

Effectiveness of a Blended Learning Model for economics and finance courses in MBA Programs

YUEN Chi Lok Andrew

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Abstract:

Blended learning has gained popularity in education as it combines traditional face-to-face instruction with online learning. However, its effectiveness has been a topic of debate among educators and researchers. This paper aimed to compare the learning effectiveness of blended learning and traditional teaching. The study analyzed MBA students who studied economics and finance. The results indicated that students in blended learning scored significantly lower in exams than those in traditional learning. The results also suggested that traditional learning mode can enhance the learning experience by making it more interesting and stimulating.

1. Introduction

The past few decades have seen significant advancements in technology that have had a profound impact on teaching and learning. Among the various applications of technology in education, the blended learning approach has emerged as one of the most popular pedagogies adopted at different levels of education globally (Eklund, et al., 2003; Sharpe et al., 2006; Parsad & Lewis, 2008; Staker et al., 2011; Picciano et al., 2012; Bernard et al., 2014). The term "blended" refers to a combination of learning activities that occur in both face-to-face and online settings (Young, 2002). Watson (2008) suggested that blended learning is likely to emerge as the predominant model of the future and become far more common than either online or face-to-face instruction alone. Given its popularity and potential enormous impacts in the process of teaching and learning, blended learning has received great attention from academics and educational professionals.

While there have been numerous studies on blended learning in K-12 and corporate training, there are comparatively more studies done in higher education (Drysdale et al., 2013; Halverson et al., 2012). Allen et al. (2007) reported that 45.9% of U.S. undergraduate institutions already offered blended courses by 2004. In the analysis of 205 doctoral dissertations and master's theses in the domain of blended learning, the majority of the manuscripts (83%) focused on the course-level, while research on program and institution level is limited. Popovich and Neel (2005) suggested that there is increasing importance for business schools to deliver education via the Internet. Following this trend, there has been a dramatic increase in studies in online and blended business education during the past decade (Arbaugh et al., 2009). They also found that the rate of increase is uneven across business disciplines, with most publications and studies from the fields of Information System, Management, and Marketing, and fewer contributions from fields such as Operations/Supply Chain Management, Finance, and Economics. The study also discussed reasons,

including methodological constraints and cultural and disciplinary prejudices, for the lack of related studies in Finance and Economics.

While more studies on blended learning in higher education have focused on undergraduate studies, postgraduate studies, especially Master of Business Administration (MBA), are of predominant importance in business schools around the world. Each year, universities in the US enroll more than a quarter of a million students in MBA programs and award more than 100,000 MBA degrees annually, at least 66% of all graduate business degrees conferred in the US in 2008 (Murray, 2011). Despite the importance of MBA in business education and the popularity of blended learning in MBA, the study on the effectiveness of blended learning on MBA students is still limited. For example, Clouse and Evans (2003) found that, in an MBA-level information systems course, the combination of asynchronous content delivery and synchronous chat session produced the poorest performance on discrete exam questions, but that the combination of face-to-face content delivery and asynchronous discussion produced significant improvement on open-ended exam questions. In an MBA-level managerial accounting course, Chen and Jones (2007) found that students in the blended courses reported higher levels of learning, but that students in the classroom courses thought that course instruction had more clarity.

It is worth noting that there is a lack of studies that investigate blended learning in economics and finance education, as well as those focused on MBA programs. Therefore, this study aims to evaluate the effectiveness of blended learning for economics and finance courses in MBA programs. Section 2 provides a literature review, and Section 3 will describe the methodology. Section 4 will discuss the study results, and Section 5 will provide concluding remarks.

2. Literature review

Blended learning has become increasingly popular in higher education institutions worldwide, leading to a vast literature on the advantages and disadvantages of this approach, as well as empirical evaluations of its effectiveness (Bernard et al., 2014). Three primary advantages of blended learning have been identified in the literature: flexibility, motivation, engagement, and student satisfaction, and student performance.

Flexibility is one of the primary reasons why students prefer online learning, as it allows them to complete coursework at their convenience, provides increased time for other activities, and eliminates the need for physical meetings (Rivera and Rice, 2002; Dziuban et al., 2004 and 2007; Graham, 2004; Macedo-Rouet et al., 2009). Blended learning provides students with greater flexibility in terms of time and location for online learning and offers more choices for different learning activities and resources (King & Arnold, 2012; Sharpe et al., 2006). Teachers can also have more flexibility in how they structure their courses and which pedagogies they use. Additionally, blended learning provides institutions with more flexibility in attracting students from different locations, offering courses at different times, and arranging physical facilities (Wallace & Young, 2010).

Blended learning has also been shown to increase students' motivation and engagement in the learning process (Garrison & Kanuka, 2004; Spring et al., 2016; Owston et al., 2013). Blended learning creates a more active learning environment, requiring students to use different modes of

learning, which increases their self-motivation and engagement (Meyer, 2014; Norberg et al., 2011). Blended learning has been shown to have a positive impact on retention rates, with blended courses having higher retention rates than fully face-to-face courses (Dziuban & Moskal, 2001; Vaughan, 2007). Blended learning has also been shown to increase attendance and satisfaction (Stockwell et al., 2015).

Blended learning has been found to improve student performance in several studies, with students receiving higher grades in blended classes than they did in fully face-to-face or online classes (Dziuban & Moskal, 2001; Martyn, 2003; Vaughan, 2007). Blended learning has also been shown to enable knowledge construction and problem-solving abilities (Bridges et al., 2015). However, there are also studies reporting negative impacts of blended learning on student performance (Xu & Jaggars, 2011).

Given the importance of MBA programs in tertiary business education and the rise of blended learning in these programs, this study aims to evaluate the effectiveness of blended learning for economics and finance courses in MBA programs. While some studies have evaluated the effectiveness of blended learning in MBA programs, the results have been mixed (Arbaugh, 2009). For example, Chen and Jones (2007) found that students in blended learning mode reported higher levels of learning in an MBA-level managerial accounting course, while Anstine and Skidmore (2005) found that online students in MBA-level statistics courses performed below students in classroom-based offerings. Therefore, this study can contribute to the literature and provide insights into the development of MBA programs.

3. Methodology

3.1 Study group and sample

This study is centered on the MBA Program at the Chinese University of Hong Kong, which was ranked as one of the top 50 MBA programs in the world by Financial Times in 2020. The program adopted a blended learning approach, offering a Flex learning mode from 2015, which was an optional choice for students admitted to Part-time MBA Programs. In 2015-2016, the program developed and offered six core and two elective blended learning courses for the students. Enrolled students were required to adhere to the recommended study sequence by the subject teacher, complete online pre-recorded lectures and course-works, such as discussion forums, quizzes, practice questions, etc., on the learning management system. For the face-to-face sessions, students returned to the campus and attended intensive weekend classes every few weeks.

This study will examine 12 classes taught in the MBA Program at CUHK over a period from 2015 to 2018. Specifically, eight classes from the course Macroeconomics for Business Executives, referred to as Macroeconomics hereafter, were selected for this study, consisting of five blended learning classes and three traditional classes. Additionally, Investment Analysis and Portfolio Management, referred to as Investment hereafter, was also a focus of this study, with three blended learning classes and one traditional class selected for analysis. In total, 490 students were enrolled in the classes.

Both courses aim to provide students with relevant academic theories, while emphasizing their application in real-world scenarios. Macroeconomics offers a foundational understanding of the

state of the global economy and macroeconomic policy, including topics such as national income accounting, unemployment, inflation, monetary and fiscal policies, and international economic interactions. The course places a strong emphasis on applying economic theories to current macroeconomic phenomena. In contrast, Investment provides a comprehensive introduction to fundamental analysis of securities, including equity, fixed-income security, and derivatives. Students are taught the theoretical foundation and practical implementation of widely used asset pricing theories.

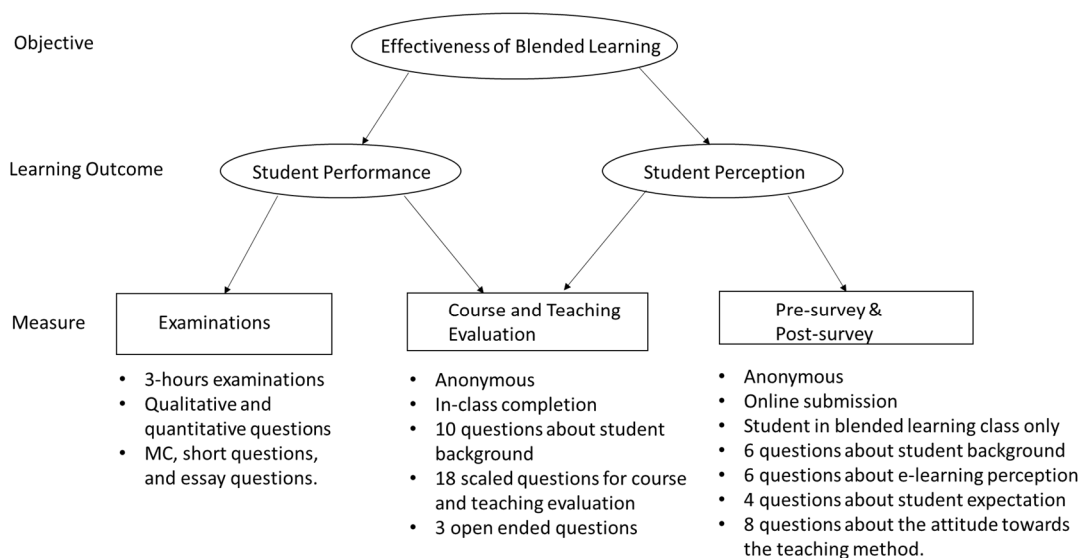
3.2 Research Design

The primary aim of this study is to examine the effectiveness of using blended learning as a teaching medium to enhance learning outcomes. To achieve this objective, a quasi-experimental setting is developed, following the approach of Chen and Jones (2007) and Lape et al. (2014), which involves comparing student performance in blended learning sections with that of traditional classroom instruction.

To ensure a consistent environment, this study adopts the approach of Lape et al. (2014) by assigning the same instructor to all classes in the same courses. Additionally, to minimize any time-varying effects, such as learning curve effects, the course structure is kept the same across all classes in the same course, including teaching materials, difficulty of examinations, and class activities. Furthermore, this study requires that instructors (referred to as instructor A and instructor B) have more than 10 years of teaching experience to maintain consistency in their teaching methods.

The general framework of the research can be seen in Figure 1.

Figure 1. General research framework of the study



The literature on blended learning typically focuses on two dimensions of effectiveness: student performance and student perception. For instance, López-Pérez et al. (2011) found that the use of blended learning significantly reduced student dropout rates and improved their examination performance. They further established that this change was closely related to their perception of blended learning. Similarly, Pierce and Fox (2012) reported that the flipped classroom not only improved student performance but also changed student perception to be more favorable towards the "new" teaching approach.

To assess these two learning outcomes, this study employs three measures: test scores, course and teaching evaluations (CTE), and two-stage surveys. Test scores are commonly used to measure changes in student performance (López-Pérez et al., 2011; Pierce and Fox, 2012; Lape et al., 2014). Instead of comparing the difference in scores between pre-test and post-test, this study focuses on analyzing the examination scores between blended and traditional classes (López-Pérez et al., 2011), which is useful in investigating the impact of blended classes. Instructors are reminded to design exam questions at the same level of difficulty across different classes, controlling for possible influence from non-teaching style elements.

Another metric of student performance is course-teacher evaluation (CTE), which is conducted at the university level. CTE includes ten multiple-choice questions about student background, 18 six-point scaled questions for perception of the classes, and three open-ended questions for other information that can be provided by students. Scaled questions, such as "The course was stimulating" and "subject knowledge is enhanced," can provide another measure (other than objective test scores) for the impact on student performance. The full list of questions in CTE is provided in Appendix I. CTE is conducted at the university level, nearly at the end of the class in the classroom. Students are not required to provide any identity in the form, so the response can be expected to be unbiased. This measure is also useful for comparing student perception of the class between two teaching methods. Survey response is a common practice in literature to assess student perception. Chen and Jones (2007) compared survey responses from blended learning classes and traditional classes. They found that both methods had a similar impact in terms of learning outcomes, while students in blended learning classes were positive about the enhancement of concepts in related fields.

Following Lape et al. (2014), the last measure is two-stage surveys (pre-survey and post-survey) used to assess the change in learning outcomes due to the blended learning element. People may be concerned about the strategic attempt by students, which can make the result biased towards positive outcomes. Thus, surveys are conducted anonymously so that students can freely express their comments. However, to make comparisons with the post-survey, which will be discussed later, students are required to write down a four-digit code that represents a specific identity. This code can then be useful for matching the results with the post-survey. The post-survey is conducted nearly at the end of the semester to investigate student perception of blended learning and changes in attitudes towards e-learning. The post-survey contains the same six scaled questions about attitudes towards e-learning, measured on a five-point scale. These findings can then be compared with those in the pre-survey to measure how student perceptions of e-learning changed after

experiencing an e-learning environment. The post-survey is an effective measure in the literature to assess the effectiveness of teaching elements.

4. Empirical results and discussions

Empirical investigation of the effectiveness of blended learning will be started by examining the difference in examination performance between traditional teaching and blended learning. The related empirical results are provided in Table 1. To control for the difficulty across examination papers, examination result is compared across students in the same subject conducted by the same instructor. Unlike Pereira et al. (2007) and Pierce and Fox (2012), this study finds that students in blended learning (BL) score significantly lower than traditional learning (TL), regardless of the subject they studied. In a scale of 0-100, the examination performance of BL students in economics and finance are 8.0 marks lower and 9.1 marks lower respectively.

Table 1. Examination performance between traditional instruction and blended learning

	Mean#	SD	Min	Median	Max	Skew	N
Economics							
- Blended	73.0	13.7	48.5	76.5	92.5	-0.3	24
- Traditional	81.0	9.2	50.5	82.5	96.5	-0.9	130
- Difference	-8.0*** (-2.74)						
Finance							
- Blended	59.7	16.7	19.0	59.0	93.0	-0.1	68
- Traditional	68.8	15.1	9.0	70.0	97.0	-1.1	69
- Difference	-9.1*** (-3.36)						

Examination performance is measured in a scale of 100.

*** Significance at 0.01 level.

The difference in result between this study and their papers may provide insight to explain why empirical evidence is mixed in evaluating the effectiveness of blended learning. The rationale is as following: The effectiveness of flipped classroom element in blended learning relies heavily on whether BL students are willing to watch the video online. Previous literature (i.e., Chen and Lin, 2008; Credé et al., 2010) has shown a strong correlation between class participation and examination performance. Although this relationship can be argued by endogeneity argument (i.e., ambitious students are more willing attend classes and working har on examination), it is generally believed that attending (or watching) lectures has positive effect on the examination performance. As MBA students is likely to have a busy schedule (i.e., family reason or job concern), their opportunity cost of watching online lecture is higher than that of undergraduate students, so some MBA students in blended learning mode may spend lesser time on lecture than those in traditional mode.

The large dispersion of examination result in blended learning for both courses can further support this conjecture. The standard deviation of economics BL classes and finance TL classes are 4.7 higher and 1.6 higher respectively. Given that there is attendance requirement in traditional teaching

classes, the higher dispersion of examination results in blended learning can be explained by the variation of time spent on video lectures. In sum, results suggest that the effectiveness of blended learning may be higher for undergraduate students than master students, further investigation can be conducted to examine this conjecture.

In previous studies (Padilla-Meléndez et al., 2013; Price, 2006), it has been reported that there are gender differences in the effectiveness of blended learning. Therefore, this paper also examines the gender difference in the effectiveness of blended learning, and the results are presented in Table 2. The results suggest that, for economics classes, female students perform better in traditional teaching (-1.4) than in blended learning (-5.4) compared to male students. However, for finance classes, female students perform worse in traditional teaching (-6.2) than in blended learning (-4.7) compared to male students. The implications of these results are mixed. Although the overall result suggests that there is no gender difference in the effectiveness of blended learning, the significant difference in economics classes suggests that the subject effect may explain gender differences.

Table 2. Comparison between traditional instruction and blended learning by courses

	Mean	SD	Min	Median	Max	Skew	N
	#						
Economics – Traditional							
- Male	81.7	8.3	55.0	82.5	95.0	-0.7	69
- Female	80.3	10.1	50.5	82.5	96.5	-1.0	61
- Difference	1.4 (0.89)						
Economics - Blended							
- Male	75.3	13.8	49.0	78.0	92.5	-0.6	14
- Female	69.9	13.7	48.5	67.8	87.5	0.0	10
- Difference	5.4 (0.95)						
Finance – Traditional							
- Male	70.9	16.4	9.0	73.0	97.0	-1.6	46
- Female	64.7	11.4	42.5	64	95.0	0.6	23
- Difference	6.2 * (1.84)						
Finance – Blended							
- Male	61.4	17.1	19.0	62.0	93.0	-0.4	43
- Female	56.7	15.9	30.0	56.5	89.0	0.5	25
- Difference	4.7 (1.14)						

Examination performance is measured in a scale of 100.

Numbers in parentheses represent the t-statistics

* Significance at 0.1 level.

In addition to academic performance, the learning experience of students is a crucial dimension to evaluate the effectiveness of blended learning. Table 3 presents the results of the course teaching evaluation for students in all classes. The results of the CTE between BL students and TL students are mostly similar, except for a few dimensions such as "The course was interesting," "The course

was stimulating," "Subject knowledge is enhanced," "Content difficulty appropriate," "Supported by library resources," and "Supported by library resources."

Table 3. Result of course teacher evaluation (CTE)

	BL	TL	Diff
Presentation is clear	5.52	5.62	-0.10
Examples relevant to learning	5.65	5.71	-0.06
Teacher was enthusiastic	5.73	5.80	-0.07
Class participation encouraged	5.56	5.56	0.00
Communication was effective	5.65	5.65	0.00
The course was interesting	5.28	5.50	-
			0.22**
The course was stimulating	5.32	5.58	-
			0.26**
Subject knowledge is enhanced	5.42	5.62	-
			0.19**
The course was well-organized	5.32	5.43	-0.12
Clear learning outcomes	5.38	5.50	-0.12
Appropriate assessment method	5.27	5.38	-0.11
Appropriate workload amount	4.87	4.83	0.03
Recommended readings useful	4.83	4.99	-0.16
Content difficulty appropriate	4.79	5.07	-
			0.28**
Supported by library resources	4.75	5.11	-
			0.37**
Supported by IT resources	4.78	5.14	-
			0.37**
Satisfaction with course	5.44	5.50	-0.06
Satisfaction with teacher	5.62	5.64	-0.01
N	85	159	

Scale of 1 (strongly disagree) to 6 (strongly agree).

Numbers in parentheses represent the t-statistics

** Significance at 0.05 level.

The results suggest that classroom teaching can enhance the learning experience by making it more interesting and stimulating. The lower score in "Subject knowledge is enhanced" may explain the lower performance in the examination shown in Table 1, implying that students can learn more from in-person teaching than online video. However, the reason behind this phenomenon requires further investigation. As BL students are less confident in "Subject knowledge is enhanced" than TT students, BL students are less likely to agree that the content difficulty is appropriate. Lastly, the

lower score in "Supported by IT resources" indicates that BL students have higher expectations for IT support than TT students.

Several studies have conducted comparative analyses between blended learning and traditional teaching. Chen and Jones (2007) focused on MBA students and found that BL students were more positive on several dimensions, such as perception of the instructor, learning from the course, and interest in the classes. Their results differ from the findings in this paper, except that BL students in their study also found the course relatively difficult. On the contrary, the results of Lape et al. (2014) are more consistent with this study. BL students were less positive on the questions asked, such as "The time spent in class helped me learn the concepts," "In this course, I often felt excited about learning new concepts," and "I feel well prepared for the next level of study in this field." In summary, these findings suggest that each teaching mode has its own advantages, and the key is to find the optimal balance between these two modes.

The empirical analysis concludes by focusing on understanding students' perceptions of blended learning elements. Pre-survey and post-survey were conducted to collect students' attitudes at the beginning and end of the course, respectively. Table 4 presents results from both surveys. The relatively low scores in Q4 (2.42) and Q5 (2.45), compared to other questions, show that the main barrier to e-learning is still the lack of interaction between students and peers (and teachers). Combining with the relatively low scores in Q1 (3.12) and Q6 (3.18), the results imply that students prefer classes with more interaction with others and can be motivated with more interaction with peers. Thus, it suggests that the future direction of improving blended learning is to enhance the interaction between students and others. On the other hand, the high score in Q2 (3.60) has shown that blended learning does help students save learning time (i.e., less traveling time). Thus, it can further support that each method has its own advantages.

Table 4 Result of pre-survey and post-survey

	Pre	Post	Diff
Q1: E-learning can motivate me to learn.	3.18	3.12	-0.06 (-0.40)
Q2: E-learning can save my time in learning.	3.68	3.60	-0.08 (-0.41)
Q3: I enjoy learning by using electronic device.	3.54	3.54	0.00 (-0.03)
Q4: E-learning increases my interaction with peers.	2.41	2.42	0.01 (0.09)
Q5: E-learning increases my interaction with teachers.	2.45	2.45	0.00 (-0.02)
Q6: Overall, I prefer class with e-learning elements.	3.21	3.18	-0.03 (-0.19)
Q7: I completed all online learning activities.		3.76	
Q8: Video help me preparing for face-to-face meeting.		3.59	

Q9: Online activities help learning subject knowledge.	3.62		
Q10: I am satisfied by the e-learning experience.	3.39		
Q11: Good connection between online and face-to-face.	3.81		
Q12: I am satisfied with the instructor's performance.	3.83		
Expected time spent on online learning activities.	13.52		
Actual time spent on online learning activities.	13.59		
Q13: I am interested in the course subject.	4.13	4.07	-0.06 (-0.44)
Q14: I expect to get an above-average score.	4.15	3.94	-0.21 (-1.49)
N	103	62	

Q1 – Q14 are scale questions scaling from 1 (strongly disagree) to 5 (strongly agree). Numbers in parentheses represent the t-statistics

Q7-Q12 indicates students' attitudes towards specific online activities in the courses. The scores from each question are quite close to each other, and they are all about 3.0, suggesting that students are satisfied with the e-learning element, and more e-learning elements are suggested to be incorporated even into traditional classes to increase teaching effectiveness. In relative comparison, it suggests that the instructor helps to improve the e-learning experience (3.81 for Q11 and 3.82 for Q12), while the e-learning experience still has room for improvement (3.59 for Q8 and 3.39 for Q10).

5. Conclusion

Blended learning, which combines traditional face-to-face instruction with online learning, has been increasingly adopted in education in recent years. Despite its growing popularity, the effectiveness of blended learning has been a topic of debate among educators and researchers. To address this issue, this paper compared the learning effectiveness in traditional teaching and blended learning.

The results of the study indicated that students in blended learning scored significantly lower in exams than those in traditional learning. The study suggests that the effectiveness of blended learning may be impacted by students' willingness to watch online lectures, which can be affected by their busy schedules. The large dispersion of examination results in blended learning further supports this conjecture. It is possible that some students did not watch the online lectures at all, or only watched them sporadically, which may have hindered their learning and performance. Regarding the students' satisfaction and learning experience, the results suggest that traditional learning mode can enhance the learning experience by making it more interesting and stimulating.

The findings of this study have important implications for educators and policymakers. While blended learning may offer various benefits, such as flexibility and personalized learning, it is not a one-size-fits-all solution. The effectiveness of blended learning depends on various factors, such as student engagement and participation, instructor quality, and course design. Therefore, educators and policymakers should carefully consider these factors when implementing blended learning.

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