The Impact of Lecture Capture Presentations in a Distributed Learning Environment in Parks, Recreation, and Tourism Management

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Abstract

Lecture capture technology allows instructors to record presentations and make them available to their students digitally. This study examined one program's implementation of lecture capture. Participants were undergraduate college students enrolled in Parks, Recreation, and Tourism Management courses at a public land grant university in the Southeast. Data were collected through an online survey. A five-point Likert scale gauged general class satisfaction and class satisfaction with using lecture capture presentations. Additionally, open-ended questions addressed presentation length, format changes, advantages, disadvantages, and barriers or challenges. Results showed that the majority of participants were satisfied with using lecture capture presentations as part of the distributed learning environment. Furthermore, participants considered the presentations an effective and valuable part of the course materials. Identified advantages of lecture capture included (a) enhanced learning style, (b) convenience and ease, and (c) usefulness.

Keywords: *lecture capture; flipped classroom; podcasting; content capture; distributed learning; online learning; blended learning; higher education*

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Introduction

The purpose of this study was to gain an understanding of one program's implementation of lecture capture presentations in a distributed undergraduate learning environment. Al Nashash and Gunn (2013) describe the benefits of lecture capture technology as (a) fostering student engagement, (b) appealing to students' interests, (c) offering multiple opportunities to access content, and (d) providing opportunities for learners to learn at their own pace. Researchers document lecture capture technology as an effective learning tool (Dey, Burn, & Gerdes, 2009; Al Nashash & Gunn, 2013). This study explores the impact of lecture capture technology in a distributed learning environment.

Lecture capture is described as, "Any technology that allows instructors to record what happens in their classrooms and make it available digitally" (EDUCAUSE, 2008, p. 3). This technology digitally captures, stores, and makes available the content of a class or individual user-generated event (Greenberg & Nilssen, 2011). The flipped classroom incorporates lecture capture technology. "The concept of the flipped classroom is to allow students the opportunity to learn the material outside of class at their own pace and then be able to apply that information in class when the teacher is available to help" (Baker & State, 2013, p. 75). A criticism of the flipped classroom is that it is a flawed pedagogy that is "simply a high-tech version of an antiquated instructional method: the lecture" (Ash, 2012, p. S6). The quality of teacher-created videos is often marginal and creating them requires a significant amount of time (Herreid & Schiller, 2013). Additionally, students new to this method may be resistant to doing work at home rather than first being exposed to the content and subject matter in the traditional classroom (Herreid & Schiller, 2013).

Lecture capture technology provides opportunities for institutions of higher learning to improve the institution's universal design and serve changing student needs (Advocate, 2010). Instructors can work with their peers from other institutions to develop and offer lectures jointly. With lecture capture technology, a professor can record a lecture in the field to present to students. With many institutions facing budget constraints, lecture capture technology "can make courses available at a cheaper cost, since students don't have to attend live lectures to get the benefit of the lectures" (Advocate, 2010, p. 7).

Through the use of lecture capture technology, students can review course material at their own pace and overcome weaknesses in areas such as note taking (Toppin, 2011). Additionally, lecture capture technology is being embraced by students as a strategy to study for course assessments (Holbrook & Dupont, 2011).

Literature Review

Distributed Learning

Many times, the terms *distance* and *distributed learning* are used interchangeably. However, there is a distinct difference in the terms. Distance learning is a subset of distributed learning and focuses on learners who may be separated in time and space from the instructor and their peers (Oblinger, Barone, & Hawkins, 2001). On the other hand, distributed learning is a convergence in the form of technology-mediated education of on-campus instruction and distance learning. "A distributed learning environment is a learner–centered approach to education, which integrates a number of technologies to enable opportunities for activities and interactions in both asynchronous and real-time modes" (Armatas, Holt, & Rice, 2004, p. 316).

Distributed learning environments, coupled with high-speed Internet access and vast information resources, are transforming the process of education and redefining the roles of teacher and learner. In distributed learning environments, learners have opportunities for orchestrating the construction of knowledge, skills, and understanding (Havice & Havice, 2005).

The Use of Lecture Capture

"The Campus Computing Project" found that 80% of campus information technology officials at public and private universities agree or strongly agree, "Lecture capture is an important part of our campus plan for developing and delivering instructional context" (Green, 2011, p. 14). However, as of fall 2011, this same survey discovered that only 8.3% of classes at public and 7.5% at private universities made use of lecture capture technologies, up from 4.5 and 4.8%, respectively in 2008 (Green, 2011).

Lecture capture is one way institutions can support and serve more students by offering a flexible learning environment (Jones, 2008). Many institutions use lecture capture as a way to record in-class presentations and make them available to students who miss class or need to review course content. "Capturing, indexing, publishing, and storing class lectures in online repositories … provide students with a resource that improves learning outcomes" (Waters, 2011, p. 22). In addition, lecture capture frees up extra time for class discussion and improves faculty performance (Waters, 2011).

As an added benefit, lecture capture is useful in online and blended classes (EDUCAUSE, 2008). Echo360™ surveyed a total of 1,746 students from 17 institutions in the United States and United Kingdom to measure ongoing perceptions about blended learning and lecture capture. Researchers found that blended learning and lecture capture are (a) widely adopted by students when given the option to do so, (b) have a positive impact on student comprehension and understanding, and (c) are viewed by students as a crucial resource more often than any other blended learning technology (Echo360, 2011).

According to Leoni and Lichti (2009), "Many students are requesting recorded lecture material outside of their regularly scheduled classroom hours" (p. 18). In a worldwide survey completed in 2009, Leoni and Lichti found that even though the implementation of lecture capture is widespread, most institutions have only utilized the technology in a small number of classes. Their study revealed a lack of standardization with lecture capture and a lack of established best practices for lecture content collections, manipulation, and delivery. Other significant findings from this study were that almost half of the institutions use their course management system to share content and just over half record video. The other half used audio only, or audio and content, as part of the captured content.

Some professors have resisted employing lecture capture in their classrooms for fear of decreased student attendance, lack of infrastructure, market uncertainty, extra work, and loss of privacy or intellectual property rights (Lecture Capture, 2011; Al Nashash & Gunn, 2013). According to Traphagan, Kucsera, and Kishi (2010), "Class attendance is one of the primary reasons educators hesitate to incorporate webcasting and podcasting into their classrooms" (p. 20). Several recent studies evaluated the impact of lecture capture on student attendance. The findings are mixed. Toppin (2011) and Ford, Burns, Mitch, and Gomez (2012) found no effect on student attendance. However, Traphagan et al. found "that the availability of webcasts and other online resources negatively impacts student attendance" (p. 30).

Teaching modalities, such as flipped classrooms, are challenging educational institutions. These challenges include determining (a) who has access to lectures and for how long, (b) who is responsible for providing the recording resources, and (c) who owns the intellectual property once the recording has been made (EDUCAUSE, 2008). Additionally, "Schools need a greater computer infrastructure to store and organize lectures in digital formats" (Lecture Capture, 2011, p. 68). Without this infrastructure, professors are deterred from employing lecture capture technology (Lecture Capture, 2011). Furthermore, professors often will not invest in one lecture capture platform in case their institution adopts a different campus-wide platform (Lecture Capture, 2011).

Perceptions of and Satisfaction with Lecture Capture

One study showed that undergraduate students preferred a course in which lecture content was recorded and streamed over a course that was not (Toppin, 2011). A survey conducted by Toppin (2011) concluded that college students perceived video recordings as beneficial and valuable to their understanding of course concepts. The majority of participants in this study felt that the recordings were a convenient way to access material and prepare for quizzes, exams, and classroom discussions. Furthermore, participants stated that the recordings helped in an overall review of course material and to clarify concepts discussed in class.

In a Tegrity™ student survey, 85% of participants stated, "having access to recorded lectures made study somewhat or much more effective than normal" (Greenberg & Nilssen, 2011, p. 4). Tegrity™ is a company known for its lecture capture technology and will promote the value of its product. In this study, the majority of participants reported that lecture capture significantly or somewhat increased their success in the course and improved their final course grade (Greenberg & Nilssen, 2011).

Havice, Davis, Foxx, and Havice (2010) surveyed undergraduate students to evaluate their engagement and satisfaction with lecture capture in a distributed learning environment. They found that asynchronous, rich media presentations positively affected student course satisfaction. Participants appreciated that the lectures were short, concise, and provided an opportunity to "have a change of environment to increase learning" (Havice et al., 2010, p. 56).

Methodology

The purpose of this single case study was to examine the implementation of lecture capture presentations, as part of a distributed learning environment, in Parks, Recreation, and Tourism Management (PRTM) courses. The researchers examined two courses that utilized lecture capture, The Profession and Practice in Parks Recreation, and Tourism Management (one semester hour) and Conceptual Foundations of Parks, Recreation and Tourism (two semester hours). The first course introduced students to the PRTM field. The course covered the history and development of the PRTM profession, including professional organizations, current issues and trends, ethical principles and professionalism, and professional competencies and development. The second course introduced students to the conceptual foundations of play, recreation, and leisure as they relate to contemporary society, the lifespan, and the natural environment.

Students registered for both classes concurrently. The first class was a large section class consisting of all students and met on Tuesdays from 8:00 a.m. to 9:15 a.m. (the first 25 minutes of the class on Tuesdays were used to administer quizzes and for additional

instructional time for the second class). For the second class, students were divided into seven sections and met on Thursdays from 8:00 a.m. to 9:15 a.m. Two sections had 18 students in each section, four sections had 19 students in each section, and one section had 24 students for a total of 136 students.

The department progressively disclosed eight lecture capture presentations throughout the semester. Table 1 displays the sequence of when presentations were made available to students, and the length of each presentation.

Table 1

Lecture Capture Presentation Availability and Length

Presentation	Week	Minutes
1	1	39
2	3	30
3	4	41
4	5	26
5	6	31
6	8	25
7	9	36
8	11	37

Presentations ranged from 25 minutes to 41 minutes. Students had one week prior to their Tuesday class to watch a presentation.When the students met on Tuesday, they completed a hard copy quiz related to the weekly presentation. On Thursday, the students participated in small group discussions and other learning activities related to the presentations.

Faculty members created presentations using Mediasite™ lecture capture and webcasting technology and made them accessible to students through Blackboard™, the institution's course management system. With Mediasite™, the system simultaneously captures the audio and video image of the faculty member along with his/her electronic slide presentation. All participating faculty members who created presentations had two years of lecture capture experience and at least five years of teaching with technology.

Participants

The population for this study was students (*N*=136) enrolled in two PRTM classes during the fall 2011 semester at a public land grant university in the Southeast region of the United States. Eighty-seven of the 136 (64%, *n*=87) students chose to participate in the study.

Fifty-five percent (*n*=48) of the participants were female and 41% (n=36) males. Four percent of the students (*n*=3) did not identify their gender. Student age ranged from 18 to 26, with the majority being 19 (47%, *n*=41). Seventy-three percent (*n*=63) of participants were sophomores, 20% (*n*=17) were juniors, 5% (*n*=4) were seniors, 1% (*n*=1) were freshman, and 1% (*n*=1) were graduate level. Forty-two percent (*n*=36) had a cumulative grade point average of 3.0 to 3.4. Furthermore, 94% (*n*=81) stated they were taking the course because it was required for their major.

Instrument and Data Collection

The researchers modified an existing survey used by Havice et al. (2010) in order to collect descriptive data. First, they used a five-point Likert scale to receive responses related to class satisfaction. The researchers devoted six questions to general class satisfaction and 12 questions to class satisfaction using lecture capture presentations. The five responses on the Likert scale were *strongly agree, agree, disagree, strongly disagree,* and *not applicable*. For survey reliability and validity, Cronbach's alpha was used to check for internal consistency among questions. The Cronbach's alpha for questions on general class satisfaction was .73 and .92 for questions on satisfaction using lecture capture presentations. Second, the researchers questioned how students watched the presentations and gathered data related to the student's attitude and perception of the lecture capture presentations. Third, questions were asked pertaining to student demographics. This included gender, age, class standing, grade point average, and reason why the student was taking the course. The researchers emailed all students enrolled in the PRTM classes an informed consent form and link to complete the Recorded Presentation Survey anonymously online using Qualtrics™ survey software.

Results

The researchers used an alpha level of .05 for all analyses to determine significance. A bivariate correlation of the six questions addressing general class satisfaction did not reveal a consistent relationship among questions, indicating a possibility of several premises underlying general class satisfaction. However, bivariate correlation of the twelve questions addressing class satisfaction using recorded presentations revealed a consistent relationship among this set of questions. This analysis most likely indicated one underlying premise for class satisfaction using recorded presentations. The researchers did not pursue identification of the underlying premise for class satisfaction since this was beyond the scope of this study.

When asked if this class was the respondent's first experience with recorded presentations, 62% (n=54) stated yes. Seventy percent of respondents claimed to have a positive or very positive attitude toward computers and other information technologies. The majority of respondents were satisfied with the class and using the lecture capture presentations. Most agreed or strongly agreed (92%, n=80) that they had adequate experience and preparation for the technical aspects of the course and sufficient computer resources to access the course in Blackboard™. Additionally, 86% (n=72) of the respondents stated they had easy access to a computer to participate in the course and 72% (n=63) reported having little difficulty accessing needed information. The majority of respondents (84%, n=73) reported receiving sufficient instruction on the use of Blackboard™ for this course. Seventy-six percent (n=64) of respondents reported access to websites containing supplemental information helped them to learn course material.

With recorded presentations, 80% (n=70) of students agreed or strongly agreed that they were able to download the presentations without an extended delay and that the presentations were an effective and a valuable part of the course materials. Eighty-nine percent (n=77) felt comfortable accessing the presentations and 78% (n=67) believed that the amount of time required for viewing the presentations was appropriate. Ninety percent (n=77) of students agreed or strongly agreed that they had adequate access to hyperlinks to retrieve the presentations. Eighty-four percent (n=73) of respondents reported they were able to launch the hyperlinks via Blackboard™. Sixty-eight percent (n=57) stated they would not prefer access to just the audio portion of the presentations.

When questioned about the use of Blackboard™, 66% (*n*=57) stated that using Blackboard™ with recorded presentations in this course increased their course workload. However, 73% (*n*=62) agreed or strongly agreed that using Blackboard™ with the presentations kept their interest engaged in the subject. Eighty-one percent (*n*=68) of respondents reported they would recommend that these courses continue to use Blackboard™ and lecture capture presentations. It is interesting to note that 73% (*n*=62) of respondents felt the delivery of content using these presentations is as effective as traditional "face-to-face" content delivery.

The survey revealed that 52% (*n*=45) of students watched four to six presentations with 28% (*n*=24) watching seven or more. The majority of students (78%, n=66) watched each presentation in one sitting. Seventy-nine percent of students (*n*=68) did not consider the presentations too long. Most students (64%, *n*=54) indicated that this was their first experience with lecture capture presentations online. The majority (73%, *n*=61) had a positive or very positive attitude toward computers and other information technologies.

The researchers created cross tabulations to evaluate the impact of student demographics on quantitative results. The first step was to cross tabulate each general class satisfaction question and demographics. The second step was to cross tabulate each question addressing class satisfaction using recorded presentations and demographics. Finally, the researchers computed an overall recorded presentation score (RPS) on the 12 questions addressing class satisfaction using recorded presentations and demographics. The findings did not reveal any significant differences based on gender, age, class standing, reason for taking course, previous experience, attitude toward technology, or grade point average.

The researchers asked several open-ended questions to gain better insight into the attitude, perception, and satisfaction of participants with lecture capture presentations. The researchers analyzed the responses with a coding process. According to Rossman and Rallis (as cited in Creswell, 2003, p. 192), "Coding is the process of organizing the material into 'chunks' before bringing meaning to those 'chunks.'" The coding of responses to the open-ended questions led to a number of findings for the research study. The open-ended questions addressed presentation length, format changes, advantages, disadvantages, and barriers or challenges.

Presentation length. Researchers asked students to explain if they thought the presentations were too long. Seventy-eight percent (*n*=68) of students said they did not consider the presentations too long. Twenty-one percent (*n*=18) of students said they did consider the presentations too long, and one student (1%) did not answer the question. With regard to the students who explained the presentation were too long, three findings emerged. The first theme was a loss of interest. One participant stated losing interest if the presentation was over 10 minutes, and another student stated, "Get to the point." The second theme was that the presentations were repetitive. Here a participant stated, "Sometimes I felt that the speaker just restated what I had read and I would have liked to have seen new information brought into the presentation rather than just highlighting things I already knew because of the readings." The third theme was the quality of the presentations. Six participants stated that the presentations were "sometimes monotonous," "not of good quality," and "boring." A student stated, "I lose focus on material that does not seem applicable or interesting."

Format changes. Researchers asked if there was anything participants would change in the format of the recorded presentations. Twenty percent (*n*=17) of the participants mentioned they would make changes. The two findings revealed were again presentation

length and quality. Suggestions included shortening the presentations, adding the ability to download the PowerPoint slides, and making the video and/or slides larger. A student explained, "Because you had to both watch the person and the PowerPoint, at times it could be overwhelming, also you couldn't blow up the PowerPoints to see them better."

Advantages. Researchers asked participants to identity the advantages of the recorded presentations. From this question, researchers identified three findings: (a) learning style, (b) convenience and ease, and (c) usefulness. With learning style, participants stated that the presentations assisted with their visual and/or auditory learning and was a different approach to learning the material. One participant stated, "I learn better from audio and visual than from reading." Another said, "At times the information stuck with me more because I had heard it out loud and written it down, causing repetition, and increasing memory of the information."

Sixteen percent of the participants (n=12) reported enjoying the ability to watch the presentations at their convenience and as often as needed. One participant stated, "You could listen to it more than once and you could replay something if you did not understand it." Another said, "Plus, you can watch them on your own time. I am a night owl so I was able to learn when it is best for me." Thirty-two percent of the participants (n=24) found the presentations easy to watch and "a quicker way to take in the information rather than reading it."

Thirty-six percent of the participants (n=27) found the presentations useful and appreciated that they had "access to extra teaching outside of class time." Several participants (5%, n=4) stated that the presentations provided "details and focus" to topics not covered in class. A student shared how the presentations "summarized important parts in the readings, and presented specific examples for reference."

Disadvantages. Researchers asked participants to identity the disadvantages of the recorded presentations and from this question identified five findings: (a) length, (b) quality, (c) repetitive, (d) technical difficulties, and (e) interactions. Participants again mentioned the presentations were too long. Likewise, many participants stated that the presentations were time consuming. A couple of participants said they had trouble finding time to watch the presentations and sometimes forgot about them.

Within this question, 13 participants (18%) mentioned that the quality of the presentations needed to be improved. Ten participants (14%) stated that the presentations were "boring, sometimes monotonous, and lacking audible clarity." Three participants (4%) felt that some presentations repeated what was in the readings or discussed in class. Learners felt these presentations were less effective. One participant stated, "There wasn't a lot of new information introduced, making it sometimes seem a little bit pointless for watching the presentation."

Five participants experienced technical difficulties with the presentations. These difficulties included inability to access the presentations and presentations taking a long time to download. One student explained, "The Internet at my apartment is slow, so often the presentations would pause, or I would have to stop watching them until I was on campus again."

A final disadvantage discussed was the lack of interaction. Eight participants (11%) identified the lack of a classroom setting as a disadvantage. Here they made comments such as "No discussions could be made," "Not face-to-face," "Lacked interaction," and "Without you being face-to-face, it is hard to keep yourself accountable for actually watching it."

Barriers or challenges. Researchers asked participants if there were any barriers or challenges to watching the presentations. From this question, the researchers identified the same findings of technical difficulty, quality, and length that they discovered in previous questions. Here some participants listed Blackboard™ as a barrier since it was sometimes inaccessible. One student explained, "At times, the presentations would not load and when you wanted to skip back to listen to something again, it was hard to do." Another student said, "Every once and a while I had problems with the videos on Blackboard™". Participants also commented that the size of the videos and PowerPoint presentations were too small and a challenge to watch. "I think that the videos were really tiny and hard to see," claimed one student. Another student stated, "The video format on the website with the PowerPoints was weird. I wasn't a fan."

Discussion

Descriptive results from this study support that the majority of participants appreciated the lecture capture presentations and found them useful and effective. In fact, 73% (n=62) felt the presentations were as effective as traditional "face-to-face" content delivery. Furthermore, most participants (81%, n=68) recommended that this course continue the use of lecture capture presentations in the future.

Student demographics in this study did not impact results. This could be due to the majority of students being in the same age group, grade level, and degree program. The results may be different if the study surveyed students from different age groups and disciplines.

Coding of open ended responses revealed evidence that provided additional insights into the attitude, perception, and satisfaction of participants with lecture capture presentations. This evidence was important to the study since revealing strengths and weaknesses associated with the use of lecture capture. Identified strengths are an alternate learning style for students, convenience and ease, and usefulness.Findings associated with weaknesses showed the need for improvements to the presentations. For example, participants perceived the presentations as too long and time consuming. During this study, the shortest presentation was 25 minutes. Participants also noted technical difficulties, the lack of audible clarity, and not being able to resize or download associated PowerPoint presentations.

Lessons learned from this study include (a) recorded presentations over 25 minutes are too long; (b) in this case, presentations of 15–20 minutes are more appropriate; (c) students want to watch high-quality presentations; and (d) students expect to watch the presentations without technical difficulties. To avoid pitfalls related to offering recorded presentations, institutions should provide appropriate training for faculty members on lecture capture technology and provide guidelines for creating high-quality presentations. Faculty members, students, and support staff should know who to contact in case of technical difficulties.

Conclusions and Implications

Lecture capture presentations show evidence to be an instructional technology valued by today's students. These students are "digital natives and regularly consume media on mobile devices" (Smith & Sodano, 2011, p. 160). Lecture capture allows students today to

access digitally stored presentations anytime and anywhere. As the use of lecture capture technology increases within courses, the ways in which they are used is likely to evolve (Chester, Buntine, Hammond, & Atkinson, 2011). It will be important that institutions of higher learning develop policies for the use of lecture capture and offer training on this technology to faculty. Therefore, further research is necessary to better understand the opinions of faculty toward lecture capture technology.

A limitation of this study was relying on self-reported data from participants as the primary source of data. A delimitation of this study was the use of a convenience sample. Surveying multiple classes using lecture capture at different universities may have returned different results.

While there is a continuing need for researchers to assess the engagement, attitudes, perception, and/or satisfaction of students with lecture capture, future research is needed to focus on direct measures, such as lecture capture usage and performance in flipped classrooms. Researchers could evaluate the impact of lecture capture technology on measurable student learning outcomes. Furthermore, research is needed to explore the impact of lecture capture technology on student retention.

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