AC 2010-1622: THE EFFECT OF PANOPTO ON ACADEMIC PERFORMANCE AND SATISFACTION OF TRADITIONAL-DISTANCE EDUCATION STUDENTS

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The Effect of Panopto on Academic Performance and Satisfaction of Traditional/Distance Education Students

Abstract

Distance Education (DE) is a growing alternative to classroom instruction. Distant programs provide unprecedented access to education to the many students that would otherwise be unable to enroll in classes, from working adults who cannot fit traditional classroom schedules into work and family responsibilities, to the more traditional students that cannot fit a class into a busy academic schedule (Mendenhall, 2007). However, for many participants, the appealing features of DE are offset by their perception of social isolation, particularly from their instructor. DE is often criticized because of the lack of face-to-face instructor-student interactions (Richardson and Swan, 2003).

To address issues stated above, this research was conducted with the primary goal to test and validate the effectiveness of Panopto, a tool that provides a "virtual lecture" ambiance into online deliveries which lack the conventional aspects of classroom interaction. Panopto allows educators to capture, edit, and stream audio and video via the web and provides indexing and archiving capabilities as well. Captured materials can be searched, linked, and annotated through the software, and recorded materials can be embedded in Blackboard Vista. It gives students on-demand access to indexed lectures and course material, enabling them to experience or revisit entire lectures, or to focus on segments of their choice.

Introduction

This study was conducted to investigate whether Panopto adds value in enhancing the learning experience for students enrolled in an Engineering Technology curriculum. Panopto is a software-based application that captures lecture sessions as rich media recordings including video, audio, and screen capture components. Through an internal research grant, this study coincided with the initiative by the Department of Engineering Technology at a large southeastern university in performing a trial test of Panopto lecture capturing to validate how it can augment the effective delivery of course lectures. The particular engineering course selected for the study provided an excellent research context as it included both traditional, on-campus students as well as non-traditional, Distance Education (DE) students in the same section. This mixture of different student bases also enabled comparison of how Panopto was perceived by students within different academic settings as a medium to enhance learning experiences.

As DE has become a growing alternative to traditional face-to-face classroom instruction, an increasing number of universities are offering more formal and informal courses to satisfy the growing demands of industry and the individual student.[1] DE programs provide unprecedented access to education to many students who would otherwise be unable to attend classes. These include working adults who cannot fit traditional classroom schedules into work and family responsibilities, and the more traditional students who cannot fit a class into a busy academic schedule.[2] Exploring DE methods of delivery to reach students at their place of work, their home,

or another locality, thus increasing educational opportunities for all, has been the focus of much academic research.

For many DE participants; however, the appealing features of DE are offset by their perception of social isolation, particularly from their instructor. DE is often criticized because of the lack of face-to-face instructor-student interactions.[3] Most studies on the effectiveness of online DE revealed that this social isolation, and lack of interaction, is the major contributor to a higher withdrawal rate of DE students from classes compared to their traditional counterparts.[3, 4, 5] To address this issue, a variety of dynamic virtual tools were introduced in an attempt to recreate the live classroom experience.

Traditional on-campus students also have problems of their own albeit different in scope. Students can easily fall behind due to missed lectures when they are out sick or unable to make it to campus. When unplanned outages in the instructional process occur, there should be a way to save course material for access by students who missed the lecture. Making such lecture materials available for students to revisit can also reduce students' stress associated with taking notes, while helping them understand complicated material.

Background

Carnevale (2000) has stated that DE students expect an instructor to interact regularly with them just as he/she would in a traditional class.[6] However, providing quality interaction between faculty and students, which is important to student success and satisfaction, is the greatest challenge facing online DE.[7] The quality of the interaction with the instructor has been found to be the most significant contributor to students' success in DE courses[8], and was rated as one of the two highest online-course quality indicators by students enrolled in DE courses.[9]

The most obvious difference between DE and traditional classes is that DE does not include face-to-face instructor-student interaction.[3] Spencer and Hiltz (2002) argue that synchronous online Distance Education classes may fail to include some of the most important features of the traditional face-to-face class, and that asynchronous online Distance Education classes provide even fewer of these features since they lack a quick feedback environment to resolve ambiguities and unforeseen student needs.[10] Although this may be true for a purely asynchronous online class, faculty who develop DE courses could provide the IT communication features that would be most helpful to students, whether they are synchronous or asynchronous. Shea et al. (2005) agree, saying "all paradigms of effective online teaching in higher education assert or imply that good online professors facilitate high levels of interaction with and between students."[11]

In both synchronous and asynchronous environments, students prefer faculty who employ immediacy behaviors. "Immediacy refers to verbal and nonverbal communication behaviors that reduce social and psychological distance between people."[12] Although this definition refers to immediacy behaviors in traditional face-to-face classes, Arbaugh argues that several immediacy behaviors may be used in DE classes to reduce the social and psychological distance between faculty and students; namely, using humor, addressing students by name, inviting questions, and providing prompt feedback.[12]

This research was conducted to address the issues stated above. Its primary goal was to test and validate the effectiveness of Panopto, which provides a "virtual lecture" ambiance into online deliveries that lack the conventional aspects of classroom interaction. This study investigated whether students (both traditional and DE) perceive Panopto to affect their academic performance, perceived learning, and satisfaction with the course. A series of pre-post tests, non-equivalent group, and quasi-experiments were conducted to test the research questions, including:

1. Will students who participate in synchronous recording of audio/video lectures using Panopto perform better than those students who do not?
2. Will students who participate in synchronous recording of audio/video lectures using Panopto have a higher level of satisfaction with the course than those students who do not?
3. Will students who participate in synchronous recording of audio/video lectures using Panopto perceive that they have learned more than those students who do not?

By drawing positive answers to these research questions, this study will provide educators with evidence of whether Panopto can be used to enhance the DE as well as traditional on-campus learning environment and to improve student performance, satisfaction, and perceived quality of learning.

Panopto Overview

Panopto offers video capture, streaming, search, and archiving solutions architected with the integration of rich content (video, voice, and screen capture) and user-driven metadata (PowerPoint slides, notes, speech to text, etc.) as key enablers for enterprise deployments. As a software-based application, Panopto's architecture distributes its capturing, editing, streaming, and archiving processes across any number of endpoints.

Panopto captures and automatically synchronizes multiple content streams, such as presenter video and slide show, by making separate recordings of each stream, and keeping track of timing and configuration details in a data file (see figure 1). Panopto allows instructors to stream live video for real-time lectures (synchronous) or to publish recorded contents online to ensure that users have access to lectures asynchronously. By using Panopto's editing interface, the instructor can easily edit recorded session for better presentation. Students can view these recorded sessions in any browser: Firefox, Safari, IE – Windows or Macintosh – with full immersive video and audio quality.

A wide variety of AV equipment can be used for the Panopto Recorder, from DV quality cameras, low end web cameras to even high end datapath video capture cards. Typical list of equipment that can be used with Panopto includes: AV capture card, DV/HD video camera, microphone, mixer, and video converter. The Department pays an annual fee of roughly $5,000 for "Silver" support that provides access to the latest builds of the product, allows participation in beta-testing of new releases and provides tremendous support when problems do arise.

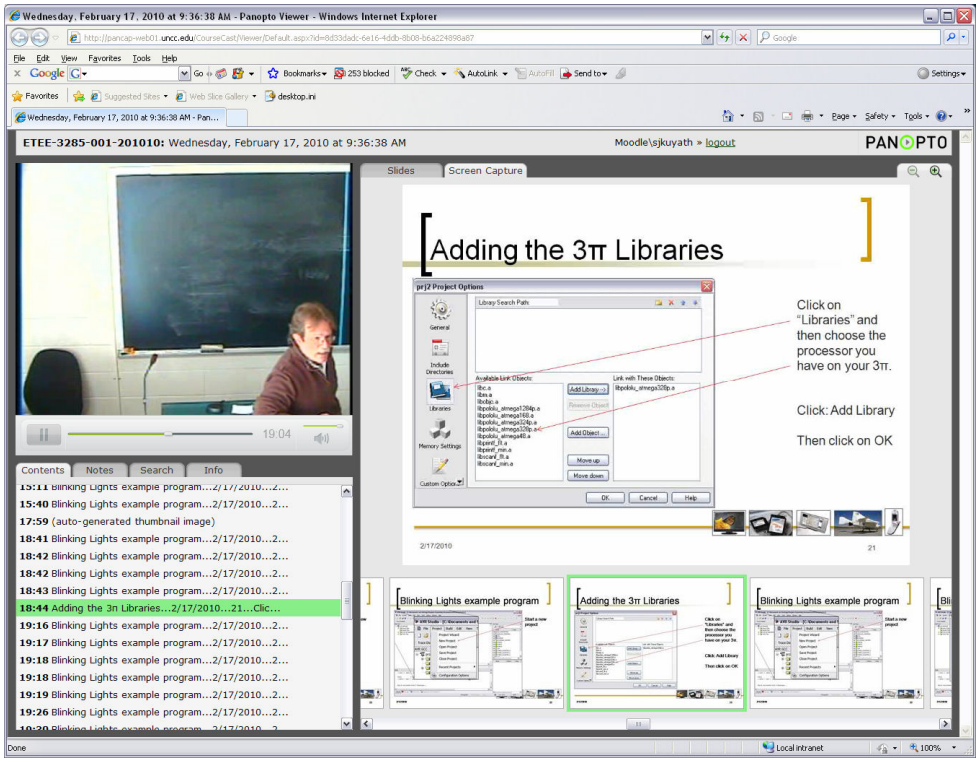


Figure 1: Screenshot of Panopto playback screen

Research Methods

An experiment was conducted to address the study questions listed in the previous section. The participants in the study were a mix of traditional and DE students from Engineering Technology who were recruited into the study because of their enrollment in the targeted course. Because this was a non-random, opportunity sample, a quasi-experimental design was necessary.

Participants

Students were recruited from a spring semester course in the Electrical Engineering Technology program. There were 43 students in the class preceding the target class. Participants ranged in age from 20 to 53, and had a range of GPAs from 1.7 to 4.0 with an average of 3.79. Of the 43 students, six were women, and approximately one third was from underrepresented minorities. With the small number of participants and a less diverse demographic, random assignment to treatment groups was unlikely to result in groups that were equivalent on important qualities related to performance and satisfaction. Therefore, students were divided into two equivalent groups based on factors that were most likely to affect academic performance, student satisfaction, and perceived learning (N_1, the initial treatment group and N_2, the initial control group). The demographics of the two groups are shown in the Table below.

Table 1: Group Demographics

	Group 1 (N1) Initial Treatment	Group 2 (N2) Initial Control
Female	4	2
Male	16	21
Mean Age	31	29.7
Mean GPA	3.25	3.12
White	11	14
African American	6	6
Other	3	3
DE	9	8
Traditional	11	15

As shown on the Table 1, each group included a mixture of traditional and non-traditional DE students, thus enabling analysis between the groups as well as within the group comparison of students with different academic settings. Because this was a non-random, opportunity sample, a quasi-experiment design was necessary.

Research Design

A switching replications design was chosen for the study, where all participants eventually received the treatment. It was possible that the students would perceive the use of Panopto to be an advantageous treatment and that it would improve the performance of those students who used it, so it was important to allow all students access to the treatment. Research design, as illustrated on Table 2 below, shows that the design consisted of a pre-test (O_1), the treatment for group 1 (X_1), and the first post-test (O_2). The groups were then switched and the treatment (X_2) applied to group 2. There was then a 2nd post-test (O_3) to measure the treatment effects for group 2.

Table 2: Experimental Design

Group 1 (N_1)	O_1	X_1	O_2		O_3
Group 2 (N_2)	O_1		O_2	X_2	O_3

The first four weeks of the class were conducted in a manner that was similar to the way DE classes had been conducted in the past. The course web site (using Blackboard Vista) was populated with written materials and weekly quizzes. Students read course materials and asked questions using email and discussion boards before taking the weekly quiz. A weekly Centra problem session was also held to help students with questions regarding course materials (Centra is the audio/video/application sharing conferencing software package used at this university).

After the first four weeks of the course, participants (both N_1 & N_2) were asked to complete a validated questionnaire (O_1) developed to test student satisfaction and perceived learning.[3] Pre and post-test questionnaires used in this study were adapted to more closely fit our research purposes (see Appendix A for the questionnaire). Homework/quiz grades were used to

assess academic performance. Baseline data such as academic performance, student satisfaction, and perceived learning were measured at the end of the 4th week, at which time the quasi experiment and the treatment began.

Measures

Students' perception of Panopto, perceived learning and satisfaction were measured with a set of pre-test and post-test questionnaire items. Using a five-point Likert scale, these items measured how much students agreed/disagreed with statements about:

- Student's learning experience: the suitability of Panopto for the course, whether it helped student in learning concepts and principles, whether the student felt he/she had more control of his/her learning because of Panopto, and whether it provided student learning flexibility
- Instructional technology: whether instructor use of Panopto contributed to the student's overall learning, whether the student would take another course using Panopto, and/or recommend a course that uses Panopto, and whether Panopto provided student learning flexibility
- Technical support: whether the student was able to resolve Panopto issues on his/her own, whether technical support was available when needed
- Learning preference: whether it is more effective than other DE technologies such as Centra, whether the student learned more watching Panopto videos than reading the textbook, doing homework, and/or working with a classmate
- Using Panopto: whether Panopto was used when unable to attend class, or when needed to better understand concepts, whether viewed on computer at home, at work or at school

All participants were asked to answer the questions on an initial questionnaire (O_1) to establish a baseline for the study and to gather demographic data as well as the participants' usage of computer status. After the initial pre-test measurement, students in the treatment group (N_1) were allowed to watch the recorded audio/visual Panopto broadcasts of the on-campus lecture as it was being given in the traditional, on-campus class (Treatment X_1). Students in the control group (N_2) were not allowed to watch the recorded Panopto audio/visual lectures. During this period, the control group read course materials and asked questions through email. After four weeks of using the Panopto audio/visual broadcast, the academic performance, satisfaction, and perceived learning of students in both the treatment and control groups were measured for a second time (O_2). After students switched their roles, four weeks of treatment (Treatment X_2) took place that was similar to the first treatment. At the completion of this treatment, the second post-test (O_3) was administered.

In summarizing the measurements, three observations were made during this study, at times T_0, T_1, and T_2. The first observation (O_1) was a baseline measurement using the pre-test. The other two observations (O_2 & O_3) were post-tests. Two treatments were applied (X_1 & X_2). The first treatment (X_1) was applied between the baseline observation (T_0) and the first post-test (T_1). The second treatment (X_2) was applied between the two post-tests (T_1 & T_2).

Data Analysis

Based on the switching-replications quasi-experiment conducted as described above, an in-depth analysis of the difference between the initial treatment group (N_1) and the initial control group (N_2) was made on the first and second post-tests. Because each group included a mixture of traditional and distance education students, the difference in their perceptions of Panopto and its impact on their performance were also studied. This research was conducted with IRB approval as all data collection followed the methods as approved in the IRB protocol.

Computer Preparedness

One of the pre-test questions involved students' access to and frequency of their computer usage since Panopto involves extensive use of a computer. The average participants of the study considered themselves to have very good computer proficiency. Most students used Windows as their main operating system. Only a few used either Macintosh or Linux. About 90 percent of students who owned a computer at home used either cable connection or a digital subscriber line (DSL) connection. In regard to prior use of the Blackboard system, participants reported, on average, that it worked most of the time.

Pre-test Results

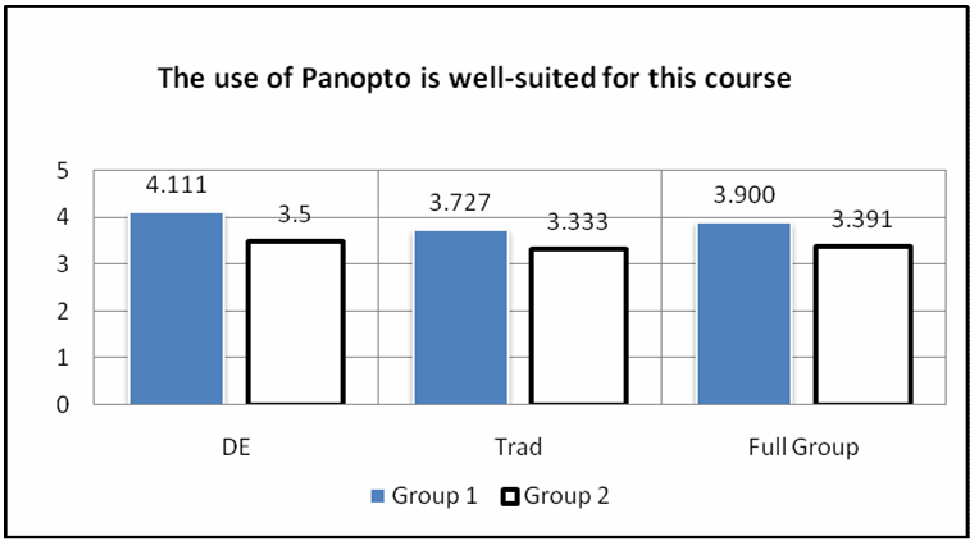
A number of questions were asked during the first observation using the pre-test, such as students' expectations of their use of Panopto as it pertained to their educational experiences. Although students were aware of this study involving Panopto, most students were unsure how it would affect their performance since access to Panopto was not yet given to group 2. This trend applied to both traditional students as well as DE students from each experimental group. More specifically, they were unsure whether the use of Panopto would be well-suited for the course, whether they would have more control of learning because of Panopto, whether Panopto would provide flexibility in their learning, and whether the use of Panopto would contribute to a high quality of learning. However, most students were reassured with the fact that they could review Panopto recordings any time they desired. Most respondents were quite excited about the potential of Panopto as it had never been introduced to them and they had no prior experiences using it.

Post-test Results

From two observations made after each scheduled treatment, insights were gained as to the participants' perception of Panopto as an added educational medium. Group 1 responses to the selected post-test questions listed and addressed in this section, were obtained from the first post-test questionnaire, while group 2 responses were obtained from the second post-test questionnaire. Comparing group 1 and group 2 responses to the first post-test questionnaire was more meaningful than comparing the second post-test results, since group 1 had already used Panopto during the first treatment period.

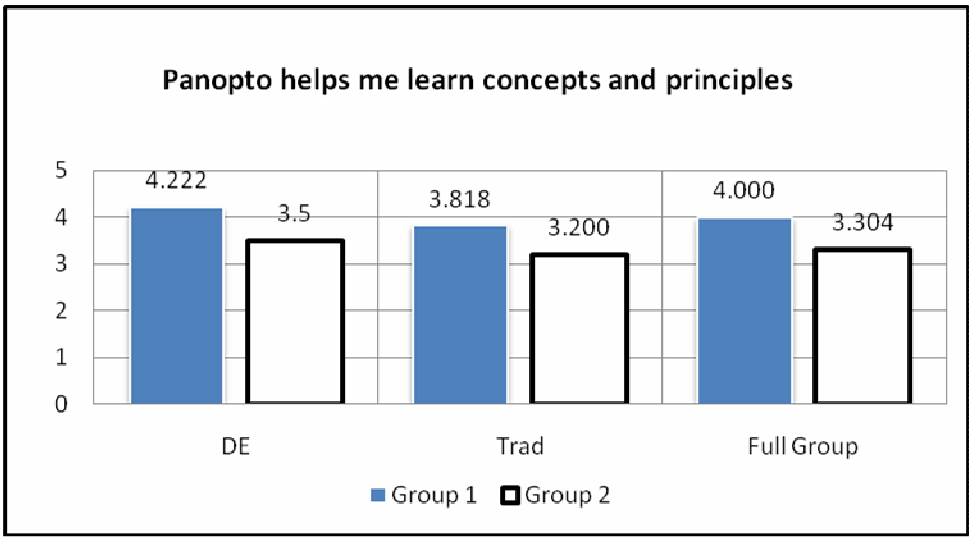
Panopto Suitable for the Course

Group 1 DE students, on average, felt that the use of Panopto was well-suited for the course, as shown. In general, group 1 students agreed more on the suitability of Panopto to the course than group 2 students.



Panopto Helpfulness

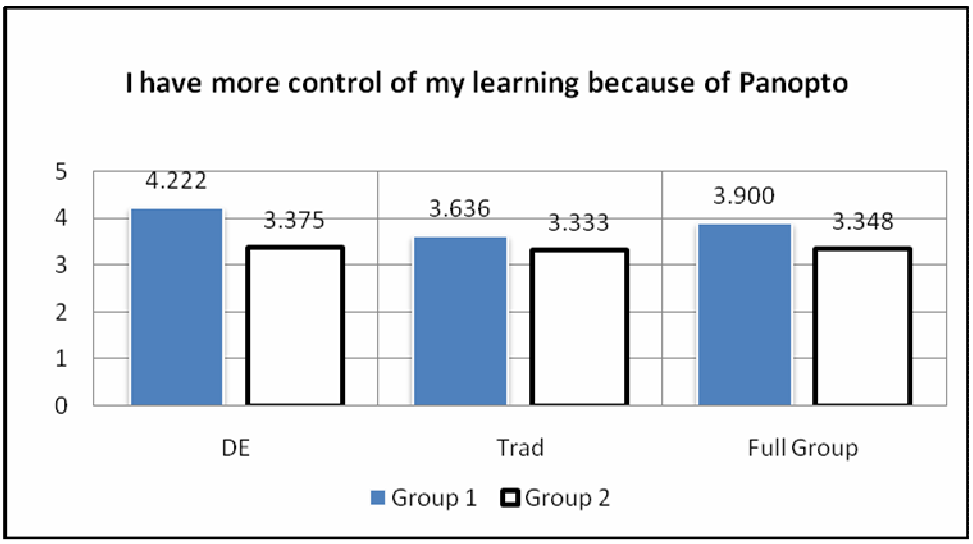
Similarly, more group 1 DE students agreed that Panopto was helpful in learning concepts and principles.



Learning Control

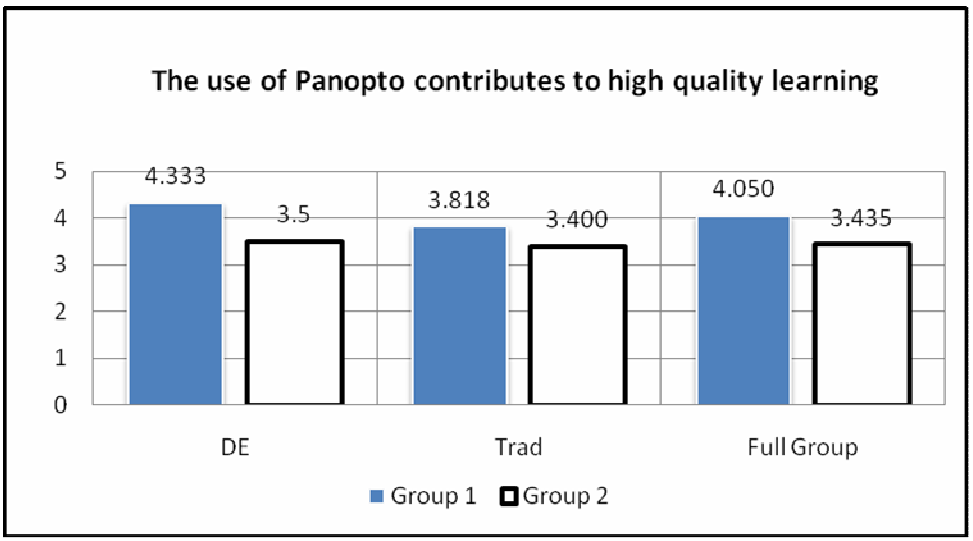
Panopto was felt to provide more confidence in learning control by DE students, as shown below. By comparison, Panopto affected DE students' perception that they have control

of their learning process. A similar result was observed in terms of their perception of flexibility in learning as a result of Panopto.



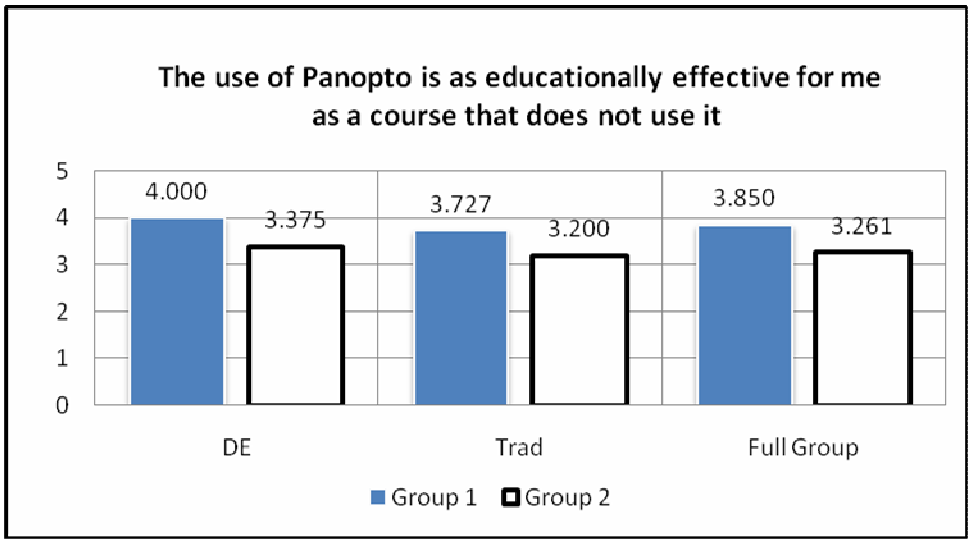
Learning Quality

Following the trend, DE students agreed more with the statement that Panopto facilitates a high quality learning.



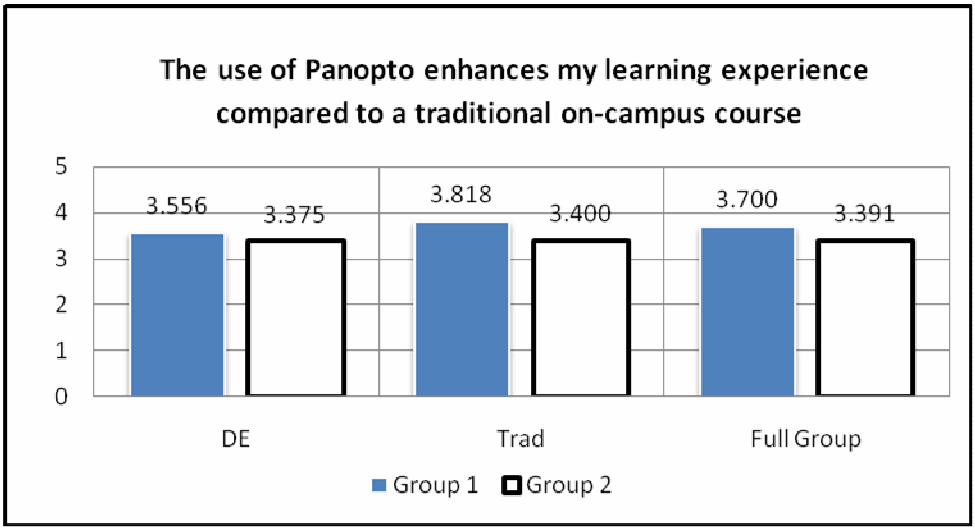
Educational Effectiveness

Panopto was regarded as an effective educational tool in the course. However, there was a slight difference in this perception between DE and traditional students.



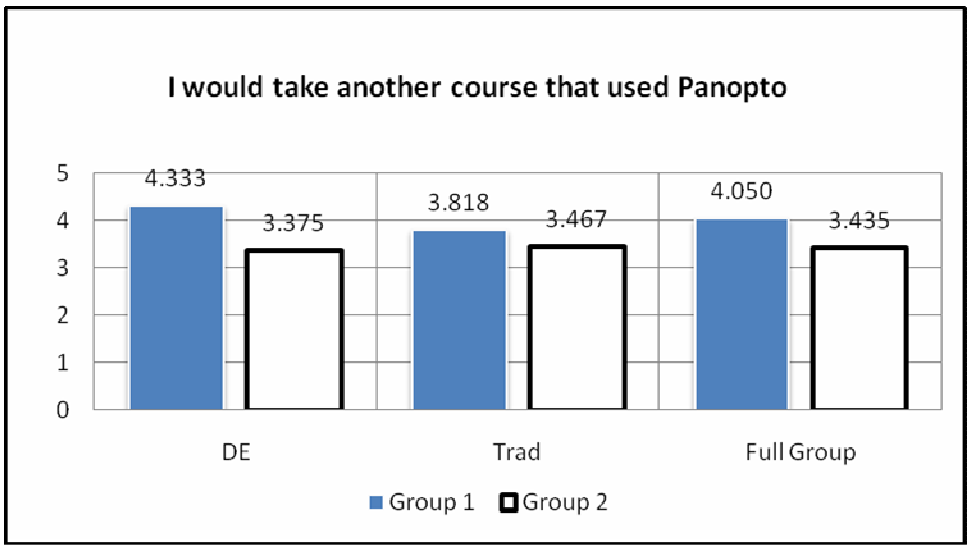
Learning Experience

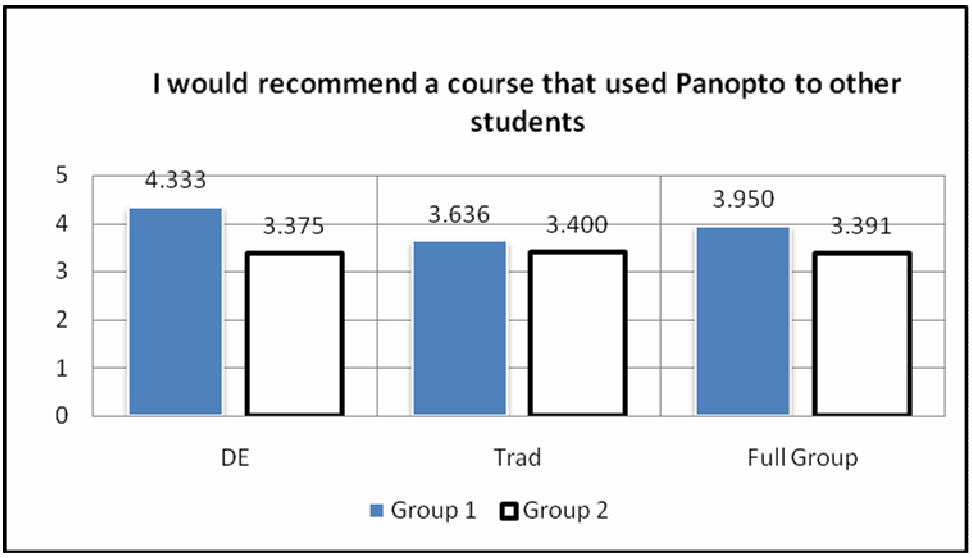
When asked to compare the course augmented by Panopto compared to traditional on-campus courses that do not use it, traditional students in group 1 agreed that Panopto enhanced their learning experiences more. Panopto was not a differentiating factor for this question for either group 1 or 2 DE students, as their mode of education typically involves an on-line class delivery.

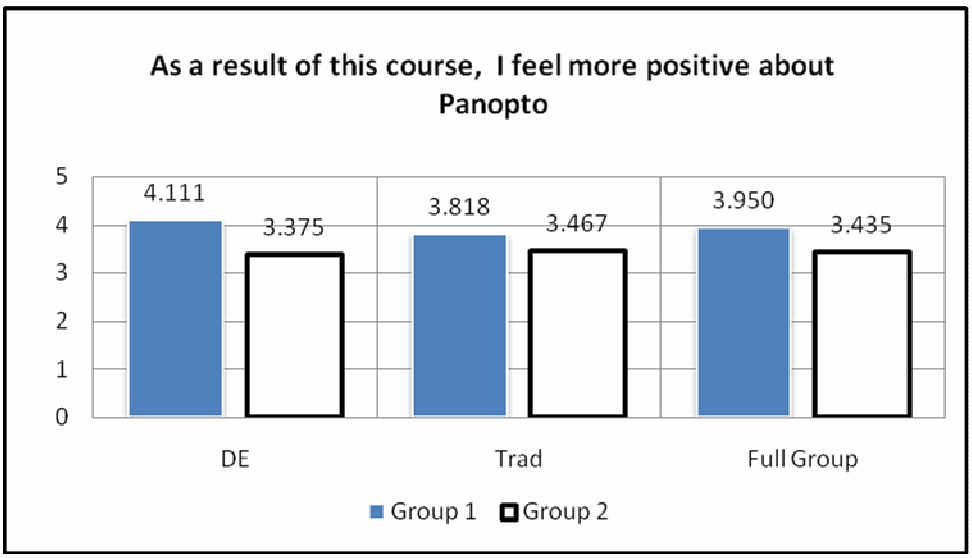


Perceptions on Panopto

As can be inferred from next three graphs, the use of Panopto, generally, provided students with positive learning experiences. Students' perception of Panopto was that it is a viable and effective educational tool. This perception was slightly stronger among DE students than their on-campus counterparts, implying that Panopto can be an effective tool especially for Distance Education.

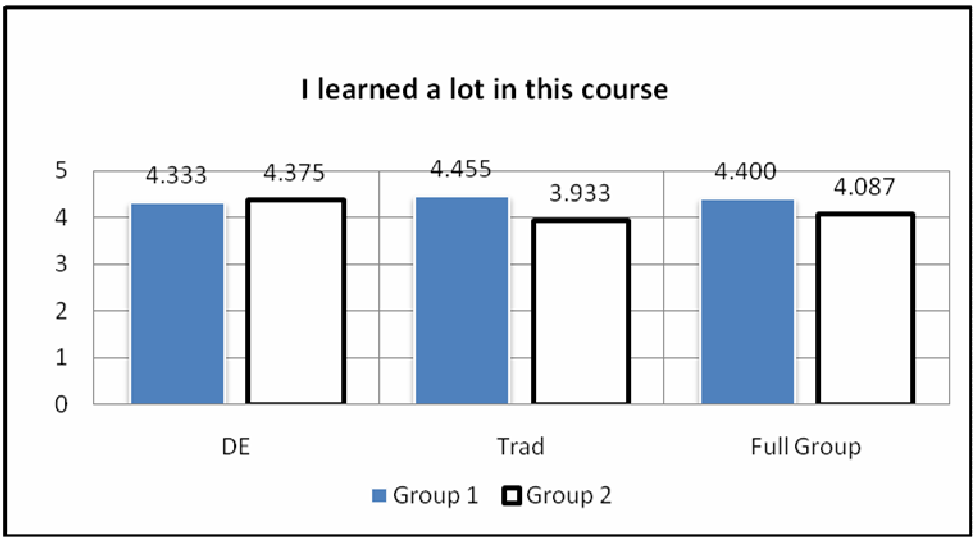

I would take another course that used Panopto
5
4
3
2
1
0
4.333
3.375
3.818
3.467
4.050
3.435
DE
Trad
Full Group
Group 1
Group 2


I would recommend a course that used Panopto to other students
5
4
3
2
1
0
4.333
3.375
3.636
3.400
3.950
3.391
DE
Trad
Full Group
Group 1
Group 2


As a result of this course, I feel more positive about Panopto
5
4
3
2
1
0
4.111
3.375
3.818
3.467
3.950
3.435
DE
Trad
Full Group
Group 1
Group 2

Overall Satisfaction on Learning

Regardless of whether Panopto was used, most students were satisfied with the course and what they learned from the course. This may imply that although Panopto may be a good augmentation to student learning, students' perception of learning depends on good class preparation and effective delivery of lectures by the instructor.



Conclusions

This study examines the use of Panopto and its effectiveness on the students' academic performance, perceived learning, and course satisfaction. The study shows that Panopto can be used effectively for both traditional on-campus as well as non-traditional DE students in enhancing their learning experience. For most DE students who participated in the study, Panopto enhanced the ambiance of a traditional, face-to-face lecture experience. The synchronous as well as asynchronous access to the rich media recordings provided by the instructor and the capability to have timely interactions with the instructor reduced many sources of dissatisfaction typically cited by DE students. Such sources of dissatisfaction include a sense of social isolation, inability to have quality interaction with the instructor, and the distance learner's perception of the dissimilarity between the DE course and the traditional course.

The traditional course can also benefit from using Panopto's lecture capture functionality. Students can access classes they miss and can revisit material that was confusing as many times as they need. In addition, Panopto may serve in disaster recovery plans such as the recent challenge of H1N1. By taking recorded lectures, sick students can be provided with the opportunity to experience missed lectures, allowing them to easily catch up on missed material.

Results of descriptive analyses mostly addressed and confirmed the research questions, except for one that measured whether students using Panopto sense that they have learned more than their traditional counterparts. The study shows that regardless of whether Panopto was used,

most students were satisfied with the course and what they learned from the course. This implies the significance of the instructor's role in satisfying students' expectation from learning.

The study also revealed certain issues (although mostly technical) that need to be addressed in the future to maximize the benefits of Panopto. For instance, most students experienced difficulties in comprehending conversations exchanged between students and the instructor during the recording session. This problem can be easily fixed by adding more microphones throughout the classroom. Students who participated in asynchronous recording raised the issue of their inability to have a timely interaction with the instructor. Integrating a relatively simple and inexpensive tool such as Instant Messaging could alleviate the problem and improve the DE students' academic performance.

Study Limitations

The first limitation to this study is the small sample size of students who participated in the study. Although all students participated in the research, the total sample size of 43 students was not sufficient for the best representation of the student body.

This study was conducted over a 12-week period. Although the length of a given semester is approximately 16 weeks, it may be better to conduct the experiment over multiple semesters to allow for more accurate and reliable results on which to draw conclusions. Extending the time frame to include multiple semesters will allow larger sample group to participate while providing more time for the participants to get acclimated to the system during the study.

By design, the participants in this study were all Engineering Technology students in technical courses. In order to generalize the study conclusions, more studies that include students from several disciplines should be conducted to see whether these results extend beyond Engineering Technology DE courses and students.

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Appendix A

Panopto in Distance Education: Pre-Test & Post-Test

1) Please enter your name. Your name will ONLY be used to match your answers from this survey with answers from the 2 post surveys. Once your responses are matched, your names will be deleted. None of your responses will be viewed by your instructor until after the names have been deleted.

2) Please indicate your computer proficiency:
Novice
Capable
Good
Very Good
Expert

3) I used the following resources in this class (check all that apply):
Internet
Blackboard
Centra
Discussion Boards
ITS Help Desk
Mosaic Staff
Instructor
TAs
Classmates

4) Which operating system are you using?
Windows Vista
Windows XP
Linux
Other:

5) Are you using Silverlight media player?
Yes
No

6) How much memory does your computer have?
1 GB
2 GB
More than 2 GB
I don't know
Other:

7) What kind of internet connection are you using?

Dial-Up
Satellite
Cable Modem
DSL
T1 connection
Other:

8) How long have you owned this computer?
Bought within the last year
2 of 8
1 to 2 years
3 to 4 years
5 or more years
Other:

9) Does Blackboard Vista work well on this computer?
Always
Most of the time
Sometimes
Rarely
Never

10) If you have seen some recorded lectures through Panopto, do they work well on this computer and network connection?
Always
Most of the time
Sometimes
Rarely
Never

11) Please indicate the degree to which you agree/disagree with the following statements about your instructor's effectiveness:
Strongly Agree Agree unsure Disagree Strongly Disagree
Presentation of course topics is clear.
The instructor is accessible to answer questions or give feedback.
The instructor promptly responds to my questions or concerns.
The instructor successfully tailors this course to a distance education environment.
I would like to take another course from this instructor.

12) Please indicate the degree to which you agree/disagree with the following statements about your learning:
Strongly Agree Agree unsure Disagree Strongly Disagree
This course requires more time than other courses at this level.
This course requires more effort than other courses at this level.
This course contributes to my professional development.
I learned a lot in this course.

As a result of taking this course, I am more interest in the subject matter.

13) Please indicate the degree to which you agree/disagree with the following statements about the Learning Environment:

Strongly Agree Agree unsure Disagree Strongly Disagree
The use of Panopto is well suited for this course.
Panopto helps me learn concepts and principles.
I have more control of my learning because of Panopto.
Panopto provides flexibility in my learning.
It was reassuring to know that I could review Panopto videos any time I desired.
The use of Panopto contributes to high quality learning.
The use of Panopto is as educationally effective for me as a course that does not use it.
The use of Panopto enhances my learning experience compared to a traditional on campus course.

14) Please indicate the degree to which you agree/disagree with the following statements about the Instructional Technology:

Strongly Agree Agree unsure Disagree Strongly Disagree
The instructor's use of Panopto contributes to my overall learning in this course.
I would take another course that used Panopto.
I would recommend a course that used Panopto to other students.
Panopto provides flexibility in my learning.
As a result of this course, I feel more positive about using distance education technologies to learn.
As a result of this course, I feel more positive about Panopto.
As a result of this course, I feel more positive about the Department of Engineering Technology distance education program.

15) Please indicate the degree to which you agree/disagree with the following statements about Technical Support:

Strongly Agree Agree unsure Disagree Strongly Disagree
I am able to resolve Panopto technical issues on my own.
Technical support is available when I need assistance using Panopto.
Technical support is helpful when I need assistance using Panopto.

16) Please indicate the degree to which you agree/disagree with the following statements about your Learning Preference:

Strongly Agree Agree unsure Disagree Strongly Disagree
Panopto is more effective than other distance education technologies such as Centra.
I learn more watching Panopto videos than I do reading the textbook.
I learn more watching Panopto videos than doing homework.
I learn more watching Panopto videos than I do working with a classmate.

17) Please indicate the degree to which you agree/disagree with the following statements about using Panopto:

Strongly Agree Agree unsure Disagree Strongly Disagree
I viewed Panopto videos when I could not attend class.

I viewed Panopto videos when I needed to better understand concepts and principles.
I viewed Panopto videos on my computer at home.
I viewed Panopto videos on my computer at work.
I viewed Panopto videos on a computer at school.

18) I use Panopto
Always
Usually
About half the time
Seldom
Never

19) Please tell me your age:

20) Please indicate your gender:
Female
Male

21) Please indicate your race/ethnicity:
African American
Asian American
Hispanic
White
Other

22) What grade do you expect to receive for this class?
A
B
C
D
F

23) What grade do you deserve for this class?
A
B
C
D
F

Appendix B

Student Comments

Post-test 1

Having used three different methods of information delivery in the DE program so far I would rate them as follows (and for the reason stated). 1. (best) Centra - recorded video delivery that is downloadable so viewing class is less subject to server issues etc. When participating live you are able to interact i.e. ask questions or give feedback. 2. Panopto - videotaped classes that offer better insight into the lecture. Not downloadable and no possibility of real-time interaction. 3. (least friendly) BB lecture documents such as PDF's - these are a very helpful learning tool but better when used with one of the above methods not as a standalone. Thank you for giving us the opportunity to give feedback!

Only half of the projector board shows up and can't see what the instructor is doing

The only thing I didn't like about Panopto was the fact that I could not hear the students in class asks their questions.

The instructor is knowledgeable and always willing to help. I have enjoyed Panopto a lot and it has been a very positive experience. Both the instructor and Panopto are beneficial for this class as it is fairly challenging. I can only imagine the impact for the future of distance ed.

The use of all camera views should be available during live sessions so that Distance Ed. students are able to see what is projected on overhead and or Professors laptop.

Panopto is great from a lecturing concept!

Panopto is essential tool for students. I am going to appreciate the development of the technology they use that makes everybody to learn without coming to the class.

I needed it today but it did not help because all I had was video of the instructor and not the screen of the computer he was using so it was of no help at all.

The feed is much halted when trying to view; this would probably not be the case if it could be downloaded to a cache first. It does cause for a problem in learning.

I think Panopto is a good way to study or for distance education but a in person lecture is still usually better.

Though Panopto is convenient in that it allows you to view lectures outside of class it is hard to take an hour+ to sit down and watch entire lectures. A suggestion would be to have a wikipedia-ish feature that would allow students and instructors to 'highlight' important parts of the lecture that would be most important to view.

I have not yet begun to use Panopto.

1. I have not yet viewed anything on Panopto. So while I have to conduct a survey on it. It is hard to either criticize or compliment it. 2. The class is not necessarily very difficult but the way the course material is set viz-a-viz the questions that get asked in the quizzes; leaves a lot to be desired. The text book the course uses fails to explain plainly enough C Language for anyone studying alone to understand and master what they learn. 3. The instructor needs to do a better job explaining what is coming. Because the way these surveys tests and quizzes were set; there was no explanation to the students as to what was in them. I believe tests and quizzes are a measure of one's understanding of any course's content rather than a trap. So in my mind the Panopto tests quizzes and surveys where just that Panopto. But was surprised to find my main course material in it. What I would have done would be to inform students that the quizzes will be on what you have learned and they would take some time to do reviews on their course material and thereby enhance their learning.

Its good.

I have not had the opportunity to use Panopto as yet therefore it is hard to judge whether it is useful or not.

I have not used it yet. But am looking forward to it.

Post-test 2

It was hard to hear the students in class ask questions.

The concept is great however would like to be able to ask questions like Centra.

It would be good if you could download to a CD in order to eliminate the drag in the video and sound recording.

From the 4 Panopto videos I have view so far I like this method of delivery.

Panopto is very good. I wonder why we have to go through surveys before we could use it. I also wonder why we waited this long before viewing the videos.

I have a satellite internet connection. it is high speed DSL but will not run the Panopto. I have to go to a place of business that has a high speed DSL with wireless to do any viewing. It is hard to concentrate and hear with earphones in a public place. Also it is very inconvenient with my schedule.

My internet speed at home does not support the 300Mb/s that Panopto requires. I have to go to work at 5am to view the classes. It is still very much worth the trouble. This has taken a great deal of the frustration out of self study (distance education). Some of my homework in the other

classes used to take me 12-24 hrs now it is usually 4-5 hrs. I am actually getting some time to spend with my family now.
I felt the class videos were difficult to watch as the picture was washed out. I learn more when actually at class and when accomplishing the homework.

I like the videos and I think they will be great for our class.