

Assessing Student Performance in Hybrid versus Web-Facilitated Personal Health Courses

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Abstract

This study aims to examine the effectiveness of web-facilitated and hybrid course delivery formats on student learning outcomes for four sections of an undergraduate Personal Health course at a public institution. This is a quasi-experimental study. Two sections were taught as hybrid classes and two sections were taught as web-facilitated classes. A total of 181 undergraduate students from across the university participated in the study. Student learning outcomes were measured by comparing quiz scores and final course grade. Instructor evaluation ratings were also compared. Results indicate that student-learning gains were similar regardless of delivery format. There were no significant differences in objective quiz scores or final grade between the delivery formats. The instructor mean evaluation score was significantly higher for the web-facilitated format. Although the students' performance is comparable in both delivery formats students prefer web-facilitated courses with more face-to-face interactions with the instructor to hybrid courses. Examining student technological capabilities and motivation in web-facilitated and hybrid courses is necessary to improve evaluations.

Keywords: Assessment; online instruction; student learning; undergraduate

Introduction

The economic climate for public four-year institutions is leading to the use of hybrid classes, while still utilizing the traditional, face-to-face classroom setting. The student population is ever-changing with more and more students working more than 25 hours per week and often having families to care for, making attending classes a difficult task. With the advancement of technology, hybrid and web-facilitated classes offer students flexibility, giving them the opportunity to repeat lectures and learn at their own pace and when it is more convenient for them (Kahn, 2001). Utilizing online and distance education is an attractive cost saving measure for universities (Olsen & Wisner, 2002; Allen & Seaman, 2013). With many universities facing fiscal constraints, distance education serves as a resource for finance-burdened universities to deliver quality instruction while reaching more students (Euzent, Martin, Moskal & Moskal, 2011).

Many universities are now offering a variety of learning formats, including online courses, hybrid courses and web-facilitated courses in addition to traditional face-to-face learning. Research has found no significant differences between online or web-based settings and traditional face-to-face settings (Hale, Mirakian, & Day, 2009). A review of the literature found no significant differences in student performance when comparing online or web-based delivery methods and traditional face-to-face delivery methods (Chumley-Jones, Dobbie, & Alford, 2002). Most of the studies that have been conducted compared student performance in online and traditional face-to-face sections of the same course.

The benefits of universities utilizing the hybrid format are: have both advantages that are in the classroom setting as in the online setting, such as access to Web information and having face-to-face interaction with the professor; students can be independent learners but also practice communication skills; students who may not feel comfortable with a class that is entirely online have the comfort of a traditional classroom; there is flexibility with time with students not always having to be physically in the classroom.

While there has been debate about the effectiveness of the web-based formats versus the traditional face-to-face format, research indicates few differences in student outcomes. Results of a meta-analysis found that student scores were higher for instruction that combined face-to-face lecture and an online component than purely face-

to-face instruction or purely online instruction (Angiello, 2010). McFarland and Hamilton (2005) found no significant difference in final grades between online students and traditional students. While these findings are encouraging, few studies have examined student learning in health and wellness courses (Block, Undermann, Felix, Reineke, & Murray, 2008).

With financial concerns in the country’s current economic state and the inexpensive technology that is available, the use of online content delivery formats is increasing (Allen & Seaman, 2013). While the evaluation literature on web-based learning compared to face-to-face learning continues to grow, little research has examined the effectiveness of hybrid courses compared to web-facilitated courses on student learning. The purpose of this study was to assess objective student learning outcomes in an undergraduate Personal Health course when the curriculum is delivered in a hybrid format versus a web-facilitated format.

METHODS

Study Design

The study was conducted in a three-credit hour 16-week undergraduate course. The same instructor taught all four sections of the Personal Health course: two sections of the hybrid course and two sections of the web-facilitated course. The university defines hybrid or blended courses as combining face-to-face learning with online learning, with 30% or more of the course content being delivered online. Web-facilitated courses use technology to enhance the traditional classroom experience. These courses usually meet on campus at regularly scheduled times and include some online content delivery; less than 30% of the instruction is conducted online (Southern Illinois University Edwardsville Information Technology Services, 2015). All online course material was delivered using the standard course management system offered through the university. This study used a quasi-experimental design, students self-selected into the courses. During registration students could choose between the hybrid courses or the web-facilitated courses: there was no random assignment. The same course materials, assignments and exams were used for all sections of the course. Learning outcomes were evaluated using quiz and assignment scores. Course evaluations, including both course and instructor components, were also examined.

Study Population

The undergraduate Personal Health course is open to all undergraduate students to fulfill the Health Experience general education requirement. A convenience sample of 181 students (108 females and 73 males) at a four-year University in the mid west was used in this study (Table 1). Half of the students were undeclared majors with 9% majoring in Psychology and 7% majoring in the Biological Sciences. The majors of the remaining 34% of the participants ranged from Accounting to Sociology, but none of them represented more than 4%. The largest proportion of students was in their junior year at the university (48%). The remaining students were sophomores (36%), seniors (15%) and freshman (2%).

Table 1 Student Characteristics

Characteristic	Hybrid N=87	Web-facilitated N=94
Percent Female	55% (n=63)	56% (53)
Student Rank		
Freshman	2% (2)	2% (2)
Sophomore	35% (31)	38% (35)
Junior	46% (40)	49% (46)
Senior	17% (14)	12% (11)
Race/Ethnicity		
White	78% (68)	72% (68)
Black	16% (14)	15% (14)
Asian	0	2% (2)
Multi	1% (1)	4% (4)
Pacific Islander	1% (1)	0
Hispanic	3% (3)	0

Hybrid. Student enrollment in the hybrid classes was 87. The majority of students were female (63%), juniors (46%), and undeclared majors (48%) with an additional 11% majoring in Psychology.

Web-facilitated. Student enrollment in the web-facilitated classes was 94. Most of the students enrolled in these classes were undeclared majors (52%) with an additional 10% majoring in Biological Sciences. Fifty-six percent of the students were female and 49% were juniors.

Data Collection

Measures

In each course students complete standard course evaluations electronically during the last three weeks of each semester. These evaluations are voluntary and anonymous. The evaluations contain twelve standard questions. Response options are on a 5-point scale, strongly agree, agree, neutral, disagree, and strongly disagree. The evaluations measure student agreement on clarity of course requirements, quality of instruction, instructor characteristics including preparedness, availability, organization, responsiveness, feedback, enthusiasm, and teaching strategies. For this study the mean evaluation scores for the web-facilitated and the hybrid sections for the instructor were compared.

To calculate the withdrawal rate, the final headcount for the course was subtracted from the number of students enrolled at the end of the course. The final headcount is taken at the end of the third week of the semester and is reported by the university registrar's office. Students who dropped the course before the end of the third week are not included in the withdrawal rate.

Student performance was measured using the same assignments, chapter quizzes, and course grade. All students completed the same three assignments and chapter reading quizzes. The quizzes were completed online in all sections of the course.

Data Analysis

Statistical analysis was performed using SPSS version 21.0 (SPSS Inc., Chicago, IL). Descriptive statistics were run for all demographic and assessment variables. The alpha level was set at 0.05. Mean data were compared using the independent sample two-tailed student's t-test. Frequency data were compared using the chi-square test to determine whether there were significant differences between the students' scores on quizzes in hybrid versus web-facilitated courses. Shapiro-Wilkes test for normality indicated that the data were normally distributed. Independent sample t-tests were used to assess course evaluations and whether students' performance in Personal Health 111 varied based on course delivery format.

FINDINGS

Instructor Evaluation

The mean course evaluation score for the web-facilitated courses was significantly higher ($M=4.4$) than the hybrid courses ($M=4.2$) ($F=3608.9, p=0.000$).

Withdrawal Rates

For the hybrid courses, 7% ($n=6$) of students withdrew after 3 weeks, whereas 2% ($n=2$) of students in the web-facilitated courses withdrew after 3 weeks.

Student Performance

Assessment scores were compared for quizzes, assignments and exams. Overall course grades were also compared. The analysis showed no significance difference in overall student performance based on final course grade between the two formats ($F=0.004, p=0.131$). There were no significant differences in pass/failure of the course for either delivery formats ($F=0.085, p=0.884$). Mean scores were compared for quizzes and assignments for the two class formats. Analysis of the mean quiz scores revealed significant differences for three of the quiz scores: Chapters 1 & 2 quiz ($F=15.616, p=0.000$), Chapter 5 quiz ($F=35.665, p=0.000$), and Chapter 17 quiz ($F=5.213, p=0.000$). Of the three quizzes, students in the Hybrid course scored significantly higher on the Chapter 5 quiz, while students in the Web-facilitated course scored higher on the Chapters 1 & 2 and Chapter 17 quizzes. There were no significant differences in the mean assignment scores when comparing the hybrid sections with each other or between the web-facilitated sections, thus the scores were combined based on delivery format. There were no significant differences in mean assignment scores for hybrid students versus the web-facilitated students (Table 2).

Table 2 Student Mean Scores on Assignments & Quizzes

Assignment/Quiz	Hybrid N=89	Web-Facilitated N=96	p-Value
Family Tree	171.17	171.68	
Behavior Modification	132.22	136.49	
Super Tracker	83.12	85.26	
Chapters 1 & 2 Quiz	38.79	32.79	$p=0.000$
Chapter 3A Quiz	17.51	16.96	
Chapters 4 & 7 Quiz	17.20	17.50	

Chapter 5 Quiz	17.37	22.74	$p=0.000$
Chapter 6 Quiz	42.63	42.69	
Chapter 8 Quiz	37.40	41.71	
Chapters 9 & 11 Quiz	32.52	32.42	
Chapter 10 Quiz	44.25	43.78	
Chapter 12A Quiz	17.00	17.40	
Chapter 14A Quiz	37.44	42.24	
Chapter 17 Quiz	16.36	14.73	$p=0.000$

DISCUSSION

Student performance data were collected during fall semester 2014. The results of this study generally support the findings of previous research that there is no significant difference in student performance and the delivery format of the course, hybrid or web-facilitated. Although on two of the quizzes students in the web-facilitated courses scored higher on average than the hybrid course students, there was not a pattern for the quizzes in terms of which class format performed better. Salcedo (2010) found that teaching delivery method does not affect students' performance. Xin and colleagues found that mean scores on the final exam were significantly higher in web-facilitated courses than either hybrid or online course formats (Xin, Kempland, & Blankson, 2014). One suggestion for the similarities in learning outcomes is that students and faculty are becoming more familiar and proficient with online course delivery technology (Euzent, Martin, Moskal, & Moskal, 2011; Arbaugh, Godfrey, Johnson, Pollack, Niendorf, & Wresch, 2009).

Findings from this study are similar to previous research related to student satisfaction with the course and instructor evaluations (Callaway, 2012; Campbell, Floyd, & Sheridan, 2002; Dahlstrom, Walker, & Dziuban, 2013; Melton, Graf, & Chopak-Foss, 2009). Students rated the course and instructor higher in the web-facilitated courses compared to the hybrid courses. One reason for this may be that web-facilitated courses offer online course delivery combined with more face-to-face instruction allowing for information availability and accessibility while accommodating diverse learning styles (Dahlstrom, Walker, & Dziuban, 2013; Melton, Graf, & Chopak-Foss, 2009). Course delivery formats that offer more face-to-face contact may be less challenging for students who lack the motivation or self-discipline required for more online course formats (Euzent, Martin, Moskal, & Moskal, 2011).

With the ever-changing world of technology, hybrid and web-facilitated classes are becoming more widely available to students. Students are working more than they have in the past and online classes seem more convenient for some students (Kahn, 2001). A benefit for institutions is that hybrid and web-facilitated classes may be relatively less expensive than traditional classroom formats (Olsen & Wisher, 2002; Allen & Seaman, 2013). Universities can benefit from the use of hybrid and web-facilitated classes to reach more students who might not otherwise be able to attend the university with a traditional class schedule (Euzent, Martin, Moskal, & Moskal, 2011). With the growing use of online class formats, the findings from this study are important related to maintaining student learning outcomes in the changing teaching environment. This study showed that there are no significant differences in student performance when comparing hybrid course formats to web-facilitated courses. However the efficacy of using hybrid and web-facilitated delivery formats is still being debated (e.g., Collopy & Arnold, 2009; Scherrer, 2011). While hybrid and web-facilitated courses are a good alternative to fully online courses by offering students the convenience and the cost saving benefits to universities, research is needed related to pedagogical integrity for health education and public health students related to maintaining program quality and knowledge acquisition.

Previous research has found that students who enroll and are successful in semi or fully online courses are either self-motivated or do so for compelling reasons leading to more motivation (Hale, Mirakian, & Day, 2009). Since this course meets a general education requirement students may be more likely to complete the course regardless of format.

LIMITATIONS

A limitation for this study was the inability to randomize students into the two types of course delivery formats because of university registration procedures. To control for potential differences in the student body of the courses student demographics were examined for differences. No significant differences were found between the two sections of the hybrid course or the two sections of the web-facilitated course. Neither were significant differences found when comparing the demographics of students in the two delivery formats. Although no significant differences were found, there may be other factors that were not measured with the potential to bias the samples.

Another potential limitation may be the fact that more than three times the number of students withdrew from the hybrid courses than the web-facilitated courses. Although there were no significant differences between the student body in the hybrid courses; one section of the course had the majority of the students who withdrew (n=5) compared to the other section (n=1). Data on students' experience using technology or motivation to complete hybrid courses were not collected for this study. Differences in these areas may explain the withdrawal rates.

CONCLUSIONS

This study was conducted to determine if hybrid and web-facilitated course delivery format resulted in comparable student learning outcomes, withdrawal rates, and course evaluations. Findings from this study support previous research that generally web-facilitated and hybrid course delivery formats offer students the flexibility and similar learning outcomes. As in other studies, students seem to prefer more interaction and communication with the course instructor. Addressing this may increase student-learning outcomes in hybrid and online courses where there is less or no face-to-face instruction. Additionally, improving communication and interaction may increase student evaluations of teaching in these courses. Overall, while hybrid courses and web-facilitated courses offer benefits to students and universities more research is needed to evaluate how students' technological capabilities and motivation for completing course work impact student learning outcomes.

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