

A PRELIMINARY COMPARISON OF STUDENT LEARNING IN THE ONLINE VS THE TRADITIONAL INSTRUCTIONAL ENVIRONMENT

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ABSTRACT

Minot State University's College of Business has offered courses over the Internet since 1997, and this fall two business bachelor's degrees were offered completely online. As Business Information Technology faculty developed their courses for the online environment, they strived to provide the students the opportunity to gain the same knowledge and skills regardless of their learning environment. This study presents the preliminary findings of research comparing student learning, both actual and self reported, in an online environment and a traditional classroom setting. The purpose of this research is to assess whether student learning in the different environment is comparable.

Keywords: Online vs. traditional learning, student learning, student learning online, assessment.

INTRODUCTION

With the increase of online course and degree delivery, universities must now incorporate into their assessment plans ways to measure student learning in the new environment. Business Information Technology faculty developed online courses that are essentially the same as the traditional classroom courses, and they elected to use the same assessment tools in both environments to assess student learning.

If the course is the same regardless of medium (same text, same syllabus, same assignments, same evaluation methods, and even same instructor), and the same assessment instruments are used, faculty determined that student learning in both learning environments should be similar. The purpose of this study was to compare student learning, both actual and self-reported, in an online environment and a traditional classroom setting in order to determine whether student learning is comparable. Actual student learning was assessed through a pretest/posttest analysis while self-reported learning was assessed through a student perception survey.

LITERATURE REVIEW

Current literature related to the comparison of student learning in online and traditional environments is limited. Comparable research studies have involved variations of the pretest/posttest assessment and student perceptions, evaluations, and satisfaction with instruction in the different environments.

Studies investigating pretest/posttest scores of online students and traditional students have concluded that student learning was comparable (3, 5, 6, 7). In Gagne and Shepherd's study (3), courses compared were identical in terms of text, syllabus, assignments, examination, and professor. Yablon and Katz's study (7) involved similar assignments and examinations, but different instructors. However, instructors worked closely to ensure the courses were comparable.

Studies investigating students' perceptions of learning varied in structure, but the final outcome in each study was that online student learning and traditional student learning was comparable (4, 5). Additionally, authors of both studies reported that studies previous to theirs also concluded that student learning in both environments was similar.

Cooper's study (2) also sought student perceptions of learning in both online and traditional environments, but she requested students evaluate their class experience. Only the online students were asked to compare their online experiences to their traditional classroom experiences. While both online and traditional students reported the class met their expectations, the traditional students were more strongly in agreement with this statement. Yablon and Katz (7) examined students' expected satisfaction with the online and traditional environments prior to and following a first-year stats course. Online students expected lower satisfaction prior to the courses and, while their satisfaction did improve, it remained lower than that of the traditional students at the end of the course.

Overall, previous studies comparing online and traditional courses have consistently found that there is no significant difference in learning. However, several authors note the limited amount of research that has been completed regarding student learning in the online environment and how this learning compares to that which is gained in the traditional environment. Research is needed to consider students' perceptions of online learning compared to traditional learning (1, 5).

CURRENT STUDY

This study is a preliminary project to investigate student learning in the online and in the traditional environments. Specifically, student learning was compared by pretest/posttest and by a student perception survey in both the online environment and the traditional classroom setting.

Courses used for this study were sections of the same course, one online and one in the traditional classroom, using the same textbook, syllabi, assignments, and evaluations. Traditional classroom lectures were replaced by notes and bulletin board discussion in the online environment.

Pretest/Posttest Comparisons

During the Spring 2001 and Summer 2002 semesters student enrolled in either the online section or the traditional setting of BOTE 247, Spreadsheet Applications. The text, syllabus, assignments, and assessments were the same for both sections and both semesters. The online

courses were both taught by the same instructor while the traditional section of each class was taught by a different instructor. Students enrolled in the online sections were instructed to complete the pretest before any course lessons would be released. The pretest was administered during the first day of class for each traditional section. The 76-question pretest/posttest was designed by the instructors teaching the sections to cover each of the expected learning outcomes, as identified on the department course syllabus. There were 32 students in the online sections and 36 students in the traditional sections.

All 32 online and 36 traditional students completed the pretest. The average pretest score for the online students was 46 (s.d. = 8.950) and for the traditional students was 39 (s.d. = 7.886). Only 14 online and 26 traditional students completed the posttest. The average posttest score for the online students was 58.6 (s.d. = 7.047) and for the traditional students was 47.8 (s.d. = 7.583). The increase for online students pretest to posttest was 27.6% while for traditional students it was 23.9%.

While the percentage of increase from pretest to posttest was higher for the online students than for the traditional students, this difference is minimal. In order to measure for significance, the researcher would need to have matching student data to assure that each pretest and posttest scores was from the same student. This information was not gathered in this preliminary study.

Student Perceptions Comparisons

The Business Information Technology faculty have developed a department mission, goal statements, and objectives as part of our assessment plan. A common syllabus has been created by the faculty for each course delivered, regardless of whether the course is online or in the traditional classroom, which includes specific assessment objectives. Each faculty member begins with the common syllabus when designing a class.

At the end of each course, faculty distribute the Assessment Survey, a list of the prescribed objectives with examples of discussions, exercises and activities, assignments, and projects from the course section. Students are asked to identify whether they feel they Competent in, Aware of, or have No Knowledge of each objective at the completion of the course.

All online and traditional courses were assessed during Spring 2002. Online students completed the assessments online and emailed the documents to the department secretary. Traditional students completed the assessments on campus and returned them to the department secretary. Scores for each objective for each course were tabulated, and the results of two selected courses were given to the researcher. BOTE 314, Business Reports and Communication, and BIT 312, Database Theory and Application, were selected because in each class the same instructor taught the online and the traditional section. Therefore, assessment objective examples were nearly identical.

Data from the assessment surveys was grouped into the six department goal areas and then compared by both class and learning environment. For BOTE 314, 9 online students and 16 traditional students completed the survey. For BIT 312, 12 online and 14 traditional students completed the survey.

As shown in Table 1, in each goal area a minimum of 85% of both the online and the traditional students reported they were competent or aware of objectives specific to the goal. While the percentage of students reporting “No Knowledge” seems large for some goals, the number of students reporting is small causing the percentage to be high if one or two students selected this response.

For Goals 1 and 5, in BIT 312, the percentage of online students who were competent or aware of the objectives was slightly higher (91% and 97% respectively) than the percentage of traditional students who were competent or aware of the same objectives (86% and 89% respectively). For Goals 4 and 6, in BOTE 314, the percentage of online students who were competent or aware of the objectives was slightly lower (89%) than the percentage of traditional students who were competent or aware of the objectives (100%).

In comparing students’ responses of competent or aware, a few goal statements warrant further research to determine if there is, in fact, a significant difference between the student’s learning based on the environment. For example, responses for Goals 2, 5, and 6, for BIT 312 online, show a substantial difference in the percentage of students indicating competent and aware. Therefore, additional information, specifically an increase in the number of student responses, needs to be available to further analyze this difference.

CONCLUSIONS

As reported by the title of this study, this research is preliminary in nature. Researchers were exploring the potential of comparative research in the area of student learning in the online and traditional classroom settings. Previous studies reported no difference in learning; this study appears to support that research but a definite conclusion is not possible because the number of student responses was limited and additional information must be collected to complete statistical analysis of the data.

Table 1
Student Perceptions of Learning

Goal 1: Students identify and demonstrate their levels of computer, information, and technological literacy.							
Course	Traditional			Online			
	Competent	Aware	No Knowledge	Competent	Aware	No Knowledge	
BOTE 314	81%	19%	0%	90%	0%	0%	
BIT 312	79%	7%	14%	83%	8%	8%	
Goal 2: Students demonstrate knowledge of communication skills.							
Course	Traditional			Online			
	Competent	Aware	No Knowledge	Competent	Aware	No Knowledge	
BOTE 314	87%	13%	0%	91%	7%	2%	
BIT 312	79%	7%	12%	61%	24%	15%	
Goal 3: Students demonstrate professional attitudes and conduct.							
Course	Traditional			Online			
	Competent	Aware	No Knowledge	Competent	Aware	No Knowledge	
BOTE 314	55%	45%	0%	100%	0%	0%	
BIT 312	86%	4%	10%	76%	12%	8%	
Goal 4: Students demonstrate global awareness.							
Course	Traditional			Online			
	Competent	Aware	No Knowledge	Competent	Aware	No Knowledge	
BOTE 314	54%	46%	0%	78%	11%	11%	
BIT 312*							
Goal 5: Students demonstrate an ability to reflect and to apply critical thinking skills when solving problems.							
Course	Traditional			Online			
	Competent	Aware	No Knowledge	Competent	Aware	No Knowledge	
BOTE 314	71%	29%	0%	85%	15%	0%	
BIT 312	81%	7%	11%	44%	53%	3%	
Goal 6: Students demonstrate and experience real-life applications in a non-academic environment.							
Course	Traditional			Online			
	Competent	Aware	No Knowledge	Competent	Aware	No Knowledge	
BOTE 314	88%	12%	0%	80%	10%	0%	
BIT 312	79%	11%	10%	71%	21%	8%	

BOTE 314 Traditional n=16, Online n=9; BIT 312 Traditional n=14, Online n=12

*This goal was not evaluated in BIT 312. For some objectives, student responses were not complete.

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