INFLUENCE OF BLENDED TEACHING MODELS ON LEARNING OUTCOMES A CASE STUDY OF CHONGQING COLLEGE OF FOREIGN TRADE AND ECONOMICS

Huiyi LAI[1] and Phitoon BHOTISARN[1]
1 Faculty of Education Program, Pathumthani University, Thailand;
1009058374@qq.com (H. L.); phitoon.b@ptu.ac.th (P. B.)

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ABSTRACT
The objectives of this study were 1) to study influence of blended teaching models on students' academic performance compared to the traditional mode, and 2) to study students' satisfaction with the blended mode of instruction as compared to the traditional mode. This research methodology was quantitative research. The conceptual framework was applied from blended teaching of Xin Hue's study. The population of the study consisted of 130 students in the first year of Chongqing College of Foreign Trade and Economics. The samples were 97 students of class 1 and class 2 that similar in all aspects and were divided into two groups determined by Krejcie and Morgan table. The research instrument was a 5-rating scale questionnaire. Statistics used for data analysis were percentage, frequency, mean, and standard deviation. The results of the study show that 1) the implementation of blended teaching mode is positively correlated with students' academic performance compared with traditional teaching methods. 2) The comparative on traditional teaching methods, blended teaching mode is positively correlated with students' satisfaction compared with traditional teaching methods.
Keywords: Online and Offline, Blended Teaching Model, Applied Research, Satisfaction

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INTRODUCTION

The explosive growth of the Internet and artificial intelligence (AI) has initiated the information technology age, significantly impacting several facets of society, particularly education. The rising popularity of online learning platforms, attributed to their flexibility in time and place, has led to their progressive integration into education, resulting in a transition towards blended learning models. This transition corresponds with national educational initiatives, including the 2019 "Double Ten Thousand Plan" by China's Ministry of Education, which promotes the enhancement of premier undergraduate programs via curriculum revisions that integrate online and offline learning modalities. These alterations indicate that conventional educational methods are unable to fulfill the requirements of contemporary society, hence prompting a reform in pedagogical techniques.

Blended Learning as an Essential Reform Instrument

Blended learning, which combines online and offline instruction, is seen as a crucial approach to enhancing educational quality. Online education provides flexibility and access to many resources, enabling students to study at their own speed without temporal and spatial limitations. This paradigm empowers educators to create curricula that address students' learning requirements, fostering enhanced engagement in the classroom and strengthening interaction between students and instructors.

The efficacy of blended learning resides in its capacity to augment student engagement and motivation, alongside enhancing learning efficiency. It accommodates various learning styles, offering individualized and accurate instruction, which is sometimes unattainable in conventional classroom environments. In-person, educators may address students' specific learning requirements, whereas online, learners can access an abundance of educational resources that promote autonomous learning.

Obstacles in Executing Blended Learning

Notwithstanding its many benefits, blended learning also poses considerable problems. In offline settings, educators may find it challenging to comprehend the specific demands of pupils, hence impeding the efficacy of tailored education. Moreover, online learning materials may sometimes be excessively complex or difficult for pupils to navigate autonomously, therefore limiting their educational achievements. These problems suggest that, while blended learning has significant potential, its execution requires meticulous planning and assistance from both educators and technology developers to guarantee student success.

National Policies and the Prospects of Blended Learning

In recent years, educational policies have increasingly prioritized blended learning. The "Modernization of Education 2035" strategy in China emphasizes the integration of artificial intelligence technology in education, which may further improve the execution of blended teaching methods. AI-enhanced education is anticipated to provide significant advancements by facilitating more precise and individualized learning experiences. This technology enables instructors to more effectively identify and address the varied needs of children, hence enhancing learning outcomes and student performance.

The Capacity of Blended Learning to Augment Student Development

Blended learning has the capacity to more effectively accommodate students' unique requirements, facilitating the enhancement of their strengths and the rectification of their inadequacies. This approach may promote autonomous learning and creative thinking, equipping students to be more versatile and competitive in the contemporary job market. As students gain autonomy in their learning, they develop vital life skills, like time management, problem-solving, and critical thinking, which are crucial for future success.

Furthermore, blended learning enables students to make more informed choices about their personal growth and career preparation, so enhancing overall quality and competitiveness. Blended teaching, by combining online and offline learning, provides a comprehensive

educational experience that equips students intellectually and prepares them for life after school.

Final Assessment

Blended learning, integrating the advantages of online and traditional instruction, has emerged as an important trend in contemporary education. As technology advances, particularly with the integration of artificial intelligence, the efficacy of blended learning will improve, hence improving educational quality and addressing the evolving demands of students and society. National education policies are progressing in this direction, and the implementation of blended teaching approaches is expected to become more prevalent in the next years.

Blended learning offers a substantial potential for educational transformation by fostering student-centered learning and delivering flexible, tailored training. To fully actualize its promise, educators must persist in tackling the problems related to its implementation. As blended learning evolves and AI technology progresses, this methodology has the potential to revolutionize education by cultivating autonomous learners, enhancing academic performance, and equipping students for success in an ever-changing environment.

LITERATURE REVIEWS

Blended teaching usually refers to a kind of teaching method that mixes "online teaching" and "offline teaching" together. At different times, the understanding of blended teaching is different. The Sloan Consortium in the United States believes that blended teaching is the integration of a certain proportion of face-to-face teaching and online teaching in the teaching content, and the cognition of blended teaching mainly stays in the technical level. The first to propose blended teaching in China was Professor He Kexiang, who proposed: "The blended teaching mode can create a better learning atmosphere for students and cultivate students' enthusiasm for independent learning." Gradually, they began to understand blended teaching from the level of teaching methods. Li Fengqing, on the other hand, clarified the difference between blended teaching and learning, and regarded blended teaching as a teaching method that can provide students with learning resources and activities and use information technology to develop students' abilities. After the application of mobile information technology was added to blended teaching, scholars began to pay attention to the student perspective of blended teaching and believed that "blended" is not only a combination of the two teaching methods, but also focuses on "student-centred", creating a personalised learning experience for students. It is believed that "blended" is not only a combination of two teaching methods, but also focuses on "student-centred" and creates a personalised learning experience for students that combines teaching and tutoring.

Humanistic psychology is a third party force of psychology that rose in the United States in the 1950s and 1960s, and the theory was developed from the basis of psychological theory, and the main representatives are Maslow and Rogers.

Du Shizhong (1999) suggests that Rogers focused on the mobilisation and stimulation of students' motivation to learn and the satisfaction of students' reasonable needs in his person-centred theory, which is a great contribution to the development of students' individuality and creativity. Zhang Mancai (2009) suggests that humanistic learning theory emphasises the need for teachers to "develop students' personalities and fully mobilise their intrinsic motivation to learn". Hong Jianmei (2021) points out that humanistic learning theory focuses on the development of human nature, stresses the value and significance of "human beings", adheres to the human-centred approach, and researches how to better promote the growth and development of human beings. Therefore, under the perspective of humanism, teachers are required to always adhere to the teaching concept of "learning-centred", respect the differences of each student, discover and affirm the individual characteristics of each student, correctly understand the differences in the performance of students, analyse specific problems, and guide

different students in different ways and methods to stimulate their intrinsic motivation and achieve their goals and values. realise their goals and values. Liu Jinhong (2009) suggests that humanistic learning theory advocates the equality of teachers and students, and the establishment of a healthy teacher-student relationship, teachers should build a positive learning environment for students, respect the status of the main body of the students, and encourage students to take the initiative to learn happily and easily.

Cognitive development theory is considered to be the most authoritative theory of developmental psychology in the 20th century, and it was developed on the basis of Gestalt psychology. The famous Swiss child psychologist Jean Piaget is one of the most famous representatives of cognitive development theory. Cognitive development generally refers to a process in which a child's perception of the world and his/her ability to think and deal with related problems in different situations change as he/she grows up in his/her individual activities after his/her birth. Piaget suggested through his research that through the study of children's cognitive development, it is possible to deeply understand and even reveal the essential laws of the whole human race about cognition.

Wang Ping (2007) pointed out that from Piaget's cognitive theory, it can be learnt that the intellectual structure of human beings changes through adaptation to different environments. Learners are able to actively adapt and explore the environment instead of passively changing it. The learner and the environment are in an action and reaction relationship. Thus, it seems that it is the child or the primary learner himself who determines the specific direction of growth and level of development. Therefore, based on the theory of cognitive development, in English teaching activities, teachers should recognise the initiative of students in the learning process, actively play the subjective initiative of students, and correctly handle the relationship between teachers and students in teaching activities.

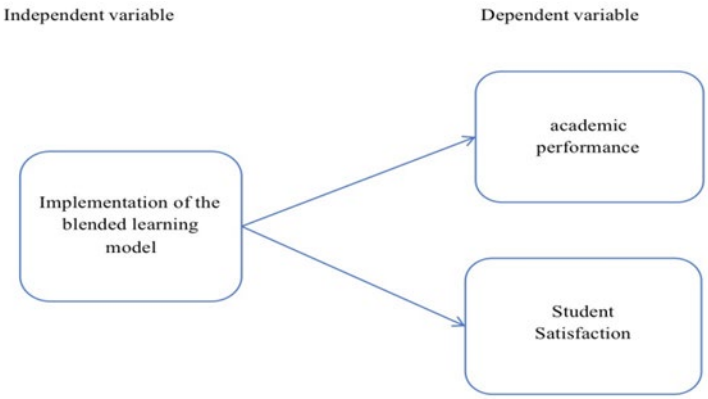

Figure 1 Conceptual Framework

RESEARCH METHODOLOGY

The population and Sample Group

The population consisted of 100 students at Guangxi Medical University, China. The samples in this research experiment, two classes of students in the first year of Chongqing College of International Business and Economics (CCCIE) were selected as the research subjects, in which class 1 is the control class with 47 students, and class 2 is the experimental class with 48 students. In the experimental class, the author will use online and offline hybrid teaching mode to teach, while in the control class, the author still uses the traditional teaching mode to teach.

Research Instruments

This study utilizes literary research, survey research, and regression analysis to investigate and substantiate the efficacy of blended teaching methods, particularly under the framework of

constructivist learning theory. Each technique provides a distinct aspect to the investigation, guaranteeing both theoretical rigor and empirical substantiation.

1) Approach to Literary Investigation

The literary research technique focuses on analyzing existing literature pertinent to blended education and constructivist learning theory. This phase is essential for pinpointing critical concerns, formulating the research subject, and structuring pertinent ideas and theoretical frameworks. This approach facilitates a thorough comprehension of the existing research landscape by examining academic sources from both national and international studies, therefore providing a theoretical framework for the investigation.

Essential stages in the literary research methodology:

Perform a comprehensive literature study on blended learning and constructivist education.

Pinpoint deficiencies in current studies that need more exploration.

Formulate research inquiries and goals derived from recognized problems.

Construct a theoretical framework to guide the creation and evaluation of the study.

The results of this literature study provide a conceptual framework and underscore the significance of student-centered, interactive learning methodologies, which are consistent with both blended learning and constructivist philosophy.

2) Survey Research Methodology

The survey research approach emphasizes the collection of quantitative data from participants to evaluate the given study hypotheses. This approach entails:

Determining essential characteristics associated with the efficacy of blended learning. These may include criteria such as student involvement, learning results, and student satisfaction.

Formulating a hypothesis model of important factors that forecasts the link among the specified variables. The hypothesis may examine the effects of blended learning methodologies on student learning efficiency.

Constructing the questionnaire to systematically collect data on the essential factors in a clear and objective manner. The questionnaire comprises inquiries designed to evaluate students' experiences with blended learning and its perceived effects on their learning processes.

Upon data collection, it is used to verify the research hypotheses and the hypothesis model, offering empirical evidence to corroborate or contest the theoretical assumptions.

3) Regression Analysis Methodology

The regression analysis technique is used to examine the correlations among the variables discovered by survey research. The stages in this procedure comprise:

Compiling and classifying the collected data from the survey replies.

Employing SPSS software for data analysis, concentrating on regression analysis to assess the impact of blended learning on diverse outcomes. Regression analysis ascertains the degree and direction of correlations between independent factors (e.g., blended learning techniques) and dependent variables (e.g., student learning outcomes).

The research may support or disprove the hypothesis model via data analysis, enabling a comprehensive evaluation of the blended teaching technique's efficacy in improving learning outcomes.

The regression analysis findings will enable the research to draw informed conclusions on the current status of instruction in a particular course and provide a data-driven assessment of the effectiveness of blended teaching.

Data Collection

Achievement test is one of the most objective ways to detect the learning effect of students, and through the comparative analysis of listening pre and post test scores, we can intuitively grasp the progress of students' listening comprehension ability. In order to test the improvement of students' English listening comprehension ability under the online-offline hybrid teaching

mode, it is necessary to carry out the pre-test and post-test of English listening comprehension ability for students in the experimental class and the control class.

Data Analysis

The data obtained from experts were analyzed to find the average of the questions by selecting items with a consistency index of.50 and above. The results of the data analysis found that the IOC value of the survey form was obtained. Demand for media use is appropriate (0.72).

RESEARCH RESULTS

1) Through the summary of the pre-test scores of the experimental class and the control class, we get Table 1.

Table 1 Comparison of pre-experimental test scores between experimental and control classes

Test	Class	Number of students	Mean	Standard deviation	Mean Difference	T-value	P-value
Pre-test	Experimental class	48	15.29	2.946	0.06	-0.083	0.934
	Control Class	47	15.23	3.143			

According to the above table, the mean values of the test scores of the two classes before the beginning of the experiment were 15.29 and 15.23, with a difference of 0.06 in the mean value, $t = -0.083$, $p = 0.936 > 0.05$, which is statistically significant that there is no significant difference in the scores of the two classes before the beginning of the experiment, and at the same time, the standard deviation of the two classes is relatively close to each other, which indicates that the degree of dispersion of the scores is also close to the students' scores. Overall, the experimental and control classes are roughly equivalent in terms of learning ability. In order to ensure the accuracy and reliability of the experimental study, the author needs to select two classes with similar scores, which can be seen from the pre-experimental test that these two classes meet the requirements of the experiment.

2) Post-test scores of experimental and control classes

Table 2 was obtained by analysing the post-test scores of the experimental and control classes in the study.

Table 2 Comparison of post-test scores between control and experimental classes

Test	Class	Number of students	Mean	Standard deviation	Mean Difference	T-value	P-value
Pre-test	Experimental class	48	17.69	2.847	1.41	-3.015	0.934
	Control Class	47	16.28	2.652			

The above table shows that at the end of the experiment, the mean values of the tests of the experimental class and the control class were 17.69 and 16.28 respectively, and the difference between the means was 1 .41. The independent samples t-test of the post-test scores yielded the data $t = -3.015$, $p = 0.003 < 0.05$, which indicates that statistically there is a statistically significant difference between the test scores of the two classes, and that the scores of the class were significantly better than those of the control class at the end of the experiment, control class. To sum up, after the implementation of the online-offline hybrid teaching mode, the experimental class's learning ability improves more than the control class.

3) Comparison of test scores before and after the experiment in the experimental class

In order to further study and analyze the changes in students' performance before and after the experiment, the test scores of the experimental class were compared before and after the experiment, and the relevant results are shown in Table 3.

Table 3 Comparison of test scores before and after the experiment in the experimental class

Test	Class	Number of students	Mean	Standard deviation	Mean Difference	T-value	P-value
Pre-test	Experimental class	48	15.29	2.946	2.40	-4.774	0.00
	Control Class	47	17.69	2.847			

From the above table, it can be seen that the mean value of the test scores of the experimental class before the experiment is 15.29, and the mean value after the experiment is 17.69 points, and the difference between the means of the two tests is 2.40. An independent samples t-test of the two test scores yields t = -4.774, p = 0.00 <0.05, indicating that there is a significant difference in the scores before and after the experiment of the experimental class, which further demonstrates that after a period of time of learning, the coupled with the introduction of online and offline hybrid teaching mode, the students in the experimental class have made greater progress.

4) Comparison of test scores of the control class before and after the experiment

The changes in the performance of the control class in the pre-test and post-test are analysed below, and with the help of SPSS23.0 data analysis software, they are summarised and collated to obtain Table 4, as shown below:

Table 4 Comparison of test scores of the control class before and after the experiment

Test	Class	Number of students	Mean	Standard deviation	Mean Difference	T-value	P-value
Pre-test	Experimental class	48	15.23	3.143	1.05	-1.558	0.123
	Control Class	47	16.28	2.652			

From the above table, it can be seen that the mean value of the test scores of the control class before the experiment is 15.23, and the mean value after the experiment is 16.28, and the difference between the mean values of the two tests before and after is 1.05 points. The independent sample t-test of the two test scores obtained t = -1.558, p = 0.123＞0.05, indicating that there is no significant difference between the test scores of the control class before and after the experiment, suggesting that after a period of time, facing the same difficulty of the topic, the mean value of the students improved by 1.05, and the overall performance has improved to some extent, but it is not significant enough. After one semester's study, the test scores of the control class have improved to some extent, but because the traditional teaching mode is still used, the students have not changed much in terms of their learning ability, so the improvement of their learning ability under the traditional mode is more limited.

DISCUSSION & CONCLUSION

Discussion

The comparative analysis of pre-test and post-test outcomes between the experimental and control groups demonstrates substantial insights on the influence of the online-offline hybrid teaching model on student performance.

Pre-test Analysis: The pre-test scores of the experimental and control groups were statistically comparable, with mean scores of 15.29 and 15.23, respectively. The negligible difference between the means (0.06) and a p-value of 0.934 (>0.05) suggests that there was no significant disparity in the students' skills prior to the experiment. Moreover, the standard deviations for both groups were similar, further suggesting that both classes had equal performance levels and learning capabilities in the beginning. This comparability was essential for the research, since it guaranteed that the benefits detected in the post-test could be ascribed to the teaching approach rather than pre-existing disparities in student skills.

Post-test Analysis: Following the adoption of the hybrid teaching model, the experimental group surpassed the control group, achieving mean scores of 17.69 and 16.28, respectively. The mean score difference of 1.41 was statistically significant ($t = -3.015$, $p = 0.003 < 0.05$), suggesting that the hybrid teaching modality positively influenced student performance. The findings indicate that the amalgamation of online and offline learning materials improved the learning experience of the experimental class, offering more options for interaction, flexibility, and engagement. Conversely, the control group, which adhered to conventional teaching approaches, had diminished progress.

The within-group comparison of pre- and post-test results in the experimental class indicates a substantial increase in performance. The average score rose from 15.29 to 17.69, resulting in a mean difference of 2.40. The t-value of -4.774 and p-value of 0.00 (< 0.05) indicate that this enhancement was statistically significant. The online-offline hybrid teaching style significantly improved students' learning capabilities by enabling engagement with varied materials and fostering a more adaptable, dynamic educational environment.

Intra-group, the control class had a lesser rise in mean scores, rising from 15.23 to 16.28, resulting in a mean difference of 1.05. The t-value of -1.558 and p-value of 0.123 (> 0.05) indicate that this enhancement lacked statistical significance. Despite a little improvement in scores, the conventional teaching style did not provide a substantial alteration in students' performance throughout the research. This underscores the constraints of conventional pedagogical approaches, especially with the promotion of significant advancements in learning outcomes over time.

Conclusion

This study's results highlight the efficacy of the hybrid online-offline teaching model in enhancing students' learning outcomes relative to conventional teaching approaches. Although both the experimental and control groups exhibited improvement over time, the experimental group that received hybrid teaching shown a much greater degree of advancement.

The hybrid teaching paradigm facilitates more flexibility and customization in education, allowing students to engage with online materials at their own speed while reaping the advantages of engaging and comprehensive conversations in face-to-face environments. This combination seems to be more efficacious in promoting critical thinking, engagement, and information retention than the inflexible framework of conventional classrooms.

The minimal improvement in the control class indicates that conventional teaching approaches, while advantageous, may not adequately address the requirements of contemporary learners. These techniques are often less dynamic and may lack the personalized attention or interactive components essential for profound learning and student development in the contemporary educational landscape.

The research concludes that the online-offline hybrid education paradigm effectively enhances students' learning experiences and results. As education evolves with technology, blended learning techniques are increasingly crucial to meet the different learning demands of students, providing both flexibility and depth. This research offers empirical data endorsing the incorporation of blended learning methods into contemporary educational frameworks, especially for courses necessitating student interaction and the cultivation of intricate skills. Educators and institutions should use hybrid teaching methodologies to enhance student potential and elevate academic achievement.

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