

COMMUNITY COLLEGE STUDENT SUCCESS IN ONLINE VERSUS EQUIVALENT FACE-TO-FACE COURSES

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ABSTRACT

As part of a nationwide effort to increase the postsecondary educational attainment levels of citizens, community colleges have expanded offerings of courses and programs to more effectively meet the needs of students. Online courses offer convenience and flexibility that traditional face-to-face classes do not. These features appeal to students with family and work responsibilities that typically make attending classes on campus difficult. However, many of the students who tend to take courses in this instructional format have characteristics that place them at high-risk for academic failure. Because of the traditional mission of community colleges, they generally serve more students who fit this high-risk profile. Despite the promise and potential of online delivery systems, studies have associated distance education with higher student withdrawal rates. In addition, research has indicated that online students tend to earn lower grades than students in comparable face-to-face classes. The existence of contrasting findings in the literature exposes the need for additional empirical research relative to the overall success of students in online courses, as well as on factors associated with success in distance education. This is especially true for community college students.

The purpose of this study was to determine if significant differences existed in student success at the community college level in online courses as compared to face-to-face courses. In addition, the researchers investigated the relationship between selected demographic, academic, enrollment, and external environmental factors and student success in online courses. The study involved secondary data analysis of quantitative data relevant to students enrolled in course sections taught by instructors who taught both online and face-to-face sections of the same course within the same semester from fall 2012 through spring 2015. The target population included 4,604 students enrolled at a public 2-year community college located in Tennessee. Results indicated there was a significant difference in success between students taking a course online and students taking a course face-to-face. Also, there was a significant difference in success based on instructional method when the following factors were considered: age group, gender, student academic classification, and Pell Grant eligibility status. There was no significant difference in success based on instructional method when first-generation college student status was considered.

INTRODUCTION

The convenience and flexibility offered by distance education has made online education attractive to students in rural locations and those with work and family responsibilities that make attending college difficult (Allen & Seaman, 2015; Hachey, Conway, & Wladis, 2013; Radford, 2011; Wojciechowski & Palmer, 2005). Postsecondary student enrollment in online education has increased at a rate far exceeding the overall higher education enrollment (Allen & Seaman). The NCES's Integrated Postsecondary Education Data System (IPEDS) reported that 70.7% of

public, degree-granting institutions participate in some level of distance education offerings. NCES data also indicated that distance education participation has been highest at public 2-year colleges (NCES, 2015).

The role of a community college is different from that of 4-year colleges or universities (American Association of Community Colleges). Most community colleges award associate's degrees, certificates, and credit for courses designed to transfer to a 4-year postsecondary institution. They provide workforce development and specialized training to assist area employers. In addition, most offer noncredit courses, cultural activities, and enrichment

programs as a service to members of the community. The majority of these institutions have open admissions policies whereby they allow any individual with a high school diploma or General Education Diploma (GED) to enroll as a student and register for classes. Also, the tuition at these colleges is much less than that at a university. All of these factors combine to make community colleges attractive to a wide range of individuals, particularly minority, low-income, nontraditional-aged, and academically underprepared students (AACCC, n.d.; Provasnik & Planty, 2008).

As student enrollment increased at many community colleges over the past decade, institutions expanded course offerings to meet the demand for more class sections. Some institutions had outgrown their existing classroom space and had to determine effective ways to manage the problem without new building construction. One of the core missions of community colleges has always been to provide access to education for students with a wide range of needs. The fact that the 2-year schools have been leaders in distance education participation seems logical, given that the offering of online courses and programs is a relatively inexpensive way to expand access and serve students with diverse needs (Hachey et al., 2013).

Additional NCES data showed the majority of students taking distance education courses were 24-years-old or older, employed full-time, and either married or with dependent children (Radford, 2011). Traditional-aged college students are 18 to 24-years-old, and nontraditional students, or adult learners, are generally considered those 25-years-old and older (Compton, Cox, & Laanan, 2006; Wyatt, 2011). Although they tend to be more serious, focused, and mature than traditional students, adult learners face challenges as they attempt college. Because they have often been out of school awhile, they are often underprepared for collegiate-level work. Also, their personal lives may require so much time and energy that they have insufficient time to attend traditional classes. Consequently, the dropout rate at many community colleges is higher for nontraditional students than for traditional students.

Although the flexibility offered by online classes potentially allows adult learners the chance to pursue an education while fulfilling outside commitments, its structure may also be a barrier to student success. The nature of online courses is such that students are often forced to think critically, take active roles in their learning experiences, and be more self-motivated, independent, self-disciplined, and goal-oriented (Kerr, Rynearson, & Kerr, 2006; Wojciechowski & Palmer, 2005). Also, not only must students learn new content, they must become familiar with the technology required to navigate and par-

ticipate in the course. Many students have issues with the technology, time management, and feelings of isolation as a result of not assessing their fit for this course format prior to enrolling (Aragon & Johnson, 2008; Capra, 2011; Wojciechowski & Palmer). Administrators tend to agree that institutions have a more difficult time retaining distance education students, but they are unsure whether the cause is the nature of the course, the characteristics of the students enrolled, or a combination of both factors (Allen & Seaman, 2015).

Statement of the Problem

As the United States strives to increase the educational attainment levels of its citizens, institutions of higher education are under pressure to increase student access, meet diverse student needs, and ensure student success. Colleges and universities have increased the number of students they can serve with distance education programs and courses. Although online courses are popular, primarily because of the convenience and flexibility they offer, the students who tend to enroll in them have characteristics or circumstances that put them at high-risk for academic failure (i.e., dropping classes, failing classes, and/or withdrawing from school).

The purpose of this quantitative study was to determine if differences existed in overall student success at the community college level in online courses as compared to face-to-face courses taught by the same instructor and across disciplines. In addition, the researchers investigated the relationship between student success and age group, gender, academic classification, financial aid status, and first generation college student status.

Significance of the Study

Institutions of higher education are increasing student access by expanding distance education offerings. Their common goal is increased educational attainment by citizens, which means completion of a degree or certificate. Therefore, colleges and universities must ensure that students are successful in the courses and programs in which they enroll. The NCES (2015) reported that the 2013 national 3-year graduation rate at community colleges for first-time, full-time freshmen students at community colleges averaged 29% for students earning an associate's degree or certificate. Information from the Tennessee Higher Education Commission (THEC) indicated that the 2014 state 3-year graduation rate at Tennessee's community colleges for first-time, full-time freshmen students averaged 28.1% (THEC, 2015). These statistics show there is room for improvement in efforts to have a more educated public. The identification of factors associated

with student success in distance education could help improve online course development, evaluation, instruction, student advisement, and support services.

REVIEW OF LITERATURE

Distance Education and Community Colleges

In 2014, 97% of public 2-year institutions offered distance education courses, a higher percentage than for any other institutional category (Allen & Seaman, 2015). Approximately 30% of U.S. higher education students are enrolled in at least one online course, and enrollment estimates for 2013 ranged from 5.3 to 7.1 million online students. The majority of these students attend community colleges (Shea & Bidjerano, 2014). The original intent of community colleges was to provide students from diverse backgrounds with a variety of postsecondary education options. As a result of their many roles, these institutions have attempted to effectively serve students with a broad spectrum of needs, knowledge, skills, and life experiences (Johnson & Berge, 2012). In an effort to meet student demand for convenience and flexible scheduling options and to increase student access, community colleges have been leaders in distance education (Hachey et al., 2013; Parsad & Lewis, 2008).

A significant number of students who attend community colleges are nontraditional students with work and family responsibilities that make attending traditional classes on campus difficult (Pontes & Pontes, 2012). Some studies have shown that the types of students who choose to enroll in distance education courses have many of the characteristics of students at risk for non-completion (Aragon & Johnson, 2008; Hachey et al., 2013). On the contrary, other researchers have found that students who take online courses tend to have a stronger academic preparation than the average community college student (Xu & Jaggars, 2011b).

Differences between Online Learning and Traditional Learning

Online courses are categorized as asynchronous or synchronous, depending on whether or not the instructor and students interact or meet online at the same time. An asynchronous online course is one that is time-independent. The course materials are generally posted online for students to access at any time. There are typically specific due dates for assignments and exams, but there are no class meeting times. Students are free to complete work at their own convenience, and they submit assignments by designated deadlines. Communication within an asynchronous course is usually by e-mail or posting on

a discussion board. A synchronous online course is time-dependent. It includes prescheduled class meeting times at which students and the instructor interact by way of two-way video conferencing, Internet chat, or some other technological means (Allen et al., 2004; Bergfeld, 2014; Bower & Hardy, 2004). Communication in an online class environment does not normally allow for level of social interaction and the use of the vocal expressions and nonverbal gestures that are a part of communication in a traditional, face-to-face classroom. Those limitations may cause frustration for some students.

Organization and Delivery

Almost all online courses are organized and delivered and using course management software (CMS), also called learning management system (LMS) software, that enables students to access course materials, post on discussion boards, submit assignments, send e-mails, take assessments, and view grades (Bergfeld, 2014). Two of the most commonly used CMS systems are Blackboard and Desire2Learn. Many researchers concur that students tend to be more successful in distance education if they frequently use computers, the internet, and other forms of technology and are comfortable with it (Dupin-Bryant, 2004; Hachey et al., 2013; Harrell & Bower, 2011; Kerr et al., 2006).

Student Success in Distance Education

Many researchers agree that the most successful students in online learning are self-disciplined, self-motivated, goal-oriented, responsible, and organized (Johnson & Berge, 2012; Kenner & Weirnerman, 2011; Kerr et al., 2006; Kiely, Sandmann, & Truluck, 2004; Neuhauser, 2002; Rovai, 2004; Wojciechowski & Palmer, 2005). These students also possess skills in time management, multitasking, and critical thinking. In addition, they are able to take responsibility for their own learning and work independently. Most of these characteristics align with those of an adult learner, or a nontraditional student (Wojciechowski & Palmer). As older students, nontraditional students are usually more mature and have prior knowledge and life experiences they want to relate to their education in some manner (Johnson & Berge; Kenner & Weirnerman; Kiely et al.). Adult learners have much to offer as students, but there are potential obstacles to their success in higher education. These include the lack of financial resources, a lack of self-confidence, under-preparedness for collegiate level coursework, the lack of sufficient time, and a lack of academic focus (Compton et al., 2006; Kenner & Weirnerman; Kiely et al.; Wyatt, 2011).

Xu and Jaggars (2011a) analyzed student data over a 5-year period from institutions of the Washington State Board of Community and Technical Colleges to compare academic outcomes of students enrolled in online courses to those of students in hybrid and face-to-face courses. Students in online courses were more likely to withdraw or fail than those in face-to-face courses. Also, students who took a greater proportion of online courses were less likely to complete a program of study or transfer to a university (Xu & Jaggars, 2011a). Similarly, Xu and Jaggars (2011b) examined data over a 4-year period from the Virginia Community College System (VCCS) to compare the success of students in online and face-to-face classes of introductory college-level English and mathematics courses. The students who took the courses online were significantly more likely to withdraw. This was true for both the English and math courses. In addition, the percentage of students who made a final grade of a "C" or better was higher for students in the face-to-face sections for both the English and math courses (Xu & Jaggars, 2011b).

Shea and Bidjerano (2014) analyzed NCES Beginning Postsecondary Student Survey (BPS 04/09) data to compare degree completion rates of community college students enrolled in distance education courses during their first year to those of students enrolled in all face-to-face courses during the first year. They concluded that the students who participated in online education during their first year of college had higher rates of degree attainment than those who did not take online courses during the first year.

Factors Associated with Success in Distance Education

Wojciechowski and Palmer (2005) investigated the relationship of various student characteristics to success in an online business course at a community college over a period of 3 years. For purposes of the study success was defined as receiving a final grade of a "C" or better in the class. The same instructor taught each section of the course and used the same textbook in each class. The researchers concluded that a significant relationship existed between each of the following student characteristics (in order from highest to lowest significance) and success in an online business course at the community college: overall GPA, attendance at an optional class orientation session, number of course withdrawals in the past, ASSET placement test reading score, number of online courses in the past, student age, and ACT English score. There was no significant relationship between student success in the online business course and these variables: full or part-time status, gender, ACT composite score, ACT reading

score, semester format (8-week or 16-week), and ASSET writing score (Wojciechowski & Palmer).

Nontraditional students tend to have lower overall completion rates in higher education than traditional-aged students; however, research is contradictory relevant to the relationship between student age and online success (Compton et al., 2006). The results from several studies indicated that completers tended to be older students as opposed to traditional-aged students (Muse, 2003; Neuhouser, 2002). Wojciechowski and Palmer (2005) discovered that younger online students did not perform as well as older students. However, other researchers reported that student age had no relationship to online course completion (Aragon & Johnson, 2008; Park & Choi, 2009).

Aragon and Johnson (2008) also found that the completion rate was higher for females than for males. However, Park and Choi (2009) observed no effect on course completion based on students' gender.

With regard to student course load, Aragon and Johnson (2008) reported that students who did not complete online courses tended to be enrolled in fewer hours than those who did complete online courses. Conversely, Wojciechowski and Palmer (2005) found that student enrollment status had no statistically significant relationship with online success. Educational level is determined by the number of credit hours a student has completed and refers to the classification of a student as a freshman, sophomore, junior, or senior. Dupin-Bryant (2004) observed that lower-division online students tended to be non-completers more often than upper-division students. Muse (2003) found that the more credit-hours community college students had completed, the more successful they were in online classes.

The number of online classes students have taken may be an indicator of technological proficiency. Researchers consistently found that students who had previously taken online courses or had relevant computer experience were more successful in distance learning than those who had less online experience (Dupin-Bryant, 2004; Hachey et al., 2013; Harrell & Bower, 2011; Kerr et al., 2006).

METHOD

This study involved secondary data analysis of quantitative data extracted from the student information database system of the participating institution, a public 2-year community college located in Tennessee. The target population included students enrolled in course sections taught by instructors who taught both online and face-to-face sections of the same course within the same semester during the following semesters: fall 2012, spring 2013, fall 2013, spring 2014, fall 2014, and spring 2015. Disciplines

represented included accounting, anthropology, biology, business, chemistry, economics, English, history, information systems, mathematics, political science, psychology, sociology, speech, and theater. The total number of students involved in the study was 4,604. A chi-square (χ^2) test of independence (two-way contingency table analysis) was used to analyze the data relevant to research question 1. The other five research questions were addressed using descriptive analyses. A significance level of .05 was used to determine statistical significance.

Data Collection

Prior to the study the researchers obtained approval to conduct research from the administration at the participating institution to conduct the study and collect existing data from the student information database system for secondary analysis. Data relevant to the research questions were collected on all students enrolled in course sections taught by instructors who taught both online and face-to-face sections of the same course within the same semester during the following semesters: fall 2012, spring 2013, fall 2013, spring 2014, fall 2014, and spring 2015. To protect the identities of the students and instructors and to maintain anonymity, unique identifier numbers were used in place of the identification numbers typically used in the institutional database. Members of the administrative computer programming staff at the participating institution assigned the numbers and provided the researcher with data that contained no personally identifying information on participants.

Data Analysis

For the purposes of this study the researchers considered student success to be demonstrated by the final course letter grades earned in the classes included in the study. Final course grades had six possible levels ("A," "B," "C," "D," "E," or "W") and were assigned to students by the course

instructor based on class performance relative to expected learning outcomes.

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RESULTS

Research Question 1

Is there a significant difference in student success as measured by the proportion of students making a letter grade of "A," "B," "C," "D," "E," or "W" on the final course grade between students taking a course online and students taking the same course with the same instructor face-to-face?

A two-way contingency table analysis was conducted to evaluate whether student success, as measured by the proportion of students making each letter grade on the final course grade, varied depending on instructional method. The two variables were final course grade and instructional method (online or face-to-face). Student success and instructional method were found to be significantly related, Pearson χ^2 (5, $N = 4,272$) = 49.15, $p < .001$, Cramer's $V = .11$. Table 1 indicates the percentage of students earning each final course letter grade by instructional method.

Follow-up pairwise comparisons were conducted to evaluate specific differences among proportions of students

TABLE 1
PERCENTAGE OF STUDENTS EARNING EACH FINAL COURSE LETTER GRADE BY INSTRUCTIONAL METHOD

Instructional Method	Final Course Grade						Total
	A	B	C	D	F	W	
Face-to-Face	38.0	25.6	16.9	6.1	10.2	3.2	100.0
Online	42.6	24.2	11.7	4.4	11.3	5.8	100.0

earning each final course letter grade. The Holm's sequential Bonferroni method was used to control for Type I error at the .05 level across the pairwise comparisons conducted. In general, students taking a class online were significantly more likely to make an "A," an "F," or a "W" than students taking a class face-to-face. Students taking a class face-to-face were more likely to make a "B," "C," or "D" than students taking a class online.

Research Question 2

What is the distribution of grades in online and face-to-face courses for traditional-age and nontraditional-age students?

Table 2 displays the percentage of traditional age and non-traditional age students earning each of the letter grades for online and face-to-face courses. Nontraditional age students were more likely than traditional age students to make an "A" in both online and face-to-face courses. Traditional age students taking face-to-face course were least likely to drop a course. The other three groups displayed similar drop rates. Traditional age students were more likely than nontraditional age students to make an "F" in both online and face-to-face courses.

Research Question 3

What is the distribution of grades in online and face-to-face courses by gender?

Table 3 displays the percentage of male and female students earning each of the letter grades for online and face-to-face courses. Both males and female online students were significantly more likely to make an "A" than their peers in face-to-face courses. Surprisingly both online groups, males and females, were significantly more likely to withdraw from an online course than in a face-to-face course. Both groups were also slightly more likely to make an "F" in online courses. Males had approximately the same chance of making a passing grade (A, B, or C) in online and in face-to-face courses (75.0% and 76.5%

respectively). Females had a significantly better chance of making a passing grade in online classes (79.9%) than in face-to-face courses (73.3%).

Research Question 4

What is the distribution of grades in online and face-to-face courses by academic classification?

Table 4 displays the percentage of freshman and sophomore students earning each of the letter grades for online and face-to-face courses. Sophomores were significantly more likely to make an "A" than freshmen. Freshmen were more likely to make an "F". This was especially true for freshmen taking online courses. Both freshmen and sophomores were twice as likely to drop an online course as they were a face-to-face course.

Research Question 5

What is the distribution of grades in online and face-to-face courses by Pell Grant Eligibility Status?

Table 5 displays the percentage of students by Pell Grant Eligibility earning each of the letter grades for online and face-to-face courses. Students that were not Pell Grant eligible were more likely to make an "A" and to make an "A," "B," or "C" than Pell Grant eligible students. Students in both groups (Pell grant eligible and not Pell Grant eligible) were more like to withdraw from online courses.

Research Question 6

What is the distribution of grades in online and face-to-face courses by first generation college student status?

Table 6 displays the percentage of students by first generation college status earning each of the letter grades for online and face-to-face courses. Students that were first generation and those that were not first generation had similar levels of success in both online and face-to-face courses. Both groups were also less likely to withdraw from face-to-face courses than from online courses.

Delivery Method	Age Group	Final Course Grade						
		A	B	C	D	F	W	
Online	Traditional-age	35.3	24.9	12.9	5.7	14.7	6.5	100.0%
Face-to-Face	Traditional-age	33.8	25.8	18.7	7.0	11.6	3.1	100.0%
Online	Nontraditional-age	45.3	24.4	11.0	3.3	9.7	6.3	100.0%
Face-to-Face	Nontraditional-age	47.2	24.8	11.9	2.6	7.9	5.6	100.0%

Delivery Method	Gender	Final Course Grade						
		A	B	C	D	F	W	
Online	Male	38.5	25.0	11.5	4.6	13.9	6.5	100.0%
Face-to-Face	Male	33.1	24.9	18.5	7.2	13.0	3.3	100.0%
Online	Female	44.1	24.0	11.8	4.3	10.4	5.5	100.0%
Face-to-Face	Female	41.5	26.1	15.7	5.3	8.2	3.2	100.0%

Delivery Method	Classification	Final Course Grade						
		A	B	C	D	F	W	
Online	Freshman	33.4	24.9	14.0	4.3	16.8	6.8	100.0%
Face-to-Face	Freshman	29.9	24.8	19.1	8.3	14.5	3.4	100.0%
Online	Sophomore	41.8	25.1	11.4	5.2	10.1	6.4	100.0%
Face-to-Face	Sophomore	41.9	28.5	16.3	3.6	5.9	3.9	100.0%

Delivery Method	Pell Grant Eligible	Final Course Grade						
		A	B	C	D	F	W	
Online	Yes	37.5	24.9	13.4	5.1	13.1	5.9	100.0%
Face-to-Face	Yes	35.4	26.2	17.7	6.0	11.1	3.6	100.0%
Online	No	50.1	23.3	9.1	3.3	8.7	5.5	100.0%
Face-to-Face	No	41.3	24.9	15.9	6.3	9.0	2.6	100.0%

Delivery Method	First Generation	Final Course Grade						
		A	B	C	D	F	W	
Online	Yes	40.9	23.9	13.6	5.0	10.9	5.8	100.0%
Face-to-Face	Yes	35.5	27.6	16.9	7.4	10.6	2.1	100.0%
Online	No	37.6	27.1	10.2	4.8	13.6	6.6	100.0%
Face-to-Face	No	37.9	25.7	17.9	5.2	10.1	3.2	100.0%

DISCUSSION

From fall 2012 through spring 2015, the period from which data were collected, the overall student population averaged: 76% traditional-aged and 24% nontraditional-aged, 61% females and 39% males, 44% enrolled full-time and 56% enrolled part-time, and a composite ACT score of 18.9. In addition, 75% of traditional-aged students were eligible to receive federal Pell grants (TBR, 2014; THEC, 2015).

Overall Student Success in Online Versus Face-to-Face Courses

The results relevant to Research Question 1 indicated that students in online courses were significantly more likely to withdraw from a class than students in face-to-face courses. This finding was consistent with those of earlier studies (Allen & Seaman, 2015; Aragon & Johnson, 2008; Hachey et al., 2013; Harrell & Bower, 2011; Wojciechowski & Palmer, 2005; Xu & Jaggars, 2011a, 2011b). Another result from the present study was that students in an online course were significantly more likely to make an "A" or "F" final course grade, whereas those in a face-to-face course were more likely to make mid-range grades of a "B," "C," or "D."

Over 21% of students in online classes made an "A," as compared to 18.8% of students in face-to-face classes. In face-to-face classes 24.1% of students made grades in the "B," "C," or "D" range, as opposed to 20.3% of students in online classes. There was no consensus among previous research, but indications were that online students tended to earn lower grades than face-to-face students (Capra, 2011; Helms, 2014; Scherrer, 2011; Sue, 2005; Xu & Jaggars, 2011b). The results from the present study suggest the need for additional research, as they are neither clearly consistent with nor contradictory to earlier findings regarding grades based on demographics.

CONCLUSIONS

Results indicated there was a significant difference in student success between students taking a course online and students taking the same course with the same instructor face-to-face. Also, there was a significant difference in student success based on instructional method when the following factors were considered: age group, gender, student classification, and Pell Grant eligibility status. There was no significant difference in student success based on instructional method when first-generation college student status was considered.

Students who were nontraditional-aged, sophomores, and non-Pell Grant-eligible tended to have success in online courses at higher rates than other students in this study.

Ironically, these are the student groups who often have personal responsibilities, work obligations, and financial management issues that make attending and completing school a complicated and challenging process (Compton et al., 2006; Wyatt, 2011).

One factor that must always be considered with respect to the success of students concerns financial aid rules and regulations. Although 58.4% of students in this study were eligible to receive Pell Grants, many additional students most likely received other types of financial aid (i.e., loans, scholarships). Generally, a student must maintain full-time enrollment status to continue receiving aid. Also, they must maintain a specified minimum GPA, which varies from one type of financial aid to another. Sometimes students who are doing poorly in courses will remain in the classes and receive "F" grades, instead of dropping and having their load status change to part-time. The effect of the "F" on the GPA may be less damaging overall in terms of keeping financial aid.

Limitations

Factors not explored in this study may have had an effect on student success. In addition to an analysis of the proportion of students making a letter grade of "A," "B," "C," "D," "F," or "W" on final course grades, other options exist to define and measure student success. The study was delimited to a specific public community college in Tennessee. Therefore, the findings may not be generalized to other postsecondary institutions. Also, the study was delimited to course sections taught in both online and face-to-face format by the same instructor within the same semester from fall 2012 through spring 2015. The researchers made the assumption that the course content and primary requirements were the same for both the online and face-to-face formats of each specific course.

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