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Performance in an online introductory course in a hybrid classroom setting

Ibrahim Aly
Concordia University

Abstract

This study compared the academic achievement between undergraduate students taking an introductory managerial accounting course online (N = 104) and students who took the same course in a hybrid classroom setting (N = 203). Student achievement was measured using scores from twelve weekly online assignments, two major online assignments, a final examination held on campus, and overall course performance. This study found that students receiving only online instruction were as successful as students receiving hybrid classroom instruction. These findings suggest that course instruction and pedagogy are more important for student learning than the type of media delivery, and online instructors should focus their effort on quality in developing *online courses*.

Résumé

Cette étude visait à comparer le rendement d'étudiants du 1er cycle dans un cours d'introduction à la comptabilité de gestion donné soit en ligne soit dans un cadre d'enseignement hybride. À l'aide d'un modèle de recherche quasi expérimental, le rendement d'étudiants de deux contextes d'enseignement différents (en ligne [N = 104] et hybride [N = 203]) a été analysé. Ce rendement était évalué en fonction des notes obtenues sur douze travaux hebdomadaires en ligne, deux travaux d'envergure en ligne et un examen final sur le campus, ainsi que des résultats pour l'ensemble du cours. Or, les étudiants du cours donné entièrement en ligne ont réussi aussi bien que ceux du cours hybride. Ainsi, on conclut que la qualité d'enseignement et la pédagogie sont plus importantes pour l'apprentissage que le mode de prestation et de transmission du cours. Par conséquent, les professeurs qui enseignent en ligne doivent mettre l'accent sur la qualité de la conception de leurs cours.

Introduction

Higher education institutions have long experimented with different learning environments. As a complement to the traditional (i.e. face-to-face) classroom, institutions have experimented with distance education (e.g., correspondence courses, televised courses, and online courses). In the last decade, online learning has grown tremendously. According to the Sloan Survey of Online Learning (2010), three-quarters of the colleges and universities surveyed reported a high demand for online courses in the last academic year. Roughly 30% of all registered students enrolled in at least one online course, resulting in an overall rise in online learning from 4.6 million to 5.6 million students in fall 2009. The 21% growth rate for online registration significantly surpassed the 2% growth rate for overall student population (Allen & Seaman, 2010).

Advocates of online learning have stated that it provides more flexible access to content and instruction and is more cost-efficient—enabling instructors to handle more students while maintaining a learning quality equivalent or comparable to face-to-face instruction. Other researchers suggest that online education has created a shift in the way institutions offer programs (Bassoppo-Moyo, 2006). However, educators continue to question the efficacy of learning in an online environment when compared to face-to-face or hybrid (also referred to as *blended*)environments, which contain a mixture of face-to-face and online learning (Parsons-Pollard, Diehl Lacks, & Hylton Grant, 2008). A review of over 200 studies comparing the differences between distance education (including online) and face-to-face learning revealed mixed results, suggesting that further studies are needed to determine the effectiveness of online instruction (Bernard et al., 2004). Authors of the review concluded that "methodology and pedagogy are more important than media in predicting achievement" (p.399), and they encouraged instructors of online classes to focus their efforts on *quality course design* rather than the environment in which it is presented. This argument is consistent with the findings of studies that have found no significant differences between online and face-to-face student achievement (Fortune, Shifflett, & Sibley, 2006; Herman & Banister, 2007; Koory, 2003; Tallent-Runnels et al., 2006; Warren & Holloman, 2005; Weber & Lennon, 2007).

A recent meta-analysis found that, *on average, students in online learning conditions performed better than those receiving face-to-face instruction* (Means, Toyama, Murphy, Bakia & Jones, 2009). Of 51 studies comparing online and face-to-face classes, eleven found positive results for online or hybrid instruction and only two supported traditional face-to-face instruction. Authors of the meta-analysis concluded that online learning approaches are successful across different content and learner types. However, most of the studies examined were conducted in non-technical settings, and the results might not apply to technical courses such as accounting (Bryant, Kahle, & Schafer, 2005; Arbaugh, 2005). Another problem with the cited research is that the vast majority of studies used the participants' final grades to measure the effectiveness of student learning. Other measures are needed to add insight into the ways in which student performance might vary across instructional methods (Kan & Cheung, 2007; Arbaugh et al., 2009).

This study first provides a review the literature pertaining to the performance of students in online accounting courses, identify desirable characteristics of effective learning environments using constructivist learning theory, and, finally, compare the performance

of online and hybrid students in an introductory managerial accounting course using four different learning measures.

Prior Research in Accounting

Previous research studies of online learning in accounting as a technical field—although scarce—have addressed instructors' experiences with online courses, comparisons of student performance in different learning environments, and student satisfaction with online learning. The studies specifically related to comparing student performance across different learning environments have yielded mixed results. Some studies have concluded that online learning is as effective as hybrid or traditional classroom learning. For example, Gagne and Shepherd (2001) found that an online environment was as effective as a traditional classroom in terms of student learning and that students' course evaluations were similar, despite online students being less satisfied with instructor availability than face-to-face students. Basile and D'Aquila (2002) found no significant difference in a study of 128 students in a principles of financial accounting course taught by two different instructors after controlling for differences based on the course instructor. Chen and Jones (2007) compared a traditional MBA course with a hybrid MBA course and reported insignificant differences in final grades and overall evaluations of the course and instructors; they did, however, report that some student preferred group work in the hybrid course. Keller, Hassell, Webber and Johnson (2009) reported no significant difference between the final grades of students in hybrid and traditional learning environments.

Some research studies have concluded that students in hybrid or online environments tend to outperform their face-to-face counterparts. Campbell, Floyd and Sheridan (2002) reported that students in an online principles of accounting course performed significantly better on a comprehensive multiple-choice exam than those in a traditional course and were more satisfied with the course and the instruction. Abraham (2007) examined the participation and performance of graduate engineering students enrolled in two sections of a financial management course over two different semesters, with one section using a traditional approach and the other section using a hybrid approach. Students in the hybrid environment displayed increased participation in non-compulsory assignments and achieved higher marks in both in-session and final examinations. Stivason, Saunders and Price (2008) found that students in an online introductory accounting course performed better on assessments than students in a traditional classroom. Jones and Chen (2008) reported that MBA accounting students in hybrid learning sections had more positive group work experiences and more positive perceptions of instructor feedback compared with students in a face-to-face section.

In contrast, other studies have concluded that online or hybrid students tend to underperform their face-to-face counterparts. Vamosi, Pierce and Slotkin (2004) reported that when class content rotated between live lectures and online lectures during the second half of a financial accounting course, online students were less satisfied with the delivery of course materials than students in a traditional classroom setting. Similarly, Chen, Jones and Moreland (2010) found that online students received lower mean scores than face-to-face students in three of four areas studied in an intermediate-level cost accounting course.

Most of the aforementioned studies used students' final grades when comparing the effectiveness of the online method with hybrid or traditional face-to-face delivery. Additionally, these research studies frequently failed to control for differences in teaching and grading formats, where, for instance, two or more instructors delivered the course content or a single instructor delivered course content over more than one semester. Well-designed strategies are necessary to provide better evidence about student learning in online versus face-to-face or hybrid class environments (Means et al., 2009; Reeves, 2005; Tallent-Runnels et al., 2006). Thus, the main purpose of this study is to contribute to the current stream of online learning literature by (a) examining the student performance using four different measures of learning and (b) controlling for instruction and grading formats by having the same instructor teach both online and hybrid sections in the same semester using the same learning outcome measurements between the two types of delivery. As a result, differences in factors such as institutional environments, grading standards, and instructor teaching style are minimized.

Constructivist Learning Theory

Constructivist learning theory is based on a notion of building. This is to say that the learner plays an active role in acquiring knowledge through interaction and association with prior experience—relating new experience with prior knowledge to build a comprehensible and more thorough understanding of a given subject. In time, the student is able to continuously add to their prior knowledge by interacting with new experiences (Sherman & Kurshan, 2005). In the scope of learning, the constructivist theory puts the learner at the focal point; rather than providing knowledge through instruction, the instructor instead plays a coaching and facilitating role (Duffy & Cunningham, 1996).

Because students are active participants in constructivist learning theory, it becomes essential for students to develop clear goals from the beginning. As Loyens and Gijbels (2008) noted, self-regulation is critical in this type of leaning environment. Action plans need to be created and realistic time lines need to be respected to allow for effective learning.

After reviewing characteristics of successful learning environments, Bransford, Brown, and Cocking (2000) concluded that effective learning depends on creating virtual spaces that advance and support active learning. However, rather than focusing on media delivery, instructors should devote their efforts towards designing learning environments that advance and support active learning based on four overlapping environments. In the first environment—called *learner-centered*—the constructivist approach recognizes the importance of the learner's unique knowledge, skills, and attitudes, and believes that the learner can contribute to the learning experience (Bransford et al, 2000). The learner-centered environment focuses on the goals, objectives, needs, and interests of the learner. It provides learning activities that are designed to give learners more responsibility, ownership, and understanding of their learning relative to face-to-face instruction. Consequently, the learner's level of engagement is enhanced and motivated with meaningful and worthwhile content. The second environment is called *knowledge-centered*. Here, the constructivist approach focuses on the structure and type of activities that enable students to construct robust understandings of particular topics (Bransford et al, 2000). Such activities do not focus on memorization, but rather on integrating the material with personal experiences and motivating students to do the work of the discipline. The third

environment, *assessment-centered*, highlights the importance of providing meaningful feedback and assessment to learners (Bransford et al, 2000). According to the constructivist approach, self-assessment is not only crucial to learning, but also to the assessment and feedback required within online activities. The constructivist theory also emphasizes the importance of the learner continuously reconstructing his or her knowledge—that is, evolving and changing his or her understanding—in response to feedback (Swan, 2005). The fourth environment, *community-centered*, elaborates the importance of structuring learner communities through social interaction, collaboration, and cooperation (Conole, Dyke, Oliver & Seale, 2004; Neo, 2008; Siemens, 2004; Snyder, 2009). Online activities must promote and develop a sense of connectedness that creates opportunities for learners to engage with others in order to learn, collaborate, reflect, and debate. Online discussion and collaborative learning facilitate social interaction and, therefore, a community of learners (Allen, 2005; Murphy, Mahoney, Chen, Mendoza-Diaz & Yang, 2005). Online educators have found that the constructivist learning theory directly applies to the development and design of hybrid or online course content. This is because online classes allow students to interact with their contemporaries, instructors, and course content through a virtual medium in order to acquire knowledge and build an understanding of the course materials (Hoic-Bozic, 2009; Mason, 1998; McCombs & Vakili, 2005).

In summary, to facilitate effective learning environments, constructivist theorists emphasize that instruction and pedagogy should promote collaborative learning environments that encourage student interaction with course content, instructors, and classmates. Learner participation in structured online discussions, collaborative online activities, online assessment, and interactive course materials are ways of promoting constructivism in a hybrid or online pedagogy (Mason, 1998). This study implemented the constructivist approach in developing, designing, and examining the students' performance using four different learning outcomes to evaluate the effectiveness of two types of media delivery.

Method

Research Design

A quasi-experimental research design was applied to students registered in three sections of an introductory management accounting course taught by one instructor during a single semester. Two sections (203 students) were taught using hybrid instruction, involving a mixture of live and online learning activities, and one section (104 students) was taught using only online instruction. Students self-selected into each section, and this study assumes that students would enrol in a section offering the teaching mode that would best maximize their performance and access to content. This self-selection would not affect the robustness of the study because students were all from the same school and taking a core course required for all undergraduate business major students. This allowed for the students' profiles to be comparable in both teaching modes. The vast majority of prior studies also employed self-selection. Moreover, to have a high degree of internal validity and achieve as close a comparison as possible between the hybrid and online sections, the same instructor taught all three sections—eliminating differences in confounding factors such as institutional milieu, grading standards, and instructor teaching style across sections. Furthermore, efforts were made to ensure that students in the two learn-

ing environments participated in the same learning activities, assignments, and discussions in addition to having access to the same textbook and supplementary learning aids such as assignment solutions, PowerPoint slides, and solutions to previous examinations. One issue often raised in the debate over the two learning environments is the interaction and discussion that can occur in a face-to-face classroom. In an effort to facilitate similar interaction, an online discussion board was made available to students in the online section, which allowed them to post comments or pose questions to other students or teaching assistants. Traditional office hours were offered for students in the traditional classroom, and virtual office hours were held for the online students.

Measures of Student Learning

Student performance was compared using four different measures of learning, consisting of twelve weekly online assignments, two major online assignments, and a final examination (held on campus). Students in both the hybrid and online groups were required to register at WileyPlus Course Management Systems to perform the twelve weekly online assignments and two major online assignments.

The twelve weekly assignments corresponded to the twelve chapters required for the course and consisted of true/false statements, multiple choice questions, and problem solving questions requiring calculations, analyses, or short answers. Each assignment was graded as a pass or fail with two attempts for each question. To earn a pass grade, students needed to receive a minimum of 60% of the 100 marks available for each assignment. To receive the full 10% grade allocated to the online assignments, students needed to pass eleven out of twelve assignments. After the due date for each assignment, students were able to review the solutions and link to the online textbook. These weekly assignments were essential in maintaining student activity while providing learners with timely, meaningful feedback and assessment. This created an element of motivation and an educational design that promoted a more active, collaborative, and participatory form of learning than those commonly found in the face-to-face environments.

Students in both groups were given two major online assignments, each of which was to be completed within three hours during a 24-hour period. Students were advised to ensure that the Internet connection was stable prior to starting the timed assignment so that they would not lose access or be timed-out unexpectedly. Students who accessed the 'Read, Study & Practice' section at the WileyPlus site while active in a timed assignment received a warning message. If they did not log out from that section after reading the warning message, they lost access to the timed assignment. Students also were not allowed to open new browser windows and/or tabs while active in a timed assignment. Their original session would be terminated and they would lose access to the timed assignment. These instructions were critical to enforce time management as recommended in Chickering and Gamson's well-known *Seven Principles for Good Practice in Undergraduate Education* (1987). These two major assignments were made up of multiple choice questions, problem solving and analyses, or short answers. Each assignment was graded out of 100 points with one attempt for each question. Each major assignment was worth 10% of the total mark in the course. After the due date, students were able to review the assignment for feedback purposes only. A common final examination was administered on campus to students in both learning environments at the same time. Student performances in the

twelve online assignments, two major online assignments, and the final examinations were used to compare the two different learning environments.

Statement of Hypotheses

The null hypotheses for this study are

1. H_0: There is no statistically significant difference in students' performance between the hybrid section and the online section in the twelve weekly assignments.
2. H_0: There is no statistically significant difference in students' performance between the hybrid section and the online section in the first major assignment.
3. H_0: There is no statistically significant difference in students' performance between the hybrid section and the online section in the second major assignment.
4. H_0: There is no statistically significant difference in students' performance between the hybrid section and the online section in the final examination.
5. H_0: There is no statistically significant difference in the students' overall performance between the hybrid section and the online section based on total marks.

Data Collection

There were 225 students enrolled in the two hybrid classroom sections and 139 registered for the online section. The results presented below only include data from students who completed all requirements for the course. In the hybrid classroom sections, 22 students either withdrew from the course or deferred the final examination for personal reasons leaving 203 students who completed the course and received a final grade. This is equal to a 90% retention rate—a full 15% higher than the retention rate found in traditional classroom settings in previous semesters. In the online section, 35 students either withdrew from the course or deferred the final examination, leaving 104 students who completed the course and received a final grade. This is equal to 75% retention rate, which is equivalent to the normal retention rate found in traditional classroom setting in previous semesters.

Statistical Analysis and Results

For each hypothesis, an independent samples t-test comparing the respective variables of the two teaching modes was used to test the hypothesis—this method was employed by a majority of prior research studies in comparing the effectiveness of the online method with hybrid or traditional delivery. This test is appropriate because the independent or grouping variable is nominal (approach = Hybrid vs. Online) and the dependent variable in each case is ratio scale. First, we analyzed and compared the differences between the mean student performance across the two hybrid sections in the twelve weekly online assignments, the two major online assignments, and the final examination using a t-test to determine if the two hybrid sections could be treated as a single sample for comparison with the online section. Student performances in the four assessments noted above were not significantly different between the two hybrid sections. Therefore, the two hybrid sections were treated as one section of 203 students for hypothesis testing. Summary performance measures for students in both the hybrid and online sections are presented in Table 1.

Table 1.
Summary Statistics and T-Tests of Students' Performances

Section	Number of Students	Mean Score	Standard Deviation	Standard Error of the Mean	F-Value	Significance Level
PANEL A: Students' Performances in 12 Weekly Assignments						
Hybrid	203	8.73	2.24	0.157	5.995	0.015
Online	104	8.06	2.77	0.271		
PANEL B: Students' Performances in the First Major Assignment						
Hybrid	203	54.70	27.49	1.93	0.625	0.430
Online	104	51.19	28.92	2.84		
PANEL C: Students' Performances in the Second Major Assignment						
Hybrid	203	81.69	17.11	1.201	8.755	0.003
Online	104	73.18	24.02	2.356		
PANEL D: Students' Performances in the Final Examination						
Hybrid	203	62.73	19.11	1.341	0.422	0.517
Online	104	61.15	19.29	1.891		
PANEL E: Students' Overall Performance in the Course						
Hybrid	203	66.28	15.74	1.105	0.187	0.665
Online	104	63.58	17.07	1.674		

The average scores on weekly assignments reported in Table 1, (Panel A) corresponds to the number of points awarded out of 10. These figures were used to test whether the mean scores on the twelve weekly assignments differed between the hybrid and online sections. The results indicate that the average score on weekly assignments in the hybrid sections (8.73) was significantly higher than that in the online section (8.06) at F-Value 5.995, which measured the difference between hybrid and online variances at the 0.015 significance level. The higher scores found in the hybrid sections may be a result of interaction among the students, both inside and outside of class. It is common that a classroom setting produces more collaboration among students than an online learning setting. Thus, these results do not support the first hypothesis.

The results of the first major assignment, presented in Panel B of Table 1, indicate that the average performance of students in the hybrid sections was not significantly different from that of students in the online section at F-Value 0.625, which indicated that variances between hybrid and online sections were not different at the 0.430 significance level. However, students in the hybrid sections achieved a higher average score (54.7%) on this assignment than those in the online section (51.2%). The statistically insignificant difference in student performance on the first major assignment might be due to limited collaboration among students in the hybrid sections. The higher performance of students in the hybrid sections on the twelve weekly assignments did not carry through to the first major assignment. This could be because the constraints related to this assignment—one attempt, limited time—did not allow students in the hybrid sections to interact with their peers to the same extent that they might have done when attempting the twelve weekly assignments. The results presented in Panel B support the second hypothesis.

The results related to the second major assignment, Table 1 (Panel C), indicate that students in the hybrid sections performed significantly better than those in the online section. The difference in their performances was statistically different at F-Value 8.755 and the 0.003 significance level. The higher performance of students in the hybrid sections is consistent with their higher performance on the twelve weekly assignments. It seems that they learned from their experience with the first major assignment to maintain and increase their lead over the students in the online section. These results do not support the third hypothesis.

The students' performances on the final examination, Table 1 (Panel D), were not statistically different at F-value 0.422, which indicated that variances between the hybrid and online sections were not different at the 0.430 significance level. It seems that the final examination, which was administered on campus, placed students from both sections on a level playing field. Any advantages that students in the hybrid sections had over those in the online section with regard to the twelve weekly assignments and the second major assignment disappeared. Hence, these results support the fourth hypothesis.

Given that students in the hybrid sections achieved higher scores, on average, than students in the online sections across all four components of the course, the final grades, Table 1 (Panel E), accordingly demonstrate that students in the hybrid sections (66.28%) outperformed those in the online section (63.58%). However, the difference in scores was not statistically significant at F-Value 0.187, which indicates that variances between the hybrid and online sections were not different at the conventional level of significance at 0.6650. This insignificant difference in the mean final scores was not surprising because the results of the first major assignment and the final examination, respectively worth 10% and 70% of the total mark, were not significantly different between the hybrid and online sections. Hence, these results support the final hypothesis.

Discussion

Online learning advocates state that online learning allows for further autonomy as it provides students with flexible access to course material, instruction, and timely feedback. To add to its benefits, online learning is more cost-efficient and enables instructors to handle more students while maintaining a learning quality equivalent or comparable to face-to-face instruction. Nevertheless, educators continue to question the quality of stu-

dent performance and learning in an online environment (Parsons-Pollard et al., 2008). Though numerous studies have been done on the matter, the majority of them have addressed the effectiveness of distance education in non-technical studies. Thus, the findings cannot be carried over to other technical areas of study such as accounting programs (Bryant et al., 2005; Arbaugh, 2005). Additionally, the vast majority of these studies used students' final grades when comparing the effectiveness of the online method with the traditional classroom setting—a method that may not be sufficient to produce meaningful results. In the current study, I compared the academic achievement of undergraduate students in an online introductory managerial accounting course and students taking the same course in a hybrid classroom setting. To provide a more robust overview of the students' performance, academic achievement was measured through an analysis of scores from four different outcomes. The findings of this study support what has been reported in previous research; namely, that online learning can be as efficient as hybrid learning. This fact fortifies the notion that the medium of delivery is not as important as the instructional strategies employed (Clark, 1983, 2001; Bernard et al., 2004; Means et al., 2009). These findings not only support the continued development and use of online programs but also suggest strategies pertaining to the development of future hybrid or online programs.

For online learning to flourish, it is first imperative that quality and diligence be put into the design and delivery of course materials. Online instructors should focus on encouraging online learners to interaction with each other and with the instructor in order to develop a community in the virtual realm, thus opening the doors to active learning and a free inter-change of knowledge. Second, as Norton and Hathaway (2008) suggest, it is essential that instructors understanding the online learning process and use that knowledge to build learning communities within the class. It is also important for instructors to facilitate higher level thinking skills and reflection, as well as promote problem solving through interactive problem-based activities. Third, a continued understanding of learning theory and learning environments needs to be emphasized among faculty. This is critical if courses are to be designed to address the various domains of learning. This is especially critical in the online environment where an element of creativity is needed to identify and design educational experiences that can be as active, collaborative, and participatory as those commonly found in face-to-face environments. Fourth, to attain a high level of success, online instructors should be able to quickly adapt from a teaching role to that of coach and facilitator. Online instructors need to focus their efforts on designing a learning environment that advances and supports active learning based on the four overlapping environments: learner-centre, knowledge-centre, assessment-centre, and community-centre. Fifth, the online learning environment depends on student engagement. This requires instructors to think outside the box and focus on the goals, objectives, needs, and interests of the learner; use online and face-to-face resources in ways that support understanding and future transfer of knowledge; use assessments to help learners understand material through consistent and meaningful feedback; and promote a sense of connectivity and collaboration through integrated online activities. Finally, in achieving the aforementioned, the instructor's role will naturally continue to shift. It will move from one of a facilitator—where they encourage student-faculty interactions and promote cooperation among students—to one of a motivator—where they support active learning, emphasize time management through assessment, and provide prompt feedback.

Conclusion

In just over a decade, online learning has become a prominent form of teaching in higher education. However, educators continue to face challenges as they strive to apply this great learning technique. A primary focus for all educators involved in online instruction is learning outcomes. The major focus of this study was to compare the learning outcomes of student performances in online and hybrid learning settings. This was achieved using four different learning outcomes to better assess and demonstrate the effectiveness of the two types of media delivery in an introductory managerial accounting course. Students were required to complete twelve weekly online assignments, two major timed online assignments, and a final examination held on campus. The results of this study revealed that students registered in the online section were as successful as students enrolled in the hybrid section. Students were able to learn the course material equally well in both settings. These results support the findings of prior research. Based on these findings, it is reasonable to conclude that robust teaching methods are far more imperative for student learning than the medium of delivery. Hence, instructors of online classes should dedicate their efforts to developing quality courses that encompass the learner-centered environment, the knowledge-centered environment, the assessment-centered environment, and the community-centered environment to both motivate and keep learners involved.

Limitations of the Study

Despite the fact that the study has provided us with further insight into the realm of online learning, some limitations were observed. These limitations include the fact that the study was conducted at a single university and for a single course taught by one instructor. Furthermore, data was collected for only one semester, and the assignment of students to each group was not random as the students had the choice of enrolling in any group. This self-selection did not affect the robustness of the study because students were all from the same school and taking a core course, which is required for all undergraduate business major students. This allowed for the students' profile to be comparable in both teaching modes. This being the case, the findings of this study cannot be generalized to other settings. Although the results of this study are informative, the study does not promote one medium of delivery (hybrid or online) over another, nor does it attempt to measure the effect of teacher/student and student/student interaction on learning outcomes.

This study concentrated on the form of delivery as the main factor influencing student performance in the course. Nevertheless, other factors such as previous online course experience, proficiency with a particular classroom webpage (WileyPlus), work experience, and other student demographics could have influenced the results. Although the results do not represent that of the general learning environment, the study benefited from internal validity resulting from one instructor teaching all online and hybrid sections. This allowed for differentiation in factors such as institutional milieu, grading standards, and instructor teaching style to be eliminated. Regardless, further research needs to be conducted in order to provide information to support the robustness and reliability of this study's findings. A question that should be addressed in future research is whether or not students can continue to succeed when hybrid formats are applied to upper level courses

of various degree programs. One thing is certain: As future studies elaborate on the effectiveness of online learning, educators will continue to face challenges as they make every effort to embrace new teaching protocols and methodologies.

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References

Abraham, A. (2007). Adopting a student-centred pedagogy in the teaching of accounting to engineering students: Comparing a blended learning approach with a traditional approach. In *ICT: Providing choices for learners and learning*. *Proceedings,* Singapore.

Allen, I. E., & Seaman, J. (2010). Class differences: Online education in the United States. *The Sloan Consortium*.

Allen, K. (2005). Online learning: Constructivism and conversation as an approach to learning. *Innovations in Education and Teaching International, 42(3),* 247–256.

Arbaugh, J. (2005). How much does "subject matter" matter? A study of disciplinary effects in online MBA courses. *Academy of Management Learning and Education, 4*(1), 57–73.

Arbaugh, J., Godfrey, M., Johnson, M., Pollack, B., Niendorf, B., & Wresch, W. (2009). Research in online and hybrid learning in the business disciplines: Key findings and possible future directions. *Internet and Higher Education*, *12*, 71–87.

Basile, A., & D'Aquila, J. M. (2002). An experimental analysis of computer-mediated instruction and student attitudes in principles of financial accounting course. *Journal of Education for Business*, *77*(3), 137–143.

Bassoppo-Moyo, T. C. (2006). Evaluating eLearning: A front-end, process and post hoc approach. *International Journal of Instructional Media*, *33*(1), 7–22.

Bernard, R. M., Abrami, P.C., Lou, Y., Borokhovski, E., Wade, A., Wozney, L., Wallet, P.A., Fiest, 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.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). *How People Learn: Brain, Mind, Experience, and School*. Washington, DC: National Academy Press.

Bryant, S., Kahle, J., & Schafer, B. (2005). Distance education: A review of the contemporary literature. *Issues in Accounting Education*, *20*(3), 255–272.

Campbell, M. C., Floyd, J., & Sheridan, J. B. (2002). Assessment of student performance and attitudes for courses taught online versus onsite. *Journal of Applied Business Research*, *18*(2), 45–51.

Chen, C. C., & Jones, K. T. (2007). Blended learning vs. traditional classroom settings: Assessing effectiveness and student perceptions in an MBA accounting course. *Journal of Educators Online*, *4*(1), 1–15.

Chen, C. C., Jones, K. T., & Moreland, K. (2010). Distance education in a cost accounting course: instruction, interaction, and multiple measures of learning outcomes. *The Journal of Educators Online, 7*(2), 1–20.

Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. AAHE Bulletin, *39*(7), 3–7.

Clark, R. E. (1983). Reconsidering research on learning from media. *Review of Educational Research*, *53*(4), 445–459.

Clark, R. E. (2001). A summary of disagreements with the "mere vehicles" argument. In R. E. Clark (Ed.), *Learning from media: Arguments, analysis, and evidence* (pp. 125–136). Greenwich, CT: Information Age Publishing Inc.

Conole, G., Dyke, M., Oliver, M., & Seale, J., (2004). Mapping pedagogy and tools for effective learning design. *Computers & Education, 43*(1/2), 17–33.

Duffy, T. M., & Cunningham, D. J. (1996). Constructivism: Implications for the design and delivery of instruction. In D. H. Jonassen (Ed.), *Educational communications and technology* (pp. 170–199). New York: Simon & Schuster Macmillan.

Fortune, M. F., Shifflett, B., & Sibley, R. E. (2006). A comparison of online (high tech) and traditional (high touch) learning in business communication courses in Silicon Valley. *Journal of Education for Business, 81*(4), 210–214.

Gagne, M., & Shepherd, M. (2001). Distance learning in accounting. *T.H.E. Journal*, *28*(9), 58–65.

Herman, T., & Banister, S. (2007). Face-to face versus online coursework: A comparison of costs and learning outcomes. *Contemporary Issues in Technology Education, 7*(4), 318–326.

Hoic-Bozic, N. (2009). A blended learning approach to course design and implementation. *IEEE Transactions on Education, 52*(1), 19–30.

Jones, K. T., & Chen, C. C. (2008). Blended learning in a graduate accounting course: Student satisfaction and course design issues. *The Accounting Educator's Journal*, *18*, 15–28.

Kan, A., & Cheung, L. (2007). Relative effects of distance versus traditional course delivery on student performance in Hong Kong. *International Journal of Management*, *24*(4), 763–773.

Keller, J. H., Hassell, J. M., Webber, S. A., & Johnson, J. N. (2009). A comparison of academic performance in traditional and hybrid sections of introductory managerial accounting. *Journal of Accounting Education*, *27*(3), 147–154.

Koory, M. A. (2003). Differences in learning outcomes for the online and F2F versions of "An introduction to Shakespeare". *Journal for Asynchronous Learning Networks, 7*(2), 18–39.

Loyens, S. M. M., & Gijbels, D. (2008). Understanding the effects of constructivist learning environments: Introducing a multi-directional approach. *Instructional Science, 36*(5/6), 351–357.

Mason, R. (1998). Models of online courses. *Proceedings of the Network Learning Conference*, University of Sheffield, Division of Adult Continuing Education, 1.72–1.80.

McCombs, B. L., & Vakili, D. (2005). A learner-centered framework for E-learning. *Teachers College Record, 107(8), 1582–1600*.

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2009). *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies*. U.S. Department of Education Office of Planning, Evaluation, and Policy Development..

Murphy, K. L., Mahoney, S. E., Chen, C., Mendoza-Diaz, N. V., & Yang, X. (2005). A constructivist model of mentoring, coaching, and facilitating online discussions. *Distance Education, 26(3)*, 341–366.

Neo, M. (2005). Web-enhanced learning: Engaging students in constructivist learning. *Campus-Wide Information Systems, 22*(1), 4–14.

Norton, P., & Hathaway, D. (2008). Exploring two teacher education online learning designs: a classroom of one or many? *Journal of Research on Technology in Education*, *40*(4), 475–496.

Parsons-Pollard, N., Diehl Lacks, R., & Hylton Grant, P. (2008). A comparative assessment of student learning outcomes in large online and traditional campus-based introduction to criminal justice courses. *Criminal Justice Studies, 21*(3), 239–251.

Reeves, T. C. (2005). No significant differences revisited: A historical perspective on the research informing contemporary online learning. In G. Kearsley (Ed.), *Online learning: Personal reflections on the transformation of education* (pp. 299–308). Englewood Cliffs, NJ: Educational Technology Publications.

Sherman, T. M., & Kurshan, B. L. (2005). Constructing learning: Using technology to support teaching for understanding. *Learning and Leading with Technology, 32(5),* 10–14.

Siemens, G. (2004). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning, 2*(1), 3–10.

Snyder, M. (2009). Instructional-design theory to guide the creation of online learning communities for adults. *Tech Trends: Linking Research & Practice to Improve Learning*, *53*(1), 45-57.

Stivason T., Saunders G., & Price J. (2008). A comparison of student performance in an online introductory accounting course with traditional classroom students. *College Teaching Methods & Styles Journal, 4*(5), 1–8.

Swan, K. (2005). A constructivist model for thinking about learning online. In J. Bourne & J.C. Moore (Eds.), *Elements of Quality Online Education: Engaging Communities*. Needham, MA: Sloan-Consortium.

Tallent-Runnels, K., Lan, W., Cooper, S., Ahern, C., Shaw, M., & Liu, X. (2006). Teaching courses online: A review of the research. *Review of Educational Research, 76*(1), 93–135.

Vamosi, A., Pierce, B. G., & Slotkin, M. H. (2004). Distance learning in an accounting principles course: student satisfaction and perceptions of efficacy. *Journal of Education for Business*, *79*(6), 360–366.

Warren, L. L., & Holloman, H. L. (2005). On-line instruction: Are the outcomes the same? *Journal of Instructional Psychology, 32*(2), 148–150.

Weber, J. M., & Lennon, R. (2007). Multi-course comparison of traditional versus web-based course delivery systems. *The Journal of Educators Online, 4*(2), 1–19.

Contact Information

Ibrahim Aly
Department of Accountancy
John Molson School of Business
Concordia University
ialy@jmsb.concordia.ca

Ibrahim M. Aly, Ph.D., is an associate professor in the Department of Accountancy at the John Molson School of Business, Concordia University. He has won the College of Business Teaching Innovation Award for two consecutive years. Professor Aly has published in reputable refereed journals in the fields of managerial accounting, financial accounting, behavioural accounting, and accounting education. Additionally, he has published four books on management accounting. He has presented his work at over 35 scholarly national and international conferences. Professor Aly has given numerous workshops and seminars on financial and managerial accounting.