F. Wiseman, personal communication, September 30, 2010; Hosick, 2010; NCAA On-line, 2008; Rhatigan, 1984). Gaston-Gayles (2004) concluded that helping student-athletes find ways to participate in academic-related activities, along with athletic activities, would likely lead to gains in student learning. This is important as the scholastic performance of student-athletes is a major concern for college and university administrators (Wolverton, 2006).

As student-athletes have been shown to vary significantly compared with the general student population, based in part on their athletic-related responsibilities, they should be studied separately as a distinct population (Huang, Jacobs, Derevensky, Gupta, & Paskus, 2007). Existing research focusing solely on student-athletes includes topics such as athletic identity (Melendez, 2010; Steinfeldt, Reed, & Steinfeldt, 2010), effects of team climate on substance use (Tomon & Ting, 2010), influence of sport participation on college outcome (Gayles & Hu, 2009), graduation success rates (NCAA On-line, 2010b), and academic success (Horton, 2009), to name a few categories. While research has studied student-athlete persistence in electronic learning (e-learning) courses (Nichols & Levy, 2009), support services available for student-athletes (Keim & Strickland, 2004;

Robinson & Mack, 2004), and the use and effect of audio-recorded lectures on students in general (Copley, 2007; Larkin, 2010; von Kansky, Ivins & Gribble, 2009; Williams & Fardon, 2007).

Only one research study concerning student-athletes' use of recorded lectures has been found. DeSantis, Pantalone, and Wiseman (2011) published an analysis of their 2009 pilot study of the Tegrity lecture capture program at Northeastern University. This study surveyed student-athlete participants and faculty members who had at least one of their class lectures recorded during the pilot test. Overall, the potential effect of recorded lectures on student-athletes is ripe for scholarly inquiry.

The availability of recorded lectures has only been found to be present at one Division I institution for student-athletes who miss class due to athletic responsibilities (F. Wiseman, personal communication, September 30, 2010). Therefore, results from this study may benefit student-athletes by providing additional resources to aid in their educational endeavors. The findings may also benefit coaches, administrators, and college athletics in general as student-athletes' academic satisfaction may increase along with overall graduation rates (Kuh, 1995; Kuh & Hu, 2001; Pascarella, 1980; Pascarella & Terenzini, 1976, 1977; Tinto, 1993). If benefits regarding the availability of recorded lectures are found, university administrators may utilize the information to further develop the technology to better assist student-athletes, the athletic department, and the college or university as a whole.

Delimitations

Delimitations will be placed on this study due to the assumption that student-athlete participants will honestly respond to the questionnaire, individual interviews, and focus group questions. Additionally, a delimitation is the population size for this study.

Limitations

This study may be limited by participant selection as a purposive sample will be employed. This limitation is due to the lecture capture program being implemented at only one NCAA Division I institution with student-athletes specifically in mind.

This study may be limited by extraneous variables including the variation of specific courses in which the selected student-athletes will be enrolled and the instructors for each class. As classes to be recorded will be based on how many classes a given student-athlete will miss during the course of a semester, the classes recorded will be random and may not represent all fields of study.

This study may be limited by the variance in pedagogy employed by the instructors whose classes will be recorded. As the classes to be recorded are based on the amount of times a student-athlete will miss the class in a given semester, the instructors will be random.

This study could be limited by the pressure student-athletes may feel to listen to the recorded lectures since they are made available. This will be taken into account when results are discussed.

Assumption

It is assumed that the data received from student-athletes in the form of questionnaires, individual interviews and focus groups will be accurate.

Definition of Terms

Asynchronous. Defined as digital communication in which there is no timing requirement for transmission and in which the start of each character is individually signaled by the transmitting device (Merriam-Webster Dictionary Online, 2010a).

Recorded lecture. Defined as an electronic recording of the class lecture provided by the instructor for students and archived for use at anytime throughout the semester.

Distance Education. Defined as a formal educational process in which the majority of the instruction occurs when student and instructor are not in the same place. Instruction may be synchronous or asynchronous. Distance education may employ correspondence study, or audio, video, or computer technologies (CC/SACS, 2010).

Distance Learning. Most commonly refers to learning that takes place via electronic media linking instructors and students who are not together in a classroom (Merriam-Webster Dictionary Online, 2010b).

Lecture Capture. Defined as an umbrella term describing any technology that allows instructors to record what happens in their classrooms and make it available digitally (EDUCAUSE, 2010).

Synchronous. Defined as learning that happens, exists, or arises at precisely the same time (Merriam-Webster Dictionary Online, 2010c).

CHAPTER II

Review of Related Literature

College student-athletes often miss class due to travel and competitions (Diersen, 2005; Fletcher, Benshoff, & Richburg, 2003; F. Wiseman, personal communication, September 30, 2010; Hosick, 2010; NCAA On-line, 2008; Rhatigan, 1984). As student-athletes miss class, they may have less educational interactions with other students and instructors. A reduction in educational interaction has been shown to result in lower academic performance and perceived satisfaction for students (Astin, 1993; Kuh & Hu, 2001; Pascarella, 1980; Spady, 1971; Tinto, 1993). Modern educational technologies allow student-athletes greater access to the learning experience and potentially alleviate some of the problems of missing class. One such technology is lecture capture technology which records classroom lectures and makes them available electronically via the Internet, allowing student-athletes to watch missed classes from anywhere and to remain up-to-date; this can lessen the effect of missed class time and demonstrate beneficial outcomes for student-athletes. Therefore, it is important to study the effect that access to lecture capture software, and its subsequent use, has on student-athletes.

Brief History of College Athletics

The first intercollegiate athletic competition took place on the waters of Lake Winnepeaukee, New Hampshire in August of 1852 as Harvard and Yale met for a two mile crew regatta (Benford, 2007; Veneziano, n.d.). Colleges and universities across the country soon after began initiating athletic programs. Various sports were added to

college athletic programs during the following years with some of the most popular begin baseball, basketball, and football.

The game of baseball had its rules first recorded by Alexander Cartwright in 1845 and enamored sports enthusiasts, journalists, and health-minded advice givers so much that it became a national pastime where nationalism surfaced in peoples attitudes towards the sport (Gems, Borish, & Pfister, 2008). During the American Civil War the game of baseball grew in popularity as soldiers played during down time. The first college baseball game took place in 1859 between Amherst College and Williams College. Soon after, in 1879, the first official college baseball league was formed.

Dr. James Naismith invented the game of basketball in 1892 while working for the YMCA training school in Springfield, Massachusetts. Basketball was first played as an intercollegiate sport in 1895 between Hamline College and the Minnesota School of Agriculture. By the early 20th century conferences began to form (History of Basketball, n.d.). Some of the early power-house schools, the University of California at Los Angeles (UCLA), the University of Indiana, the University of North Carolina, Duke University, and the University of Kentucky, still maintain story basketball programs today.

The first intercollegiate football game was played on November 6, 1869 between Rutgers College (now Rutgers University) and the College of New Jersey (now Princeton University) where modified London Football Association rules were used. During the next seven years, rugby, instead of soccer, gained favor with the major eastern schools,

and the modern football game began to develop. The first rules for American football were written at the Massasoit convention in 1876 (History of Football, n.d.). In 2011, football reigns as the largest revenue producing sport and the bowl championship series (BCS) has been created as a way to showcase some of the best teams in the country.

As sports programs began to increase and conferences formed, a need to protect young people from the dangerous and exploitive athletic practices of the time spurred the creation of the National Collegiate Athletic Association (NCAA) in 1906 (NCAA Online, 2010a). While the Intercollegiate Athletic Association of the United States (IAAUS) was initially constituted on March 31, 1906 after President Theodore Roosevelt encouraged reforms, it took its present name in 1910 (NCAA Online). The current purpose of the NCAA is to "govern competition in a fair, safe, equitable and sportsmanlike manner, and to integrate intercollegiate athletics into higher education so that the educational experience of the student-athlete is paramount." (NCAA Online, 2010b). In 2011, the NCAA sponsors 60 championships for the nearly 1100 institutions who participate in either Division I, II, or III (NCAA Online, 2010c).

The increase of college athletic teams brought about the term "intercollegiate athletics"; defined as athletic contests between colleges and universities (Bates, n.d.). Individuals who participate on college athletic teams are termed "student-athletes" as they have always been required to attend class in addition to their athletic responsibilities. Student-athletes must maintain minimal academic success, according to the APR, in order to remain eligible to compete in accordance with NCAA rules. In 2011, college athletic

programs represent a significant portion of the sport industry; an industry valued to be worth over $400 billion (Plunkett Research, 2010). As the value of the sport industry continues to increase, so does the athletic responsibilities of student-athletes. However, advancements in technology have provided ways to improve and maintain the academic focus for student-athletes.

Educational Technologies

The Rise.

Technology, the practical application of knowledge (Merriam-Webster Dictionary On-line, 2010d), has been shaping life since the beginning of time with the invention of the wheel, the pen, and the printing press, to name a few. Developments in computer technology, specifically personal computers, have had a significant effect on all aspects of life, including higher education. Computers have successfully connected all corners of the world in an instantaneous, interactional and mercurial location commonly known as cyberspace. Cyberspace can be described as the nebulous "place" where humans interact over computer networks (Gibson, 1984). Cyberspace has created new opportunities for higher education that have previously not been available; however, these new opportunities come with the need to fully understand their effects on students, teachers, administrators, and all other relevant stakeholders (D'Arcy, Eastburn & Bruce, 2009; Li, 2007; Nelson-Laird & Kuh, 2005; Ng & Nicholas, 2009; Wang, Wu & Wang, 2007).

During the past century, educators have been affected by many new technologies, ranging from lantern slides to personal computers (Morrison & Ross, 1998). Peters

(2007) wrote that one of the most distinguishing features of our society at the beginning of the 21st century has been the rapid rate of technological innovations and the subsequent social change because of those technologies. In 2010, for example, Martindale reported that 90% of college students owned a computer and that 41% could access the Internet through their mobile phone.

Advancements in technology have also had an impact on educational institutions. Traditional note-taking from lectures has been replaced with audiocassette and videocassette communications (Powers, 1999). Videotaped lectures have been used in university and professional courses for over twenty years (Falowo, 2007). An example of technology's impact is the television. In 2011, it seems commonplace, but only thirty years ago televisions were not present in every classroom, or even in every school. Television improves the quality of learning as it enhances student experiences through the information it conveys (Timm & Junco, 2008). Today, almost all college classrooms have televisions for educational purposes (Timm & Junco).

Technology is continuing to infiltrate higher education through teaching and learning methods: "From notebook computers to Wireless phones and handheld devices, the massive infusion of computing devices and rapidly improving Internet capabilities have altered the nature of higher education" (Green, 2000 as cited in Motiwalla, 2007, p. 582). D'Arcy, Eastburn, and Bruce (2009) reported that the continual search for new teaching and learning media is a significant trend in education.

The classroom is being transformed. As Enoch & Soker (2006) pointed out:

> Although lectures supplemented by printed materials still play a major role, they have been supplemented and, in some cases, even replaced by more advanced technologies: audio-cassettes and video-cassettes, satellite transmitted lectures, video-conferencing and, finally, computer web-based instruction (WBI), which includes Internet sites, discussion groups, email, and so on. In recent years WBI has become the most popular and widely used among these new methods of delivery (p. 100).

Information technologies are more universal, powerful, and adaptable then ever before and educators are being challenged to utilize the opportunities provided by new technologies to enhance teaching and learning (Levin & Wadmany, 2006). In 2011, teachers in higher education sometimes use presentation programs, one being Microsoft PowerPoint, to supplement lectures. While projectors have been used for many years, presentation programs provide a simplistic way for instructors to creatively present information. Few students in America would consider education complete if teachers did not use presentation programs, primarily PowerPoint, to aid in the delivery of their teaching material (Cooper, 2006). However, technology is at risk of not being used to its potential and possibly being discarded altogether (Cowan, 2008). In 2011, teachers may no longer have the autonomy to incorporate technological innovations at will due to current reform initiatives (e.g. No Child Left Behind) (Cowan).

While some teachers are struggling to incorporate technology, a few school administrators have been reportedly working to remove technology from their classrooms

because they feel technology is being used as a crutch instead of a creative tool (Young, 2009). Dean José A. Bowen from the Meadow School of the Arts is advocating for the removal of PowerPoint presentations from lectures because he believes professors use this technology as a crutch rather than as a creative tool. Mr. Bowen wants lectures to be interesting, meaning he wants interaction between students and professors. Instead of simply telling the students what the answers to problems are, Mr. Bowen wants students to play an active role in trying to discover the answer (Young). Reisberg (2000) suggested that some uses of information technology may distract students from participating in empirically confirmed effective educational practices. Additionally, the British Educational Research Journal published a study in April of 2009 that found 59 percent of students surveyed reported that at least half of their lectures were boring and that PowerPoint was one of the dullest methods they saw (Young).

Klemm (2007) warned against the overuse of new technologies by reporting that PowerPoint presentations can actually interfere with learning. Klemm cited research on memory suggesting that PowerPoint instruction can be less effective than traditional lecturing when the teacher uses a blackboard or overhead projector (Cowan, 2005; McGaugh, 2000; O'Brien, 2000). The author admitted PowerPoint presentations have advantages, but cautioned teachers not to become ensnared in the lecture mode. Klemm stated: "The slide show should clarify what needs to be learned, motivate students, point them to good reference material, illustrate and explain difficult concepts, and engage

them in active thought and application of information" (p. 122). The author concluded by recommending teachers use PowerPoint presentations sparingly, and not as a "show".

Reisberg (2000) warned that the use of technology may distract students from learning in traditionally-accepted ways which may result in less prepared graduates. Studies during the 1990s by Burge (1994) and Hara and Kling (1999) indicated high levels of dissatisfaction from students with regards to new technology-based environments. Hara and Kling found frustration was a problem for many students. Frustration originated from technological problems, minimal and not timely feedback from the instructor, and ambiguous instructions on the Website as well as via e-mail. They concluded that more student-centered studies of distance education along with research designed to teach the appropriate use of technology and pedagogy was needed to make distance education beneficial for students (Hara & Kling).

Some teachers advocate for learning with the help of technology (Hoffner, 2007; O'Bannon & Puckett, 2007). Research has indicated students positively view the use of computers in distance education classes (Barbrow, Jeong & Parks, 1996; Foell & Fritz, 1995; Hiltz, 1997) and positively view the use of technology in general (Heafner, 2004; Levin & Wadmany, 2006; Shuell & Farber, 2001). Twigg (2004) reported that the incorporation of technology into a course resulted in greater learning for students compared to classes without the technology incorporation. Additionally, research has shown that student use of computer technology improves test scores along with motivation (eSchool News, 2005; O'Dwyer, Russell, Bebell, & Tucker-Seeley, 2005).

The overall use of technology has increased dramatically partially due to the ever-increasing availability of course management software programs (e.g. Blackboard or Web CT). Another reason may partially be because in 2005 students reportedly spent 11-15 hours per week e-mailing, writing papers, surfing the Internet, talking with friends, and listening to music (Kvavik & Caruso, 2005).

Technological advancements in higher education are encouraging the teacher-student relationships to change. The digital age has created a new relationship between teachers and learners (Peters, 2007). This is partially because college students are such ferocious consumers of technology (Timm & Junco, 2008). Freitas & Neumann (2009) wrote:

> The role of the practitioner and learner is clearly being realigned in the light of more social modes and opportunities for learning. While traditional learning focused upon an asymmetry between tutors and learners, the modern modes of learning interactively and in groups promote a rather more horizontal relationship between tutor and learner (p. 351).

Arbaugh (2004) mentioned how well documented the need is for instructors to shift roles, from dispensing knowledge to being a content expert and facilitator in online learning.

Change in Teacher and Student Roles.

With new opportunities being created because of technological advancements, it is important for educators, teachers and administrators to remain on the leading edge.

Bazillion, Braun, Matter, Murphy, Pevas, and Svingen, (2000) wrote, "As educators, the more we recognize and educate ourselves on the emerging technologies in education, the more our student's education will be enhanced in the 21st century" (p. 5). The authors highlighted four internet-based courses that were developed by faculty members at Winona State University in Minnesota. Beginning in 1997, faculty were provided easily accessible development software (FrontPage™ and PaintShop Pro™) and were encouraged to apply their own creative energies toward creating new Web-based courses during a series of Web Camps offered on campus. All four courses provided increased learning opportunities for students. The authors concluded by encouraging other institutions to embark on similar endeavors.

In the information age, teachers are no longer necessarily the sole source of knowledge, instead, potentially a facilitator is playing a supportive role in student learning (Falowo, 2007). As the role of the teacher continually changes, it is forcing the student role to change as well. Students can no longer passively receive knowledge but need to actively construct and generate their own learning, with and without other learners (Arbaugh, 2004). A good way to do this, while improving the ability to retain information more readily and to operate at higher levels of cognition, is to abstract from what one learns (Freitas & Neumann, 2009). One way to abstract is to interact with the knowledge that has been previously obtained. There are multiple ways to interact with the knowledge. One includes utilizing social networking websites to extrapolate new ideas and to defend, critique, or pose new questions pertaining to the information

previously learned. Freitas and Neumann reported that as learners have become more empowered by their abilities to produce their own learning content and share their content with others online it has produced a paradigmatic shift in education. This does not mean a complete erosion of the "tutor", however, the role is changing.

Potential Implications.

The potential for technology to enhance teaching and learning is apparent, even beyond what current methods allow (Ouzts & Palombo, 2004). The authors developed, administered, and analyzed a survey designed to examine and reflect on a framework for subsequent delivery of technology workshops that would enhance student learning. Their goal was to enhance both educator and, subsequently, student learning using technology. The results showed professors are becoming more self-proficient at using technology but that they are not yet at the point of enhancing their pedagogy. The authors concluded that technology has the potential to enhance teaching and learning beyond what traditional methods allow. And, as such, teachers should continue striving toward expanding the use of technology in their research and in their classrooms.

Hong, Lai, and Holton (2003) reported that the use of technology does not guarantee academic success. The authors explored students' responses and reactions to a Web-based tertiary statistics course supporting problem-based learning. Data was collected through questionnaires near the completion of the course as well as open-ended interviews. Students reported high levels of satisfaction with the Web-based course. This finding was consistent with previous studies of Web-based courses (Collins, 2000;

Fredericksen et al., 2000; Jiang & Ting, 1998; Motiwalla & Tello, 2000; Oliver & Omari, 2001; Swan et al., 2000). The authors concluded that future endeavors should strive to improve the Web-based learning environment to provide more structure and guidance to students in learning from asynchronous interaction and group work. This research supports the idea that technology is not the sole panacea for all the educational problems in the world. As such, technology should be used as a tool to help strengthen and improve learning, while not completely replacing the current system.

Li (2007) examined teachers' and their students' views about technology integration in schools. In 2005, a mixed-method approach was used, including interviews and a survey, to collect data from 15 secondary mathematics and science teachers in two urban schools and two rural schools in Canada. After the teacher interviews took place, the teachers invited their students to participate and a total of 575 students completed the survey. Findings suggested teachers and their students often held distinct views on the integration of technology in schools and this was reflected in their beliefs about the benefits and disadvantages of technology. Students generally held more positive attitudes toward technology than their teachers. The author's believed technology adoption would not continue until a harmonizing of opinions was achieved.

In 2006, Cooper wrote that technology is arguably the lynchpin of our modern society and that "nowadays, citizens from university professors to kindergarten children, cashiers to nuclear scientists, must be at least somewhat conversant with computers" (p. 320). The author conducted a study where boys and girls were primed with gender roles

to see what the reaction would be to computers and technology in general. For the most part, girls that were told they could perform well with computers were more successful than girls who were primed with traditional gender roles. The author concluded that the conveyance of technology disproportionately to men in modern society is making women disadvantaged.

Technology has allowed learning to become a more dynamic process and knowledge has become the most important source of sustainable competitive advantage (Liu, Chiang, & Huang, 2007). Educational technology has made learning from a distance a more connected process where students can feel like they are a part of the classroom. Now distance learning will be discussed.

Learning at a distance

Distance education began as a way to afford students the opportunity to learn without having to attend traditional classrooms (Warren & Holloman, 2005). Distance education can be traced back to when the first group of self-directed learners met in Chautauqua, New York and decided to project their teaching beyond their current physical, geological constraints (Gould, 1972 as cited in Saba, 2005). Distance education was never sedentary and has since evolved as a way to provide access to education for those who are unable to attend traditional face-to-face classes (Beldarrain, 2006: Rumble, 2007). With the aid of technology, the medium for distance education changed from traditional pencil and paper correspondences to an online Internet course (Falowo, 2007).

During the 1980s, when the Internet was made available to the general public, distance education moved from the margins into the limelight in the United States (Saba, 2005). The Internet enabled teachers to utilize synchronous and asynchronous learning formats which assisted with the adoption of real-time Internet classes in the late 1990s (Collaborative Strategies, 2009). Powers (1999) explained the difference:

> a bulletin board is an asynchronous form of communication, in which each participant reads messages and posts their own replies at different times, according to their own schedule. In contrast, a chat room supports the synchronous exchange of messages among participants (p. 224).

Technology in the 21st century, associated with ubiquitous computing, is so embedded in the world that it disappears (O'Malley & Fraser, 2006). Concannon, Flynn and Campbell (2005) reported that the trend in higher education to provide online access to course materials for students is proliferating at a steady rate. With the improved access and availability of technology, more adult learners are participating in educational programs (Falowo, 2007).

When considering students are participating in online classes from the comfort of their own homes a host of questions arise, including what role interaction plays in learning. Although new technologies are allowing students to learn anytime and anywhere, it is important to remember that these students still need support. Ni and Aust (2008) reported that a sense of classroom community is a significant predictor of online students' satisfaction and perceived levels of learning. The authors conducted a

quantitative study with 214 undergraduate and graduate student participants to analyze the effects of perceptions concerning teacher verbal immediacy and classroom community on students' level of satisfaction, perceived learning, and online discussion frequency. Results suggested the development of a sense of classroom community was critical to enhancing students' satisfaction and perceived learning. Students learning at a distance need support just as much as traditional students learning on campus need support (Menlove, Hansford, & Lignugaris-Kraft, 2000; Ni & Aust, 2008). Mentzer, Cryan and Teclehaimanot (2007) found traditional face-to-face classes motivate students to a higher degree than web-based courses. This was attributed to the support traditional face-to-face classes provide.

Ni and Aust (2008) reported that a lack of close interaction between learners may have adverse affects on their satisfaction and perceived levels of learning. The authors analyzed the effects of perceptions concerning verbal immediacy and classroom community on students' level of satisfaction, perceived learning, and online discussion frequency. Results indicated classroom community was the only significant factor able to explain variability of satisfaction and perceived learning. Students in person-oriented courses perceived higher levels of teacher verbal immediacy and sense of classroom community. The authors concluded that a sense of classroom community is critical to enhance students' satisfaction and perceived learning.

The use of online discussion has been reported to reduce feelings of isolation and promote student-centered learning (Davies & Graff, 2005). Davies and Graff explored

the notion that more time spent participating in group discussions facilitated by the Blackboard system would lead to higher grades for those students. The authors found:

> ...the reported beneficial effects of online participation and interaction [did] not necessarily translate into higher grades at the end of the year... However, students who failed their classes did interact less frequently than students who achieved passing grades (p. 663).

Three years later Shee and Wang (2008) provided contradictory evidence. The authors surveyed 276 undergraduate college students from a large university in Taiwan to investigate the learners' perceptions of the relative importance of decision criteria while using the web-based e-learning system (WELS). Results indicated WELS learners regarded the learner interface as being the most important dimension. The authors concluded that for a learning community, the key issue was to be able to easily access shared data. When it came to system content, learners cared most about whether they found it useful. Additionally, the study showed the learning community was regarded by learners as having the least relative importance.

The United States Department of Education (2010) published a meta-analysis of online learning studies and concluded that students in online learning classes performed better than students in traditional face-to-face classrooms. The largest difference between student outcomes were found in studies contrasting blended learning classrooms with entirely face-to-face classrooms. Educationally purposeful uses of information technology have also been shown to foster more frequent contact between students and

faculty (Hu & Kuh, 2001; Kuh & Hu, 2001; Wingard, 2004). Alavi (1994) and Oblinger and Maruyama (1996) both concluded that educational purposeful uses of information technology, such as e-mailing faculty or other students about assignments, encouraged collaboration among students.

Shea and Bidjerano (2008) and Saba (2005) reported that 90% of public higher education institutions offer at least some distance learning courses. Shea and Bidjerano reported that from 1998 until 2008 distance learning continually grew as a way for students to meet the competing demands of school, family, and work. Beldarrain (2006) wrote:

> It [distance education] has evolved from correspondence schools to delivery mechanisms such as independent study, computer-based instruction, computer-assisted instruction, video course, videoconferencing, Web-based instruction, and online learning. Technology has played a key role in changing the dynamics of each delivery option over the years, as well as the pedagogy behind distance education (p. 139).

Beldarrain went on to report that "learning 'on the go' is more commonplace than ever before" (p. 145). The researcher explored the benefits of using various new technologies, including wikis, blogs, and podcasts, to foster student interaction in online learning.

Groen, Tworek and Soos-Gonczol (2008) reported that many learners within higher education never physically attend their post-secondary campuses. The authors

explored the implementation of effective synchronous voice communication sessions within a graduate level university program in a school of education. By way of qualitative methods, four stakeholders (students, instructors, program administrators, and technical support personnel) met for a two-hour session and wrote narratives of their experiences associated with an online class. The authors concluded that the challenge of providing a teaching and learning environment where learners are actively engaged in relevant and meaningful learning processes remains a challenge. They recommended stakeholders not become too focused on their own concerns and maintain a holistic view of the system including overall goals. This finding is consistent with the U.S. Department of Education's meta-analysis of online learning (2010).

Warren and Holloman (2005) believed issues concerning technology use were going to continue and that more online classes would be offered in higher education in the future. Chang and Smith (2008) reported that instructors should remain cognizant of students' desires for interaction when designing online courses. Now a look at how technology is making distance learning more accessible.

Electronic Learning (e-learning).

Students send and receive e-mails, engage in chat rooms and find most of the information they use in their schoolwork on the Internet (Breivik, 2005). The use of Short Message Service (SMS), referred to as "texting", and Wireless Access Protocol (WAP) browsers have become increasingly popular around the world, yet little has been done to apply the usage of these devices in e-learning (Motiwalla, 2007). Due to the rate

at which learning is becoming individualized, learner-centered, more collaborative, ubiquitous, and continuing, e-learning is becoming increasingly important (Motiwalla).

Electronic learning (e-learning) focuses on the use of Internet and other Information Communication Technologies (ICT's) in education (Motiwalla, 2007). E-learning employs the use of electronic devices for learning, including the Internet, audio or videotape, satellite broadcast, interactive television, and CD-ROM (ASTD, 2009). E-learning not only provides learners with content, but it also allows learners some control over what they learn, the speed at which they progress through various programs, how much they practice, and even when they learn (Liu, Chiang & Huang, 2007). Some reported advantages of e-learning are cost-effectiveness, timely content, and access flexibility for learners (Hong, Lai & Holton, 2003; Lorenzetti, 2005; Rosenberg, 2001).

A challenge for e-learning is "transactional distance" (Moore & Kearsley, 1996). Moore and Kearsley defined transactional distance as a psychological space where the potential exists for misunderstandings between the behaviors of instructors and learners. Breivik (2005) warned about some disadvantages relating to the increase of information-gathering technologies in an article written based on the research done for a book that was published in 2006 by the American Council on Education.

Mobile Learning (m-learning).

Ng and Nicholas (2009) reported that students are being termed the *m*-generation, "m" meaning mobile and multimedia. Lehner and Nosekabel (2002) define m-learning as the supply of electronic information and educational content to a learner, meant to

provide knowledge, regardless of location and time. M-learning has noticeably grown in significance and visibility within higher education (Traxler, 2007). Traxler provided a literature review on mobile learning and offered a few definitions to aid in future discussions concerning this topic. One medium used for m-learning is the cellular telephone.

Suki and Suki (2007) commented on the wide use of cellular phones today and have encouraged using them for educational purposes. The authors conducted a study to examine how the usage of mobile phones for m-learning differs between heavy and light mobile phone users. Results indicated heavy mobile phone users accessed/subscribed to more types of mobile content than light mobile phone users, had more frequent access to, subscription to and purchase of mobile content within the last year than light mobile phone users, and spent more money on mobile learning, its content and mobile games than light mobile phone users. These findings could suggest that heavy phone users are currently more equipped to engage in m-learning than light phone users.

Motiwalla (2007) extended the use of wireless/handheld (W/H) computing devices to help with mobile learning. The goal was to develop applications that could compliment classroom or distance learning courses. Over the course of two semesters, a total of 63 students from undergraduate and graduate courses from the University of Massachusetts participated in a two-phase study where m-learning applications were tested. During the first phase, 19 participants completed a survey containing questions concerning the usefulness of the m-learning system and their overall satisfaction after

having used the applications for at least three weeks. Results indicated students found the m-learning system useful as well as a good complimentary tool for the classroom interaction.

The second phase was designed to allow 44 participating students to experience the m-learning system and provide feedback on their perceptions of the role of the m-learning system on their learning. After three weeks of system participation, the students completed a survey. The survey was designed to have students think beyond the current implementation and rather focus on future implementation. Results indicated students foresaw m-learning systems as an effective learning tool or aid as well as foresaw an important supplementary role for W/H device use applications. The author reminded readers that, in his opinion, "learning with W/H devices will never replace classroom or other electronic learning approaches" (p. 582). Additionally, instructors should understand the strengths and weaknesses of any technology being considered for deployment so that specific learning goals can be achieved.

Everywhere one looks, the evidence of mobile technology's influence and adoption is undeniable (Wagner, 2005). "No demographic is immune from this phenomenon [mobile technology's influence]", was written in a 2005 EDUCAUSE Review story titled *Enabling Mobile Learning* (Wagner, p. 1). Wagner meticulously described the current situation in higher education and demonstrated how previous technologies merged to create a new learning format titled m-learning. Wang, Wu and Wang (2009) investigated the determinants of m-learning acceptance and sought to

discover if acceptance was determined by age, gender, or both. The Unified Theory of Acceptance and Use of Technology (UTAUT) model was used to analyze the questionnaire results from 330 Taiwan respondents. The respondents had an average of 8.15 years of computer experience and 5.55 years of Internet experience. The researchers concluded that performance expectancy, effort expectancy, social influence, perceived playfulness, and self-management of learning were shown to be predictors of behavioral intention to use m-learning. Based on the findings, administrators should promote m-learning as playful and beneficial to promote adoption by potential users. Results also indicated some significant gender and age differences in terms of the effects of the determinants on behavioral intention. Age differences moderate the effects of effort expectancy and social influence on m-learning use intention, and gender differences moderate the effects of social influence and self-management of learning on m-learning use intention.

Implicit in the term "mobile learning" is the fact that learning is not confined to a single location but rather it is a mobile activity intertwined in everyday life (Waycott, Jones & Scanlon, 2005). M-learning will eventually allow teachers to do more than simply deliver information but will allow them to more closely manage learning (Peters, 2007). The author believes the use of mobile technologies will help learners gain specific skills that are currently needed and valued in the knowledge-based economy. This shift in pedagogy will bring about the concept of Learner Control.

> Learner Control refers to the ability for learners to actively learn through self-pacing, exploring links to other material, and conversations with other learners and experts, i.e. online learning allows activities typically led by instructor and learners as well as group interaction to be incorporated into training without the learners or the instructor having to be physically present in the training room (Liu, Chiang, & Huang, 2007, p. 218).

Laptop computers are currently being used in higher education settings in record numbers. Notebook computers are currently ranked as the most important piece of hardware present on campus, followed by cellular telephones (Wagner, 2005). Wagner wrote, "whether we like it or not, whether we are ready for it or not, mobile learning represents the next step in a long tradition of technology-mediated learning" (p. 3). Peters (2007) reported that mobile technologies have created new learning opportunities via PDA's, mobile phones, laptops, and PC Tablets. Norbayah and Norazah (2007) reported that individuals who use technology on a regular basis benefit from technological advancements more so than individuals who do not use technology on a regular basis.

Wang, Wu, and Wang (2009) reported that the success of m-learning may depend on the user's ability and willingness to continually adopt new technologies that are different from what they have used in the past. Traxler (2007) reported that m-learning provided students the opportunity to exploit small amounts of time and space for

learning. M-learning was also found to help students collaborate on projects and discussions as well as maximize contact and support from tutors (Traxler).

Wagner (2005) warned about the increased ease of academic dishonesty related to recent technological advancements. The author expressed how extending the reach of 'anytime, anywhere' learning resources would raise inevitable questions about academic honesty and if whether or not Internet access in the classroom would encourage or, even worse, enable cheating (Wagner). Szabo and Underwood (2004) found more than 50% of students surveyed reported using the Internet for academically-dishonest activities.

Today's undergraduates are less prepared to conduct research than students of earlier generations have been, despite their familiarity with, and access to, powerful information-gathering tools (Breivik, 2005). With the overabundance of information available on the Internet, it is important to understand how to identify important information. This ability to sift through information is known as being "Information Literate". The American Library Association (ALA) in 1989 defined people who are information literate as:

> Knowing when they have a need for information, identifying information needed to address a given problem or issue, finding needed information, evaluating the information, organizing the information, and using the information effectively to address the problem or issue at hand (¶ 27).

Information literacy is related to meta-reflection.

Meta-reflection in learning has become central to the effectiveness of learning (Freitas & Neumann, 2009). Meta-reflection is the act of reflecting on multiple issues, views, or ideas congruently and synthesizing the cognized information into usable conclusions. Being able to abstract from what we learn can allow for a greater retention of information while encouraging students to become more engaged in the learning processes (Freitas & Neumann). The most recent trend looks to improve engagement through combining the technologies that have come before.

Blended Learning.

The term "blended learning" is used to describe the combination of several different educational delivery methods, including collaboration software, web-based courses, and computer communication mediums with the traditional face-to-face instruction method (Mortera-Gutierrez, 2006). Teachers who employ blended learning pedagogies combine traditional face-to-face lectures with web-based course content, essentially blending the best aspects of both real and virtual environments (Concannon, Flynn & Campbell, 2005). Concannon, Flynn, and Campbell utilized a mixed-method approach to examining students' perceptions of an undergraduate accounting class utilizing a blended learning pedagogy. The authors concluded that blended learning classes, based on a solid pedagogic rational, providing feedback, interaction, and access to course materials, is seen as both a benefit, and an improvement in teaching quality.

Bonds-Raacke and Raacke (2008) conducted a study using Tablet PC's in the classroom to see how students perceived the blended learning approach. Students in this

research study reported a positive attitude and indicated their enjoyment of specific technologies used in each class. Students also reported how the use of technology enhanced the classroom experience while allowing them to benefit from using the technology. These results may be due to the novelty effect of the Tablet technology, and given time, it is possible the results will vary. The researchers were careful to note that technology must be based on meeting the needs of students and on the development of their lifelong learning abilities. In other words, technology should not simply be used for its own sake.

Some of the largest employers of blended learning technology are institutions that have embraced distance education as one of their major institutional teaching efforts (Mortera-Gutierrez, 2006). Laumakis, Graham and Dziuban (2009) wrote that if blended learning classes are designed well, and if they are evaluated thoroughly, then they can offer the best of both worlds: face-to-face and online learning environments. The authors went on to write, "Blended learning has established a culture of sustainability in higher education, providing accessibility to the most diverse student population in history with the unanticipated side effects of raising students' expectations and their standards for learning as well" (p. 86). These conclusions came from their 2009 case study of 500 students in an Introductory Psychology course at San Diego State University (SDSU). Mortera-Gutierrez (2006) wrote that most instructors who choose to use blended learning approaches do so because their pedagogy is based on the belief that benefits exist with face-to-face interactions as well as with various online methods of teaching. D'Arcy,

Eastburn, and Bruce (2009) reported that students value a mix of media in their educational endeavors. Amaral and Shank (2010) reported that blended courses enhance student learning and increase student retention.

As universities continue to turn toward distance learning courses, researchers need to continually study the effects of these actions. Davis and Cho (2005) wrote that implementing new technologies is worth the risk because technology is able to serve as a bridge to introduce new cultures, knowledge, and people to students. Karpova, Correia, and Baran (2009) argued that the increasing use of online and blended learning courses in higher education demands further examination to better understand how this technology is, and should be, used. The authors examined how global learning teams utilized technology in a virtual collaboration to solve complex problems. A qualitative methodology with background questionnaires, in-depth individual interviews, and postings on discussion boards was used. Graduate students from a university in Denmark and the United States participated in a four-week virtual collaboration. Three global learning teams were formed with a total of 11 educational technology students, five from the United States and six from Denmark, by being assigned to three or four member teams. All participants completed a demographic questionnaire and were individually interviewed.

Lee, Hong, and Ling (2002) examined the preparation of students to participate in a newly developed virtual learning environment. Students' skills were examined in the framework of the Technology Acceptance Model (TAM). This model proposes that

perceived usefulness and perceived easiness are influenced by external variables and ultimately influence ones attitude toward using computers and technology in general. A questionnaire was administered to 382 students enrolled in a private college offering tertiary education in Malaysia. The authors concluded that by encouraging and providing opportunities for students to become comfortable with Information Communication Technologies more positive attitudes would result, leading to better prepared students for participation in virtual learning environments. This may lead to lowered levels of stress resulting in increased use of a computer in virtual learning environments. In 2011, blended learning is used largely by higher education institutions with the scholastic system offering more each year (US Department of Education, 2010).

Lecture Capture

Larkin (2010) wrote that students are more technologically savvy than their teachers and that they have come to expect 24-hour access to all services including educational services. In 2011, it is possible for teachers to record individual lectures and make them available to students virtually anytime, anywhere. However, this ability has conjured some resistance.

Teachers have voiced concerns regarding classroom attendance and intellectual property rights as two of the many criticisms relating to audio-recorded lectures being made readily available to students. Gosper, Green, McNeill, Phillips, Preston, and Woo (2008) reported that teachers fear students who can simply download lectures anytime, anywhere, will choose not to attend class. This fear stems from a perspective of teaching

as purely the transmission of knowledge, a 'Level 1' theory of teaching as described by Biggs and Tang (2008). For those teachers that believe in a contemporary view, where teaching involves the interactive nature of face-to-face teaching, the idea of having audio-recorded lectures available is not so threatening (Larkin, 2010).

Research has indicated that students prefer to attend class even when audio-recordings of lectures are available (Larkin, 2010; von Konsky, Ivins & Gribble, 2009; Williams & Fardon, 2007). In a study conducted by Williams and Fardon, 78.3% of surveyed students reported 'always' or 'regularly' attending class even though audio-recorded lectures were available. No mention was made as to class attendance being mandatory or not. Von Konsky, Ivins and Gribble found that the act of making lectures available online did not significantly impact student attendance at lectures. Research has shown students highly enjoy lectures being made available via Blackboard, or some similar educational system like Web CT, as it helps them review past lectures and creates a study tool for assessments (Bongey, Cizadlo & Kalnbach, 2006; Copley, 2007; Hove & Corcoran, 2008; Larkin, 2010; Williams & Fardon, 2007).

Larkin (2010) conducted a study aimed at exploring students' use of online lectures and the measured impact on student attendance at lectures. In 2008, a pre- and post- self-administered questionnaire was used to gather quantitative and qualitative data from 64 students enrolled in an undergraduate class in a single 13-week semester at Deakin University, Geelong. A questionnaire was completed at the beginning of week one and in week 13. In the first questionnaire students provided information about their

previous and typical patterns of attendance at lectures in the past, if they had used recorded lectures before and how useful they found them to be. The questionnaire at the end of the semester asked students about their actual attendance, whether they had used the lecture recordings, for what purpose and how useful they considered them to be. A head count was undertaken each week within the lecture and all lectures were recorded and immediately uploaded following the conclusion of each class. Blackboard was used as a repository for the archived lectures and all enrolled students had 24-hour access. Results indicated attendance remained high throughout the semester (a mean attendance rate of 84%). It should be noted that class attendance being mandatory or not was not addressed.

The students who used the recordings reported them to be helpful. Most students reported using recorded lectures to either supplement their learning or make up for a lecture that they had missed. The authors concluded that generation Y students, in general, do not aspire to replace lectures with downloadable, online versions as they appear to value the interactive nature of learning that should arise out of face-to-face teaching. One limitation of this study was the small sample size, and the fact that only one discipline was represented. Additionally, only audio-recordings were made available. Had visual recordings been an option, perhaps more students would have utilized them and perhaps classroom attendance would have been more greatly affected.

McGarr (2009) stated that mobile learning, made possible partially by recorded lectures, can enhance the student experience. The author examined the possible influence

of podcasting on the traditional lecture in higher education by way of reviewing the literature available. Three main uses of podcasts--substitutional, supplementary, and creative--were identified and examined for positive and negative attributes. The author concluded that while podcasting had the potential to enhance learning, future uses should be guided by sound educational goals.

Lecture capture has the potential to lessen the effect of missed class time and demonstrate beneficial outcomes for student-athletes. Brotherton and Abowd (2004) studied the effect of eClass, a lecture capture technology, on students at two large schools in the United States and found that captured notes and lectures are most commonly used for review purposes but no measurable impact on performance was found. No measurable impact means all students performed similarly, meaning students who were unable to attend class, but that had access to captured lectures, did as well, on average, as students who attended the physical classroom. This research offers a glimpse into what might be found if student-athletes utilize captured lectures made available for their review when away from the institution.

Advancements in technology have lowered the cost of lecture capture initiatives while improving their quality and ease of use. In 2008, the Microsoft Research LecCasting System (MSRLCS), using *iCam2* technology, launched a lecture capture system that is completely automated with cameras that follow the instructor around the room, automatically switch between various cameras for different shots, and even capture student questions before posting the lecture within one minute after the instructor has

ended class (Zhang, Rui, Crawford, & He, 2008). This system is designed to minimize pre- and post- production time, thus reducing labor costs and operation costs as the system automatically records and broadcasts (Zhang, Rui, Crawford, & He).

While the technology exits to provide student-athletes recorded lectures of classes that are missed due to athletic responsibilities (e.g. eClass and Tegrity), only one NCAA Division I institution, Big Time University, has been found to offer such services. DeSantis, Pantalone, and Wiseman (2011) published an analysis of their 2009 pilot study of the Tegrity lecture capture program at Northeastern University. This study surveyed student-athlete participants and faculty members who had at least one of their class lectures recorded during the pilot test. Findings indicated that overall, 88% of the faculty members that participated in the study indicated that they would recommend the technology to a colleague. Additionally, 100% of the 30 male faculty members who participated in the study were likely to recommend the technology to a colleague, compared with only 74% of the 27 female faculty members who participated. Student-athlete responses were reported to be overwhelmingly positive. The study by DeSantis, Pantalone, and Wiseman will be used as a benchmark when discussing this study's findings in chapter five.

While relevant research was published in 2011, research concerning this topic has historically been almost non-existent. Therefore, it is important to document the effect that access to lecture capture software, and its subsequent use, is having on student-athletes.

CHAPTER III

Research Methods

Statement of Purpose and Research Questions

The purpose of this study was to document the effect that access to recorded lectures was having on NCAA Division I student-athletes. Student-athletes often miss class due to travel and competitions (Diersen, 2005; F. Wiseman, personal communication, September 30, 2010; Hosick, 2010; NCAA On-line, 2008; Rhatigan, 1984). Missing class can be negatively associated with grades (Park & Kerr, 1990; Romer, 1993; Schmidt, 1983). Without physically being in the classroom, student-athletes may be less likely to participate in educational interactions with other students and instructors. Interactions have been shown to produce positive effects with regards to academic performance and perceived satisfaction levels (Kuh, 1995; Kuh & Hu, 2001; Pascarella, 1980; Pascarella & Terenzini, 1976, 1977; Tinto, 1993). Therefore, as classroom instruction is replaced by athletic-related commitments, student-athletes may be negatively affected.

Lecture capture technology is being implemented to help reduce the impact of student-athlete time demands. Student-athletes have reported having little time available to take advantage of institutionally provided programs due to their time constraints (NCAA On-line, 2008). Additionally, student-athletes recently reported viewing themselves more as athletes than as students, with some reporting spending over 40 hours a week on official athletic activities (NCAA On-line). This was based on the GOALS

study of approximately 20,000 current student-athletes. Potuto and O'Hanlon (2007) reported that the majority of student-athletes surveyed wished they had more time to pursue educational opportunities available at their universities. Some of the time demands for student-athletes are a result of athletic training commitments, competition, media-relations, and strength and conditioning programs (Pope & Miller, 1996).

To help reduce the effects of time demands on student-athletes, Big Time University initiated a program in the fall of 2009 designed to record classroom activities so student-athletes who are unable to attend class due to official athletic responsibilities could continue learning while away from the classroom (DeSantis, Pantalone, & Wiseman, 2011; Hosick, 2010). The program uses lecture capture technology and has grown to include 50 faculty participants recording 445 classes each semester. While the lecture capture initiative is designed for student-athletes, any student can request the service for a university approved absence (F. Wiseman, personal communication, September 30, 2010).

In 2011, a paucity of research specifically concerning student-athlete use of recorded lectures existed, in part, due to the relative newness of the technology needed to provide the proposed service. Therefore, further examination was required to fully understand what effect the access, and subsequent use, of recorded lectures was having on student-athletes.

The following research questions guided this study:

RQ1 To what degree are student-athletes accessing recorded lectures?

RQ2 To what degree is access to recorded lectures affecting the self-reported academic satisfaction of student-athletes?

RQ3 To what degree is access to recorded lectures affecting the self-reported academic progress of student-athletes?

RQ4 To what degree do the effects of lecture capture initiatives vary according to student-athlete characteristics?

Research Design

Case Study.

This research utilized the case study approach to document the effect that access to lecture capture technology was having student-athletes. Simons (2009) defined case study as "the process of conducting systematic, critical inquiry into a phenomenon of choice and generating understanding to contribute to cumulative public knowledge of the topic" (p.18). The approach to research referred to as case study was created out of necessity since primary methods at the time were experimental, quasi-experimental, and survey based, of which all utilized quantitative outcome measures of program effectiveness (House, 1993). When studying innovative and specific programs, control groups could not be established and it was not sufficient to indicate solely what learning gains were achieved by testing learning outcomes (Simons). Such methodological approaches failed to capture the complexity of these programs in practice and provided inadequate evidence as a basis for action (Norris, 1993; Simons, 1987). During the late 1960s and 1970s the case study approach developed a significant following in education

research and evaluation in part because of its ability to help people understand the experience of curriculum innovation (Simons). The case study has been one of the most criticized and most used forms of social science research (Willis, 2007). In the 21st century, the case study is widely accepted as a research approach for evaluating complex educational innovations in specific contexts (Simons, 1980) and social and educational phenomena in general (Merriam, 1988; Stake, 1995).

Case study cannot solely be equated with qualitative research because much qualitative research is not case study and because case study can incorporate methods other than qualitative (Simons, 2009). The case study approach is not defined by a methodology (Adelman, Kemmis, & Jenkin, 1980; Stake, 1995; Yin, 1994), however, it shapes the form of a particular study. Simons (2009) suggested that the employment of one case study method over another should be based on whether it facilitates an understanding of the particular case. While the purpose of the case study approach is to explore the particularity, the uniqueness, of a single case, the case can be a person, a classroom, an institution, a program, a policy, or a system, to name a few (Simons). Additionally, subjective data are an integral part of the case.

Various types of case studies have evolved including intrinsic, instrumental, and collective. Intrinsic is where a case is studied for the intrinsic interest in the case itself. Instrumental is where a case is chosen to explore an issue or research question determined on some other ground; that is, the case is chosen to gain insight or understanding into something else. Collective is where several cases are studied to form

a collective understanding of the issue or question (Stake, 1995). In addition to these three types, Bassey (1991) defined theory-seeking, theory-testing, story-telling, and picture-drawing as types of case studies. Merriam (1988) defined descriptive, interpretative, and evaluative while Yin (1994) added a few resulting in explanatory, descriptive, illustrative, exploratory, and meta-evaluation, with explanatory being the most important.

The case study approach is regarded by post-positivists as having "no scientific value" (Campbell & Stanley, 1963, p.6) as the data being utilized is based on individuals memories and observations. However, critical and interpretive researchers utilize the case study approach for its ability to gather rich, detailed data in authentic settings, its holistic nature, and the fact that case study research can be done without predetermined hypotheses and goals (Willis, 2007). The case study approach used for this research was intrinsic(descriptive) and exploratory with both quantitative and qualitative methods.

Setting.

This research study took place at Big Time University, located in Boston, Massachusetts. Big Time University is a large private not-for-profit institution with over 22,000 students located in the northeast region of the United States. The Carnegie Foundation classifies Big Time as a research university with high research activity and as a medium full-time four-year, selective, lower transfer-in institution. Big Time University has 16 varsity sports teams with a total of 453 student-athletes according to the published rosters for Fall 2010. According to the National Center for Educational

Statistics, the six year graduation rate for students at Big Time University is 77% (Grove, 2011). It should be noted that Big Time University does not offer Football.

While Big Time University was the physical location for this research study, the technology could be accessed from anywhere an Internet connection could be made. This meant the setting for student-athletes who were utilizing the recorded lectures might have been in a hotel room in Virginia, on a bus driving through New York on Interstate 95, or at their home in California while on spring break. The potential to view classes from anywhere in the world was made possible via a three step process.

First, administrators at Big Time University, prior to the start of each semester, analyzed student-athletes' schedules and compared them with their team's athletic schedule to determine which student-athletes would miss four or more classes from a single course. Second, after specific courses have been identified, the administrators contacted the instructor(s) and asked for permission to record the lecture(s) that would be missed. Lastly, on the day that the recording of class was to take place, a trained information technology worker brought the necessary technology into the classroom and set up the cameras, microphone, and Internet connection. When the instructor was ready to begin class, they pressed a single button and the lecture recording began. When finished, a single button was pushed and the class lecture automatically finalized and posted on the Tegrity database for students to view.

Due to the influx of classes being recorded each day, administrators decided to forgo the automatic recording of classes for student-athletes that miss more than four

class sessions in a single class because they did not have the human resources needed. Therefore, beginning in September, 2011, student-athletes continued to be educated about the programs availability but classes were only recorded for student-athletes who actively initiate the process. Initiation is as simple as letting their student-athlete academic advisor know that they wish to have a class recorded and then asking their professor to participate. Administrators at Big Time University anticipate this change in policy to save a significant amount of resources (E. Johnson, personal communication, August 19, 2011).

The Tegrity system operates as a self-contained all encompassing package. Tegrity is designed to increase the accessibility of learning by making every class on campus available for replay by every student – anytime and anywhere (Tegrity, 2010). Students log into the Tegrity system either through their institutions Course Management System (e.g. Blackboard or Web CT), directly from the Tegrity website, or by clicking a link in the body of an e-mail provided by their academic advisor. After signing in, users are presented with a home page showing every recorded class available, of which classes the user is enrolled for any given semester. Users can select the class and specific lecture they would like to view. During viewing sessions, users can search and skip directly to a specific part of the recorded lecture, making review sessions more efficient. According to their website, Tegrity web service is the leading class-capture solution impacting learning, student satisfaction and retention across the entire institution (Tegrity).

Data Collection.

This research study utilized purposeful sampling to select student-athlete participants from Big Time University. The case study, mixed-method approach with a questionnaire, focus group, and individual interviews, was used to gather information from student-athletes. Three data collection techniques were employed to provide triangulation. Triangulation uses different methods of collecting data or collecting data with different samples, at different times, or in different places, to strengthen credibility. Credibility is "the extent to which the data, data analysis, and conclusions are believable and trustworthy" (McMillan, 1992, p. 222). Because only one research study had been found that investigated the effect of access to recorded lectures for student-athletes at an NCAA Division I institution, (DeSantis, Pantalone, & Wiseman, 2009), the purpose of this study was to primarily describe and explore rather than to refine a concept or contrast findings with previous research.

After successfully submitting the Institutional Review Board (IRB) paperwork and receiving final approval for the study, recruitment e-mails were sent on November 16, 2011 to every student-athlete listed on an official roster for a varsity sport for the Spring 2011 and Fall 2011 semesters at Big Time University (see appendix B). Included in the e-mail was an introductory paragraph, followed by a paragraph requesting the completion of the online questionnaire and the link to the online questionnaire. The online questionnaire was administered via REDCap (Research Electronic Data Capture) hosted at Virginia Commonwealth University. REDCap is a secure, web-based

application designed to support data capture for research studies (Harris, Taylor, Thielke, Payne, Gonzalez, Conde, 2009). A follow-up e-mail was sent four days after the initial e-mail (November 20, 2011) and again four days after that (November 24, 2011) to request participation in the study (see appendix B). If a student-athlete did not respond after the third e-mail, the student-athlete was not contacted further for participation in this study. A total of 51 student-athletes responded to the online questionnaire resulting in an 11% response rate. Fourteen responses (27.4%) were incomplete and deemed unusable by the researcher. In all, 37 usable questionnaires were completed. Females completed the questionnaire at a rate of 64.9% (n=24) with males completing the questionnaire at a rate of 35.1% (n=13). Additionally, every varsity sport at Big Time University was represented with the exception of Men's and Women's Basketball.

After the questionnaires had been administered for a period of two weeks, 11 student-athletes that completed the questionnaire and utilized the Tegrity system were contacted by a student-athlete academic advisor at Big Time University and were asked to participate in the individual interview. If a student-athlete declined to participate an additional student-athlete that meet the aforementioned qualifications was contacted and asked to participate. This process continued until the target range of 10-15 individual interviews was achieved. Individual interviews took place on Thursday December 1, 2011 and Friday December 2, 2011 on the campus of Big Time University in the Student Athlete Support Services (SASS) conference room.

Additionally, three student-athletes that completed the questionnaire and utilized the Tegrity system were selected by a student-athlete academic advisor to participate in the focus group. If a student-athlete declined to participate in the focus group, an additional student-athlete that meet the aforementioned qualifications was contacted by the student-athlete academic advisor and asked to participate until the minimum number of 3-5 student-athletes was achieved. A focus group comprised of three female upperclassman student-athletes took place on Friday December 2, 2011 on the campus of Big Time University in the SASS conference room.

Questionnaire.

The first data collection tool used was the questionnaire. The questionnaire for student-athletes was reviewed and approved by the dissertation committee before being administered to student-athletes. Data collected to measure access to recorded lectures, academic satisfaction, and academic progress was obtained from student-athlete self-reports in the questionnaire. The questionnaire was e-mailed to each student-athlete via their institution's e-mail address on November 16, 2011 (see appendix B). The e-mail asked student-athletes for their participation in the study and contained a link to the online questionnaire. The deadline for completion of the questionnaire was two weeks (November 30, 2011).

The questionnaire began with demographic questions which inquired about the participants age, gender, athletic eligibility, academic class, grade point average, and the sport(s) in which they participate for Big Time University. Immediately following, a

question asked how many classes the participant has missed for the 2011 year for "athletic-related commitments" and for "other". A screening question then asked if the participant had ever had access to a recorded lecture while at Big Time University. Student-athletes that reported never having had access to a recorded lecture while at Big Time University were thanked for their participation and exited the questionnaire. Branching logic, provided with the REDCap software, was used to achieve this. Student-athletes that reported having had access to recorded lectures continued with the questionnaire. Questions number four and five asked for the total number of recorded lectures that the participant watched and/or listened to during the 2011 year for "athletic-related commitments" and for "other", respectively. Question number six asked how they learned about the availability of recorded lectures and question seven asked why the participant chose to access the recorded lecture(s). Question number eight asked how the participant accessed the lectures. The final questions asked about the lecture capture initiatives impact on student-athletes. Participants were directed to select the best answer based on a likert-scale selection from "strongly disagree" to "strongly agree" (see appendix C).

Interviews.

The second data collection technique consisted of 11 personal interviews with participants from the total number of student-athletes that reported having had access to a recorded lecture. Interviews took place on Thursday December 1, 2011 and Friday December 2, 2011 on the campus of Big Time University in the Student-Athlete Support

Services (SASS) conference room. Interviews were designed to last approximately 30 minutes and followed a guide designed to inquire about the use of recorded lectures, the impact access to recorded lectures had on participant's academic satisfaction, and participant's academic progress (see appendix E). Patton (1990) suggested using an interview guide as it "helps make interviewing across a number of different people more systematic and comprehensive by delimiting in advance the issues to be explored" (p. 283).

The personal interview guide was reviewed and approved by the dissertation committee before being used by the researcher. The guide ensured that questions were asked in an identical order for each interview. Additionally, specific probe questions were asked when appropriate. Personal interviews were audio-recorded and transcripts of the interviews were typed before member checking. After member checking, the transcripts were cleaned, taking out all identifiable information, before being coded and then searched for themes.

Coding was used because it is a systematic way of developing and refining interpretations, themes, and concepts (Taylor & Bogdan, 1984). Bogdan and Biklen (1982) suggested the following broad coding categories: setting or context codes; definition of the situation codes; perspective held by subject codes; subject's way of thinking about people and objects codes; process codes; activity codes; event codes; strategy codes; relationship and social structure codes; and methods codes. The researcher referred to these categories as working guides during the coding process.

Focus Group.

The final data collection method was a focus group consisting of three student-athletes which had indicated having had access to a recorded lecture while at Big Time University. The focus group took place Friday December 2, 2011 on the campus of Big Time University in the SASS conference room. The focus group was audio recorded and a transcript was created before member checking, cleaning, coding, and searching for themes. The focus group followed a script identical to the personal interviews (see appendix E). Pseudonyms were used to protect the identities of participating student-athletes.

Data Analysis.

The findings of this study are presented in a descriptive, narrative format with the context of the study and the participants' language presented as data. Transcripts from individual interviews and the focus group were transcribed, coded and reviewed for themes and concepts. Additionally, interview and focus group transcript summaries were used to maintain greater organization and improved access to data (Merriam, 1988). Verbatim transcripts of tapes were used to extract all relevant information form the interviews and focus group. Words, phrases, or entire sentences were quoted exactly and coded by line number from the original transcript so that they could be easily located if needed. The analysis focused on all comments concerning the effect that access to recorded lectures has had on the student-athlete participants.

The SPSS statistical package was utilized to analyze the questionnaire data. Descriptive statistics were used to describe the sample and provide frequency outputs. Crosstabulations were used to test relationships between demographics and dependent variables. Dependent variables consisted of questions nine through 18 on the questionnaire.

Triangulation was used to compare findings from the questionnaire, focus group and individual interviews for consistency. The qualitative data was used in an attempt to answer the why and/or how questions that arose from the quantitative data. The constant comparative method was used during this study as it allowed for the continuous analysis of data (Bogdan & Biklen, 1982; Merriam, 1988). This allowed garnered insight to be continually reapplied throughout the study. This research study was a quasi-experimental, mixed-method study utilizing the case study approach.

Limitations.

This research study limited its focus to the reported effect that access to recorded lectures, provided by the Tegrity lecture capture system, has had on NCAA Division I student-athletes from a single institution. No other forms of technology or mediums were addressed. Student-athletes were not observed so there is a possibility that what is reported may not be completely accurate. This research may also be limited by the fact that no Men's or Women's Basketball players chose to participate in the study in any capacity. The focus group only contained female student-athletes (n=3) and the

individual interviews were comprised of 10 male student-athletes and one female student-athlete.

CHAPTER IV

Findings

This chapter describes the demographic information from the survey, individual interviews, and focus group before systematically addressing each of the stated research questions. The statistical findings derived from analyzing the quantitative data are presented, and themes from the qualitative data are discussed to add context.

About the sample and participants

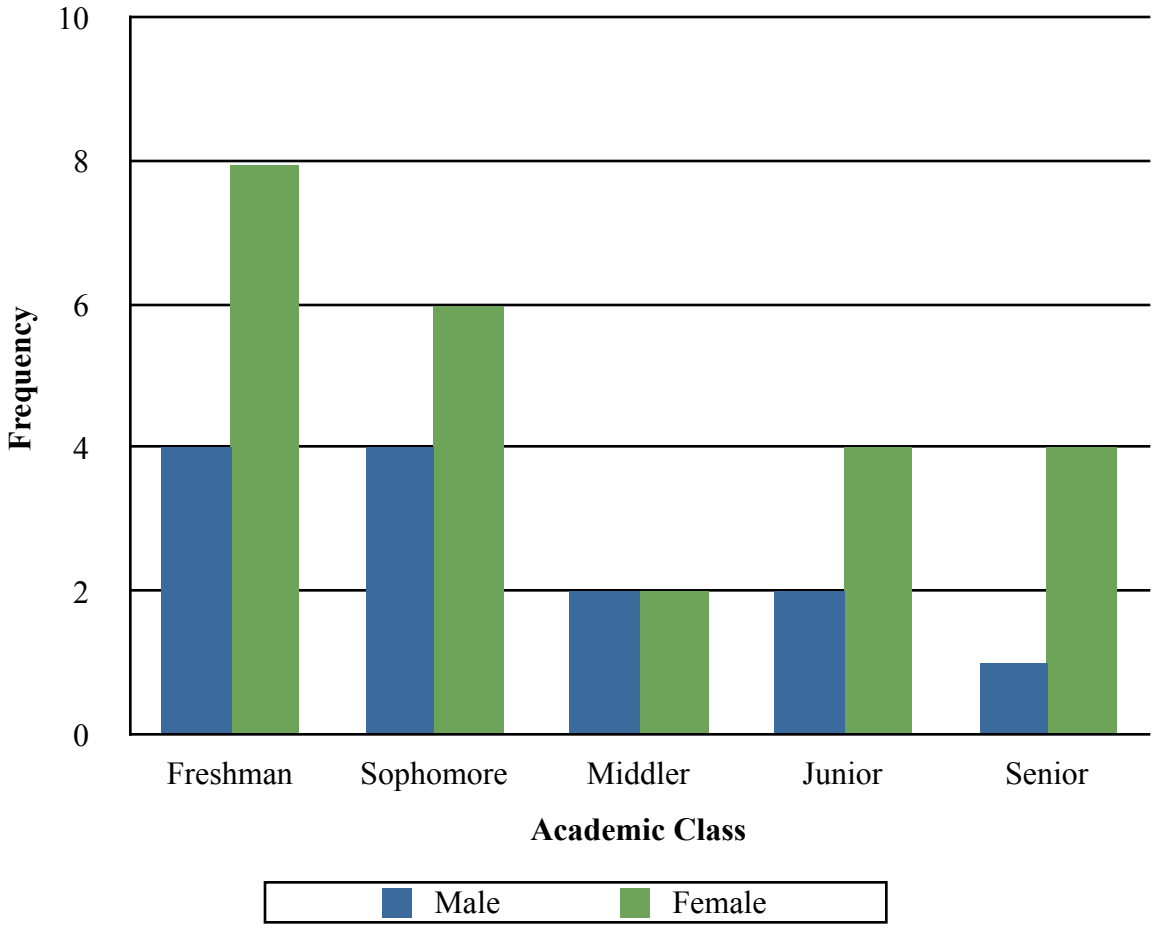
The survey sample

A total of 49 participants responded to the online questionnaire. However, only 75.5% (n=37) of the submitted questionnaires were complete. As 37 student-athletes completed the online questionnaire, the quantitative findings are not necessarily generalizable to the entire student-athlete population (N=453) at Big Time University. Missing data were excluded from percentages in the reporting of the statistical findings.

For the participants that reported a gender (n=37), 64.9% (n=24) were female and 35.1% (n=13) were male. The completed questionnaires indicated that every varsity sport at Big Time University was represented with the exception of basketball. For athletic class, defined as the year of athletic eligibility based on completed course credits according to the National Collegiate Athletic Association, 68.6% (n=24) of respondents identified themselves as either Freshmen or Sophomores (underclassmen) and 31.4% (n=11) identified themselves as Juniors or Seniors (upperclassmen). The responses for academic class closely matched athletic class, with 59.5% (n=22) underclassman and

29.7% (n=11) upperclassman; additionally, 10.8% (n=4) of participants reported being Middler. Undergraduate students, including student-athletes, at Big Time University typically enroll for five years, instead of four years. Therefore, third year students are called Middler as they have completed their Sophomore year academically but have not yet begun their Junior year (see Figure 1).

Figure 1. Academic Class by Gender



The data analysis indicated that 24.3% (n=9) of participants reported that they were 18 years of age, 32.4% (n=12) were 19, 13.5% (n=5) were 20, 13.5% (n=5) were 21, 13.5% (n=5) were 22, and 2.7% (n=1) were 23 years of age. Additionally, 71.4%

(n=35) of all participants reported having attended Big Time University for two years or less.

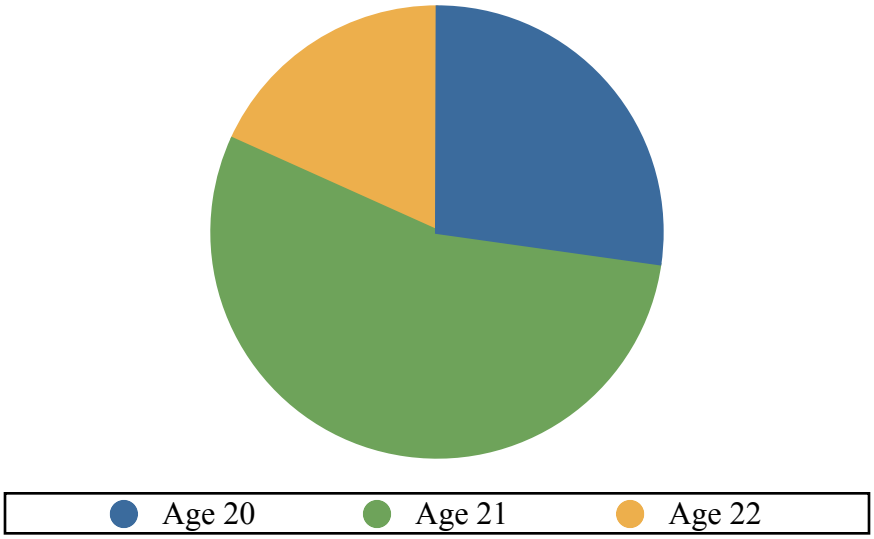
When asked to self-report their grade point average (GPA), 57.1% (n=28) of respondents indicated having a GPA of greater than 3.0. When asked to report how many classes student-athlete participants had missed in 2011 due to athletic-related commitments, 88.9% (n=32) reported having missed one or more classes and 11.1% (n=4) reported having missed zero classes. When asked about how many classes they had missed in 2011 for any other reason, 75.0% (n=27) reported to have missed one or more classes with 25.0% (n=9) reporting to have missed zero classes.

The interviewees

A total of eleven student-athletes participated in individual interviews on the campus of Big Time University on Thursday, December 1 and Friday, December 2, 2011. More than 200 minutes of individual interviews were recorded with an average interview length of 19 minutes and four seconds. Of the total participants, 81.8% (n=9) were male and 18.2% (n=2) were female. Baseball and Soccer were the only sports represented. Student-athlete participants reported to be 20 years old 27.3% (n=3) of the time, 21 years old 54.5% (n=6) of the time, and 22 years old 18.2% (n=2) of the time (see Figure 2). When asked to self-report their GPA, 36.4% (n=4) of student-athlete participants reported having a GPA of greater than 3.0 and 63.6% (n=7) reported having a GPA of less than 3.0. For athletic class, 18.2% (n=2) reported being a Sophomore, 45.5% (n=5) reported being a Junior, and 36.4% reported being a Senior. For academic class, 9.1% (n=1)

reported being a Sophomore, 18.2% (n=2) reported being a Middler, 45.5% (n=5) reported being a Junior, and 27.3% (n=3) reported being a Senior.

Figure 2. Participant Age



The focus group participants

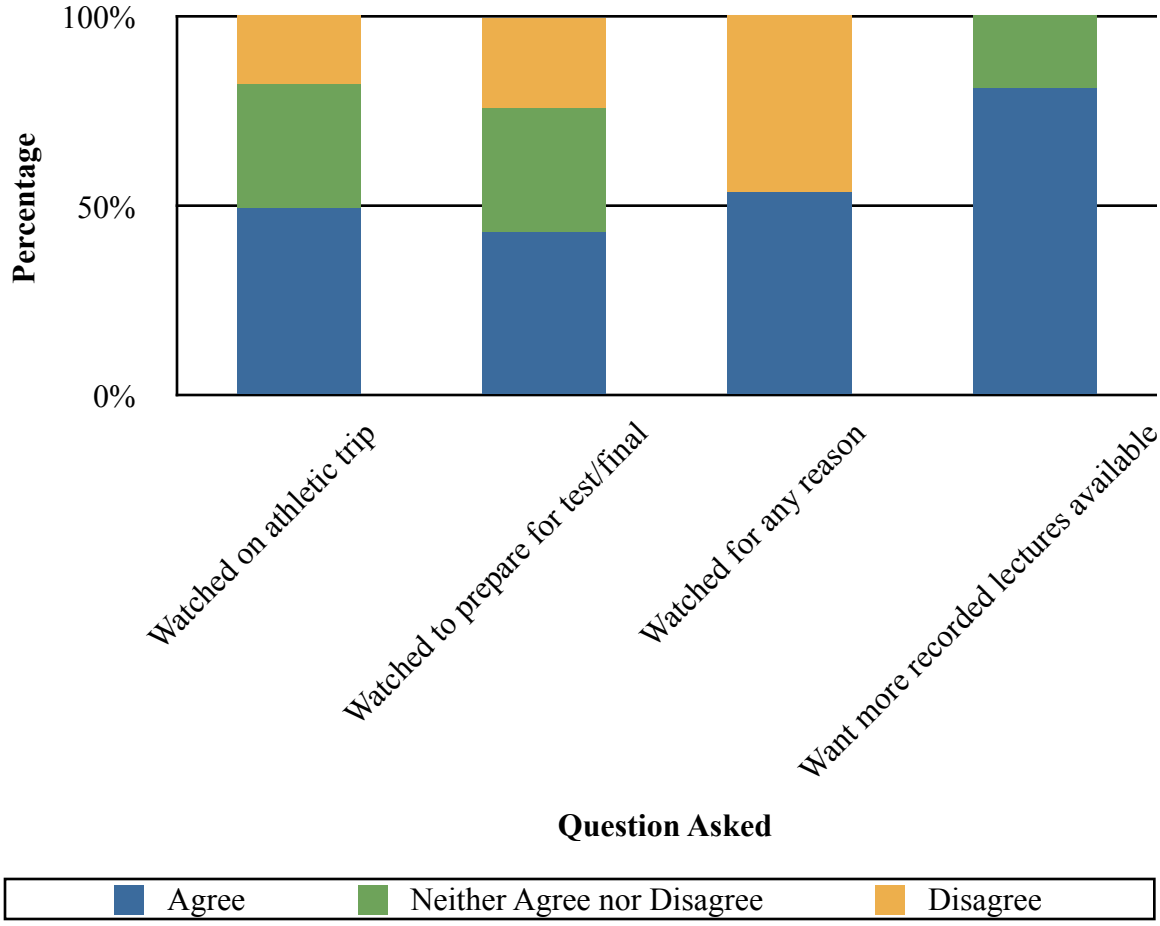
The focus group took place on Friday, December 2, 2011 on the campus of Big Time University. The focus group lasted 33 minutes and 19 seconds and was comprised of three female student-athletes. The varsity sports of Soccer and Field Hockey were represented. Based on athletic class, there was one Senior and two Juniors. Based on academic class, there was one Senior, one Junior, and one Middler. Two of the participants reported to have a GPA of greater than 3.0 and one of the participants reported to have a GPA of less than 3.0. All three participants reported to be 21 years of age.

Results

RQ1 To what degree are student-athletes accessing recorded lectures?

Of the student-athletes that responded to the questionnaire, 41.7% (n=15) watched at least one recorded lecture for an athletic-related absence; 58.3% (n=21) reported to have watched zero. When asked how many recorded classes participants had watched for any absence not related to athletics, 23.0% (n=8) indicated having watched at least one while 77.1% (n=27) reported having watched zero. When asked if participants had watched a recorded lecture while away on an athletic trip, 48.5% (n=16) reported to "agree", 33.3% (n=11) reported to "neither agree nor disagree", and 18.2% (n=6) reported to "disagree" (see Figure 3). Similarly, 42.4% (n=14) of student-athlete participants reported to "agree" with having watched a recorded lecture to prepare for a test or final, 33.3% (n=11) reported to "neither agree nor disagree", and 24.2% (n=8) reported to "disagree" (see Figure 3). In all, 52.7% (n=19) of student-athlete participants reported to have watched a recorded lecture for any reason in 2011 while 47.3% (n=17) reported to have not (see Figure 3). When asked if student-athlete participants wanted more recorded lectures to be made available, 80.0% (n=28) reported to "agree" and 20.0% (n=7) reporting to "neither agree nor disagree"; zero student-athlete participants reported to "disagree" with this statement (see Figure 3).

Figure 3. The Degree to which Student-Athletes are Accessing Recorded Lectures



Student-athlete participants, during their individual interviews and the focus group, indicated that they watched recorded lectures to ensure they "wouldn't fall behind in classes" (Junior, Baseball player), "just to be able to keep up with class, be able to maintain my grade point average" (Middler, Baseball player), and to ensure they understood the material that was covered during their absence. A Senior Women's Soccer player added, "Because I missed classes I was lost in the next class, so I went back and looked to review, to understand it." Student-athlete participants also stated that they

watched recorded review sessions and class lectures for their upper-level classes specifically.

Those interviewed mentioned the importance of having classes recorded if professors use real-life examples during class or if a professor discusses ideas or concepts that cannot be found in the class textbook(s). Additionally, student-athletes indicted making it a priority to watch these recorded lectures first:

> For the classes that I have, that I get recorded, it's hard to miss them because it's more like in-class stuff, not really by the textbook, so those are usually classes that I listen to first. (Junior, Women's Soccer player)

Participants reported that some of their classes did not need to be recorded. A Junior Baseball player said, "I just think there are some classes where you don't really need [lecture capture]." Additionally, in some situations, student-athlete participants reported preferring to learn missed material another way or that they did not feel the material being missed during their absence would cause too many problems.

All student-athletes participanting in the individual interviews and the focus group had watched a recorded lecture while away on an athletic trip. The primary situation for doing so was inside their hotel room or while traveling on the team bus:

> Um, yeah. Just in our hotel room at night usually. Usually the Thursday we get in, if we travel on a Thursday, I will watch my Thursday class if it is up, and then usually on the trip home or that following Monday if I miss

> a Tuesday or Friday class, I will be caught up for the next Tuesday class. (Senior, Baseball player)

Student-athletes reported using their personal laptop computers to access recorded lectures and said this access allowed them to stay current with their classes, to ensure no new assignments were given, and to ensure that no changes were made to current assignments. A Middler Baseball player said that being able to follow recorded lectures while traveling for athletic trips was especially useful towards the end of a semester:

> Being able to follow the lectures, especially when you are on the road and towards the end of the semester when it gets hard, so thats probably the biggest time that it's of help.

Student-athletes stated learning style preferences for justification as to why they did and also why they did not choose to watch some of the recorded lectures provided for them. A Middler Baseball player reported that he preferred to watch the recorded lectures for a missed class because, " it is easier just to hear it from the teacher." A Senior Baseball player had mixed feelings and stated, "at times I felt [lecture capture] was very helpful at other times I felt I would be better off teaching myself." Another Senior Baseball player mentioned how if he did not understand something that was covered during an absense then he would prefer to discuss the missed material with his professor:

> I don't know if it was just because that's how my classes lined up that I didn't need [lecture capture] for review, but if I were to be put in that situation I probably wouldn't. I mean I probably would listen to it but I

> wouldn't rely on it. I would probably e-mail or go in and talk to my professor if that was the case.

Other student-athlete participants reported having watched a recorded lecture to prepare for a test or final. A Junior Baseball player stated, "I watched [a recorded lecture] and it helped a little bit." Another Junior Baseball player said:

> I would go through each chapter and find like a section that I was unsure about. Then I'd go right in and Tegrity has, when you fast forward it would show what PowerPoint they were on, so I was able to like fast forward to the PowerPoint that was in the packet, and I could hear what [the professor] said about it.

A Junior Baseball player explained how taking notes on what the professor and other students said during the missed class lecture helped to learn the material:

> I sat there, I got my notebook out and took notes on everything [the other students] were talking about, the questions they were asking and the answers the teacher was giving back to the students. That's what really helped me. And I wrote that stuff down.

RQ2 To what degree is access to recorded lectures affecting the self-reported academic satisfaction of student-athletes?

When asked if access to recorded lectures had increased their academic satisfaction, 54.5% (n=18) reported to "agree", 42.4% (n=14) reported to "neither agree nor disagree", and 3.0% (n=1) reported to "disagree" (see Figure 4). During the

individual interviews and focus group, the identical statement was asked. A Middler Field Hockey player reported that when she listens to a recorded lecture, it "gets rid of the anxiety that I miss something important or like a little key phrase that happened in class." A Senior Baseball player reported that recorded lectures are "the second best thing to actually being in class." A Junior Soccer player stated, "If I didn't have [lecture capture], I would just be so lost in those classes." And, a Junior Baseball player said, "I definitely feel that with that accounting class my grade probably would have been a whole grade lower if I didn't have Tegrity." A Senior Baseball player stated how he could not imagine missing class without the Tegrity system and that to make up for the lost class time he would have to spend large amounts of time with the professor:

> I couldn't imagine missing class without Tegrity just because it's so cumulative, especially my finance classes, that you would have to spend hours in an office with the teacher if you didn't have this.

For the student-athletes that reported "neither agree nor disagree," some of the reasons why include the fact that "it was just a lot more time consuming" (Sophomore, Baseball player) and therefore they "didn't find it really helpful" (Sophomore, Baseball player). Additionally, some student-athletes did not have enough experience using the Tegrity system to give an opinion: "I feel like I don't have enough usage of it to either strongly agree with it or disagree with it at this point" (Middler, Baseball player).

Student-athlete participants reported having few issues with the Tegrity system. The issues that were reported primarily centered around Internet speeds, dated computer

equipment, and professor error or set-up malfunctions. A Senior Baseball player said: "I am sure I have had a time when [the recorded lecture] wouldn't load, or whatever it was, but I can't remember a time when I couldn't view a class with the new system." A Sophomore Baseball player also mentioned how once or twice he had trouble opening a recorded lecture but that he was eventually able to view the recording:

> Maybe one or two times in my research class I had trouble opening [the recorded lecture]. I'm not sure why but like I tried a few more times and then I finally got it to work. But the first time I did it it didn't really open.

When asked if lecture capture had made learning more enjoyable, 60.0% (n=18) of student-athletes responded "agree", 30.0% (n=9) responded "neither agree nor disagree", and 10.0% (n=3) responded "disagree" (see Figure 4). When asked the identical statement during individual interviews, a Senior Baseball player reported, "There are aspects that you get with the Tegrity system that you don't get in class - like you can rewind and pause - so I mean, in that respect, it is almost better than being in class." Another student-athlete reported an increase in academic satisfaction because the lecture capture program provided security: "I had that safety net just in case I couldn't get notes from someone or if I really needed to further get detail on something that I had missed" (Middler, Baseball player).

At least one reason why so many student-athletes selected "neither agree nor disagree" on the questionnaire for this statement may have been due to the specific wording. During the individual interviews, participants reported that the word

"enjoyable" was not how they would describe the impact of recorded lectures on their learning: "It's just like, I mean, it's not more enjoyable. It's just going to class basically, [even though] you're not there" (Middler, Baseball player). A Middler Field Hockey player explained how she dislikes certain classes regardless of them being recorded or not:

> [Lecture capture] definitely doesn't hurt. It's definitely beneficial, but I don't know if I would use the word enjoyable. Some of my classes I hate regardless if it is lecture capture or not.

When asked what the participants liked least about the lecture capture program, the main issues reported were due to the fact that some student-athletes' learning styles and some course subject matters were simply not conducive to lecture capture. For example, A Junior Baseball player talked about how important a visual component was to him:

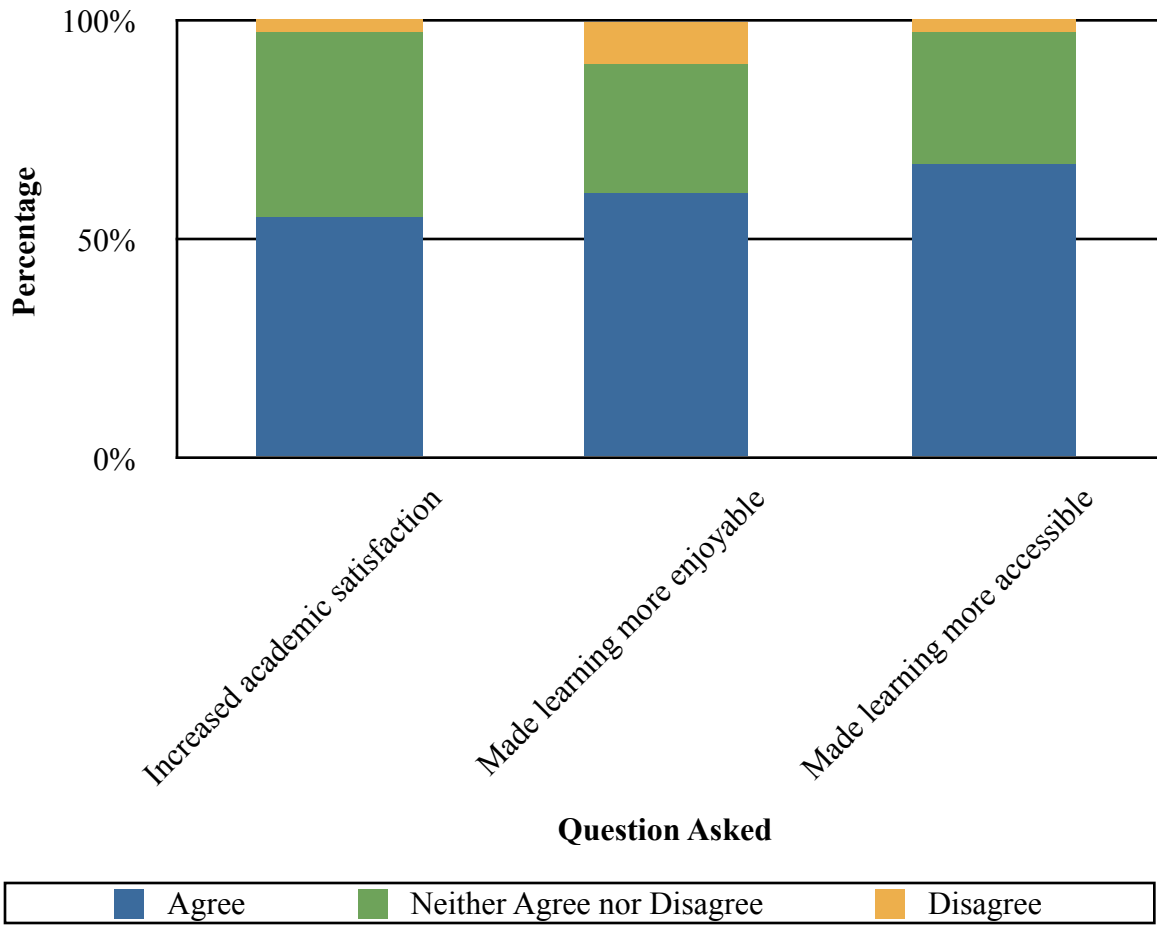
> I feel like it depends on how [the professor] teaches his class because I feel that if they are using PowerPoints more it's probably better then if they don't because you have something to follow and you can kind of put this topic like with what they're writing on the board. So it's easier to take notes on.

When asked if lecture capture had made learning more accessible, 66.7% (n=22) of respondents reported to "agree", 30.3% (n=10) reported to "neither agree nor disagree", and 3.0% (n=1) reported to "disagree" (see Figure 4). When asked the identical question during the individual interviews and focus group, a Junior Baseball

player provided the following statement: “Absolutely. It was definitely a positive experience.” A Senior Women’s Soccer player said:

> I’d be going through my homework and always look at my lecture at the beginning when [the professor] asked about homework questions. Because sometimes there’d be like an error in the assignment or something. So, if I watched the lecture I would know how to do the problems.

Figure 4. The Degree to which Access is Affecting Academic Satisfaction



RQ3 To what degree is access to recorded lectures affecting the self-reported academic progress of student-athletes?

Three statements were used on the questionnaire to provide an answer to research question number three: Statement number 15, "My grades have improved since having had access to recorded lectures"; statement number 16, "I am able to be a better student thanks to lecture capture"; and statement number 18, "Lecture capture technology has improved my likelihood of graduating on time" (see Appendix A). Participants were asked to respond to these statements using the provided likert scale (i.e. 1-5 from strongly disagree to strongly agree).

When asked if participants' grades had improved since having had access to recorded lectures, 92.9% (n=39) responded with "agree" and 7.1% (n=3) responded "neither agree nor disagree"; zero student-athletes reported to "disagree" with this statement (see Figure 5). During the individual interviews and focus group, student-athlete responses varied; however, student-athletes reported that their grades had improved, which is consistent with the findings of the online questionnaire:

> Last semester I missed the most amount of classes I ever have, and I - it was my best semester GPA-wise-and I did use the Tegrity system so I guess there is a correlation there. (Senior, Baseball player)

Student-athletes also explained that they neither agreed nor disagreed: "I didn't have [lecture capture] Freshman year or Sophomore year and my grades like haven't really improved so it's just kind of still the same" (Junior, Field Hockey player). Another

student-athlete questioned the correlation between lecture capture access and grades: “I don’t have an opinion. I mean, I can’t say because of lectures that [my grades improved]” (Senior, Baseball player). A Middler Field Hockey player mentioned how using Tegrity and reviewing her notes produced similar results:

> This is my first year using [Tegrity] and I feel like I missed a couple classes this semester, but I feel like watching it and then going over again in my notes too has, it equals the same effect.

A Junior Baseball player reported to “disagree” and described listening to recorded lectures as burdensome:

> When I have to go to class, you know, when I don’t have a reason not to be in class, is the best way I learn, just for me. Obviously, when we’re traveling it’s tough to, you know, sit in your room after a game or get up in the morning and try and do something, or listen to a lecture. It’s just kind of difficult.

When asked if student-athlete participants were able to be a better students thanks to lecture capture, 57.6% (n=19) reported to “agree”, 30.3% (n=10) reported to “neither agree nor disagree”, and 12.1% (n=4) reported to “ disagree” (see Figure 5). During the individual interviews and the focus group, student-athletes reported that they were able to be better students thanks to lecture capture. A Senior Baseball player stated, “I strongly agree with that. Given the circumstances, yes. It is obviously second to being in class, but given the circumstances we are in, yes. Absolutely.” A Senior Baseball player stated how

recorded lectures are a good reference tool and that they help students to better understand the missed material: “The lectures, I think, are a good reference... I can teach myself better and better understand afterwards.” A Junior Baseball player also mentioned how recorded lectures help him to learn the material that was missed during his absence. Additionally, student-athletes are able to better understand the material in their current classes because of the cumulative nature of how the classes build upon each other:

> Strongly agree. Lecture capture has helped me learn material in classes that I would have missed. The topics I learned from these filmed classes have been used in classes I am taking this semester, and thanks to lecture capture, I have a better understanding of the material. (Junior, Baseball player)

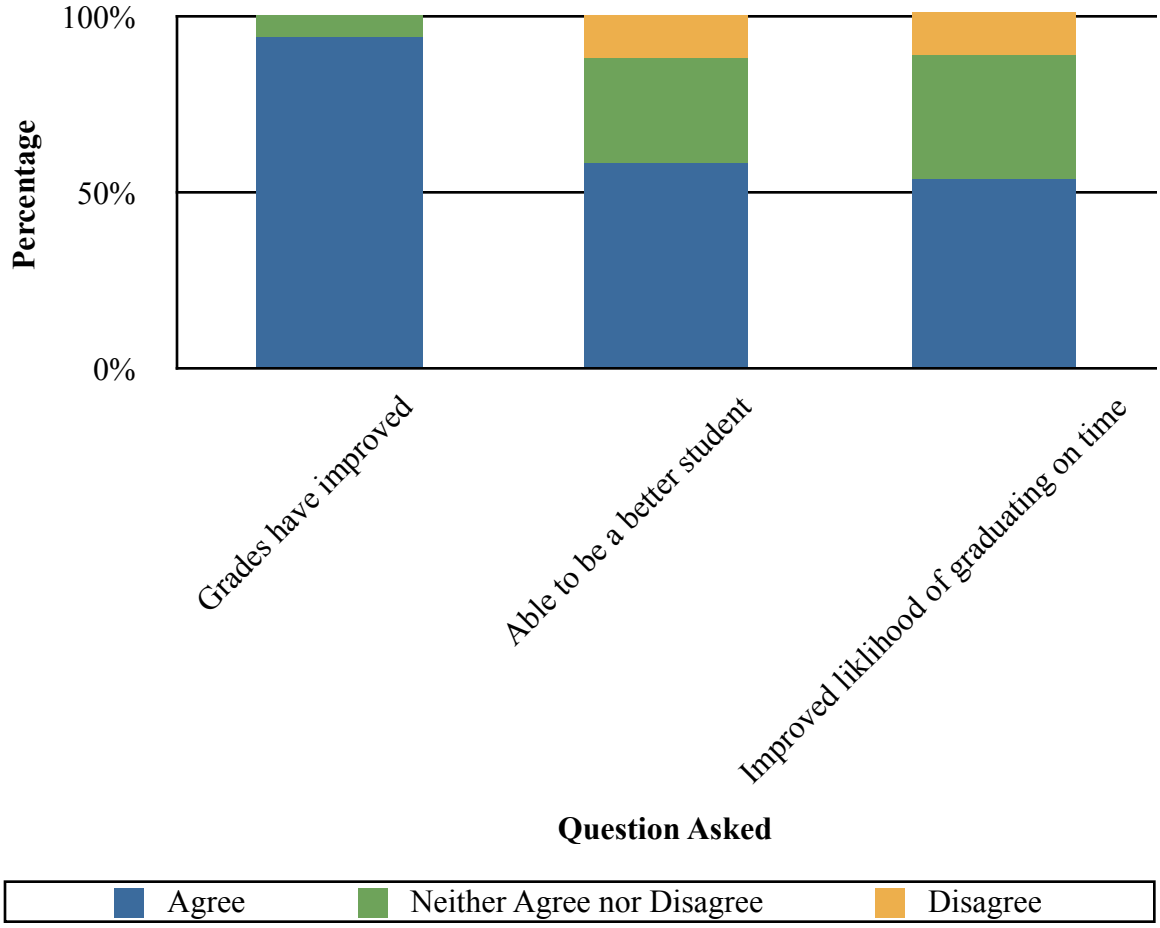
Student-athletes also reported to “neither agree nor disagree”. A Junior Field Hockey player reported to be undecided because while “it’s hard to fit in the time to do assignments, [lecture capture] also helps because if you’re more accountable, then you will get it done like right away instead of leaving it until a later date and then like cramming it all together.”

The final statement, lecture capture has improved my likelihood of graduating on time, was answered “agree” by 52.9% (n=18) of participants, “neither agree nor disagree” by 35.3% (n=12), and “disagree” by 11.8% (n=4) (see Figure 5). Student-athletes, during the individual interviews and focus group, reported that lecture capture technology improved their likelihood of graduating on time. A Senior Women’s Soccer player stated

that for the classes she missed, “if I hadn’t had Tegrity I would have fallen behind...and may not have passed.” Student-athletes also reported to “neither agree nor disagree”. A Middler Baseball player stated that being “a student athlete you come in here knowing that you are going to miss classes and you are going to have to make up more work than the average student, so you prepare yourself.” A Junior Women’s Soccer player stated, **“**I don’t really have an opinion on that just because I would probably graduate on time. I wouldn’t fail a class just because I wasn’t there. Like, there are other alternatives to lecture capture.”

Some student-athletes reported to “disagree” with the statement that access to lecture capture has improved their likelihood of graduating on time. A Senior Baseball player said, “I just think that I probably would have been able to get it done. Although [lecture capture] has helped my grades, I would say that, I think I would have been okay.” A Junior Baseball player said, “I mean, it obviously made a difference on individual tests and stuff, but I mean, between like graduating and not graduating it didn’t really make that big of a difference.”

Figure 5. The Degree to which Access is Affecting Academic-Progress



RQ4 To what degree do the effects of lecture capture initiatives vary according to student-athlete characteristics?

The online questionnaire asked student-athlete participants to respond on a likert scale from "strongly disagree" to "strongly agree" for a number of statements relating to their use of the Tegrity lecture capture system. Upon initial analysis of the submitted responses, the researcher concluded that the original variables needed to be transformed into new variables in order to recode the response options. Therefore, "strongly agree"

and “somewhat agree” were combined into “agree”, “strongly disagree” and “somewhat disagree” were combined into “disagree”, and “neither agree nor disagree” remained the same. Although this helped to increase the statistical significance of most crosstabulation tests, none of the tests were statistically significant at the p=<0.05 level.

The demographic questions for athletic class and grade point average were also transformed. Athletic class was transformed from “Freshman”, “Sophomore”, “Junior”, and “Senior” to “Underclassmen”, and “Upperclassmen”. Grade point average was transformed into “Less than 3.0” and “Greater than 3.0”. After transforming and recoding these variables, additional crosstabulation tests were conducted. Still, no statistically significant findings at the p=<.05 level were found. All of the student-athlete participants indicated as expected to all of the questions labeled as demographics on the questionnaire (see Appendix C).

The researcher concluded that no statistically significant effects of the lecture capture initiative varied according to student-athlete characteristics. Therefore, all student-athlete participants reported similarly, or as expected, to all questions on the questionnaire.

Common themes across research questions

During the individual interviews and focus group, various contextual themes emerged. Themes include: learning style, technology proficiency of professors, control, and lecture type. While these themes are common across the research questions, they are not mutually exclusive as they overlap to some degree.

Theme 1: Learning style

Learning style emerged as the most common theme throughout the individual interviews and the focus group. Student-athlete respondents mentioned their learning style as being the main factor contributing to their decision to watch, or to not watch, specific recorded lectures. Additionally, based on the participants' learning styles, they thought certain classes should be recorded while other classes should not be recorded.

Based on participants' responses, student-athletes who used the Tegrity lecture capture system at Big Time University found it to be most useful for classes where the instructor used material not found in the class textbook(s), presentations, or provided notes. When instructors used real-life examples and explored tangents during lectures in order to better relate the material to students, student-athletes reported preferring to have the class recorded. Additionally, student-athletes reported that review sessions should always be recorded when missed due to an athletic-related commitment:

> During the review session, to listen to other people's questions [and] having the teacher go over the final materials is a big help. (Middler, Baseball player)
>
> One of my classes, you know, it's a very important class with very important material, so I needed to really go back and watch that one. (Junior, Baseball player)

> One...was a test review that I missed because of Baseball and...I think I missed a couple other classes so I wanted to catch up so I didn't get too far behind. (Middler, Baseball player)

Student-athletes who prefer to take detailed notes, because writing the material helps to commit the learned information to their memory, reported a high level of satisfaction with the recorded lectures regardless of the lecture being either video- or audio-recorded only, or both. For the student-athletes that reported being visual learners, the value of that recording was diminished greatly if the Tegrity recording only captured audio. A Middler Baseball player mentioned how he was a visual learner and that the PowerPoint slides helped him:

> My teacher had the video and the slides which I'm a visual learner...I couldn't just listen to someone talk and be able to pay attention but the visual with the slides, being able to pause it and look at the slides and listen to what he says actually can help, I think, and it did.

It should be noted that student-athletes reported preferring to be in class whenever possible and viewed recorded lectures as " the second best thing to actually being in class" (Senior, Baseball player). This finding is consistent with research that shows students prefer to attend class even when audio-recordings of lectures are available (Larkin, 2010; von Konsky, Ivins & Gribble, 2009; Williams & Fardon, 2007).

While student-athlete participants only discussed the issue of classes being recorded from their experiences as students, research by Chang (2007) suggests that

certain lecture styles are not conducive to the lecture capture technology. This is based on research by Fardon (2003) that found for professors who believed their paralinguistic cues (e.g. hand gestures, body language, and facial expressions) were important components of their teaching method, the lecture capture technology where only audio was captured was not a good fit. Therefore, while student-athletes expressed that some classes should be recorded while others should not and equated this to their personal learning style, it is possible that the professor's lecture style is as much the culprit.

Theme 2: Control

The second most frequently emerging theme during the individual interviews and focus group was the issue of control. Student-athlete participants reported that they enjoyed being able to watch missed classes whenever it best fit their schedules and that they also liked the controls with the Tegrity system where fast forwarding, rewinding, and pausing were available. The overarching theme of control developed two subcategories: control over one's own learning process and control over which specific classes are recorded. The idea of control is consistent with previous research published by Larkin (2010), where students were reported to want access to educational services, including captured lectures, to be available at all times. However, with control comes the element of accountability:

> [Lecture capture] kind of holds you responsible for the material you've missed because [professors have] supplied it for you so you can't walk up at the end of the semester and be like, oh, I missed this many classes like

whatever, because you have them accessible to you. (Senior, Women's Soccer player)

control over one's learning process.

The subcategory of control over one's learning process is delimited by referring only to the process which one goes through in initially acquiring information, storing learned knowledge, and retrieving such knowledge for dissemination when needed. This includes attending class lectures, taking notes or listening intently, reviewing class materials with a friend or by oneself, and studying for tests and finals, to name a few. Student-athletes reported that the Tegrity lecture capture system provided them the opportunity to take more control over their own learning. Visual learners specifically mentioned the user controls of being able to pause, fast forward, and rewind as positive attributes about the Tegrity lecture capture program: "There are aspects that you get with the Tegrity system that you don't get in class like you can rewind and pause, so I mean, in that respect, it is almost better than being in class" (Senior, Baseball player). These controls provided student-athletes with the ability to take copious notes. At the same time, student-athletes also mentioned how the ability to slow down the lecture made returning to the classroom harder as they felt the instructor was speaking very quickly. Without Tegrity, student-athletes were forced to conform their learning process to what the situation dictated. This meant asking classmates for notes, attending office hours to ask the professor what was missed and what needed to be made up, and hoping not too many review sessions would be missed.

Thanks to the Tegrity lecture capture system, student-athletes reported being able to watch missed class lectures, to take their own notes based on what took place in class, to attend office hours only if needed, and to never have to miss another review session. The idea of having the recorded lecture as a back-up or "safety net" resonated in student-athlete responses. The presence of a safety net also helped to improve the reported academic satisfaction of student-athlete participants. As a Middler Baseball player stated, "Being able to hear it from the teacher is a huge advantage." Two additional Baseball players provided the following:

> I had that safety net incase I couldn't get notes from someone or if I really needed to further get detail on something that I had missed. (Middler, Baseball player)
>
> You can access those lectures when you're not at class instead of having to rely on somebody else to tell you what you missed... It's extremely helpful to have that. (Junior, Baseball player)

control over which classes are recorded.

The subcategory of control over which classes are recorded received attention from student-athlete participants. In their responses to the individual interviews and the focus group, student-athletes articulated how certain classes did not need to be recorded regardless of how many times they missed that particular class, with the exception of a review session. A Junior Baseball player stated, "I just think there are some classes where you don't really need [lecture capture]." Student-athletes explained, for example,

that some professors follow the class textbook(s) and presentation slides and rarely deviate from the material during class. Therefore, student-athletes reported simply being able to read the chapter that was covered during their absence, to review the provided presentation slides, and to self-teach. If a student-athlete has questions at that point, it was reported that he or she would attend office hours or send the professor an e-mail. Student-athlete participants reported this to be a more efficient and effective way to acquire the missed information for some classes, as opposed to taking the time to watch the entire recorded lecture.

For classes where specific examples not found in the class textbook(s), notes, or presentation slides were used and/or where the professor used real-life examples and explored tangents, it was reported that these classes should be recorded:

> [The professor] just talks about like nothing that's really in the book it's all like real-life examples and if you miss a class you're so far behind so it's really helpful for me to use the capture. (Senior, Women's Soccer player)
>
> In important classes you can't just not know what goes on. Going back in watching what goes on will help you out so when you come down to like a midterm or final, a big test, you will know most of the material and you won't have any questions of any classes that you missed. (Junior, Baseball player)
>
> All my classes are basically teaching you how to do a problem and they give examples, so I can read the book but I don't have the examples. So, I

> watch the lectures to get the examples to learn how to use the concept. (Senior, Women's Soccer player)

Additionally, it was reported that any review session for any class should be recorded for student-athletes who miss due to an athletic-related commitment. When asked who should decide which classes should be recorded, student-athlete participants reported that they, along with their academic advisors, should share the ability to decide whether or not a specific class should be recorded.

Theme 3: Technological proficiency of professors

Student-athlete participants mentioned that the quality of recorded class lectures was reduced due to some professors' low technological proficiency. One example included a professor not understanding where the camera was focussing and therefore writing important information on the classroom blackboard outside of the camera's view. Another example was the issue of sound quality:

> It's oftentimes really hard to hear and you don't really know what was asked. So yeah, so it's just tough to follow because a lot of times if there is an issue or if kids have a similar question, [the professor] will spend like twenty minutes going over it but you didn't hear the question so you are playing catch up with what he's trying to explain. (Junior, Baseball player)

Due to these preventable issues, along with others, student-athlete participants reported that a formal training program should be created to ensure all faculty members know how to utilize the Tegrity lecture capture system and to help faculty understand the importance

of recorded lectures for student-athletes. It should be noted that student-athletes mentioned that most of the younger professors seemed to have no problem with the technology, while the senior faculty appeared to be apprehensive. The idea of a campus-wide training for all faculty was thought by student-athlete participants to be the most efficient and effective way to raise the comfort and awareness levels of all faculty members. It was believed that even if only a percentage of the faculty members attended, it would be a move in the right direction.

CHAPTER V

Conclusions, Discussion and Implications

The purpose of this study was to document the effect that access to recorded lectures had on NCAA Division I student-athletes at Big Time University. Four research questions guided this study:

RQ1: To what degree are student-athletes accessing recorded lectures?

RQ2: To what degree is access to recorded lectures affecting the self-reported academic satisfaction of student-athletes?

RQ3: To what degree is access to recorded lectures affecting the self-reported academic progress of student-athletes?

RQ4: To what degree do the effects of lecture capture initiatives vary according to student-athlete characteristics?

Chapter V summarizes the findings of this research study, its limitations, and possibilities for future research.

Summary of research findings

As 37 student-athletes completed the online questionnaire, the quantitative findings are not necessarily generalizable to the entire student-athlete population (N=453) at Big Time University. However, the qualitative data are trustworthy to the extent that saturation was achieved and the primary user groups, according to administrators at Big Time University, were represented.

In all, 52.7% (n=19) of student-athlete participants reported to have watched a recorded lecture for any reason in 2011 while 47.3% (n=17) reported to have not. While away on athletic trips, 48.5% (n=16) of student-athlete participants at Big Time University reported to have accessed recorded lectures and reported to have done so 100.0% (n=16) of the time via a personal lap top computer. Additionally, student-athlete participants reported to have accessed recorded lectures to aid in the preparation for a test or final, and to clarify any terms, ideas, or concepts from their classes at a rate of 42.4% (n=14). While recorded lectures were not necessarily the preferred way to learn for all participating student-athletes, as interview participants reported to prefer being present during class lectures, recorded lectures were viewed as a comforting "safety-net" and as a "last option", if needed.

Findings indicate that the Tegrity lecture capture system has improved the academic satisfaction of most student-athlete participants based on their self-reports, as evidenced by the fact that student-athletes who watched recorded lectures reported to have increased control over their own learning process thanks to the Tegrity system. The specific controls referenced by participants included being able to fast forward, reverse, pause, and even search for keywords. Additionally, student-athlete participants reported that being able to watch a class lecture at their own convenience helped improve their academic satisfaction. Access to recorded lectures was also found to help student-athletes earn higher grades, to better prepare for tests and finals, and to feel less stressed about missing classes due to athletic-related commitments.

Findings also showed that student-athlete participants who used the Tegrity system reported that their grades had improved, in part, due to the availability of recorded lectures. While this study's findings, including the reported usage of recorded lectures by participating student-athletes and its reported positive effect on academic success, lend support for the adoption of lecture capture technologies at other institutions, student-athlete participants believed that they would still have been able to pass their classes and graduate on time without Tegrity.

Additionally, this study found no statistically significant results according to variations among student-athlete characteristics based on the quantitative data. Therefore, all student-athlete participants, regardless of demographic characteristics, reported similar effects of the Tegrity lecture capture initiative. Although no statistically significant findings could be reported, this does not mean they do not exist. It is possible that the small sample size and relative homogeneity of the sample led to no statistical significance at the $P=<0.05$ level.

Implications

After collecting the data and analyzing the findings, recommendations concerning the application of the Tegrity system at Big Time University surfaced. Student-athlete participants reported that an institution-wide, faculty training should be initiated. This training would ensure all faculty members are familiar with the Tegrity program and its controls and understand the importance of recorded lectures for student-athletes who miss class due to athletic-related commitments.

A second recommendation is that student-athletes have a say in deciding which specific classes are recorded. While student-athletes felt that specific types of classes, including upper-level classes as well as review sessions for most classes, were valuable to have recorded, they considered the recording of other classes as unnecessary. Student-athlete participants indicated that they should be afforded an additional role in determining which classes are recorded for them specifically.

Finally, administrators should select technology systems that are user-friendly and meet the needs of both professors and students who will use them. Administrators should use data-driven decision making to ensure that a system is selected based on the needs of the intended users and the results of program evaluations. Systems like the Microsoft Research LecCasting System (MSRLCS), for example, would eliminate some of the camera view issues reported by participants. MSRLCS has cameras that automatically follow the professor around the classroom and the system automatically uploads the captured lecture within one minute after the recording has ended (Zhang, Rui, Crawford, & He, 2008). MSRLCS is just one of many systems that could be implimented to improve the reported camera issues while reducing the effect of missed class time.

Limitations

This research study was limited by the fact that it depended on accurate self-reports of student-athlete participants. It is difficult to know if student-athlete participants answered questions based on how they desired the findings to be, or not. For example, did the student-athletes report that they wanted more recorded lectures to be

made available so that they could be absent from the classroom more frequently without the threat of earning lower grades? It is unknown if student-athlete participants were attempting to appease the researcher.

No direct observations took place and no data on actual usage of the Tegrity system, participants' actual GPA, or any other data were collected. Eleven student-athletes participated in an individual interview and three student-athletes participated in the focus group. Although the researcher believes that saturation was reached, only the varsity sports of Baseball, Women's Soccer, and Field Hockey were represented. As administrators at Big Time initially reported that the primary users of the Tegrity program were Baseball and Women's Soccer players, it is believed that the findings are trustworthy. However, the online questionnaire indicated that student-athletes from every sport, with the exception of Basketball, were utilizing Tegrity to some degree. Therefore, the qualitative findings, in addition to the quantitative findings, should not necessarily be considered representative of the entire student-athlete population (N=453) at Big Time University. Additionally, since this research study examined the effect of the Tegrity lecture capture initiative at only one NCAA Division I institution, the findings are not generalizable to other schools.

Men's and Women's Basketball were not represented in this study. As purposeful sampling was utilized in the selection of student-athlete participants, and as administrators at Big Time University indicated the primary users of the Tegrity lecture

capture system were Baseball and Women's Soccer players, it is possible that they were never encouraged to participate.

Discussion

The Tegrity lecture capture system has been shown to be an essential component of the educational process for some student-athletes at Big Time University. However, findings also indicate that some student-athletes view recorded lectures as superfluous for certain courses. While student-athlete opinions concerning lecture capture vary, the participants were unanimous in reporting that it does not hurt to have recorded lectures available. Therefore, although some students-athletes may not choose to access recorded lectures of missed classes on a daily or even weekly basis, they reported to prefer having recorded lectures available. Access to recorded lectures provided some anxiety relief and was reported to increase the overall academic satisfaction of student-athlete participants.

Liu, Chiang, and Huang (2007) wrote that knowledge has become the most important source of sustainable competitive advantage. As technology continues to advance, students will most likely continue to demand more technologically savvy professors, administrators, and college campuses as a whole. Bazillion, Braun, Matter, Murphy, Pevas, and Svingen (2000) wrote, "As educators, the more we recognize and educate ourselves on the emerging technologies in education, the more our student's (sic) education will be enhanced in the 21st century" (p. 5).

The Tegrity system has incorporated a few different technologies to make the recording, uploading, and playback of lectures intuitive for users. Student-athlete

participants reported that the playback controls were similar to the controls found on iTunes. Because young adults are typically early adopters and therefore more proficient with many new technologies before older generations are even aware that such a technology exists, it is not surprising that most respondents reported to like having access to recorded class lectures. Research by Timm and Junco (2008) indicated that college students were ferocious consumers of technology. Additional research has also indicated that students positively view the use of technology in general (Heafner, 2004; Levin & Wadmany, 2006; Shuell & Farber, 2001).

Participants from this study reported high satisfaction with lectures being made available via the Tegrity system which is consistent with research by Bongey, Cizadlo and Kalnbach (2006), Copley (2007), Hove and Corcoran (2008), Larkin (2010), and Williams and Fardon (2007). While satisfaction was self-reported to be high, lecture capture initiatives should be carefully planned for and meticulously managed. This is because new opportunities come with the need to fully understand their effects on students, teachers, administrators, and all other relevant stakeholders (D'Arcy, Eastburn & Bruce, 2009; Li, 2007; Nelson-Laird & Kuh, 2005; Ng & Nicholas, 2009; Wang, Wu & Wang, 2007). Big Time University understood this and introduced the new technology slowly. Over the course of a few semesters, the students, faculty, and administrators were able to familiarize themselves with the program and to identify areas for improvement before fully launching the program in 2009.

Based on the success at Big Time University, if implemented and maintained properly, it is the belief of the researcher that similar lecture capture programs could benefit other universities similarly. Costs include up front technology costs and human resources costs related to training and maintaining. Benefits include reduced strain on faculty time demands, as it will no longer be necessary to meet with students on an individual basis who miss class in an attempt to re-teach the material, reduced stress for student-athletes, as they know that the class was recorded and is available to them electronically, higher earned grades, and increased academic satisfaction for users. This is important as Bonds-Raacke and Raacke (2008) warned about not simply using technology for technology's sake. Technology should be used solely for the betterment of the students and the institution as a whole.

Student-athlete participants who used the Tegrity system reported earning higher grades and being able to maintain their grades as upper-level classes became harder thanks, in part, to the availability of recorded lectures. If student-athletes are earning higher grades with access to Tegrity, then it should follow that they are more likely to remain academically eligible to continue participating in college athletics and are more likely to graduate as well. Having student-athletes remain academically eligible and graduating are both important to educational institutions and is one more justification for the adoption of similar lecture capture technologies. Big Time University reported a 79% student-athlete graduation success rate for their 2004-05 Freshman-Cohort (Big Time University, 2005).

Due to the specific technology, it is possible for athletic departments to see an immediate and substantial change in the first academic year after launching a lecture capture program initiative. However, for the best possible impact, the program needs to be adopted by all university employees as a worthwhile venture. Having faculty members who refuse to record lectures, athletic advisors who do not encourage their student-athletes to utilize recorded lectures, or administrators who do not back the initiative with funding and additional support can significantly reduce the potential impact. Li (2007) discussed how technology adoption would not continue until a harmonizing of opinions was achieved. Therefore, the biggest impact will most likely be a direct result of buy in from coaches, administrators, faculty and students in addition to institutional financial support. Even still, it should be noted that Hong, Lai, and Holton (2003) reported that the use of technology does not in itself guarantee academic success.

The concern that students will choose not to attend class if they can download the lecture electronically was not supported during this study. Only one participant mentioned students choosing not to attend class if recordings were available and this opinion was based on perceptions, not facts or any specific examples. All other participants alluded to classroom attendance being important and that they believed lecture capture was a nice supplement to, but not a replacement for, the "real thing". This finding was consistent with research by Larkin (2010), von Konsky, Ivins and Gribble (2009), and Williams and Fardon (2007). It should be noted that while no specific question concerning class attendance being mandatory or not was asked, nearly all

interview and focus group participants addressed the topic. Based on feedback, some professors count attendance as part of the students' grade and some do not. However, no participant used the justification of class being mandatory to support or justify their desire for attending class.

While student-athlete participants responded to the quantitative and qualitative data collection methods in the ways outlined above, it is possible that responses were chosen based on desirous outcomes. For example, it is possible that student-athlete participants reported to want more recorded lectures made available in order to reduce their need to attend class. Additionally, it may be that having professors contour their teaching styles to fit the ideal capturing confounds of the Tegrity system may be a step in the wrong direction. While these are merely thoughts, they do raise deeper theoretical concerns surrounding the adoption of lecture capture technology in regards to teaching and learning theory.

However, while traditional teaching and learning pedagogies are continually being challenged by technological breakthroughs, technological advancements should not automatically be viewed as harmful, corrosive, or malignant. Instead, technological advancements should be studied, analyzed, and adopted where empirical results indicate doing so.

Future research

Future research should attempt to produce more generalizable results and a thorough cost-benefit analysis to aid school administrators at other institutions who are considering implementing similar lecture capture technology initiatives. As no variation was found according to demographics for the quantitative data, additional research should focus on alternative demographic characteristics like socio-economic status, race and ethnicity in an attempt to further understand who might be more likely to utilize lecture capture technologies. As different students may be using the Tegrity system for very different reasons, analyzing variance among demographics for the qualitative data may also prove fruitful. A study designed to analyze motivations for using lecture capture technologies may also provide additional insight. A quantitative study analyzing actual, rather than self-reported, grades and graduation rates of lecture capture users may strengthen the findings of this study and would help to quantify the impact of the Tegrity system. Additionally, a similar long-term study using student-athletes from Big Time University may show varying results as students and administrators become more familiar with the available technology.

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Appendix A

Schematic for questions

Research Question (RQ)	Questionnaire (Q)	Interview (I)	Focus Group (FG)
RQ 1	**(Q1.)** For the 2011 year, how many classes have you missed due to:Athletic related commitments: Other: **(Q2.)** Have you had access to any recorded lectures while at Big Time University?*Yes/No* **(Q3.)** During the 2011 year, what is the total number of recorded lectures that you have watched/listened to for either an athletic related absense or for anything else (other)? **(Q7.)** I have watched/ listened to recorded lectures to prepare for tests/finals **(Q8.)** I have watched/ listened to recorded lectures while away on athletic trips	**(I2.)** While at Big Time University, what class(es) have had lectures recorded for you? **(I3.)** Did you watch/listen to any of the available recorded lecture(s)? **If "yes" continue with (3.a.), if "no" skip to (3.d.)* **(I3.a.)** Did you watch/listen to every one that was made available? **(I3.b.)** How many would you say you watched/ listened to? **(I3.c.)** What made you decide to watch/listen to them? **(I3.d.)** What made you decide not to watch/listen to them? **(I7.)** I have watched/ listened to recorded lectures to prepare for tests/ finals **(I7.a)** If so, for how long? **(I7.b.)** What else did you do to prepare? **(I8.)** I have watched/ listened to recorded lectures while away on athletic trips **(I8.a.)** If so, when and where? **(I8.b.)** If not, why not?	**(FG2.)** While at Big Time University, what class(es) have had lectures recorded for you? **(FG3.)** Did you watch/ listen to any of the available recorded lecture(s)? **If "yes" continue with (3.a.), if "no" skip to (3.d.)* **(FG3.a.)** Did you watch/ listen to every one that was made available? **(FG3.b.)** How many would you say you watched/ listened to? **(FG3.c.)** What made you decide to watch/listen to them? **(FG3.d.)** What made you decide not to watch/listen to them? **(FG7.)** I have watched/ listened to recorded lectures to prepare for tests/ finals **(FG7.a)** If so, for how long? **(FG7.b.)** What else did you do to prepare? **(FG8.)** I have watched/ listened to recorded lectures while away on athletic trips **(FG8.a.)** If so, when and where? **(FG8.b.)** If not, why not?

RQ 2	**(Q4.)** Lecture capture has made learning more enjoyable **(Q5.)** Access to recorded lectures has increased my academic satisfaction **(Q6.)** Lecture capture has made learning more accessible	**(I4.)** Lecture capture has made learning more enjoyable for me **(I4.a.)** What aspect(s) did you like most? **(I4.b.)** What aspect(s) did you like least? **(I5.)** Access to recorded lectures has increased my academic satisfaction **(I5.a.)** In what way? **(I5.b.)** To what degree? **(I6.)** Lecture capture has made learning more accessible **(I6.a.)** How would you describe the experience of using the Tegrity system? **Probe: Was it easy based on intuitive controls and the overall design? Was download speed an issue? Anything else?*	**(FG4.)** Lecture capture has made learning more enjoyable for me **(FG4.a.)** What aspect(s) did you like most? **(FG4.b.)** What aspect(s) did you like least? **(FG5.)** Access to recorded lectures has increased my academic satisfaction **(FG5.a.)** In what way? **(FG5.b.)** To what degree? **(FG6.)** Lecture capture has made learning more accessible **(FG6.a.)** How would you describe the experience of using the Tegrity system? **Probe: Was it easy based on intuitive controls and the overall design? Was download speed an issue? Anything else?*
RQ 3	**(Q9.)** My grades have improved since having had access to recorded lectures **(Q10.)** I am able to be a better student thanks to lecture capture **(Q12.)** Lecture capture technology has improved my likelihood of graduating on time	**(I9.)** My grades have improved since having had access to recorded lectures **(I9.a.)** If so, do you think this could be attributed to something besides access to recorded lectures? What else? **(I9.b.)** If not, do you think recorded lectures could help in the future? Why or why not? **(I10.)** I am able to be a better student thanks to lecture capture **(I10.a.)** How so? Please explain. **(I12.)** Lecture capture technology has improved my likelihood of graduating on time **(I12.a.)** Please explain.	**(FG9.)** My grades have improved since having had access to recorded lectures **(FG9.a.)** If so, do you think this could be attributed to something besides access to recorded lectures? What else? **(FG9.b.)** If not, do you think recorded lectures could help in the future? Why or why not? **(FG10.)** I am able to be a better student thanks to lecture capture **(FG10.a.)** How so? Please explain. **(FG12.)** Lecture capture technology has improved my likelihood of graduating on time **(FG12.a.)** Please explain.

RQ 4	**Q-D.1.)** How do you identify yourself? *Male/ Female* **Q-D.2.)** Based on athletic eligibility, what class are you currently considered? *Freshman/Sophomore/ Middler/Junior/Senior/ Graduate* **Q-D.3.)** Based on academics, what class are you currently considered? *Freshman/Sophomore/ Middler/Junior/Senior/ Graduate* **Q-D.4.)** How many years have you attended Big Time University? *1 2 3 4 5+* **Q-D.5.)** What is your current GPA? **Q-D.6.)** What is your age? **Q-D.7.)** In what sport(s) do you participate?	**I-D.1.)** How do you identify yourself? *Male/ Female* **I-D.2.)** Based on athletic eligibility, what class are you currently considered? *Freshman/Sophomore/ Middler/Junior/Senior/ Graduate* **I-D.3.)** Based on academics, what class are you currently considered? *Freshman/Sophomore/ Middler/Junior/Senior/ Graduate* **I-D.4.)** How many years have you attended Big Time University? *1 2 3 4 5+* **I-D.5.)** What is your current GPA? **I-D.6.)** What is your age? **I-D.7.)** In what sport(s) do you participate?	**FG-D.1.)** How do you identify yourself? *Male/ Female* **FG-D.2.)** Based on athletic eligibility, what class are you currently considered? *Freshman/Sophomore/ Middler/Junior/Senior/ Graduate* **FG-D.3.)** Based on academics, what class are you currently considered? *Freshman/Sophomore/ Middler/Junior/Senior/ Graduate* **FG-D.4.)** How many years have you attended Big Time University? *1 2 3 4 5+* **FG-D.5.)** What is your current GPA? **FG-D.6.)** What is your age? **FG-D.7.)** In what sport(s) do you participate?

Appendix B

Initial e-mail
(Sent on November 16, 2011)

Thank you for participating in this study. We are interested in the effect that the Tegrity lecture capture initiative is having on student-athletes at Big Time University. You are being asked to participate in this study because you are a current student-athlete at Big Time University.

The questionnaire will take approximately ten minutes to complete, with the results most likely of interest to you and fellow student-athletes. All information will be collected and analyzed only to be released and discussed in a generalized nature, with complete results available to all parties involved in the study. By linking to the questionnaire, you are giving consent to participate in the study. If you have questions about this questionnaire, contact Greg Smith at smithga2@vcu.edu. This questionnaire has been approved by Virginia Commonwealth University's Human Subject Review Board. All answers to these questions are provided anonymously and will be kept confidential to the maximum extent permitted by law. If you have any questions about your rights as a research subject, you may contact the Virginia Commonwealth University Office of Research Subjects Protection by phone (804.828.0868) or by e-mail (ORSP@vcu.edu). This questionnaire is completely voluntary and you are free to stop the questionnaire at any time. There are no foreseeable risks to your participation.

[Survey Link]

Thank you for your time.

Second e-mail
(Sent on November 20, 2011)

Approximately four days ago an e-mail was sent asking for your participation in the current lecture capture study being conducted. If you have already completed the questionnaire please accept my full appreciation. If not, please do so today by clicking the following link.

[Survey Link]

The original e-mail has been included for your convenience.

-Original e-mail-

Thank you for participating in this study. We are interested in the effect that the Tegrity lecture capture initiative is having on student-athletes at Big Time University. You are being asked to participate in this study because you are a current student-athlete at Big Time University.

The questionnaire will take approximately ten minutes to complete, with the results most likely of interest to you and fellow student-athletes. All information will be collected and analyzed only to be released and discussed in a generalized nature, with complete results available to all parties involved in the study. By linking to the questionnaire, you are giving consent to participate in the study. If you have questions about this questionnaire, contact Greg Smith at smithga2@vcu.edu. This questionnaire has been approved by Virginia Commonwealth University's Human Subject Review Board. All answers to these questions are provided anonymously and will be kept confidential to the maximum extent permitted by law. If you have any questions about your rights as a research subject, you may contact the Virginia Commonwealth University Office of Research Subjects Protection by phone (804.828.0868) or by e-mail (ORSP@vcu.edu). This questionnaire is completely voluntary and you are free to stop the questionnaire at any time. There are no foreseeable risks to your participation.

Thank you for your time.

Final e-mail
(Sent on November 24, 2011)

Approximately one week ago an e-mail was sent asking for your participation in the current lecture capture study being conducted. This will be the final e-mail asking for your participation. If you have already completed the questionnaire please accept my full appreciation. If not, please do so today by clicking the following link.

[Survey Link]

The original e-mail has been included for your convenience.

-Original e-mail-

Thank you for participating in this study. We are interested in the effect that the Tegrity lecture capture initiative is having on student-athletes at Big Time University. You are being asked to participate in this study because you are a current student-athlete at Big Time University.

The questionnaire will take approximately ten minutes to complete, with the results most likely of interest to you and fellow student-athletes. All information will be collected and analyzed only to be released and discussed in a generalized nature, with complete results available to all parties involved in the study. By linking to the questionnaire, you are

giving consent to participate in the study. If you have questions about this questionnaire, contact Greg Smith at smithga2@vcu.edu. This questionnaire has been approved by Virginia Commonwealth University's Human Subject Review Board. All answers to these questions are provided anonymously and will be kept confidential to the maximum extent permitted by law. If you have any questions about your rights as a research subject, you may contact the Virginia Commonwealth University Office of Research Subjects Protection by phone (804.828.0868) or by e-mail (ORSP@vcu.edu). This questionnaire is completely voluntary and you are free to stop the questionnaire at any time. There are no foreseeable risks to your participation. Thank you for your time.

Appendix C

Questionnaire
(Delivered via REDCap)

1. Consent to Participate
RESEARCH SUBJECT INFORMATION AND CONSENT FORM
TITLE: An Analysis of the Effect of Lecture Capture Initiatives on Student-Athletes at an NCAA Division I Institution
VCU IRB NO.: HM13999

PURPOSE OF THE STUDY
The purpose of this study is to describe the effect that access to recorded lectures has on student-athletes at an NCAA Division I Institution.

You are being asked to participate because you are an NCAA Division I student-athlete.

DESCRIPTION OF THE STUDY AND YOUR INVOLVEMENT
If you decide to participate in this research study, you will be asked to acknowledge your consent after you have read the consent information and been provided the opportunity to have all your questions answered.

You will be asked to answer a short questionnaire that will take between 10-15 minutes of your time. You will be asked to answer these questions from your perspective and in a confidential setting. You will be asked to provide general demographic information but will not be asked to personally identify yourself. Additionally, you may be asked to participate in an individual interview and focus group. The individual interview is designed to last approximately 30 minutes and the focus group is designed to last approximately 45 minutes. While some answers will be identifiable by sport, all answers will be kept strictly confidential. A census of all participants has been selected from the official athletic rosters as posted on the Big Time University website for the 2011 year. Your academic and/or athletic status will not be impacted in any way by choosing to participate in this study.

RISKS AND DISCOMFORTS
There are no risks associated with this study that are different from those you normally encounter.

BENEFITS TO YOU AND OTHERS

You may not get any direct benefit from this study, but, the information we learn from people in this study may help us provide additional lecture capture technologies for you and other student-athletes.

COSTS
There are no costs for participating in his study other than the time you will spend in filling out the questionnaire, and potentially participating in an individual interview and focus group.

CONFIDENTIALITY
Potentially identifiable information about you will consist of generally collected information in the demographic section of the questionnaire. Data is being collected only for research purposes. The data collected will be stored on an encrypted website, transferred to a secure computer, and accessed only by the research team. All personal identifying information will be kept in password protected files and these files will be deleted prior to May 2012. Other printed records regarding the study will be kept in a locked file cabinet for one year after the study ends and will be destroyed at that time. Access to all data will be limited to study personnel.

We will not tell anyone the answers you give us; however, information from the study and information about aggregate groups may be utilized by Virginia Commonwealth University for the purpose of research.

What we find from this study may be presented at meetings or published in papers, but your name will not ever be used in these presentations or papers.

VOLUNTARY PARTICIPATION AND WITHDRAWAL
You do not have to participate in this study. If you choose to participate, you may stop at any time without any penalty.

QUESTIONS
In the future, you may have questions about your participation in this study. If you have any questions, complaints, or concerns about the research, contact:

Office for Research
Virginia Commonwealth University
800 East Leigh Street, Suite 113
P.O. Box 980568
Richmond, VA 23298
Telephone: 804-827-2157

Primary Investigator: Jonathan Becker, PhD,
School of Education

Virginia Commonwealth University

Student: Gregory A. Smith, PhD Candidate
Urban Services Leadership
Virginia Commonwealth University
e-mail: smithga2@vcu.edu
telephone: (540) 352-2103

CONSENT

I have been given the chance to read this consent document. I understand the information about this study. Questions that I wanted to ask about the study have been answered. My willingness to participate is indicated below.

I agree to participate in this research study.

_____ yes

_____ no

Only those who answer "Yes" to this question will continue with the questionnaire. All others will be thanked for their time and will exit the questionnaire.

2. Demographic Information
Demographic information provided will be used specifically for the purpose of research. Your answers will allow data to be aggregated by groups for the purpose of analysis. No personally identifying information will be reported.

D.1.) How do you identify yourself? *Male/Female*
D.2.) Based on athletic eligibility, what class are you currently considered?
Freshman/Sophomore/Junior/Senior/Graduate
D.3.) Did you redshirt any season for any reason? *Yes/No*
D.4.) Based on academics, what class are you currently considered?
Freshman/Sophomore/Middler/Junior/Senior/Graduate
D.5.) How many years have you attended Big Time University? *1 2 3 4 5 6*
D.6.) What is your current GPA?_____
D.7.) What is your age? _____
D.8.) In what sport(s) do you participate? _____

1.) For the 2011 year (January 2011 - November 2011), approximately how many classes did you miss due to athletic related commitments? [0, 1-2, 3-4, 5-6, 7-8, 8+]

2.) For the 2011 year (January 2011 - November 2011), approximately how many classes did you miss due to any other reason? [0, 1-2, 3-4, 5-6, 7-8, 8+]

3.) Have you had access to any recorded lectures while at Big Time University?
Yes/No?Do Not Know

Only those who answer "yes" to question #2 will continue with the questionnaire. All others will be thanked for their time and will exit the questionnaire.

4.) During 2011 (January 2011-November 2011), what is the total number of recorded lectures that you have watched/listened to for an athletic related absence? [0, 1-2, 3-4, 5-6, 7-8, 8+]

5.) During 2011 (January 2011-November 2011), what is the total number of recorded lectures that you have watched/listened to for any other reason? [0, 1-2, 3-4, 5-6, 7-8, 8+]

6.) How did you learn about the availability of recorded lectures?
7.) Why did you choose to access (watch/listen to) the recorded lecture(s)?
8.) How did you access (watch/listen to) the recorded lecture(s)? [Smart phone, lap top computer, desk top computer, other_____]

For questions 9-20, please indicate your response based on the following scale
(1- strongly disagree, 2- somewhat disagree, 3- somewhat agree, 4- strongly agree X- neither agree nor disagree)

9.) Lecture capture has made learning more enjoyable
1 2 3 4 X

10.) Access to recorded lectures has increased my academic satisfaction
1 2 3 4 X

11.) Lecture capture has made learning more accessible
1 2 3 4 X

12.) I have accessed (watched/listened to) recorded lectures to prepare for tests/finals
1 2 3 4 X

13.) I have accessed (watched/listened to) recorded lectures while away on athletic trips

1 2 3 4 X

14.) Grades are important to me

1 2 3 4 X

15.) Participating in class is important to me

1 2 3 4 X

16.) My grades have improved since having had access to recorded lectures

1 2 3 4 X

17.) I am able to be a better student thanks to lecture capture

1 2 3 4 X

18.) I want more recorded lectures to be made available

1 2 3 4 X

19.) Lecture capture technology has improved my likelihood of graduating on time

1 2 3 4 X

20.) Is there anything additional that you would like to share concerning your experience with access to recorded(captured) lectures?

Thank you!

Appendix D

Information Sheet

(To be read to participants prior to the individual interview and focus group)

The purpose of this study is to document the affect that access to recorded lectures is having on student-athletes at an NCAA Division I institution. You are being asked to participate in this study because you are an NCAA Division I student-athlete and you have had at least one class lecture recorded and made available for you electronically during the 2011 year.

In this study you will be asked to participate in one individual interview and possibly one focus group. The interview is designed to last approximately 30 minutes. During the interview, questions will specifically target access to and use of provided recorded lectures. The focus group is designed to last approximately 45 minutes. During the focus group, questions will specifically target access to and use of provided recorded lectures. The interview and focus group will be audio taped so that we are sure to accurately capture your ideas, but no names will be recorded.

Potentially identifiable information about you will consist of audiotapes of the individual interview, focus group and researchers notes. Data is being collected only for research purposes. Your data will be identified by pseudonyms, not names, and stored separately in a locked research area. All personal identifying information will be kept in password-protected files and these files will be deleted within one month from the completion of this study. The findings and other non-identifiable records from this study will be kept indefinitely. Access to all data will be limited to study personnel. A data and safety-monitoring plan is established.

What the researchers find from this study may be presented at meetings or published in papers, but your name will not ever be used in these presentations or papers. You may chose to stop participating at any time during the interview and focus group and if you chose, your information will not be used in this study.

Appendix E

Interview and Focus Group Guide
(To be used during personal interviews and the focus group)

Welcome and thank you for participating in this study. Please remember that you can chose to stop at any time. For the reminder of this interview/focus group your pseudonym will be _____. I will now turn on the recorder and we will begin.

Please answer the following questions as honestly and as precisely as possible. If you are unsure or if you do not know an answer please let me know so that the data collected will be as accurate as possible.

Demographics

D.1.) How do you identify yourself? *Male/Female*
D.2.) Based on athletic eligibility, what class are you currently considered?
Freshman/Sophomore/Junior/Senior/Graduate
D.3.) Did you redshirt any season for any reason? *Yes/No*
D.4.) Based on academics, what class are you currently considered?
Freshman/Sophomore/Middler/Junior/Senior/Graduate
D.5.) How many years have you attended Big Time University? *1 2 3 4 5 6*
D.6.) What is your current GPA?_____
D.7.) What is your age? _____
D.8.) In what sport(s) do you participate? _____

1.) For the 2011 year (January 2011 - November 2011), approximately how many classes did you miss due to:
Athletic related commitments: _____
Other:_____

2.) While at Big Time University, what class(es) have had lectures recorded for you?

3.) Did you watch/listen to any of the available recorded lecture(s)?
**If "yes" continue with (3.a.), if "no" skip to (3.d.)*

3.a.) Did you watch/listen to every one that was made available?
3.b.) How many would you say you watched/listened to?

3.b.) What made you decide to watch/listen to them?
3.d.) What made you decide not to watch/listen to them?
Probe: What could be done to encourage you to watch/listen to them?

For questions 4-12, please indicate if you strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, or strongly agree with the following statements.

4.) Lecture capture has made learning more enjoyable for me
Probe:
4.a.) What aspect(s) did you like most?
4.b.) What aspect(s) did you like least?

5.) Access to recorded lectures has increased my academic satisfaction
Probe:
5.a.) In what way?
5.b.) To what degree?

6.) Lecture capture has made learning more accessible
Probe:
6.a.) How would you describe the experience of using the Tegrity system?
**Probe: Was it easy/hard based on intuitive controls and the overall design? Was download speed an issue? Anything else?*

7.) I have accessed (watched/listened to) recorded lectures to prepare for tests/finals
Probe:
7.a) If so, for how long?
7.b.) What else did you do to prepare?

8.) I have accessed (watched/listened to) recorded lectures while away on athletic trips
Probe:
8.a.) If so, when and where?
8.b.) If not, why not?

9.) Grades are important to me
Probe:
9.a.) If so, why, have they always been?
9.b.) If not, why not?

10.) Participation in class is important to me
Probe:

10.a.) If so, why, has it always been?
10.b.) If not, why not?

11.) My grades have improved since having had access to recorded lectures
Probe:
11.a.) If so, do you think this could be attributed to something besides access to recorded lectures? What else?
11.b.) If not, do you think recorded lectures could help in the future? Why or why not?

12.) I am able to be a better student thanks to lecture capture
Probe:
12.a.) How so? Please explain.

13.) I want more recorded lectures to be made available
Probe:
13.a.) If so, how many would you like? Why?
13.b.) If not, why?

14.) Lecture capture technology has improved my likelihood of graduating on time
Probe:
14.a.) Please explain.

15.) Is there anything additional that you think I should know about your experience with access to recorded(captured) lectures?

Thank you for taking the time to participate in this interview/focus group. At this time the recorder will now be turned off.

You may be randomly selected to participate in the focus group so please continue checking your e-mail frequently during the next week. Thank you again!

Curriculum Vitae

Gregory Allen Smith
3317 Clarks Lane, Apt. B
Baltimore, MD 21215
Phone: (443) 812-6701
smithga2@vcu.edu

Professional Experience:

Programs Administrator
Maryland State Youth Soccer Association, Glen Burnie, MD, 2012-Present
- Coordinate all Olympic Development Program teams and training schedules
- Facilitate TopSoccer and Soccer Across America initiatives

Substitute Teacher
Our Lady of Grace School, Parkton, MD, 2011-Present
- Execute prepared lesson plans
- Maintain high-quality learning environment
- Instruct all grades (k-12); most subjects

Head Soccer Coach
Maryland State Youth Soccer Association, Olympic Development Program, 2011-Present
- Instruct elite soccer players (age 10 and up)
- Create developmentally appropriate soccer curriculum
- Maintain a safe learning environment

Adjunct Faculty
Virginia Commonwealth University, School of Education, Richmond, VA, 2010-Present
- Instruct graduate level course online
- Provide input on distance learning program for administrators
- Conduct, publish, and present research on student-athletes

Head Soccer Coach
Virginia Youth Soccer Association, Olympic Development Program, 2007-2011
- Instructed elite soccer players (age 10 and up)

- Developed soccer curriculum; ran continuation training
- Maintained a safe learning environment

Graduate Teaching/Research Assistant
Virginia Commonwealth University, Center for Sport Leadership, Richmond, VA, 2008-2010

- Developed curricula for multiple courses and taught as instructor of record since 2009
- Created supplemental lecture program for students
- Mentored students and placed students in graduate assistant positions
- Assisted with $250,000 federal grant proposal
- Conducted research and published findings; presented at conference
- Visited multiple campuses to recruit potential students
- Created videos for recruitment and community outreach

Lil' Kickers Coordinator
Sports Center of Richmond (SCOR), Richmond, VA, 2007-2008

- Initiated and led the Lil' Kickers child development program for children ages 18 months to 9 years old; program quickly grew to include over 250 participants weekly
- Managed budget to maintain profitability; hired and trained 20 coaches
- Developed advertising to increase enrollment
- Instructed approximately 40 children and parents per session

Educational Background:

Doctor of Philosophy. Education
Virginia Commonwealth University, Richmond, VA, May 2012

- Dissertation Topic: An Analysis of the Effect of Lecture Capture Initiatives on Student-Athletes at an NCAA Division I Institution
- Final GPA: 3.77

Master of Science, Recreation, Parks and Sport Leadership
Virginia Commonwealth University, Richmond, VA, August 2008

- Concentration: Administration
- Final GPA: 4.0

Bachelor of Arts, Sport Management
Lynchburg College, Lynchburg, VA, May 2007

- Played on Varsity Men's Soccer team

- Member of Omicron Delta Kappa National Honors Society
- Final GPA: 3.47

Relevant Skills

- High computer literacy with expert knowledge of Microsoft Word, Excel, Outlook, and PowerPoint

Additional Experience and Community Service

- Created the Soccer Stars Child Development Program curriculum, 2011
- Assisted with consumer research data collection for the U.S. Tennis Association at the Verizon Wireless Arena in Richmond, VA, 2010
- Collected consumer data via survey at the Richmond International Raceway, 2010
- Served as Resident Assistant (RA), 2008-2010
- Planned and coordinated House of Blues social event for graduate students, 2010
- Volunteered for Mix and Mingle social event for graduate students, 2010
- Planned and implemented Larrick Student Center Grand Opening, 2010
- Assisted with economic impact study of Jefferson Cup soccer tournament for the Richmond Strikers Soccer Club, 2009
- Conduct private soccer lessons and small group trainings, 2008-present
- Ran soccer training's for Richmond Kicker's soccer teams, 2008
- Instructed under-served children at Lobs and Lessons, 2007-2008
- Coordinated the reading of a newly published book by former Virginia Commonwealth University Basketball Coach Anthony Grant, 2008
- Volunteered for Special Olympics regional basketball tournament, 2008
- Coached high school boys junior varsity team, 2007
- Coached middle school co-ed soccer team, 2006

Refereed Presentations

Smith, G. A., & Kaltenbaugh, L. (2011, June). *An analysis of job placement rate data for alumni of sport management programs in the United States for the 2009-2010 academic year.* North American Society for Sport Management, London Ontario, Canada.

Smith, G. A., Dwyer, B., LeCrom, C., & Tomasini, N. (2010, April). *An investigation of*

division I student-athletes downtime associated with official athletic activities. College Sport Research Institute (CSRI), UNC-Chapel Hill.

Publications

Smith, G. A., & Kaltenbaugh, L. (2011, October 7). Academic Programs Encouraged to Form Alumni Associations, Campus Connections, Ashland University Newsletter, Ashland, OH.

Dwyer, B., LeCrom, C., Tomasini, N., & **Smith, G. A.** (2011). The Richmond what? The naming of a minor league baseball franchise. *Sport Marketing Quarterly, 20,* 56-64.

Smith, G. A., Dwyer, B., LeCrom, C., & Tomasini, N. (2010, April). *An investigation of division I student-athletes downtime associated with official athletic activities.* College Sport Research Institute (CSRI), UNC-Chapel Hill.

Courses Instructed (instructor of record)

- Sport Ethics [online] (SPTL-642 C90: Graduate Level) Spring 2011
- Sport Ethics [independent study] (SPTL-642: Graduate Level) Summer 2010
- Sport Ethics (SPTL-642 001: Graduate Level) Spring 2010
- Sport Ethics [online] (SPTL-642 C90: Graduate Level) Summer 2009
- Sport Ethics (SPTL-651 902: Graduate Level) Spring 2009

Courses Assisted

- Sports Business (SPTL-632 Graduate Level) Fall 2008
- Research Methods (SPTL-603 Graduate Level) Fall 2008

Curriculum Development

- Sport Management (in progress)
- History of Sport (no course number) Summer 2011
- Sport Finance (no course number) Spring 2011
- Sport Ethics (SPTL-642 C90: Graduate Level) Summer 2009
- Sport Ethics (SPTL-651 902: Graduate Level) Spring 2009

Professional Organization Membership:

- College Sport Research Institute (CSRI), 2010 - Present
- North American Society for Sport Management (NASSM), 2008 - Present