



Blended Learning Mode of Management Course Using MOOC

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Received 02/08/2024

Revised 05/08/2024

Accepted 05/09/2024

Abstract

Background and Aim: Currently, blended learning can complement traditional classrooms. This study aimed to investigate the effectiveness of MOOCs-based blended learning in management courses, explore if there was any difference in the students' engagement, and gauge to what extent the students' satisfaction was influenced in the MOOCs-based blended learning environment.

Methodology: A quasi-experiment was conducted in the research. The population was students majoring in Business Administration in Liaoning Province, China. The sample was 74 first-year students majoring in Business Administration who registered online for the first semester of 2023 at Liaoning University of Science and Technology. Performance pre-tests and post-tests were used to investigate the students' academic performance. A questionnaire was used to explore the students' engagement and satisfaction. SPSS was employed to make an analysis and interpret the conclusion.

Results: The validity and reliability of the instruments were all testified in the research. After comparing the score improvement and engagement in the control group and treatment group by independent samples t-test, students' ability and engagement were improved in the treatment group. According to the analysis from the questionnaire, students showed active satisfaction with the teaching mode.

Conclusion: The findings of this research suggested that MOOC-based blended learning in management courses could stimulate learning motivation and improve teaching effectiveness.

Keywords: Blended learning; Management Courses; MOOCs

Introduction

With the development of the times, the Internet, and information technologies are developing rapidly, and education and teaching methods are facing unprecedented challenges and opportunities (Pelikan et al., 2021). Traditional classroom teaching has always been the main form of education and teaching. In the traditional classroom teaching mode, most of the time in the classroom is spent by the teacher explaining, and students become passive recipients. With the rapid development of artificial intelligence and technologies, this teaching model is not able to meet the personalized learning students' needs, nor does it correspond to the trend of rapid updates in teaching technology (Tagoe, 2012). The current education environment is changing.

The management course is a fundamental course commonly offered in business administration majors in Chinese universities, providing theoretical support for the advanced learning of subsequent core courses. Management is a discipline that specializes in studying the basic laws and general methods of management activities. With the advent of big data, artificial intelligence, machine learning, and the internet era, management activities have undergone tremendous changes (Robbins & Coulter, 2021). New models and theories of management science are constantly emerging, which requires our teachers and management researchers to keep pace with the times, grasp the pulse of the development of the Internet era, and keep up with the development trend of management science, to reflect the new ideas, new theories and new methods of management science into teaching.

Blended learning is a teaching mode that utilizes digital technology to transform courses and combine online and offline learning materials and instructions (Huang et al., 2022). The advantages of blended learning include flexible teaching and material acquisition, attractiveness to students, cost reduction, and increased efficiency (Medina, 2018).





MOOC is not just a regular online course, it is an open, participatory, and distributed learning program where participants share work to get a rich network of learning content (Aretio, 2015). At present, internationally renowned MOOC platforms include Coursera (www.coursera.org), edX (www.edx.org), Future-Learn (www.futurelearn.com), Khan Academy (www.khanacademy.org), etc. In China, there are platforms such as Chinese MOOC, CNMOOC, Xueyin Online MOOC, and other platforms, which provide strong support for online learning.

As a novel way of learning, the discussion about MOOC is becoming a unique method of learning in the field of higher education (Martin, 2012). MOOC provides a lot of free online materials, and their employment in higher education can provide more possibilities for blended learning model designs (online face-to-face learning experiences) (Bruff et al., 2013).

Nowadays, in traditional management course teaching, the content is dull, and students have less practical experience. There is little interaction and exchange between teachers and students in the classroom; teachers are the dominant force in the classroom and students passively receive the knowledge transmitted so students' learning enthusiasm, initiative, and engagement cannot be motivated; there are some problems such as inadequate teaching evaluation system and poor learning materials.

In terms of the problems above, this study conducted an experiment in which the MOOC-based blended learning method was used in the management course. This research explored the effectiveness of this MOOC-based blended learning method on the students' learning outcomes and investigated the students' engagement in the learning activities and students' satisfaction with this learning method.

Currently, there is almost no research on evaluating the effectiveness of blended learning in management courses. The research evaluated the effectiveness of blended learning in management courses using a quasi-experimental research method, to determine whether the blended learning method could effectively improve students' management course grades, engagement, and satisfaction. The research results enriched the theories related to educational technology and provided practical guidance for the teaching of management courses.

Objectives

This experiment was conducted to see how blended learning based on MOOCs affected students in management courses and to what extent students were satisfied with this kind of teaching model. Thus, the research objectives are as follows:

1. To examine the effectiveness of blended learning in management studies based on MOOCs toward business administration majors' learning outcomes.
2. To explore business administration majors' engagement in MOOC-based blended learning activities.
3. To determine business administration majors' satisfaction with blended learning in management studies based on MOOCs.

Literature review

Introduction of the Course of Management and MOOCs

The management course is a fundamental course commonly offered in business administration majors in Chinese universities, providing theoretical support for the advanced learning of subsequent core courses. Management is a fundamental course in business administration and a discipline that reveals the general laws of management activities (Drucker, 1986). Management course mainly discusses the introduction of management (concepts, principles, decision-making, organizational culture, etc.), the development history of management, mainstream theories and representative views, and the four basic functions of management (planning, organization, leadership, control). It is a professional basic course with strong theoretical and practical significance (Robbins & Coulter, 2021).

MOOC stands for Massive Open Online Course, referring to large-scale online open courses. In 2008, Canadian scholars Stephen Downs and George Siemens jointly constructed the world's first MOOC



course "Connectivism and Connective Knowledge". This course applies the theory of connectionism learning, supports large-scale online learning, and adopts the method of learners jointly building the course, attracting a large number of learners from around the world to participate. On this occasion, the concept of MOOC as a large-scale open online course has been officially proposed (Hew & Cheung, 2014).

MOOC as a broader open education resource framework provides abundant digital materials for teaching and learning (Hew & Cheung, 2014). At present, scholars have provided different interpretations of the MOOC definition from different perspectives. Mcauley et al. (2010) argued that MOOCs are online courses that involve large-scale student engagement and utilize the Internet to access open resources. Downs (2010) pointed out that MOOC is a kind of course in which participants and course materials are distributed virtually. It is a teaching strategy that links everything with students through shared issues, in addition to being a repository of information and pupils.

This study believed that the concept of MOOC could be understood from two perspectives: curriculum form, and teaching mode. First, in terms of course form, MOOC has the characteristics of massiveness and openness (Israel et al., 2015). MOOC brings together students worldwide via information technology, including the Internet (Mcauley et al., 2010). Along with rich, high-quality materials like microfilms, electronic documents, and homework assignments, it also offers students rich learning experiences including discussion participation, peer and self-assessment, and evaluation by peers (Rekha et al., 2023). Secondly, in terms of teaching mode, MOOC is a new shape of teaching in which information technology, represented by the internet, is applied to education, and it is a new teaching mode integrating open education resources and learning support services.

The Effect of Blended Learning

Blended learning (BL) was connected to in-person instruction and online learning activities (Graham et al., 2006). It is a fusion of scene teaching and e-learning teaching paradigms (Wong et al., 2014), and it is a very effective learning model (Merete, 2018). Blended learning combines online and face-to-face (F2F) teaching methods, which can cultivate students' learning abilities, improve teaching effectiveness, and effectively help teachers achieve teaching objectives (Wong et al., 2014). Blended learning allows students to assess the knowledge they learn throughout the semester in addition to providing a clear means of expression for their learning (Aguti et al., 2013).

There are many definitions of blended learning (Smith & Hill, 2019), and scholars have gradually clarified and elaborated on the concept of blended learning, but each still has its emphasis. For example, the implementation methods of blended learning are diverse, to achieve a balance and optimization between learning costs and learning outcomes. Christensen et al. (2013) believe that blended learning is blended learning combines a variety of instructional strategies and educational technologies to produce the best possible learning results. Stockwell et al. (2015) understand blended learning as integrating various learning resources to form a student-centered learning environment, motivating students to find the best learning resources and methods through hard work in this environment. All definitions have a common basic component the integration of different teaching methods (Alammary et al., 2014). Most definitions believe that blended learning is a mixture of F2F and online teaching, but it should be combined with various teaching methods (such as constructivism, behaviorism, and cognitivism). Environment, theory, and techniques should all be included in the definition of blended learning, which is to maximize learning through the right application of a combination of theory, methods, and technology in a particular setting (Cronje, 2020).

MOOC-based Blended Learning

As a form of blended learning, MOOC has been used as part of F2F regular university courses (Albó & Hernández-Leo, 2020). Talbert (2014) proposed blended learning based on flipped classrooms, where students watch instructional videos offline before class and engage in targeted exercises; In class, students quickly complete a small number of assessments and internalize knowledge by solving problems. Finally, summarize and provide feedback. Ghadiri et al. (2013) a teacher at San Jose State University in the United States, used Anant Agarwal's MOOC to conduct blended learning there. The teaching method adopted a





flipped classroom model, where students watched MOOC videos, read electronic textbooks, completed tests and online experiments on the EDX platform before class, and asked questions and evaluated their understanding of MOOC content on the online forum of San Jose State University. Classroom activities include teacher Q&A, students dividing into groups to solve local teacher's questions, teachers explaining the best strategies for solving group problems, personal tests, and teachers explaining the answers to personal tests. The experiment found that this blended learning model can significantly improve students' grades and pass rates in learning local courses. Plasencia and Navas (2014) argue that online learning like MOOC has changed the learning paradigm and practice, but this learning model cannot replace traditional classroom teaching and instead focuses on developing blended learning models.

Yousef et al. (2015) proposed that blended learning based on MOOCs should be student-centered. During the teaching process, teachers should provide timely and effective feedback and evaluation to students, taking into account different MOOC participants and supporting F2F discussions. These scholars have conducted MOOC-based blended learning in two universities for the course Teaching Methodology. Through the survey of participants and the implementation of the entire teaching process, it was found that this teaching model can truly achieve student-centered learning. Students are not just simply watching videos online, but also seeing more diverse learning activities. In this learning mode, students are more willing to share and showcase their achievements, and the teacher-student relationship is also more harmonious.

Thus, according to this study, MOOC-based blended learning refers to the teaching process wherein instructors use top-notch MOOC resources, such as instructional design, assignments, tests, and activities, to target administrative classes with dozens of students, assist them in overcoming obstacles to learning brought on by various learning environments, and help them develop a thorough and methodical understanding of the material they have learned (Bralić & Divjak, 2018; Hao & Li, 2018).

Based on the above analysis, a single MOOC teaching form lacks teacher-student interaction (Hew & Cheung, 2014), teaching feedback is not timely, and the background and learning motivation of participating learners are not controlled, resulting in a low completion rate of courses for learners under the pure MOOC teaching mode, which cannot achieve the expected teaching effect (Breslow et al., 2013; Koller, Ng, Do, & Chen, 2013; Jordan, 2014; Greene, Oswald, & Pomerantz, 2015). Based on MOOC support, blended learning combines online and offline teaching (Williams, 2024), targeting classes with dozens of students. This teaching method improves the quality of student learning by introducing high-quality MOOC resources (Risdianto, Medriati, Parwito, & Setiawan, 2023). In contrast to micro courses, which have very few resources, high-quality MOOC materials contain both video resources and teaching design, assignments, activities, testing, and other resources. (Alghamdi, Hall, & Millard, 2019; Rayyan, et al., 2016). Under the supervision and management of teachers, learners can participate in MOOC course learning, which will better achieve teaching effectiveness (Langseth & Haugsbakken, 2016; Wu & Luo, 2022; Bralić & Divjak, 2018).

MOOC-based Blended Learning Outcomes for Management: Ability to Acquire Professional Knowledge;

The theory of human resource management holds that talents with knowledge, expertise, and skills are valuable resources for enterprises, and the ability of employees to acquire professional knowledge is crucial for enterprises (Chen & Huang, 2009). Therefore, the ability to gain professional knowledge is crucial for students. Through learning and innovation, students can enhance their ability to acquire professional knowledge, to improve their basic professional literacy (Li & Jin, 2020).

MOOC-based Blended Learning Outcomes for Management: Teamwork Ability

With the development of the times, organizations need more cooperation and coordination, and improving team collaboration ability is increasingly important for organizations (Pazos, et al., 2020). The implementation of blended learning in management often demands the gathering, compiling, and arrangement of educational resources, including technical data, professional expertise, and professional materials. It enables students to supervise and motivate each other outside of class, actively completing





various learning tasks; In class, students discuss and help each other, actively expanding their knowledge, broadening their thinking, and further consolidating their knowledge and skills in the process of mutual communication with students, thereby improving learning efficiency and quality (Li & Jin, 2020)

MOOC-based Blended Learning Outcomes for Management: Application Skill

Drucker (1986) pointed out that management is a discipline that combines scientific and practical aspects, and management courses should focus on cultivating students' practical application abilities. In self-directed learning, learners engage themselves in extensive simulation, practice, and practice of knowledge, skills, and other learning processes, to effectively accelerate the comprehensive application of management knowledge. It is necessary to fully accelerate students' initiative and desire for self-directed learning, provide them with more practical opportunities, and improve their ability to apply management knowledge. This can effectively improve students' professional quality, developing students' ability to discover and solve problems, thereby enhancing their thinking and innovation abilities in self-directed learning (Li & Jin, 2020).

Students' Engagement

Student engagement refers to the social, cognitive, emotional, and behavioral inputs that students make when interacting with higher education institutions and their key factors: age, employees, and the institution itself (Bowden, Tickle & Naumann, 2021). In this study, student engagement describes the interactions that MOOC participants have with the course material, instructors, and/or other learners on a behavioral, cognitive, emotional, and social level (Eccles & Wang, 2012). A structured survey questionnaire was designed from four variables: behavioral engagement, cognitive engagement, emotional engagement, and social engagement. Based on the survey results, the experience of using MOOC for blended learning in management courses was analyzed.

Students Satisfaction

Student engagement refers to the social, cognitive, emotional, and behavioral inputs that students make when interacting with higher education institutions and their key factors: age, employees, and the institution itself (Bowden, Tickle & Naumann, 2021). In this study, student engagement describes the interactions that MOOC participants have with the course material, instructors, and/or other learners on a behavioral, cognitive, emotional, and social level (Eccles & Wang, 2012). A structured survey questionnaire was designed from four variables: behavioral engagement, cognitive engagement, emotional engagement, and social engagement. Based on the survey results, the experience of using MOOC for blended learning in management courses was analyzed.

Conceptual Framework

This study explored the teaching effect of MOOC-based blended learning in management courses. The ability of students to acquire professional knowledge, collaborate in teams, and apply management skills was measured through the end-of-semester management exam. The learning experience and feelings of students towards MOOC-based management courses were measured by the results of a survey questionnaire on engagement and satisfaction after the course ends. The conceptual framework is as follows:



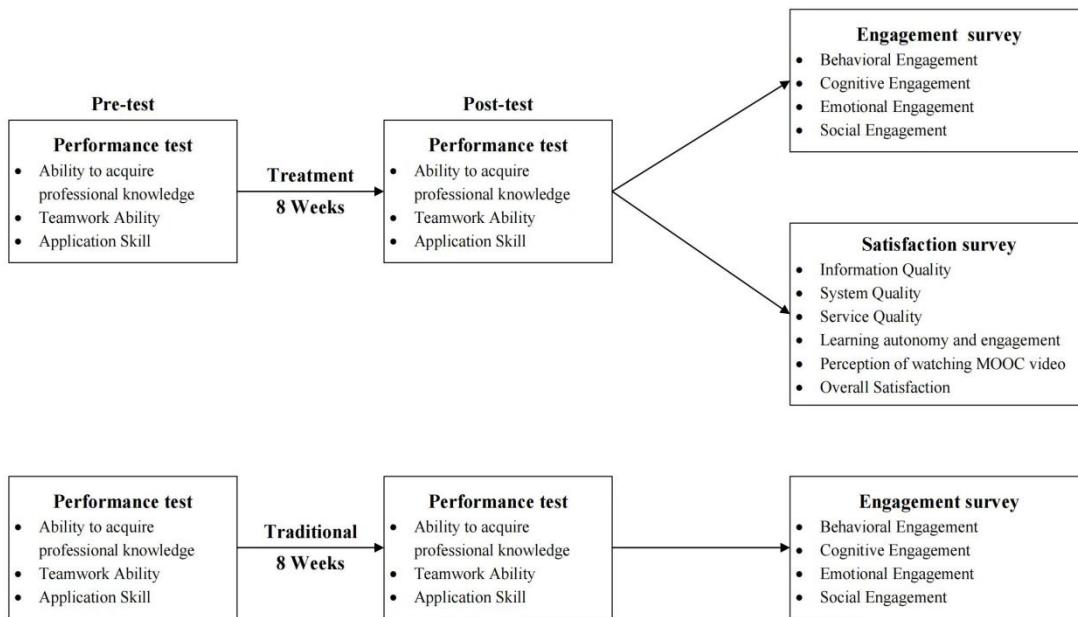


Figure 1 Conceptual Framework: Blended Learning Based on MOOCs
 Source: Constructed by the Author

According to the conceptual framework, there were such hypotheses as follows:

H₀₁: There is no difference in student's ability to acquire professional knowledge between the control group and the treatment group.

H₀₂: There is no difference in students' teamwork ability between the control group and the treatment group.

H₀₃: There is no difference in students' application skills between the control group and the treatment group.

H₀₄: There is no difference in students' engagement between the control group and the treatment group.

Methodology

This research is based on behaviorism theory, cognitive theory, and constructivism theory to experiment to explore the teaching effectiveness of blended learning using MOOC in the teaching process of management courses.

This research adopted a mixed method, using a quasi-experimental and structured questionnaire survey, to study the teaching effectiveness of blended learning in management courses based on MOOC. Through a questionnaire survey, understand the engagement and satisfaction of students towards blended learning in MOOC-based management courses.

Research Instruments

In the quasi-experimental study, the experimental group adopted a blended learning based on MOOC, while the control group adopted a traditional face-to-face classroom teaching. By comparing and analyzing the scores in the pre-test and pos-test of the two groups, the study was to understand whether there are significant differences in knowledge acquisition ability, team collaboration ability, and management application ability between the two groups before and after the experiment, and the effect of using the blended learning mode of management course based on MOOC.



This research used a questionnaire survey to collect feedback on the students' satisfaction and engagement in the blended learning mode of management course based on MOOC and conducted analysis and evaluation to understand the mixed learning experience of students in MOOC-based management course, and to provide constructive suggestions for improving the quality of management course. The engagement evaluation indicators include four indicators: behavioral engagement, cognitive engagement, emotional engagement, and social engagement. The satisfaction evaluation indicators include six indicators: information quality, system quality, service quality, learning autonomy and engagement, feeling of watching MOOC videos, and overall satisfaction.

Population, Sample Size, and Sampling Technique

In this study, the population was freshmen from the School of Business Administration, Liaoning University of Science and Technology. Generally speaking, freshmen had similar scores in the college entrance examination before entering university, with a similar gender ratio and little difference in ability levels. Because management was the first fundamental course for all new students majoring in business administration, almost all undergraduate schools offering such majors nationwide offered management courses in the first semester of students entering university. Therefore, the significance of this study was extended to benefit all relevant students nationwide.

The sample for this study was 74 first-year students majoring in Business Administration who registered online for the first semester of 2023 at Liaoning University of Science and Technology. Randomly divide 74 students into two groups, each with 37 people. One was the experimental group, and the other was the control group, which could meet the needs of the sample size.

Quasi-experimental research adopted a simple random sampling method, which generally first numbered the experimental areas of the population, and used a lottery or random number table to select the required students to form the sample. This made it possible for each unit to be selected in the population, to improve the reliability of the values from the sample. In this study, 74 cards were prepared with each person's name written on them and then placed in a "hat" (sampling box) for stirring. 37 people were selected from them to form a group, and the remaining 37 people were selected as another group. Through simple random sampling, 74 students majoring in Business Administration were randomly divided into two groups, one of which was the experimental group and the other the control group, for a quasi-experiment.

After an 8-week experiment, two groups of students took part in the course assessment test. Then, a questionnaire survey was conducted in the two groups to understand their satisfaction and engagement in the MOOC-based blended learning model for management courses. After conducting a small sample survey and meeting the requirements for reliability and validity, the questionnaire was officially surveyed and distributed in the form of an online questionnaire through Questionnaire Star.

Data Analysis and Results from Performance Tests for Students' Learning Outcomes

The data from the pre-and-post tests and the information from the questionnaire were collected. The results were analyzed by using the SPSS software.

The independent samples t-test was used to analyze data from pre-tests and post-tests in the treatment group and control group. Calculate the score improvement between pre-test and post-test for each group, compare the score improvement between the two groups, and statistically and analytically show the difference by calculating mean and significance values. Students' learning outcomes consist of three parts: students' ability to acquire professional knowledge, students' teamwork ability, and students' application skills. This hypothesis was presented from these three aspects to test the improvement of learning outcomes. The hypothesis testing for learning outcomes in management course was presented as follows:

H_01 : There is no difference in student's ability to acquire professional knowledge between the control group and the treatment group.

H_02 : There is no difference in students' teamwork ability between the control group and treatment group.

H_03 : There is no difference in students' application skills between the control group and treatment group.



Table 1 Independent Samples Test for Students' Outcomes between Control Group and Treatment Group

| | | Levene's Test for Equality of Variances | | | t-test for Equality of Means | | | | | |
|-------------------------------------------|----------------------------------|-----------------------------------------|------|------|------------------------------|-----------------|-----------------|-----------------------|-------------------------------------------|-------|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | | Lower |
| Comprehensive scores | Equal variances assumed | 0.39 | 0.54 | 4.41 | 72 | .000 | 15.38 | 3.48 | 8.43 | 22.32 |
| | Equal variances are not assumed. | | | 4.41 | 71.95 | .000 | 15.38 | 3.48 | 8.43 | 22.32 |
| Ability to acquire professional knowledge | Equal variances assumed | 0.39 | 0.54 | 4.75 | 72 | .000 | 16.57 | 3.49 | 9.62 | 23.52 |
| | Equal variances are not assumed. | | | 4.75 | 71.95 | .000 | 16.57 | 3.49 | 9.62 | 23.52 |
| Teamwork Ability | Equal variances assumed | 0.39 | 0.53 | 4.03 | 72 | .000 | 14.03 | 3.48 | 7.09 | 20.97 |
| | Equal variances are not assumed. | | | 4.03 | 71.91 | .000 | 14.03 | 3.48 | 7.09 | 20.97 |
| Application Skill | Equal variances assumed | 0.42 | 0.52 | 4.20 | 72 | .000 | 14.81 | 3.52 | 7.79 | 21.83 |
| | Equal variances are not assumed. | | | 4.20 | 71.96 | .000 | 14.81 | 3.52 | 7.79 | 21.83 |

According to Table 1, the F-test indicated that equal variances were assumed to establish homogeneity based on the comprehensive scores (the significance probability of $F p=0.54>0.05$, indicating no significant difference between the variance of the experimental group and the control group). Additionally, upon observing the t statistic, its significance probability (2-tailed) Sig. (2-tailed) was found to be $p=0.000<0.05$, leading to the rejection of the null hypothesis. There are significant differences in student scores between the two teaching methods. Regarding sub-item scores, results from the F-test for the ability to acquire professional knowledge, teamwork ability, and application skill indicated that equal variances were assumed (significance probability of $F p > 0.05$), suggesting no significant difference between the variance of the experimental group and control group. Furthermore, upon observing the t statistic with a significance probability (2-tailed) Sig. (2-tailed) $p= 0.000<0.05$, thus rejecting the null hypothesis. There are significant differences in student scores between the two teaching methods.

In summary, the results of the independent sample t-test showed the rejection of three null hypotheses in the process of hypothesis testing.



Results from the Questionnaire for Students' Engagement

In this study, SPSS 26 was used to quantitatively analyze the results of the participation questionnaire data. Using an independent sample t-test, we investigated whether there is a difference in students' engagement between the experimental group using Xueyin Online MOOC for blended learning in management courses and the control group using traditional teaching methods. Both groups have access to online learning resources and can engage in self-paced learning. The difference lies in that for the experimental group, who adopt blended learning, the teaching teacher is fully involved and guides them throughout their online learning process. As for the control group, the students used online resources to learn independently without teacher intervention, while the teaching method remained traditional face-to-face instruction.

This section analyzed the improvement of students' engagement in each class after the experiment. Using independent sample t-test to verify whether there is any difference between the experimental group and the control group after using blended learning based on Xueyin Online MOOC. The hypothesis testing is as follows:

H_04 : There is no difference in students' engagement between the control group and the treatment group.

Table 2 Independent Samples Test for Students' Engagement between Two Groups

| | | Levene's Test for Equality of Variances | | | t-test for Equality of Means | | | | | |
|-----------------------|----------------------------------|-----------------------------------------|------|-----------|------------------------------|-----------------|-----------------|-----------------------|-------------------------------------------|-------|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | | | | Lower | Upper |
| Behavioral Engagement | Equal variances assumed | 6.20 | 0.02 | 4.5372.00 | .000 | | 0.75 | 0.17 | 0.42 | 1.08 |
| | Equal variances are not assumed. | | | 4.5368.04 | .000 | | 0.75 | 0.17 | 0.42 | 1.08 |
| Cognitive Engagement | Equal variances assumed | 10.03 | 0.00 | 3.9272.00 | .000 | | 0.75 | 0.19 | 0.37 | 1.13 |
| | Equal variances are not assumed. | | | 3.9267.07 | .000 | | 0.75 | 0.19 | 0.37 | 1.13 |
| Emotional Engagement | Equal variances assumed | 6.67 | 0.01 | 3.9572.00 | .000 | | 0.65 | 0.16 | 0.33 | 0.98 |
| | Equal variances are not assumed. | | | 3.9565.47 | .000 | | 0.65 | 0.16 | 0.33 | 0.98 |
| Social Engagement | Equal variances assumed | 14.50 | 0.00 | 4.3372.00 | .000 | | 0.83 | 0.19 | 0.45 | 1.21 |
| | Equal variances are not assumed. | | | 4.3363.91 | .000 | | 0.83 | 0.19 | 0.45 | 1.21 |

The F-test in Table 2 indicates that the assumption of homogeneity of variance, where equal variances are assumed, is not valid (the significance probability of F is $p < 0.05$), indicating a significant difference in variance between the experimental group and the control group.) At this point, the t-statistic is observed, and its significance probability (two-tailed) is $Sig. (2-tailed) p = 0.000 < 0.05$, i.e. rejecting the null hypothesis, there is a significant difference in participation between the two teaching methods. In summary, during the



hypothesis testing process, based on the results of the independent sample t-test, the original hypothesis was proven to be rejected.

Results from the Questionnaire for Students' Satisfaction

In this study, SPSS 26 was used to quantitatively analyze the results of satisfaction questionnaire data. In the questionnaire survey, there are six variables, namely information quality, system quality, service quality, learning autonomy and engagement, perception of watching MOOC videos, and overall satisfaction. This study used a 5-level Likert scale (Agreement) to collect the attitudes of the sample towards the measured variable.

Table 3 Descriptive Statistics of Students' Satisfaction in Experimental Group(n=37)

| | Item Statement | Mean | Std. Deviation | Interpretation |
|-----------------------|----------------------------------------------------------------------------------------------------|------|----------------|----------------|
| Information quality | 1. The MOOC platform offers helpful data. | 4.76 | 0.55 | Strongly Agree |
| | 2. The MOOC platform provides comprehensible knowledge. | 4.73 | 0.61 | Strongly Agree |
| | 3. The MOOC platform offers intriguing information. | 4.70 | 0.62 | Strongly Agree |
| | 4. The MOOC platform offers accurate information. | 4.73 | 0.61 | Strongly Agree |
| | Average | 4.73 | 0.58 | Strongly Agree |
| System quality | 1. Navigating the MOOC interface is simple. | 4.73 | 0.56 | Strongly Agree |
| | 2. I can locate the information I'm seeking with ease thanks to the MOOC platform. | 4.78 | 0.53 | Strongly Agree |
| | 3. The MOOC platform has a clean layout. | 4.76 | 0.55 | Strongly Agree |
| | 4. Using the MOOC platform is simple. | 4.70 | 0.62 | Strongly Agree |
| | Average | 4.74 | 0.54 | Strongly Agree |
| Service quality | 1. The instructor is always more than happy to assist me with the MOOC platform anytime I need it. | 4.57 | 0.60 | Strongly Agree |
| | 2. The instructor gives me one-on-one help when I run into issues with the MOOC platform. | 4.35 | 0.63 | Strongly Agree |
| | 3. The instructor delivers MOOC platform-related services on schedule. | 4.76 | 0.49 | Strongly Agree |
| | 4. The instructor is knowledgeable enough to respond to my inquiries about the MOOC platform. | 4.78 | 0.53 | Strongly Agree |
| | Average | 4.61 | 0.42 | Strongly Agree |
| Learning autonomy and | 1. This MOOC-based course improves my learning autonomy. | 4.73 | 0.61 | Strongly Agree |
| | 2. In the current instruction, I feel motivated to explore the course topics. | 4.73 | 0.51 | Strongly Agree |

| Item Statement | | Mean | Std. Deviation | Interpretation |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|------|----------------|----------------|
| engageme nt | 3. In the current instruction, I am engaged to be involved in discussions with other course participants in class and online forums. | 4.59 | 0.72 | Strongly Agree |
| | Average | 4.68 | 0.56 | Strongly Agree |
| Perception of watching MOOC video | 1. The MOOC videos give me more flexibility because I can watch and learn those videos at my own pace. | 4.70 | 0.57 | Strongly Agree |
| | 2. I can easily get access to the MOOC videos. | 4.73 | 0.56 | Strongly Agree |
| | 3. The vivid way of presenting the MOOC videos enhances my comprehension and understanding of the course topics. | 4.81 | 0.46 | Strongly Agree |
| | 4. Watching MOOC videos beforehand is an effective way for me to acquire new knowledge. | 4.84 | 0.44 | Strongly Agree |
| | Average | 4.77 | 0.46 | Strongly Agree |
| Overall Satisfaction | 1. I am happy with how well the MOOC platform is performing. | 4.51 | 0.69 | Strongly Agree |
| n | 2. My usage of the MOOC platform has been positive. | 4.59 | 0.64 | Strongly Agree |
| | 3. I made a smart choice in using the MOOC platform. | 4.81 | 0.52 | Strongly Agree |
| | Average | 4.64 | 0.45 | Strongly Agree |
| | Overall Average | 4.76 | 0.49 | Strongly Agree |

For the Information quality dimension, the average value is 4.73, which indicates "strong agreement" compared to any level; Students believe that the MOOC platform provides useful information (with an average score of 4.76), the information provided by the MOOC platform is understandable (with an average score of 4.73), the information provided by the MOOC platform is interesting (with an average score of 4.70), and the information provided by the MOOC platform is reliable (with an average score of 4.73). For the System quality dimension, the average value is 4.74, which indicates "strong agreement" compared to any level; The students stated that the MOOC platform is easy to operate (with an average score of 4.73) and found that it allows students to easily find the information they want (with an average score of 4.78). The MOOC platform has a good structure (with an average score of 4.76) and is easy to use (with an average score of 4.70).

For the service quality dimension, the average value is 4.61, indicating "strong agreement" compared to any level; Students believe that whenever they need support from the MOOC platform, teachers are always very willing to provide help (average score of 4.57). When students encounter problems on the MOOC platform, teachers give them personal attention (average score of 4.35). Teachers provide MOOC platform-related services at the agreed time (average score of 4.76), and teachers have enough knowledge to answer students' questions about the MOOC platform (average score of 4.78).

For the Learning autonomy and engagement dimension, the average value is 4.68, indicating "strong agreement" compared to any level; Students believe that this MOOC-based course has improved their learning autonomy (average score of 4.73). In current teaching, students feel motivated to explore course



topics (average score of 4.73). In current teaching, students are committed to discussing with other course participants in the classroom and online forums (average score of 4.59).

For the perception of watching MOOC video dimension, the average value is 4.77, which indicates "strong agreement" compared to any level; Students believe that MOOC videos give them more flexibility because they can watch and learn at their own pace (average score of 4.70), easily access MOOC videos (average score of 4.73), and the vivid presentation of MOOC videos enhances students' understanding and comprehension of course themes (average score of 4.81). Watching MOOC videos in advance is an effective way for students to acquire new knowledge (average score of 4.84).

For the Overall Satisfaction dimension, the average value is 4.64, indicating "strong agreement" compared to any level; The students were very satisfied with the performance of the MOOC platform (average score of 4.51) and the experience of using the MOOC platform (average score of 4.59). It was a wise decision to use the MOOC platform (average score of 4.81).

Overall, the experimental group students were unanimously satisfied with the blended learning of management based on Xueyin Online MOOC.

Discussion

Through an 8-week blended learning practice, combined with the research and practice of this paper, some insights have been gained into blended learning. The deeper understanding and reflection on blended learning were expected to guide some research and blended learning practices with frontier teachers. Firstly, there has been a shift in teaching philosophy. Blended learning first needs to achieve a transformation from a "teaching-centered" to a "learning-centered" teaching philosophy, shifting from focusing on what to teach, how to teach, and how to assess knowledge to more consideration of what students need to learn, how to learn, and how to evaluate their true learning performance. In the process of blended learning, students not only acquire, memorize, and understand knowledge information, but also have more important expressive and higher-order learning goals in the learning process.

Secondly, blended learning online and offline teaching complement and support each other. Blended learning involves two stages of learning activities, online and offline, and the effectiveness of online learning directly affects the implementation of classroom learning activities. The main problem facing the current stage of online self-directed learning is that some students cannot conscientiously complete online learning activities and tasks. Therefore, teachers should strengthen the teaching design of online learning activities and tasks, design self-directed learning task lists that stimulate students' learning interests and clear goals, and learning paths that are more in line with students' cognitive laws. They should ensure the learning effectiveness of students in the online self-directed learning stage.

Thirdly, in blended learning, the effectiveness of classroom learning activities greatly affects the overall learning effect. According to the actual needs of classroom teaching, appropriate choices should be made for the consolidation and internalization stage, application transfer, and evaluation.

The learning activities in the thinking stage can be integrated and utilized from these two or three stages. Teachers should focus on answering questions, designing questions and discussion topics that help promote the development of higher-order thinking, strengthening organizing and guiding classroom discussions, improving the quality of teaching interaction, strengthening self-directed learning tasks and collaborative learning, and providing feedback and personalized guidance on the process of learning tasks to improve the quality of learning outcomes.

Conclusion

This study was based on behaviorism, cognitivism, and social constructivism as theoretical foundations, combined with previous research on blended learning by scholars, and developed a blended learning model based on Xueyin Online MOOC in the teaching of management courses. It included pre-class, in-class, and post-class activities, and used quasi-experimental methods to study whether students had improved management skills and participation, as well as their views on blended learning based on

Xueyin Online MOOC. The improvement between the pre-test and post-test scores was analyzed to show the three variables: Ability to acquire professional knowledge, teamwork ability, and application skills in the control and experimental groups. Paired sample t-tests were used to verify whether there was any difference in scores of three variables: Ability to acquire professional knowledge, teamwork ability, and application skills between the pre-test and post-test of the experimental group after using blended learning based on Xueyin Online MOOC; Using paired sample t-test to verify whether there was any difference in Ability to acquire professional knowledge, teamwork ability, and application skills scores between the pre-test and post-test in the control group; Using independent sample t-test to verify whether there is no difference in Ability to acquire professional knowledge, teamwork ability, and application skills scores between the control group and the experimental group after using blended learning based on Xueyin Online MOOC. In addition, independent sample t-tests were used to investigate student participation.

Data analysis showed that blended learning in management based on Xueyin Online MOOC was effective in improving students' ability to acquire professional knowledge, teamwork ability, and application skills. The participation rate of the experimental group was significantly higher than that of the control group.

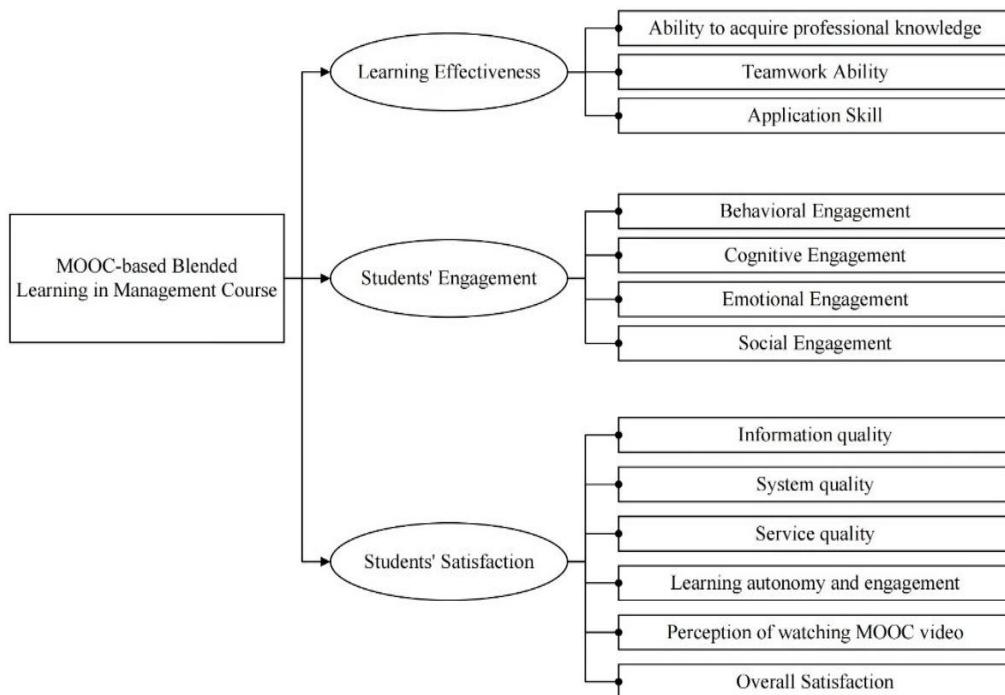


Figure 2 Mind Mapping of the Research Conclusion

Source: Constructed by the Author

Recommendation

The development of the Internet, information technology, and artificial intelligence has changed the generation, development, acquisition, and application of knowledge, and human learning methods and rules will also change accordingly. Hybrid learning is neither a technological innovation nor a technological invention. It is an inevitable outcome of the development of the Internet and information technology to a certain stage and a new stage in the history of human learning. Blended learning, which combines information technology, Internet resources, and education closely, is an important innovation and progress in the education model.

The blended learning model is student-centered and aims to cultivate self-learning and innovation abilities, adapting to the current demand for talent cultivation in society. In the future, if students can truly participate and achieve good teaching quality, teachers need to combine teaching practice, keep up with the times, be brave in innovation, attract students with advanced teaching methods and high-quality teaching content, and improve teaching effectiveness. Blended learning is not only a new learning method, but also a new learning concept, which has a significant and far-reaching impact on current educational concepts, models, and methods.

References

Aguti, B., Walters, R. & Wills, G. (2013). A Framework for Evaluating the Effectiveness of Blended E-Learning within Universities. In R. McBride & M. Searson (Eds.), *Proceedings of SITE 2013-- Society for Information Technology & Teacher Education International Conference* (pp.1982-1987). *New Orleans, Louisiana, United States: Association for the Advancement of Computing in Education (AACE)*. <https://www.learntechlib.org/p/48392>

Alammary, A., Sheard, J., & Carbone, A. (2014). Blended learning in higher education: Three different design approaches. *Australasian Journal of Educational Technology*, 30(4). <https://doi.org/10.14742/ajet.693>

Albó, L., & Hernández-Leo, D. (2020). Conceptualizing a visual representation model for MOOC-based blended learning designs. *Australasian Journal of Educational Technology*, 36(4), 1-26. <https://doi.org/10.14742/ajet.5178>

Alghamdi, T., Hall, W., & Millard, D. (2019, July). A classification of how MOOCs are used for blended learning. In *Proceedings of the 4th International Conference on Information and Education Innovations* (pp. 1-7). <https://doi.org/10.1145/3345094.3345107>

Aretio, L. G. (2015). Yantes de los MOOC. *Revista Española de Educación Comparada*, 26, 97-115. <https://doi.org/10.5944/reec.26.2015.14483>

Bowden J. L. H., Tickle L., & Naumann K. (2021). The four pillars of tertiary student engagement and success: a holistic measurement approach. *Studies in Higher Education*, 46(6), 1207-1224. <https://doi.org/10.1080/03075079.2019.1672647>

Bralić, A., & Divjak, B. (2018). Integrating MOOCs in traditionally taught courses: achieving learning outcomes with blended learning. *International journal of educational technology in higher education*, 15, 1-16. <https://doi.org/10.1186/s41239-017-0085-7>

Breslow, L., Pritchard, D. E., DeBoer, J., Stump, G. S., Ho, A. D., & Seaton, D. T. (2013). Studying learning in the worldwide classroom research into edX's first MOOC. *Research & Practice in Assessment*, 8, 13-25. https://www.edx.org/courses/MITx/6.002x/2013_Spring/About

Bruff, D. O., Fisher, D. H., McEwen, K. E., & Smith, B. E. (2013). Wrapping a MOOC: Student perceptions of an experiment in blended learning. *Journal of Online Learning and Teaching*, 9(2), 187. <http://creativecommons.org/licenses/by-nc-sa/3.0/us/>

Chen, C. J., & Huang, J. W. (2009). Strategic human resource practices and innovation performance—The mediating role of knowledge management capacity. *Journal of Business Research*, 62(1), 104-114. <https://doi.org/10.1016/j.jbusres.2007.11.016>

Christensen, G., Steinmetz, A., Alcorn, B., Bennett, A., Woods, D., & Emanuel, E. (2013). The MOOC phenomenon: Who takes massive open online courses and why? Available at SSRN 2350964. <https://ssrn.com/abstract=2350964>

Cronje, J. (2020). Towards a new definition of blended learning. *Electronic Journal of e-Learning*, 18(2), 114-121. <https://doi.org/10.34190/EJEL.20.18.2.001>

Downes, S. (2010). Learning networks and connective knowledge. In *Collective Intelligence and E-Learning 2.0: Implications of web-based communities and networking (1-26)*. IGI Global. DOI: 10.4018/978-1-60566-729-4.ch001

Drucker, P. (1986). *MANAGEMENT: Tasks, Responsibilities, Practices*. Fitzhenry & Whiteside Ltd.

Eccles, J., & Wang, M. T. (2012). Part I commentary: So, what is student engagement anyway? In *Handbook of Research on Student Engagement* (pp. 133-145). Boston, MA: Springer US.
https://doi.org/10.1007/978-1-4614-2018-7_6

Ghadiri, K., Qayoumi, M. H., Junn, E., Hsu, P., & Sujitparapitaya, S. (2013). The transformative potential of blended learning using MIT edX's 6.002 x online MOOC content combined with student team-based learning in class. *environment*, 8(14), 14-29

Graham, C. R. (2006). Blended learning systems. *The Handbook of blended learning: Global perspectives, local designs*, 1, 3-21.

Greene, J. A., Oswald, C. A., & Pomerantz, J. (2015). Predictors of retention and achievement in a massive open online course. *American Educational Research Journal*, 52(5), 925-955.
<https://doi.org/10.3102/00028312155846>

Hao, W., & Huiyan, L. (2018, August). Research on blended teaching reform and innovation strategy based on MOOC education. In *2018 13th International Conference on Computer Science & Education (ICCSE)* (pp. 1-4). IEEE. DOI:10.1109/ICCSE.2018.8468767

Hew, K. F., & Cheung, W. S. (2014). Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges. *Educational research review*, 12, 45-58.
<https://doi.org/10.1016/j.edurev.2014.05.001>

Huang, J., Matthews, K. E., & Lodge, J. M. (2022). 'The university doesn't care about the impact it is having on us': Academic experiences of the institutionalization of blended learning. *Higher Education Research & Development*, 41(5), 1557-1571.
<https://doi.org/10.1080/07294360.2021.1915965>

Israel, M., Pearson, J. N., Tapia, T., Wherfel, Q. M., & Reese, G. (2015). Supporting all learners in school-wide computational thinking: A cross-case qualitative analysis. *Computers & Education*, 82, 263-279. <https://doi.org/10.1016/j.compedu.2014.11.022>

Jordan, K. (2014). Initial trends in enrolment and completion of massive open online courses. *International Review of Research in Open and Distributed Learning*, 15(1), 133-160.
<https://doi.org/10.19173/irrodl.v15i1.1651>

Koller, D., Ng, A., Do, C., & Chen, Z. (2013). Retention and intention in massive open online courses: In-depth. *Educause review*, 48(3), 62-63.

Langseth, I., & Haugsbakken, H. (2016). Introducing blended learning MOOC—a study of one bMOOC in Norwegian teacher education. In *Stakeholders and Information Technology in Education: IFIP TC 3 International Conference, SaITE 2016, Guimarães, Portugal, July 5-8, 2016, Revised Selected Papers 1* (pp. 59-71). Springer International Publishing. DOI:10.1007/978-3-319-54687-2_6

Li, Y., & Jin, D. (2020). A model for the influential factors of the autonomous learning ability of Japanese majors. *International Journal of Emerging Technologies in Learning (iJET)*, 15(12), 153-167.
<https://doi.org/10.3991/ijet.v15i12.14531>

Martin, F. G. (2012). Will massive open online courses change how we teach? *Communications of the ACM*, 55(8), 26-28. <https://doi.org/10.1145/2240236.2240246>

McAuley, A., Stewart, B., Siemens, G., & Cormier, D. (2010). The MOOC model for digital practice.
<https://www.researchgate.net/publication/260205419>

Medina, L. C. (2018). Blended learning: Deficits and prospects in higher education. *Australasian Journal of Educational Technology*, 34(1). <https://doi.org/10.14742/ajet.3100>

Merete Fkaris, K., & Sevald, H. (2018). Communication in mental health Nursing-Bachelor Students' appraisal of a blended learning training program exploratory study. *BMC Nursing*, 17, 1-10.

Pazos, P., Cima, F., Kidd, J., Ringleb, S., Ayala, O., Gutierrez, K., & Kaipa, K. (2020). Enhancing teamwork skills through an engineering service-learning collaboration. In *2020 ASEE Virtual Annual Conference Content Access*, Virtual Online. <https://peer.asee.org/34577>

Pelikan, E. R., Lüftenegger, M., Holzer, J., Korlat, S., Spiel, C., & Schober, B. (2021). Learning during COVID-19: the role of self-regulated learning, motivation, and procrastination for perceived

competence. *Zeitschrift für Erziehungswissenschaft*, 24(2), 393-418.
<https://doi.org/10.1007/s11618-021-01002-x>

Plasencia, A., & Navas, N. (2014). MOOCs, the flipped classroom, and Khan Academy practice The implications of augmented learning. *Innovation and teaching technologies: New directions in research, practice, and policy*, 1-10. https://doi.org/10.1007/978-3-319-04825-3_1

Rayyan, S., Fredericks, C., Colvin, K.F., Liu, A., Teodorescu, R., Barrantes, A., & Pritchard, D. E. (2016). A MOOC based on blended pedagogy. *Journal of Computer Assisted Learning*, 32(3), 190-201. <https://doi.org/10.1111/jcal.12126>

Rekha, I. S., Shetty, J., & Basri, S. (2023). Students' continuance intention to use MOOCs: empirical evidence from India. *Education and Information Technologies*, 28(4), 4265-4286.
<https://doi.org/10.1007/s10639-022-11308-w>

Risdianto, E., Medriati, R., Parwito, P., & Setiawan, I. (2023). Requirements Analysis of the Development of Project Based Learning (PJBL)-based Blended Learning Model Assisted by MOOC. *AL-ISHLAH: Jurnal Pendidikan*, 15(2), 1529-1537.
<https://doi.org/10.35445/alishlah.v15i2.2839>

Robbins, S.P., & Coulter, M. (2021. *Management*. Pearson Education Limited. R.L. Katz, Skills of an Effective Administrator, Harvard Business Review, September/October 1974, pp. 90–102.

Smith, K., & Hill, J. (2019). Defining the nature of blended learning through its depiction in current research. *Higher Education Research & Development*, 38(2), 383-397.
<https://doi.org/10.1080/07294360.2018.1517732>

Stockwell, B. R., Stockwell, M. S., Cennamo, M., & Jiang, E. (2015). Blended learning improves science education. *Cell*, 162(5), 933-936. <https://doi.org/10.1016/j.cell.2015.08.009>

Tagoe, M. (2012). Students' perceptions on incorporating e-learning into teaching and learning at the University of Ghana. *International Journal of Education and Development using ICT*, 8(1), 91-103.
<https://www.learntechlib.org/p/42295>

Talbert, R. (2014). Inverting the linear algebra classroom. *Primus*, 24(5), 361-374.
<https://doi.org/10.1080/10511970.2014.883457>

Williams, R. T. (2024). An Overview of MOOCs and Blended Learning: Integrating MOOC Technologies into Traditional Classes. *IETE Journal of Education*, 1-8.
<https://doi.org/10.1080/09747338.2024.2303040>

Wong, L., Tatnall, A., & Burgess, S. (2014). A framework for investigating blended learning effectiveness. *Education+ Training*, 56(2/3), 233-251.
<https://www.emerald.com/insight/content/doi/10.1108/ET-04-2013-0049>

Wu, H., & Luo, S. (2022). Integrating MOOCs in an undergraduate English course: Students' and Teachers' perceptions of blended learning. *SAGE Open*, 12(2).
<https://doi.org/10.1177/21582440221093035>

Yousef, A. M. F., Chatti, M. A., Schroeder, U., & Wosnitza, M. (2015). A usability evaluation of a blended MOOC environment: An experimental case study. *The International Review of Research in Open and Distributed Learning*, 16(2). <https://doi.org/10.19173/irrodl.v16i2.2032>

