A Ten-Year Comparison of Outcomes and Persistence Rates In Online Versus Face-to-Face Courses

By Faruk Tanyel and Jan Griffin

Peer Reviewed

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Abstract

With the practice of offering college courses and degrees through distance education in order to increase college enrollments, the question arises, “are there unintended consequences for students taking these courses?” The purpose of the research reported on in this article was to compare student outcomes for online versus face-to-face sections of courses matched by course number and instructor for a ten-year period following the introduction of online courses at a small-sized, southeastern regional state university. Results indicated a +12 percent difference in the percent of students receiving credit for the course and +.15 higher average course GPA (on a 4.0 scale) favoring the face-to-face format. Longitudinal analyses indicated that as online sections of courses were offered in more disciplines by more instructors to more students, the differences in GPA became apparent. These results are discussed in terms of the potential unintended effects of taking an online version of a course on the hour and GPA continuation requirements for keeping state scholarships.

Over the past 20 years, there has been significant growth in the offering of college courses and degrees through online formats. With the introduction, popularity, and wide-spread availability of high-speed internet, colleges and universities have expanded their offerings to include a variety of online courses and degree programs. Data collected by the Babson Survey Research Group (Allen & Seaman, 2010) indicated that from fall 2006 to fall 2007, there was a 12 percent increase in the number of U.S. students taking at least one class in an online format. In fall 2007, 20 percent of all higher education students were enrolled in at least one online course. By 2011, this number had reached 6.7 million or 32 percent of all higher education students (Sloan Consortium, 2012). Online courses have traditionally been popular with a certain segment of the student population (e.g., nontraditional, older, working, geographically distant students) and are now being endorsed by college administrators as a potential solution to maintaining or increasing college enrollments with lower costs (Dell, Low, & Wilker, 2010; Jenkins, May 22, 2011; Moore, February 15, 2013).

As a South Carolina editorial ("More online higher education," September 16, 2012) suggested, the high growth rate of online enrollments has created a "frenzy of efforts," including the establishment of online campuses at state universities which have traditionally been residentially-based. The University of South Carolina Palmetto College is a case in point. It is designed to be an online college that allows students with two years of classroom college credits to finish a bachelor's degree (in selected majors) online. With increasing numbers of students having to drop out of college or delay starting due to financial considerations, the flexibility of online courses may provide an alternative for many working Americans.

Our study adds to the literature on comparing the outcomes of online versus face-to-face course delivery methods in the following ways:

- First, it provides a 10-year longitudinal analysis of outcomes comparing online versus face-to-face courses using the same instructors teaching different sections of the same course.
- Second, the current study extends the literature by assessing both *grades* and *persistence rates* to measure student success. To date, most research has focused on grades (measured by overall course GPA) as the measure of student success (see *Community College Research Center* Working Paper Series for exceptions: Jaggars, 2011; Jaggars, Edgecombe, & Stacey, 2013; Jaggars & Xu, 2010; Xu & Jaggars, 2013a; Xu & Jaggars, 2013b; Xu & Jaggars, 2011a; Xu & Jaggars, 2011b). Persistence rates provide a more sensitive measure of student success by including an analysis of *successful completion of a course* (with a grade of D or higher) versus *receiving no credit* (receiving a grade of F or W-withdrawal). Previous research has considered the effects of a grade of F in terms of its impact on final GPA, but not on its impact on number of hours completed. Other than the Jaggars' group, most researchers have not considered the impact of withdrawing from a course other than to protect GPA. There is the additional adverse outcome of "lost money" and "lost credit."

- Third, our study adds a new dimension to the discussion of offering increasing numbers of online courses: the potential unintended effect on meeting the hour and GPA continuation requirements for state scholarships.

Brief Literature Review: Online Versus Face-To-Face Course Delivery Methods

The literature in the area of comparing outcomes for online versus face-to-face instruction is vast, but, due to a variety of constraints that occur in providing an undergraduate education, much of the research is methodologically weak. Evaluations of the effectiveness of online course outcomes vary widely in methodology, focus, and scope. Finding relevant, methodologically rigorous evaluations of outcomes is difficult. Therefore, many of the studies evidence weaknesses such as small sample sizes, failures to report persistence rates and outcome measures, biases due to the authors performing the dual-roles of experimenter and instructor, the comparison of formats in only one discipline, and the use of case studies. The U.S. Department of Education meta-analysis (2010), Dell et al. (2010), Bennett et al. (2011), Kearns (2012), Jaggars et al. (2013), Tallent-Runnels et al. (2006), and Gondhalekar, Barnett, & Edwards (2005) all provide excellent reviews of these issues and the literature to date.

Qualitatively, the preponderance of research on the effectiveness of undergraduate or graduate courses indicated either no differences in final grade outcomes between courses presented in online versus face-to-face formats or a slight positive effect for courses presented in a face-to-face format, especially at the community college level. A modest number of studies indicated no differences between the two, and, more rarely, a few studies indicated a positive effect for the online format. It appears from these reviews that online delivery caused no harm and caused slightly lower overall final grades.

Quantitatively, recent meta-analytic reviews appeared to disagree on the effectiveness of online versus traditional face-to-face formats (Bernard et al., 2004; U.S. Department of Education, 2010). There were no significant differences in performance outcomes between online and face-to-face courses. Positive effects for online courses found by the U.S. Department of Education were due to the inclusion of blended/hybrid courses which also involve, face to face sessions, improved pedagogy, and increased student contact, which, by themselves, may result in an increase in grades. (See Jaggars & Bailey, 2010 for a response to the U.S. Department of Education meta-analysis.)

Bernard et al. (2004) found no differences in independent achievement, attitude, and retention outcomes between the two presentation media. When they divided their data into synchronous and asynchronous modes of presentation, they found slight differences: synchronous modes favored face-to-face formats, whereas asynchronous modes favored internet formats. The authors made an important point: the pedagogical methods used to present the material (time spent communicating with instructor and

between students in the course) and the medium by which the instruction was offered (online versus face-to-face format) were separate constructs and should not be considered as one element of instruction. However, in most broad investigations of outcome differences between online and face-to-face instruction, the method and the medium are confounded due to the use of different instructors teaching different courses at different times using different types of methods.

The results of the U.S. Department of Education commissioned meta-analytic review originally of K-12 instruction (2010) indicated that on average students in the online learning conditions performed modestly better than those in traditional settings. The authors also noted that this effect was strongest in what they termed "blended online instruction," which they included in their online group. As in Bernard et al.'s meta-analysis (2004), this version of online instruction used different curriculum materials, pedagogy, and learning time in treatment than pure face-to-face conditions. The authors noted that the modest positive effect of online course delivery could not be distinguished from the positive effect of increased instructional time and improved pedagogy. This finding agreed with Bernard et al.'s findings that instruction that uses "extra" time with students, referred to as the pedagogy effect, and resulted in slightly higher grades, irrespective of whether instruction was online or face to face.

However, using the results of the U.S. Department of Education meta-analysis (2010) to guide policy in a higher education setting may present additional challenges. The researchers were originally charged with investigating online learning in a K-12 setting, not in a higher education environment. Additionally, data from qualified studies from two- and four-year college courses were included to reach an acceptable level of data points for analysis. The authors of the study note that there were too few observations to draw concrete conclusions. Their findings agreed that there is a serious lack of methodologically valid comparisons of online and face-to-face instructional learning outcomes that include both student success and persistence rates.

Purpose of the Current Research and Hypotheses

The purpose of the current research was to compare student outcomes for online versus face-to-face sections of courses. Student outcomes were measured using the *final grades* achieved by students differentiating between *successful completion for credit* and *no credit for course* outcomes.

Hypotheses

First, in terms of student characteristics, it was predicted that students in the online courses would be older (aged 25 or greater) and have a higher prior GPA (GPA of 2.5 or greater). Second, it was expected that *final grades* would be essentially the same between the two methods of delivery, however, the number of *no credit for course* outcomes would be greater for online courses, and that this difference would increase over the ten-year period. Third, it was predicted that there would be a difference in the

final course GPA favoring face-to-face sections and that as the number of on-line sections increased over successive semesters, this difference would also increase.

Rationale

Distance education was originally introduced to provide a way for geographically distant students to complete a degree. As Gondhalekar et al. (2005) state, there is a clientele effect: compared to face-to-face courses, online courses tend to have a lower representation of minority and financial aid students and a higher representation of older and female students. These differences alone may alter success. As online delivery becomes a more popular venue for presenting college courses, this potential confounding effect may decrease as more students begin taking these courses. To date, the evidence has suggested that in four-year institutions online presentations of material were just as effective as face-to-face presentations. If the results were due in part to the characteristics of the students who selected online courses, then offering online courses en masse to all students may create new challenges. Further, research from four year institutions did not take into account *withdrawal* rates. As the researchers at the *Community College Research Center, Columbia University* have found, there was a difference in withdrawal rates favoring face-to-face courses.

Method

Sample

The data for this study was obtained from a southeastern regional university which offers baccalaureate degrees in over 20 majors to an undergraduate population of approximately 5,000 students, 85 percent of which are enrolled full-time. This university is both a residential and commuter campus that provides courses for beginning freshman and transfer students. Existing institutional data since the introduction of the first online course at the university (from spring 2002 to spring 2011) were analyzed. The criteria for including courses in the sample were as follows: the same course had to be taught by the same instructor, both online and face-to-face, during the same semester. As a result, only 15 of the 19 semesters were included in the data set. We were unable to differentiate amongst different online modes of delivery, such as only online, hybrid or blended courses, because the institution coded all versions of online courses the same. Similarly, we could not determine if face to face courses were simultaneously broadcast online or recorded and played later on. We also did not seek course syllabi or compare course materials and assignments. This was an archival data study. Student registration processes was the same for both modes of delivery. Since the instructor taught at least one section of each type, students could freely select the desired section.

Data Set

The data set used as the sample in our study included information about students enrolled in undergraduate, non-nursing courses. Nursing courses were not

included because they were for majors only, had a minimum grade point requirement, and were only offered at the 300-level or above.

The data set included information about each student's major, prior GPA, age, and performance in the courses as determined by *course outcome*, persistence or *successful completion for credit,* and *no credit for course.* Course outcomes (e.g., Alghazo, 2005; Friday, Friday-Stroud, Green, & Hill, 2006; Gondhalekar et al., 2005; Orabi, 2004; Ury, McDonald, McDonald, & Dorn, 2005) and persistence are generally acceptable measures of student success rates (e.g., Jaggars, 2011; Jaggars et al., 2013; Jaggars & Xu, 2010; Xu & Jaggars, 2013a; Xu & Jaggars, 2013b; Xu & Jaggars, 2011a; Xu & Jaggars, 2011b).

Controls

First, to control for the pedagogy effect, we included only courses from each semester where there were sections of the same course taught by the same instructor in both online and face-to-face formats.

Second, in order to extend the concept of performance to include the broader concept of student success, we included a comparison of *no credit for the course* and *successful completion for credit.*

Third, in order to control for research bias and short comparison periods, the authors were not amongst the faculty teaching the courses that were compared over the ten-year time period.

Results

Data Set Composition

Information concerning the sample data set is presented in Tables 1-3 below. Table 1 indicates the number of different instructors, different student majors, and online and face-to-face sections from different academic units of the university.

The total sample included students who received a grade (grades A - F/WF, NR) or who withdrew (W) from the course after the semester had started. For those students who received grades, grades were coded on a standard 4-point grading scale, with A = 4, B+ = 3.5, B = 3, C+ = 2.5, C = 2, D+ = 1.5, D = 1, F/WF = 0. Grades of WF indicated that the student elected to withdraw from the course after the withdrawal deadline and received a grade of F for the course. Therefore, a grade of WF was treated the same as an F. Grades of NR reflected "no record," were rarely used, and were converted to a grade of F if no grade was entered. These grades were all included in the student's grade-point average. Grades of "I" reflected "incomplete", and they were not used in the analyses. A grade of W indicated that the student elected to withdraw from the course by withdrawal deadline, and although the student paid full tuition for the course, he or she did not receive credit.

Table 2 below presents student characteristics for the total sample (those who received a grade of A - F or received a W), and Table 3 below presents student characteristics for the subset of students who persisted in the course for the entire semester and received a grade for the course (grades A - F).

Sample Characteristics

As is shown below in Table 1, over the ten-year period, there were 38 different instructors who taught both online and face-to-face sections of the same course during the same semester. There were 81 different courses with a total of 226 sections: 132 face-to-face and 94 online sections. There were 66 courses from the college of arts and sciences with 115 face-to-face and 78 online sections; there were 11 courses from the college of business and economics with 13 face-to-face and 11 online sections; and there were four courses from the school of education with four face-to-face and five online sections. Due to the large differences in the number of courses from each area, comparisons between areas were not conducted. There were 37 different majors declared by students in the face-to-face sections and 36 different majors declared by the students in the online sections.

Table 1

Distribution of Courses and Sections

Academic Unit (No.; % of courses)	Sections (No.;%)		
	Face-to-Face	Online	Total
Arts and Sciences (66; 81%)	115 (87%)	78 (83%)	193
Business and Economics (11; 14%)	13 (10%)	11 (12%)	24
School of Education (4; 5%)	4 (3%)	5 (5%)	9
Total (81)	132 (58%)	94 (42%)	226
Number of different instructors			38
Number of different majors	37	36	

Total Sample

Table 2 below presents student characteristics for the total sample (those who received a grade of A - F or received a W because they withdrew from the course.) and Table 3 presents student characteristics for the subset of students who persisted in the course for the entire semester and received a grade for the course (grades A - F).

There were 5,621 students in the total sample, with 3,355 students in the face-to-face sections and 2,266 students in the online sections of the course. Consistent with our prediction, 49 percent of online students were aged 25 or older versus 26 percent of face-to-face students (X^2(1, N = 5,614) = 324.16, p < .001; r = .24); contrary to our prediction, there were no differences in the number of students with a prior GPA of 2.5 or greater between online versus face-to-face sections (66 percent for online students versus 64 percent for face-to-face students, X^2(1, N = 5,621) = 2.26, p = .133). Therefore, students' relative ability as indicated by prior GPA performance was similar. However, there were differences in other student characteristics for the online versus face-to-face sections. Twenty percent of online students were taking upper division courses versus 12 percent of face-to-face students (X^2(1, N = 5,621) = 70, p < .001; r = .11) and 17 percent of online students withdrew from the course versus 10 percent of face-to-face students (X^2(1, N = 4,913) = 60.1, p < .001; r = .11).

Table 2

Student Characteristics for Total Sample

	No. (%) of Students				
	Face-to-Face	Online	Total	X^2	r
Total	3,355 (60%)	2,266 (40%)	5,621		
Prior GPA				2.26	
Prior GPA 2.5 or greater	2,154 (64%)	1,499 (66%)	3,653		
Prior GPA less than 2.5	1,201 (36%)	767 (34%)	1,968		
Lower/Upper				70.0*	.11
Lower division classes	2,953 (88%)	1,809 (80%)	4,762		
Upper division classes	402 (12%)	457 (20%)	859		

Age				324.16*	.24
Less than 25	2,486 (74%)	1,147 (51%)	3,633		
25 or greater	867 (26%)	1,114 (49%)	1,981		
Grade/Withdrawal				60.1*	.11
Received a grade[a]	3,027 (90%)	1,886 (83%)	4,913		
Received a withdrawal[b]	328 (10%)	380 (17%)	708		

*$p < .001$

[a]Grades of A - F/WF/NR (grades of F, WF, and NR were coded as F's).

[b]Received a W; withdrew by 10-week withdrawal period; paid full tuition for the course, but did not receive credit.

Subset Sample

Table 3 below presents student characteristics for the subset of students who persisted in the course for the entire semester and received a grade for the course (grades A - F).

There were 4,113 students who received a grade for the course, with 3,027 students in the face-to-face sections and 1,886 students in the online sections of the course. Student characteristics for those who received a grade mirrored the entire sample. Forty-nine percent of online students were aged 25 or older versus 25 percent of students in the face-to-face courses ($X^2(1, N = 4,911) = 32.16$, $p < .001$; $r = .08$). There were no differences in the number of students with a prior GPA of 2.5 or greater between online and face-to-face sections (69 percent for online students versus 67 percent for face-to-face students ($X^2(1, N = 4,913) = 3.1$, $p = .078$), but as with the entire sample, there were differences in the percent of students taking upper division courses: 22 percent of online students were taking upper division courses versus 13 percent of face-to-face students $X^2(1, N = 4,913) = 77.81$, $p < .001$; $r = .13$).

Table 3

Student Characteristics for Selected Sample
(received a grade of A-F/WF/*NR*[a]

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	No. (%) of Students				
	Face-to-Face	Online	Total	X^2	*r*

Total	3,027 (62%)	1,886 (38%)	4,913		
Prior GPA				3.10	
Prior GPA 2.5 or greater	2,023 (67%)	1,306 (69%)	3,653		
Prior GPA less than 2.5	1,004 (33%)	580 (31%)	1,968		
Lower/Upper				77.81*	.13
Lower division classes	2,644 (87%)	1,467 (77%)	4,111		
Upper division classes	383 (13%)	419 (23%)	802		
Age				32.16*	.08
Less than 25	2,269 (75%)	963 (51%)	3,633		
25 or greater	757 (25%)	922 (49%)	1,679		

*$p < .001$

[a]Grades of A - F/WF/NR (grades of F, WF, and NR were coded as F's).

Grade Comparisons

Distribution of Grades

The overall distribution of percent grades from 15 semesters from spring 2002 until spring 2011 for students in face-to-face versus online sections is shown below in Table 4 and illustrated in Figure 1.

Table 4

Student Performance in Face-to-Face Versus Online Sections

	% (No.) of Students		
	Face-to-Face	Online	Total
	60% (3,355)	40%(2,266)	5,621
Grades			Difference

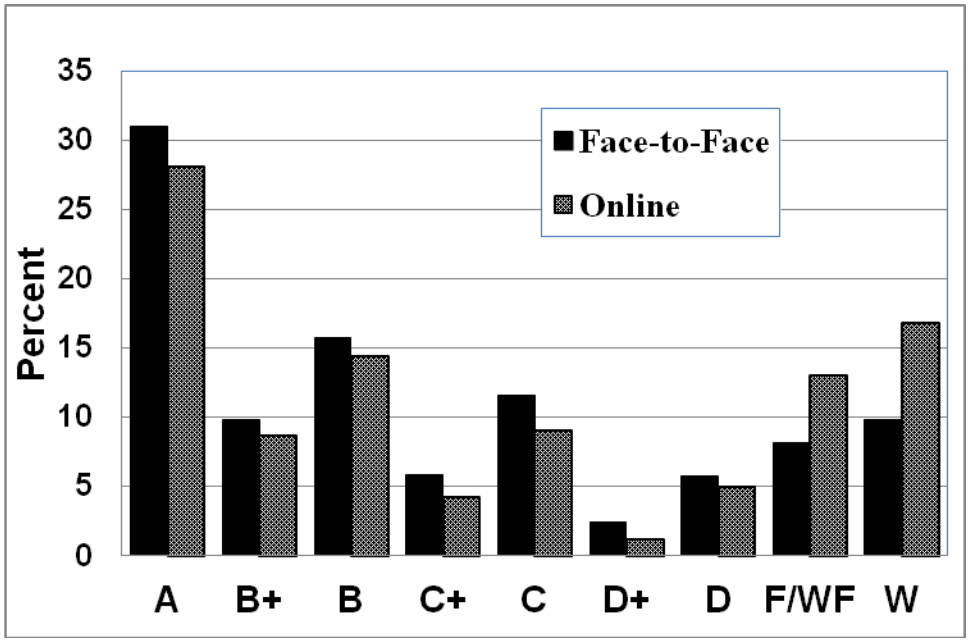
A	31% (1,040)	28% (635)	+3%		
B+	10% (329)	9% (195)	+1%		
B	16% (528)	14% (325)	+2%		
C+	6% (195)	4% (96)	+2%		
C	12% (388)	9% (204)	+3%		
D+	2% (80)	1% (26)	+1%		
D	6% (192)	5% (111)	+1%		
F	8% (275)	13% (294)	-5%		
W	10% (328)	17% (380)	-7%		
				X^2	*R*
Successful Completion*				106.73	.16
A - D	82% (2,752)	70% (1,592)	+12%*		
F + W	18% (603)	30% (674)	(-12%)		

*Difference in percent of students who received credit for the course

As can be seen above, there was a difference in student success between the face-to-face and online sections of the same course. Eighty-two percent of students in the face-to-face sections received credit for the course, whereas only 70% of students in the online sections received credit for the same course ($X^2(1, N = 4,344) = 106.73$, $p < .001$; $r = .16$). Thus, although the size effect was small, as predicted, there was a significant difference of 12 percent of students who successfully completed the face-to-face versus the online section of the same course.

Figure 1

Percent distribution of grades in face-to-face versus online sections for 10-year period from spring 2002-spring 2011 (15 semesters)



To see if this pattern held over the entire 15 semesters, the data were divided into three, five-semester groupings and reanalyzed. It was predicted that there would be a difference in favor of the face-to-face sections, and that the difference would increase over the five year periods. As can be seen below in Table 5 and Figure 2, the pattern remained the same; the percent of students who successfully completed the course for credit was greater for the face-to-face sections in all three time periods.

Table 5

Received Credit Versus No Credit Over Five Semester Intervals: Difference in Percent for Face-to-Face Versus Online Sections

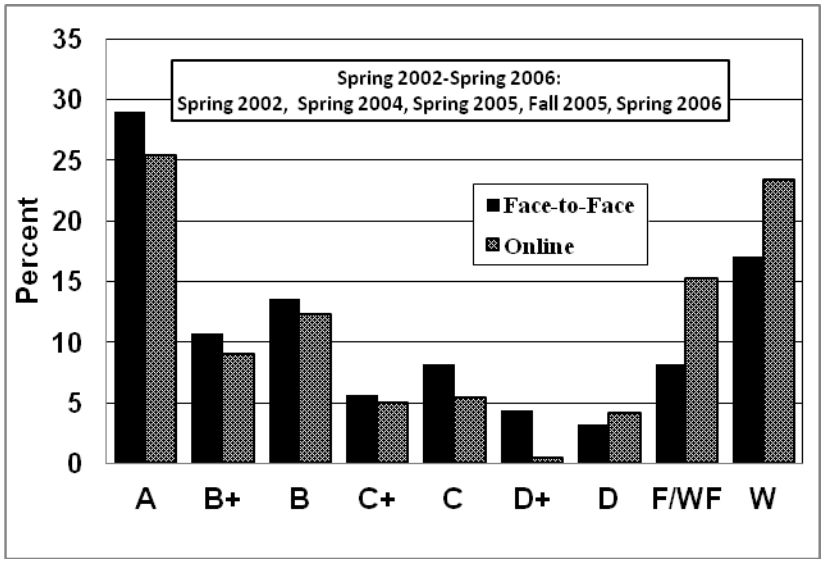
Difference Score	X^2	*r*
First five semesters: Spring 2002-Spring 2006		
+14%	11.38**	.14
Second five semesters: Fall 2006-Fall 2009		
+9%	77.81*	.08

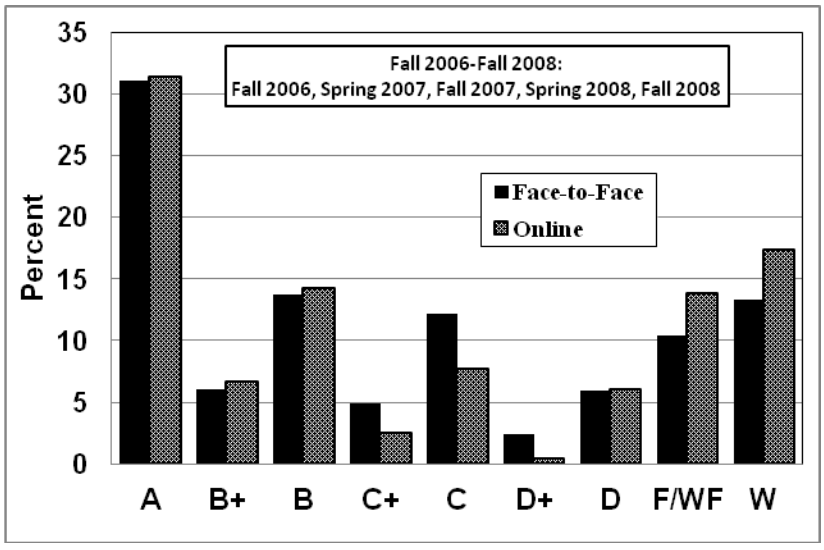
Third five semesters: Spring 2009-Spring 2011			
	+13%	92.51**	.18

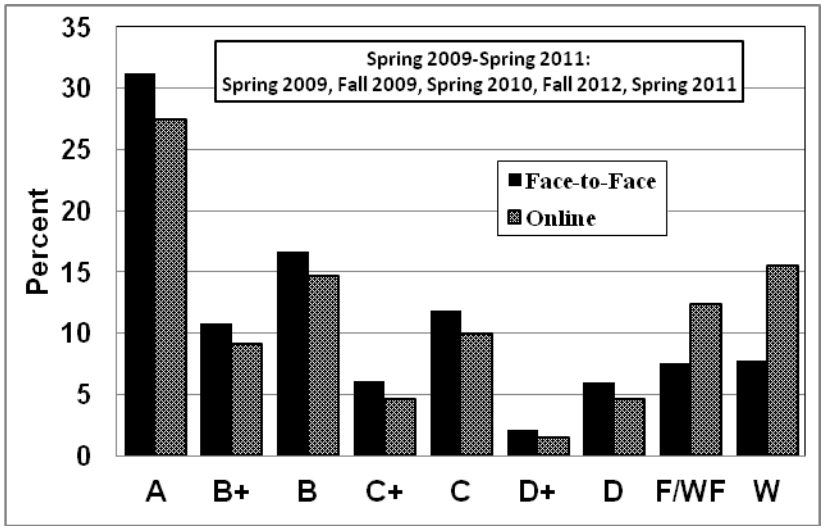
*$p < .005$; **$p < .001$

Figure 2

Percent distribution of grades for five semester intervals over the 10-year period







Performance Outcomes

Overall GPA earned in the online versus face-to-face sections shown below in Table 6 presents the difference between the average GPA earned in the course for face-to-face and online sections. The average GPA for students in the face-to-face sections was significantly higher than for those in the online sections of the same course (*M*s = 2.8 vs. 2.65, respectively; $t(4,911) = 3.84$, $p < .001$; $d = .11$) even though the Prior GPA was in the opposite direction. The Prior GPA favored the students in the online sections (*M*s = 2.81 vs. 2.76, respectively; $t(4,911) = 2.31$, $p < .05$; $d = .07$). Although the effect size was small, there was a +.15 significant difference in GPA favoring face-to-face sections.

Table 6

Average GPA Differences

			99% Confidence Interval	
	Diff	*t*(4,911)	Lower	Upper
Average GPA	0.15	3.84**	0.05	0.25
Prior GPA	- 0.05	2.76*	- 0.11	0.01

*$p < .05$; **$p < .001$

To see if this pattern held over the entire 15 semesters, the data were divided into three, five semester intervals and reanalyzed. As can be seen in Table 7 below, contrary to our prediction, it was only during the last five semesters that there was a difference in the average GPA between the face-to-face and online sections of the same course, $t(3,451) = 3.75$, $p < .001$; $d = .13$, with students in the face-to-face sections earning a significantly higher GPA than those in the online sections of the same course (*M*s = 2.83 vs. 2.66, respectively).

Table 7

Average GPA Differences Overall GPA Over Five Semester Intervals

Differences in Percent for Face-to-Face versus Online Courses

Diff		99% Confidence Interval	
		lower	upper
First five semesters: Spring 2002-Spring 2006			
	t(448)		
+ 0.25	1.88		
Second five semesters: Fall 2006-Fall 2009			
	t(1,008)		
+ 0.15	0.31		
Third five semesters: Spring 2009-Spring 2011			
	t(3,451)		
+ 0.17	3.75*	0.17	0.05

*$p < .001$

Discussion

The purpose of our research was to compare student outcomes for online versus face-to-face sections of courses matched by course number and instructor for a ten-year period following the introduction of online courses at a southeastern regional state university. There were a greater number of students in the online sections of the courses who were older (aged 25 or above) than traditionally-aged college students, and these students also had a higher GPA prior to enrollment in an online course. The results indicated significant differences in course GPA averages favoring face-to-face versus online sections (+.15 grade points on a 4.0 scale). The results also indicated that as the number of online courses increased during the last five-semester interval, the difference in average GPA became significant. Although previously untested before this

study, the findings in the literature which indicated the impact of the clientele and pedagogy affects appear to be correctly hypothesized.

Clientele Effect

The previous findings of no differences in the average achievement between online and face-to-face courses were due more to a clientele effect than a course delivery format effect. In the past, when there were fewer offerings of online sections at universities across the country. Researchers (e.g., Gondhalekar et al., 2005) found a difference in the population of students who elected to register for the online versus face-to-face courses which may have, by itself, resulted in successful outcomes in the online courses.

It may be that there is a certain skill set, student attitude, and maturity that are necessary to be successful in an online course. If increasing numbers of students take courses in an online format, success may decrease. When the performance data from the longitudinal sample was analyzed in five-semester intervals, it was in the last five-semester interval (from spring 2009 to spring 2011) that the difference in average course GPA became evident. When the number of students enrolled in online sections of courses more than tripled from 479 to 1,543 (and the clientele effect may have been reduced), the difference in average course GPA became significant. These findings support research that found that taking a course in an online format may not be in the best interests of all students and that establishing a criteria for enrollment might be necessary.

Pedagogy Effect

The slight differences that have been found favoring online instruction in some research may have been due to the methodology employed by the instructors teaching some of the online courses rather than the medium used to convey the material (e.g., Bernard et al., 2004; U.S. Department of Education, 2010). In the present study, when the instructors of the online and face-to-face sections were matched, not only did the slight effect in favor of the online sections disappear, but it also significantly shifted in the opposite direction. Students in the face-to-face sections achieved a higher course grade point average (+.15) than those in the online sections of the same course taught by the same instructor during the same semester.

In addition to course GPA, the current study reported persistence rates, a measure that assessed credit earned for enrolled students. Course GPA is one measure of student success, but successful completion of a course resulting in credit is another important measure. Whether a student has to retake the same course or another course in order to achieve credit has an important impact on the graduation rate. The results revealed a 12 percent difference in successful completion of the course for credit for students who took the face-to-face versus online section of the same course. A recent research summary from the *Community College Research Center, Columbia University* (Jaggars et al., 2013) found a similar percentage difference

for students (*N* = 24,000) taking online or hybrid courses (*N* = 184,357) at 23 community colleges in a southern state. Their results showed a 13 percent difference in successful completion for face-to-face versus online courses. Particularly disturbing was their finding that students who took online courses were significantly less likely to persist and attain a degree.

Including measures of withdrawal rates to evaluations of online course effectiveness would add to the present literature by introducing a useful, yet subtle measure of the potentially unintended negative effects of offering online courses to *unprepared* or *uninformed* students. Research (Lee, 2013) that investigated the effectiveness of teaching with asynchronous online discussion formats found that students' approaches to learning and their perceptions of the discussion formats predicted academic performance. Those students who were able to produce deep critical thinking responses, rather than surface reactions to others' ideas (*prepared*), and who understood the intent of the discussions (*knowledgeable*), performed better. However, no measures of withdrawal from the courses were assessed. Asynchronous discussions are common platforms used to assess online learning. If students are not prepared to write to the depth needed, nor feel informed of the need to do so, they might believe it is better to withdraw from the course rather than receive a low grade. The very strategy that might be effective for maintaining the scholarship GPA requirement (withdraw from the courses) might endanger meeting the number-of-credit-hours-per-year completion requirement.

Implication of Current Findings

The difference in GPA and student completion rates for online courses raises concerns about the practice of increasing online course offerings simply as a way to increase enrollment. Approximately 30 percent of students attend the current university on state scholarships (Office of Institutional Research report for 2011-2012). These scholarships are funded from the State Educational Lottery System and are for graduating high school seniors who meet qualification requirements. The scholarships have minimum GPA and per-year-credit-hour-completion requirements for renewal while in college. A difference of .15 grade points on a 4.0 scale may appear to be small, but it is major if it is the difference between meeting or missing GPA requirements. Similarly, to withdraw from a course, or to fail a course, simply due to the venue through which it is offered, would also affect students' ability to meet credit hour completion requirements.

Institutional Example

Although data allowing correlation between online course performance and state scholarship retention were not available, an examination of scholarship trends at the current institution illustrates the potential impact in student terms (data for fall 2011-fall 2012, Office for Institutional Research). For the 2011-2012 school year, 1,318 (24 percent) students started with one of the state scholarships; 182 of those students graduated, resulting in 1,136 continuing students. Only 942 of those students returned

fall 2012. Of those students who returned, 74 percent (693) kept their scholarships, and *26 percent (249) lost their scholarships and needed to find alternate sources of funding* which may have included student loans. Perhaps, the most disturbing figure was that *20 percent (228) of the returning students had an insufficient GPA after their spring 2012 semester to keep their scholarships*. No data was available on how many students lost their scholarships due to not completing the credit hour requirement. State-funded scholarships are a key component in funding many students' access to higher education (30 percent at the current institution). Although differences of 12 percent in completion rate and .15 grade points on a 4.0 scale may appear small, they are particularly significant both to the students struggling to maintain their scholarships and to the institutions struggling to increase retention and graduation rates.

Limitations and Directions for Future Research

The first limitation of the present research came from the inclusion of only courses where instructors taught at least two sections (one online and one face-to-face) of the same course during the same semester. This limited the number of courses included from the college of business and economics and the school of education. Future research should focus on including a greater number of matched courses from these two disciplines. The second limitation was the lack of ability in determining the mode of delivery of on line classes. Third limitation was the inability to identify the number of prior online courses students had completed. Future research should also investigate the effects of taking prior courses in an online format to assess whether there is transfer of online course "know-how" from one course to another. The final limitation was that it was not possible to identify whether failure or withdrawal from online courses specifically affected students' abilities to maintain their scholarships. This may have resulted in students having to take a summer courses to maintain the hour completion requirements. Future research should focus on linking the general negative effects of taking online sections of a course with maintenance of scholarships.

Conclusion

The research question was whether there were unintended consequences for students taking online sections of courses. The results of this research suggest that there are consequences. There was a 12 percent difference in the percent of students receiving credit for a face-to-face section of the same course and a 0.15 higher overall GPA (on a 4.0 scale). With money tight, and scholarships on the line, these differences, although unintended, are significant.

References

Allen, I. E., & Seaman, J. 2010. "Changing Course: Ten Years of Tracking Online Education in The United States." *Babson College, MA: Babson Survey Research Group, supported by the Sloan Corporation*. Retrieved on: July 18, 2013 from: http://www.eric.ed.gov/ PDFS/ED541571.pdf.

Alghazo, A. 2005. "Comparing Effectiveness of Online and Traditional Teaching Using Students' Final Grades." *Online Journal for Workforce Education and Development OJWED* 1(3): 1-11. Retrieved on: October 12, 2012 from: http://opensiuc.lib.siu.edu/cgi/viewcontent.

Bennett, D. McCarty, C., & Carter, S. 2011. "Teaching Graduate Economics: Online vs. Traditional Classroom Instruction." *Journal for Economic Educators* 11(2): 1-11. Retrieved on: November 12, 2012 from: http://capone.mtsu.edu/jee/2011/fall/1_MS411_pp1to11.pdf.

Bernard, R. M., Abrami, P., Lou, Y., Borokhovski, E., Wade, A., Wozney, L., Wallet, P. A., Fiset, M., & Huang, B. 2004. "How Does Distance Education Compare with Classroom Instruction? A Meta-Analysis of The Empirical Literature." *Review of Educational Research* 74(3): 379-439. Retrieved on: October 21, 2012, from: http://www.jstor.org/stable/3516028.

Dell, C. A., Low, C., & Wilker, J. F. 2010. "Comparing Student Achievement in Online and Face-to-Face Class Formats." *Journal of Online Learning and Teaching* 6(1): 30-42. Retrived on October 1, 2012. Retrieved from http://143.43.221.130/coehs/ncate/standard_5_exhibits/wilker_candi.pdf.

Friday, E., Friday-Stroud, S. S, Green, A. L., & Hill, A. Y. 2006. "A Multi-Semester Comparison of Student Performance Between Multiple Traditional and Online Sections of Two Management Courses." *Journal of Behavioral and Applied Management 8*(1): 66-81.

Gondhalekar, V. Barnett, R., & Edwards, S. 2005. "Online vs. In-class: Comparison Based on Grades." *Working paper Series – Document # 001-05, Seidman School of Business*, Grand Valley State University, Grand Rapids, MI. Retrieved on November 12, 2012. Retrieved from http://www.gvsu.edu/ cms3/assets/ C6D78A67-0AEF-0264-A38619EC6FB0793A/Online_inclass_ gondhalekar_edwards.pdf.

Jaggars, S. S., Edgecombe, N. and Stacey, G. W. 2013. "What We Know About Online Course Outcomes. CCRC Research Overview." Community College Research Center, Columbia University. Retrieved on August 8, 2013 from: http://www.eric.ed.gov/PDFS/ED542143.pdf.

Jaggars, S. S. 2011. “Online Learning: Does it Help Low-income and Underprepared Students?” *CCRC Working Paper No. 26*. *Community College Research Center, Columbia University*. Retrieved on March 10, 2013, from: http://ccrc.tc.columbia.edu/publications/online-learning-low-income-underprepared.html.

Jaggars, S. S. and Bailey, T. 2010. “Effectiveness of Fully Online Courses for College Students: Response to A Department of Education Meta-Analysis.: Community College Research Center, Columbia University. Retrieved on March 10, 2013 from: http://anitacrawley.net/Reports/Jaggers%20ResponsesetoMetaAnalysis.pdf.

Jaggars, S. S., & Xu, D. 2010. “Online Learning in The Virginia Community College System.” *Community College Research Center, Columbia University*. Retrieved on March 10, 2013, from: http://ccrc.tc.columbia.edu/publications/online-learning-virginia.html.

Jenkins, R. 2011. “Why Are so Many Students Still Failing Online?” *Chronicle of Higher Education*. May, 22. Retrieved from: www://chronicale.com/article/Why-Are-SoMany-Students-Still/127584/.

Kearns, L. R. 2012. “Student Assessment in Online Learning: Challenges and Effective Practices.” *Journal of Online Learning and Teaching*: 8(3) 1-11. Retrieved on March 10, 2013, from http://jolt. merlot.org/vol8no3/kearns_0912.htm.

Lee, S., W.Y. 2013. “Investigating Students’ Learning Approaches, Perceptions of Online Discussions, and Students’ Online And Academic Performance.” *Computers & Education* 68: 345-352. Retrieved on March 8, 2013, from: http://dx.doi.org/10.1016/j.compedu.2013.05.019.

Moore, T. 2013. “Speech to The Faculty of The College of Arts And Sciences.” February 15, *University of South Carolina Upstate*, Spartanburg, SC.

“More Online Higher Education: USC’s Palmetto College May Represent a Better Future.” 2012. Newspaper Editorial. September 16, *Spartanburg-Herald Journal*, pp1-2. Retrieved from http://www.goupstate.com/article/20120916/opinion/209161011.

Orabi, I. I. 2004. “A Comparison of Student Performance in an Online with Traditional Based Entry Level Engineering Course.” Proceedings of the 2004 American Society for Engineering Educational Annual Conference, June 20-23 Salt Lake City Utah.

Sloan Consortium, 2012. *Changing course: Ten years of tracking online education in the United Sates.* The Sloan Consortium. Retrieved on February 3, 2014. Retrieved from http:://sloanconsortium.org/publications/survey/changing_course_2012.

Tallent-Runnels, M. K., Thomas, J. A., Lan, W. Y., Cooper, S. Ahern, T. C., Shaw, S. M., & Liu, X. 2006. "Teaching Courses Online: A Review of the Research." *Review of Educational Research* 76(1): 93-135. Retrieved October 10, 2012 from: http://www.jstor.org/page/info/about/policies/terms.jsp.

Xu, D., & Jaggars, S. S. 2013a. "Adaptability to Online Learning: Differences Across Types of Students and Academic Subject Areas." *CCRC Working Paper No. 54*. *Community College Research Center, Columbia University*. Retrieved on March 8, 2013 from: http://academiccommons.columbia.edu/catalog/a:157286

Xu, D., & Jaggars, S. S. 2013b. "Examining the Effectiveness of Online Learning Within a Community College System: An Instrumental Variable Approach." *CCRC Working Paper* No. 56. *Community College Research Center, Columbia University.* Retrieved on March 10, 2013, from: http://ccrc.tc.columbia.edu/publications/examining-effectiveness-of-online-learning.html.

Xu, D., & Jaggars, S. S. 2011a. "Online and Hybrid Course Enrollment and Performance in Washington State Community and Technical Colleges." *CCRC Working Paper No. 31. Community College Research Center, Columbia University*. Retrieved on October 12, 2012 from: http://hdl.handle.net/10022/AC:P:12683

Xu, D. & Jaggars, S. S. 2011b. "The Effectiveness of Distance Education Across Virginia's Community Colleges: Evidence from Introductory College-Level Math and English Courses." *Educational Evaluation and Policy Analysis 33*(3): 360-377. doi: 10.3102/0162373711413814.

Ury, G. McDonald, M. McDonald, G. & Dorn, B. 2006. "Student Performance: Online vs. Onground: A Statistical Analysis Of IS Courses." *Information Systems Education Journal* 98(4): 1-9. Retrieved on October 1, 2012. Retrieved from http://isedj.org/4/98/. ISSN: 1545-679X. (Also appears in The Proceedings of ISECON 2005: §3162. ISSN: 1542-7382.)

U.S. Department of Education, Office of Planning, Evaluation and Policy Development. 2010. "Evaluation of Evidenced-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies." Washington, DC: Author. Retrieved on March 29, 2012. Retrieved from www.ed.gov/ about/offices/list/opepd/ppss/reports.html.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