Review of Education Studies
ISSN 2770-9779
Vol. 3, No. 4, 2023
Published by STSL Press

Original Paper

Intermediate Accounting Online/Face-to-Face Comparison

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Abstract

The authors analyze exam data for students when the content delivery mode is different. Specifically, this exam data allows for an investigation of the performance between face-to-face students versus online students in an Intermediate Accounting II course. Results suggest that the delivery method and repeating the course does not affect the outcome of students' performance in Intermediate II Accounting. The results also support that gender and student rank does not affect the AVERAGE grade of students in Intermediate II Accounting.

Keywords: Content delivery mode, face-to-face, online, student performance and Intermediate Accounting II

Introduction

In recent years, more and more universities have increased their offering of online courses to their students. While some of this may be attributed to COVID, other reasons may include convenience for part-time and full-time working students or lack of proximity to the university campus. With the change in content delivery mode increasing for many universities, the question of how the performance will differ for students will be examined in this study. Dendir (2016) found that Principles of Microeconomics online students performed higher on assessments when compared to face-to-face students for the same course. In contrast, Dendir (2019) suggests that when examining homework assignments that measure problem-solving skills of the student, face-to-face students outperform online students. Nemetz (2017) examines online and face-to-face Operations Management students and finds that student performance is the same regardless of the mode of course delivery. As a result of the mixed findings, this study examines Intermediate Accounting II student performance when the mode of delivery is different.

The learning environment is pivotal in student success. The online learning environment offers a lot of opportunity to explore how student learning is affected by the delivery mode of the content. This study examines the effects of student exam performance controlling for content delivery mode while examining exam performance. In this study, the performance of Intermediate II students, with the same instructor, with one section fully online and one section fully face-to-face are investigated. Exam scores from the Fall 2022 semester are studied. The exams are administered through Examplify software. Examplify is a testing application of Examsoft that allows students to complete their exams in an offline setting on a computer. The online course section took the entire exam each time using the software. The face-to-face section took the same exam in the software for all of the questions except the open ended problems, which will be worked on paper. There are four exams administered throughout the semester. The exams all count equally toward the final grade and the final exam is not comprehensive.

The results of the analysis suggest that the only determining factor in predicting the students' ability to succeed in Intermediate II Accounting is the students' ability to succeed on the exams in the course. The delivery mode and repeating the course did not impact the outcome of the students' performance nor did gender or student rank affect the average grade of students.

Contribution

This study offers the unique opportunity to study the performance difference between the course formats as well as the performance difference when using paper compared to using software to answer open

ended problems.

The following section contains a brief literature review on face-to-face and online learning. After which, an explanation of the methodology and research design is provided. This is followed by the study results and conclusion.

Literature Review

The impact of online learning on the academic performance of accounting and business students has been well researched, especially since 2020. Research has been conducted on the performance outcomes of online versus face- to-face students, in both assessment results and retention of knowledge. Research has also been conducted on academic integrity and the outcome of online and accounting programs.

With both online and face-to-face, there are discrepancies and differences between the scores on assessments such as exams, and how much high-level learning and thinking skills were gained through a course. Some studies show a higher level of competency with problem solving skills with face-to-face upper-level economics students, while online upper-level economics students performed the same as and sometimes outperformed face-to-face students on exams and other assessments (Dendir, 2019). In another similar study also conducted by Dendir (2016), it was again found that online principles of economics students outperformed face-to-face students on exams given at different points over an entire semester. In a study conducted by Nemetz (2017), concurring results were found that on line and face-to-face students performed equally well. However, student success was determined by how often class was attended by in person students and how interactive online student work was as designed by the professor.

When the same professor conducts the exact same course as similar as possible with an online and a face-to-face class, the results are generally the same with the performance of students. In upper-level accounting courses, online and face-to-face students show the same performance when the content and design of the class is the same, but the delivery method is changed (Fortin, 2019). When it comes specifically to exam taking online and face-to-face, there is a large question of how academic integrity will be maintained and tests comparable across both forms. Especially with accounting students, ethics in proctored exam taking should be maintained to the highest order.

In a study of graduate students conducted in 2021, researchers have found that proctoring services, when used with a camera and microphone, minimize the possibility of dishonesty since graduate students still feel “watched”. However, graduate student satisfaction with the course and exams are much lower with online proctored exams due to feeling a lack of privacy (Parades, Pena, & Alcazar, 2021).

Success in accounting programs needs to be maintained, and the trend of increased online programs should be vetted to be successful. For students enrolled in an accounting program, results have shown that students who graduated from an online accounting program have lower scores on their CPA examination than students that graduated from a face-to-face accounting program (Morgan, 2015).

Methodology & Research Design

The exam data from the Intermediate Accounting II course used in this study allows for an investigation of the performance between face-to-face students versus online students in an Intermediate Accounting II course. This study seeks to answer the following research question:

Is the final course average associated with content delivery mode exam format?

Data Selection

The initial sample was obtained from a Fall 2023 Intermediate Accounting II course in person and online. The initial sample consisted of 35 students, with 21 in-person and 14 online students. The sample is further reduced with the removal of students who still need to complete the course and receive a final grade resulting in a final sample of 29 students that consisted of 19 in-person and 10 online students. Thus, the attrition rate of the course is 17.14%, and 3 students receive a final grade of an F for the course, with all 3 attending the in-person course. The average final grade for the classes is equal to 75%, and the sample comprises 59% of females. Furthermore, the sample consists of 17% repeat students and consists of 1 freshman, 0 sophomores, 11 juniors, 13 seniors, 3 masters, and 1 second- degree student. The

average exam scores were 74.86%, 65.59%, 68.62%, and 60.86% for exam I, II, III, and IV, respectively.

Sample Construction

The final dataset for this study is a compilation of the exam scores from two Fall 2022 Intermediate Accounting II classes, an online class consisting of **10** students and a face-to-face class consisting of **19** students. The exams are administered through Examplify software, an online exam platform by Examsoft. The online class completed their exams entirely online. The face-to-face class completed the same exam in Examplify for all of the questions except the open-ended problems, that were worked on paper. There are a total of four exams administered throughout the semester, with each exam counting equally toward the final grade. In addition to the students' average final grade (**AVGScore**), data is collected for several other variables including course delivery (**Delivery**), repeating of course (**Repeat**), student rank (**Rank**), exam grade 1 (**Exam 1)**, exam grade 2 (**Exam 2**), exam 3 grade (**Exam 3**), exam 4 grade (**Exam 4**), and gender (**Gender**). We examine Intermediate Accounting II student performance when the mode of delivery is different.

Table 1. This table presents the variables used in the regression model and their respective description

Variable Name	Description
AVGScore (Dependent Variable)	Students' average final grade for the semester.
Delivery (Independent Variable)	This variable relates to the course delivery mode for each student. This is a dichotomous variable where the online student is equal to 1 and the face- to-face student is equal to 0.
Repeat (Independent Variable)	Repeat is an independent, dichotomous variable denoting whether the student is repeating the course. A 0 represents a student that is repeating the course, while a 1 represents a non-repeating student.
Rank (Independent Variable)	The variable Rank is an independent variable that represents the classification/level of the student based on the number of earned hours (i.e. freshman, sophomore, junior, senior, masters, or 2nd degree).
Exam 1, Exam 2, Exam 3, Exam 4 (Independent Variables)	Each exam grade is an independent variable representing the grade value for each of the four exams for each student. A total of four exams per student during the semester. The exams all count equally toward the final grade and the final exam is not comprehensive.
Gender (Independent Variable)	Gender is an independent, binary variable which denotes whether the student is female at 1.

Research Design

This study examines the effects of student exam performance controlling for content delivery mode while examining exam performance. The following regression model is used to analyze the impact of delivery, repeat, rank, exam 1, exam 2, exam 3, exam 4 and gender on score. The regression model is defined as follows:

$$AVGScore_{it} = \beta 0 + \beta 1\ Delivery + \beta 2\ Repeat + \beta 3\ Rank + \beta 4 Exam\ 1 + \beta 5\ Exam\ 2 + \beta 6\ Exam\ 3 + \beta 7\ Exam\ 4 + \beta 8 Gender$$

Average Score (AVGScore) is the dependent variable in this study. This variable relates to the students' average final grade for the semester. Delivery is an independent, dichotomous variable representing whether the student is attending the online or face-to-face class. A student in the face-to-face class is denoted by a 0, while a student in the online class is equal to 1. Repeat is an independent, dichotomous variable denoting whether the student is repeating the course. A 0 represents a student that is repeating

the course, while a 1 represents a non-repeating student. The variable Rank is an independent variable that represents the classification/level of the student based on the number of earned hours (i.e. freshman, sophomore, junior, senior, masters, or 2nd degree). Exam 1, 2, 3 and 4 are independent, dichotomous variables stating the student's exam score on each of those respective exams. A 0 denotes a non-accounting major, while a 1 is an accounting major. The remaining variable Gender is an independent, binary variable which denotes whether the student is female at 1.

Descriptive Statistics

Table 1a presents the descriptives of the full dataset used in this study. Tables 1b and 1c provide the descriptives for in-person students and online students, respectively. The set includes the results of the four exams administered to the Fall 2022 Intermediate Accounting II students. Evaluating the sample by splitting the class between online and in-person results in a sample that consists of 58% females for in-person and 60% for online students. The AVERAGE for the in-person course is 76%, and 74% for the online class. The exam grades for I, II, III, and IV are 77.74%, 70.11, 67.26, and 60.05, respectively, for the in-person class and for exam I, II, III, and IV, 69.4%, 57%, 71.2%, and 62.4% for the exam for the online class. Testing the difference between the exams only exam II is statistically different using a one-tail test at a .10% level (p-value = .0646). The in-person class consists of 84.21% of first-time Intermediate II Accounting students, while the online course has 80% of first-time intermediate II students. The difference between in-person and online for REPEAT is not statistically significant at any level. Lastly, female students for the in-person and online classes are 58% and 60%, respectively, and have no statistical difference between the two class structures.

Table 1a. Full-sample descriptives

Variable	Mean	Std. dev.	Min	Max
AVERAGE	0.75	0.20	0.14	1.05
REPEAT	0.83	0.38	0.00	1.00
ONLINE	0.34	0.48	0.00	1.00
EXAM 1	74.86	19.31	32.00	106.00
EXAM 2	65.59	21.98	21.00	104.00
EXAM 3	68.62	23.42	0.00	108.00
EXAM 4	60.86	23.19	0.00	90.00
GENDER	0.59	0.50	0.00	1.00
RANK	2.76	1.06	0.00	5.00

This table presents the full sample descriptive statistics of the variables used in the model.

Table 1b. In-person descriptives

Variable	Mean	Std. dev.	Min	Max
AVERAGE	0.76	0.25	0.14	1.05
REPEAT	77.74	20.34	32.00	106.00
EXAM 1	70.11	24.35	21.00	104.00
EXAM 2	67.26	28.48	0.00	108.00
EXAM 3	60.05	27.20	0.00	90.00
EXAM 4	0.84	0.37	0.00	1.00

GENDER	0.58	0.51	0.00	1.00
RANK	1.00	0.00	1.00	1.00

This table presents the in-person sample descriptive statistics of the variables used in the model.

Table 1c. Online students' descriptives

Variable	**Mean**	**Std. dev.**	**Min**	**Max**
AVERAGE	0.74	0.08	0.62	0.85
REPEAT	69.40	19.76	36.00	85.00
EXAM 1	57.00	13.84	39.00	79.00
EXAM 2	71.20	8.53	55.00	83.00
EXAM 3	62.40	13.77	40.00	80.00
EXAM 4	0.80	0.42	0.00	1.00
GENDER	0.60	0.52	0.00	1.00
RANK	0.80	0.42	0.00	1.00

This table presents the online sample descriptive statistics of the variables used in the model.

Table 2 provides the results of the multiple regression model used to evaluate students' success in Intermediate II Accounting courses. The Model is statistically significant, with an F-value of 91.57 and a p-value < 0. Furthermore, the Adjusted R-squared is = .9628, thus suggesting that 96.28% of the variance in AVERAGE is explained by the variables included in the regression model.

Evaluating individual coefficients, only exams 1, 2, 3, and 4 are statistically significant within the model. Thus, the delivery method (ONLINE) does not affect the outcome of students' performance in Intermediate II accounting. This is supported by the statistically insignificant ONLINE variable (t-value 0.59, p-value =.561). The GENDER coefficient has a t-value of -.16 and a p-value of .873, while RANK has a t-value of .13 and a p-value of .9. Thus, the results support that GENDER and RANK do not affect the AVERAGE grade of students in Intermediate II. The variable REPEAT is statistically insignificant (t-value = 1.14, p-value =.267), thus suggesting that taking the class for a second time does not affect students' performance in Intermediate II.

The exam scores are all positively significant at a .001 level with a t-value greater than 3. The coefficients for exams 1, 2, 3, and 4 are .002, .002, .004, and .002, thus suggesting that on average, students' grades are predicted to increase by .002 for every percent they earn on exam 1, 2, and 4. Furthermore, for exam 3, students' AVERAGE increased by .004 for every percent earned on their third exam. Overall, the results suggest that the only determining factor in predicting the students' ability to succeed in Intermediate II Accounting is the students' ability to succeed on the exams in the course.

Table 2. Regression Results

VARIABLE	**COEFFICIENT**	**t-Value**	**p-Value**	**VIF**
INTERCEPT	0.039	0.98	0.34	
REPEAT	0.028	1.19	0.248	1.53
ONLINE	0.010	0.55	0.589	1.54
EXAM 1	0.002	3.82	0.001	1.95

EXAM 2	0.002	3.32	0.003	3.88
EXAM 3	0.004	4.08	0.001	8.59
EXAM 4	0.002	2.82	0.011	5.28
GENDER	-0.003	-0.16	0.873	1.46
RANK	0.001	0.12	0.906	2.14
MODEL Pr>F		<.001		
ADJUSTED R2		0.9628		

This table presents the regression results using the following model: $\boldsymbol{AVGScore_{it} = \beta 0 + \beta 1\ Delivery + \beta 2\ Repeat + \beta 3\ Rank + \beta 4\ Exam\ 1 + \beta 5\ Exam\ 2 + \beta 6 Exam\ 3 + \beta 7 Exam\ 4 + \beta 8 Gender}$

Summary & Conclusion

The learning environment can play a critical role in the success of a student. This study examines the performance difference between course formats as well as the performance difference when using paper compared to using software to answer open ended problems. Exam results are gathered for one semester for students enrolled in an online Intermediate Accounting II class and students enrolled in a face-to-face Intermediate Accounting II class in the Fall 2022 semester, for comparison purposes. The results of the study suggest that the delivery method (ONLINE) and repeating the course (REPEAT) does not affect the outcome of students' performance in Intermediate II Accounting. The results also support that GENDER and RANK do not affect the AVERAGE grade of students in Intermediate II Accounting. All in all, the results suggest that the only determining factor in predicting the students' ability to succeed in Intermediate II Accounting is the students' ability to succeed on the exams in the course.

References

Dendir, Seife. (2016, February). An Online Premium? Characteristics and Performance of Online versus Face-to-Face Students in Principles of Microeconomics. *Journal of Education for Business, 91*(2), 59-68. EBSCOhost, https://doi.org/10.1080/08832323.2015.1110555

Dendir, Seife. (2016, April). Performance Differences between Face-to-Face and Online Students in Economics. *Journal of Education for Business, 94*(3), 175-84. EBSCOhost, https://doi.org/10.1080/08832323.2018.1503586

Fortin, Anne, et al. (2019, August). Accounting Students' Choice of Blended Learning Format and Its Impact on Performance and Satisfaction. *Accounting Education, 28*(4), 353-83. EBSCOhost, https://doi.org/10.1080/09639284.2019.1586553

Morgan, John Daniel. (2015, November). Online Versus Face-to-Face Accounting Education: A Comparison of CPA Exam Outcomes Across Matched Institutions. *Journal of Education for Business, 90*(8), 420-26. EBSCOhost, https://doi.org/10.1080/08832323.2015.1087371

Nemetz, Patricia Louise, et al. (2017, July). Comparative Effectiveness and Student Choice for Online and Face-to-Face Classwork. *Journal of Education for Business, 92*(5), 210-19. EBSCOhost, https://doi.org/10.1080/08832323.2017.1331990

Gudiño Paredes, Sandra, Felipe de Jesús Jasso Peña, & Juana María de La Fuente Alcazar. (2021). Remote proctored exams: Integrity assurance in online education? *Distance Education, 42*(2), 200-218.