

Strategies for Enhancing the Impact of Blended Instruction in Chinese Colleges and Universities

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Abstract—Due to the rapid development of information technology, traditional classroom teaching is not able to meet the needs of students. Therefore, colleges and universities are paying more and more attention to cultivating students' individuality and comprehensive quality. The "student-centered, teacher-led" online and offline hybrid teaching mode emerged as the times require, and has become a new teaching method, which has gradually become the focus of attention of colleges and universities. In the teaching practices of colleges and universities, blended instruction has made some progress, but issues with instruction quality also arise. Upon review of the relevant literature and interviews with teachers and students, this study determined that outmoded teaching practices, lack of awareness of students' independent learning, and absence of external conditions in colleges and universities are the most influential factors affecting the quality of mixed teaching. Based on these, corresponding measures are proposed from the perspectives of teachers, students, and schools to aid the development of blended teaching in colleges and universities and improve its effects. Teachers should continuously improve their hybrid teaching skills and ensure quality. Moreover, students should improve their sense of participation in teaching activities and develop a consciousness of independent learning. Finally, the school should improve the support structure to implement blended teaching seamlessly.

Index Terms—Blended teaching, countermeasures, teaching effect

I. INTRODUCTION

With the continuous advancement of the information revolution, integrating information technology with education and teaching has significantly impacted the growth of higher education. Blended teaching originated in the United States, wherein blended learning teaching was initially implemented in higher education institutions. The rise of MOOCs has provided significant support for blended teaching. President Graham of the Pennsylvania State University once stated that blended teaching would be an inevitable trend in higher education today [1]. In 2018, the Ministry of Education of China issued the Education Informatization 2.0 Action Plan, proposing "promoting the integration and interaction of network learning space and physical learning space". This plan provides a policy basis for Chinese universities to promote the development of blended teaching [2]. Then, in 2020, the COVID-19 pandemic manifested unprecedented challenges to education and teaching. However, it helped educators recognize the power and benefits of online education resources and the convenience and practicability of

online teaching tools. Nevertheless, it is undeniable that online teaching has limitations regarding instructional design, teacher-student interaction, and emotional communication. Thus, pure online teaching cannot fully replace conventional offline teaching [3]. Amid education informatization, it has become essential for post-epidemic education development to consider and discuss the combination of online and offline teaching modes.

Since the dawn of the new millennium, when educational researchers began to focus on blended teaching in colleges and universities, domestic scholars have conducted pertinent studies on blended teaching. Li Wei believes blended teaching combines all teaching elements, including theory, mode, and method. In his view, blended teaching aims to deliver comprehensive teaching effects via various means [4]. However, with the development of blended teaching, it has also become apparent that there are implementation difficulties. For example, teachers emphasize scientific research more than instruction, making them not invest more effort in blended teaching and not fully adapt to the mode. In addition, most of them need a comprehensive understanding of classroom interaction [5]. Consequently, students lack self-discipline, a clear learning plan, and effective interaction between themselves and their teachers. Teachers also fail to integrate offline and online classes, resulting in poor teaching effects that significantly adversely impact the quality of blended learning [6]. Several scholars have also discussed the blended teaching quality assurance system. Yang [7] proposes establishing external and internal school guarantee systems by modifying and optimizing top-level school design and classroom infrastructure, changing teachers' teaching philosophies, and establishing education and training systems. Regarding the quality assurance system for blended teaching, she also emphasizes the significance of teachers. Liu and Lin [8] propose establishing a quality assurance system for blended teaching from the following perspectives: the establishment and improvement of guarantee mechanisms; the development and innovation of teachers' talent systems; the utilization and integration of new media technology; the continuation and docking of online and offline instruction; and the intervention and management of students' independent learning.

In previous studies, insufficient survey data from the perspectives of teachers and students directly reflected the status quo of blended teaching in colleges and universities. Moreover, these studies lacked discussions of the practical effects of blended teaching. Therefore, considering the background of information-based teaching and the actual situation of blended teaching in X University, this study examines the current situation of blended teaching in colleges and universities, investigates the factors that influence the

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effect of blended teaching, and proposes improvement measures from the perspectives of schools, teachers, and students to aid in the development of blended teaching in colleges and universities.

II. METHODOLOGY

This study utilizes X University as its research object to understand better the current state of blended teaching in colleges and universities. Based on the schedule for the second semester of 2021-2022, X University offered 95 general education elective courses, 16 of which used blended teaching methods, as shown in Table I.

TABLE I: X UNIVERSITY'S GENERAL EDUCATION SCHEDULE UNDER THE BLENDED TEACHING MODE

| Curriculum | Credits | Weekly Class Hours | Capacity |
|--|---------|--------------------|----------|
| Legal Wisdom in Life | 2 | 3 | 150 |
| Elderly Life Planning and Negotiation | 2 | 3 | 150 |
| Aesthetic Theory | 2 | 3 | 300 |
| Opera Appreciation | 2 | 3 | 300 |
| The Universe from Einstein to Hawking | 2 | 3 | 300 |
| Chemistry and Man | 2 | 3 | 300 |
| Global Change and Earth System Science | 2 | 3 | 300 |
| Food Safety and Daily Diet | 2 | 3 | 300 |
| Military Theory | 2 | 3 | 300 |
| Contemporary Chinese Economy | 2 | 3 | 300 |
| Mental Health Education for College Students | 2 | 3 | 300 |
| Effective Communication Skills | 2 | 3 | 300 |
| Emotion Management | 2 | 3 | 300 |
| The Mysteries of Mathematics | 2 | 3 | 150 |
| Scientific Enlightenment | 2 | 3 | 300 |
| Image Management | 2 | 3 | 300 |

The authors conducted one-on-one interviews with teachers who had implemented blended teaching at X University and with students who took blended teaching courses to comprehend the current state of blended teaching quality in colleges and universities. As much as possible, various types of students were represented as the specific interview objects. This study interviewed 80 participants, including 30 teachers and 50 students. The interview content for teachers consisted primarily of the following: (1) basic information, including subjects taught, age, and gender; (2) specific situations for conducting blended instruction, such as using a network platform, the duration of conducting blended instruction, the teaching method, and the setting of teaching content; and (3) experience in performing blended teaching, including blended teaching effect and existing problems and

suggestions. On the other hand, student interviews primarily included the following: (1) basic information, including gender, subject, and grade; (2) learning status, including the effect of blended teaching, teacher-student interaction, and interaction between students; and (3) satisfaction degree of blended teaching, and difficulties in combined online and offline teaching. The interviews combined an on-site approach and a networked approach due to the influence of multiple factors.

III. RESULTS

Based on the interviews, the following results were drawn.

A. Blended Teaching Undertaking

According to the interviewees, blended learning offers more options and leeway for teaching design and implementation. Although 3% of the students stated that they chose a course because it was simple and easy to earn credit, 75.5% of those interviewed expected blended teaching to be more engaging and content-rich than traditional face-to-face courses or purely online ones. In this case, most teachers and students support the development of mixed teaching. In addition, nearly all teachers stated that they had invested more time and effort in constructing online platforms, participating in students' online discussions, and preparing classrooms than traditional classroom teaching. Therefore, compared to traditional face-to-face classroom instruction, blended teaching requires more investment and makes it more difficult to achieve significant results, discouraging some teachers from implementing it.

B. Blended Teaching Implementation

According to the interviewees, blended education places greater demands on teachers' information technology literacy, online teaching, and research skills. The schools' unified online teaching platforms will yield network technology issues. Older teachers hope to receive additional network technology training compared to their younger counterparts. According to 85% of the teachers, effectively integrating network teaching and classroom teaching from a global perspective is a significant challenge in teaching design. Around 65% believed online instruction lacks classroom supervision and interaction. Students with limited autonomy and self-discipline found blended teaching to be challenging. Around 50% of the students admitted that they were often distracted enough to play games instead of studying their course materials; 30% rarely reviewed the learning content after class; 20% did not actively participate in online course discussions; and 75% had difficulties in opening web pages, playing videos slowly, or making videos unplayable when using online platforms. Regarding this situation, the interviewed teachers agreed: "Many students have low self-restraint and self-learning abilities." In terms of academic completion and homework correction, blended learning teaching exhibits more perfunctory behaviors than traditional face-to-face teaching. Furthermore, 39% of students disapproved of the blended teaching methodology. During the interview, 55.5% of the students stated that some online classes were replicas of traditional classes.

C. Evaluation of Blended Teaching Effect

According to students' feedback on blended instruction, 40% of them could master the course's primary teaching material, and their overall impression of it was positive. In addition, 24.5% of them reported having more flexibility and could adjust to blended teaching. Hence, learning needs neither be confined to the classroom nor must all students work at the same pace. These benefits improve students' learning effectiveness. However, 55.5% of the interviewees believed that blended teaching was not achieving the expected results, while 25% of the teachers were unsure of blended teaching's long-term effects on student learning. Meanwhile, nearly all teachers believed that blended learning teaching had incomparable benefits for stimulating students' independent learning ability, improving their learning interest and collaborative teaching ability, and promoting their overall quality development. Furthermore, the importance of independent learning and collaborative teaching in blended learning was acknowledged by 65.5% of the students.

IV. DISCUSSION

Through interviews with teachers and students and a review of relevant literature, it was determined that the primary factors influencing the effectiveness of blended teaching in colleges and universities are as provided below. The discussion and analysis of these factors will aid in developing measures to improve the effectiveness of blended teaching.

1) There are issues concerning teachers' blended teaching methods, whose related skills must be improved.

Blended teaching embodies the concept of student-centered instruction with modern scientific and technological tools, but it can only exist with teachers' guidance. Therefore, teachers play a crucial role in the quality assurance of blended teaching. Primarily, blended teaching combines the characteristics of classroom and e-learning teaching, requiring teachers to fully embrace their leadership role in the teaching process while mastering blended teaching skills. This study's interview survey revealed that teachers' lack of blended teaching skills was the primary factor limiting the quality assurance of blended instruction. First, some teachers do not actively engage in blended instruction due to scientific research and teaching demands. Second, the innovation of blended teaching methods employed by teachers was insufficient. Teachers generally thought blended learning combines online and classroom teaching [9]. According to Ma Hui-jun's research, only a supplement to classroom teaching is used in blended network learning, while students can choose whether to study online. There is no evaluation process for teacher-to-student network learning, making network learning and classroom teaching lack effective cohesion. In this case, teachers still use the original method of classroom teaching, which fails to cultivate students' initiative, enthusiasm, and creativity in learning, making them not take advantage of the benefits of hybrid teaching [10]. In addition, some teachers have an exaggerated belief in students' self-learning and loosen their guidance and supervision over the learning process, resulting in the ineffectiveness of blended teaching [11]. Due to factors like

funding, technology, and teamwork, the quality of the course videos recorded by teachers is generally low. There are widespread issues, including lack of systematic design, knowledge fragmentation, and insufficient update and maintenance [12], as some teachers upload their lectures directly to the network platform. Lastly, there are few high-quality course materials.

2) Students' awareness of independent learning is weak, and their understanding of blended learning must be updated.

In blended teaching, students are the primary source of learning, as teachers must guide them through the teaching process and promptly address any questions they may have. Students should independently complete the activities for the remaining time [5]. With this, blended teaching raises the bar for students' self-control and learning abilities. However, students have been accustomed to the traditional mode of instruction for many years; as blended teaching replaces the traditional mode of instruction, it requires students to adopt new learning strategies and habits. Students claim it is initially difficult to accept and do not know how to learn with a blended approach [13]. Through interviews, the authors discovered that although students initially had a strong interest in blended teaching, some believed that the mode could not improve their learning quality or assist them in mastering the knowledge system through independent study. After some time, it appeared that students were experiencing negative emotions. In addition, due to the adaptability of hybrid teaching, students frequently watched videos independently and felt frustrated when they encountered problems they could not solve in time. Students' emotions and learning efficiency were low due to the lack of emotional interaction in online learning. Some students with a limited understanding of independent learning found it challenging to adhere to independent online learning [14]. Although most of the current research indicates that the effect of blended teaching and its learning environment is open to a positive attitude and satisfaction is relatively high, some indicate that students' participation enthusiasm for blended teaching is low. Nevertheless, hybrid teaching should increase the learning burden to achieve the effect of traditional teaching [15]. Blended instruction provides students more opportunities to acquire knowledge and improve their skills, but it may take them longer and require more guidance to adapt to the new teaching method.

3) The school's external conditions are not in place, and the policy service and technical support must be improved.

a) Network platform technical support

In the interviews, both teachers and students reported encountering network technology issues during the implementation of blended teaching, and the absence of conducive technical conditions became a barrier to the improvement of blended teaching's effectiveness. The teachers in charge of blended teaching came from various colleges, yet they needed more computer-related professional expertise. Therefore, it was difficult for students to obtain timely solutions to problems such as being unable to open websites or play videos. Some course teaching resources were updated slowly, leading to technical reasons such as the inconvenience of changing the content after uploading [16]. In addition, the teaching platform's statistical data and

information do not reflect the actual learning level of students, making the data likely false. According to online learning data, teachers cannot effectively improve their teaching plans. Since the platform cannot quickly determine the actual learning status of students nor generate personalized learning reports based on the learning characteristics of students, there is still much room for technological improvement [17].

b) Policy support

Relevant studies indicate that colleges and universities should focus on providing support for several aspects of blended teaching, including information technology, teachers, continuous investment, senior management support, and teacher training [18]. However, in most colleges and universities, there are still numerous problems with implementing blended teaching. For example, most colleges and universities in China prioritize scientific research over teaching. Therefore, to realize the reform of blended teaching, some colleges and universities cannot spend much money to improve the construction of relevant network platforms required by blended teaching, nor do they have the time to develop incentive mechanisms to inspire teachers to conduct in-depth research on hybrid education. Meanwhile, numerous teachers rely on their interests and enthusiasm to engage in blended teaching practices. Thus, the school needs to provide practical assistance and encouragement to teachers, especially on human, material, and financial resources [14].

V. CONCLUSION

Blended teaching is the result of the development of the times. Improving learning initiative and enthusiasm enhances students' professional and practical skills. However, it currently needs improvement. Reviewing the literature and interviews with teachers and students at X University, the authors conclude that blended teaching is ineffective due to teachers' outdated teaching methods, low self-learning ability, and the school's lack of external support. Considering the factors above, the authors provide suggestions to improve the effect of blended teaching and foster its growth.

1) Teachers should continuously improve their blended teaching skills and ensure the quality of their lessons.

The combination of online and offline education in curriculum content should be prioritized by teachers in their teaching strategies. Regarding their abilities, teachers should continuously improve their information literacy and ability to create digital resources. In implementing blended teaching in colleges and universities, teachers should first strengthen their understanding of the theoretical framework of blended teaching, appropriate methods, and other fundamental knowledge through self-study, discussion, and training. Then, they should optimize the course content. In teaching design, reasonably allocating online and offline teaching time, optimizing teaching content, and avoiding content duplication is essential. Online teaching resource sharing and offline course explanation ensure courses' integrity. Third, teachers must increase their interaction with students. They can improve students' sense of participation in blended teaching through group discussions and theme reports or provide timely assistance for students who may experience academic

and psychological issues during blended teaching through real-time interaction on the network platform. After class, teachers should strengthen their teaching reflection, pay close attention to students' learning feedback, comprehend students' learning situations and difficulties, and adjust their teaching strategies and methods promptly based on the feedback. They should continuously improve their varied teaching skills, innovate their teaching methods, and provide students with a more enriching mixed-teaching experience.

2) Students should establish a sense of independent learning and improve their participation in teaching activities.

Teachers should improve their guidance of students, assist them in broadening their horizons through abundant online learning resources, and fundamentally capture their interest in actively pursuing knowledge. Offline teaching must be expanded based on online student feedback to alter students' traditional learning concepts and improve their capacity for independent thought. The ability to learn independently has become an essential skill for college students in the modern era, and students should be aware of this. Therefore, students must develop the habit of independent study during college. Online teaching actively utilizes network teaching platforms or digital teaching tools to interact with teachers and students in real time. In offline classroom teaching, students must actively cooperate, take the initiative to participate in discussions and engage in independent learning under the direction of teachers. To ensure that students can achieve the goal of independent learning, schools must develop an appropriate management and supervision system. Through punching in and academic warnings, students can be encouraged to complete their high-quality learning tasks within the allotted time during the blended teaching process to help them develop good habits of autonomous learning and self-management. Additionally, relevant courses can be designed to help students improve their independent learning skills.

To improve students' awareness of autonomous learning, they must develop their learning habits and methods, maximize their use of learning resources, improve their ability to manage and direct their learning, and actively seek support and assistance in their studies.

3) Schools should improve the support framework to ensure the seamless development of blended teaching.

Colleges and universities must support blended teaching through planning, infrastructure, management, evaluation, and incentive system.

To promote the reform of mixed teaching, schools should undertake the following. First, they must give mixed education preferential policies, invest more in constructing a network platform, implement digital resources, and upgrade the server. Broadband and other infrastructure provide the hardware foundation for teachers and students to engage in mixed teaching. Second, schools should organize or encourage teachers to participate in relevant training, improve their information literacy and blended teaching concepts, establish a blended teaching implementation team, address their difficulties in constructing network platforms promptly, and recognize those who implement blended teaching in terms of teacher performance evaluation. Third, schools should strengthen the construction of network platforms and improve

the frequency with which teachers and students utilize platforms by reducing complexity. Simultaneously, platform functions can be added. For example, big data and artificial intelligence can automatically push appropriate learning resources based on students' personal characteristics and learning situations, stimulate their learning motivation, and improve their autonomous learning ability. Finally, to ensure the quality and effect of instruction, colleges and universities must strengthen the supervision and management of blended learning. It includes monitoring course quality, managing teaching resources, and ensuring security.

The authors are optimistic about the future of blended education, although there are some areas for improvement in blended teaching in colleges and universities. The development of blended teaching solves the problems of traditional teaching having a single form and content and students lacking the ability to learn independently and innovate. Moreover, it compensates for the need for teacher guidance and systematic learning of knowledge in pure online teaching. Colleges and universities should improve the support framework and strengthen the guarantee of external conditions. Teachers should enhance their ability to implement blended learning and ensure the quality of instruction, while students should develop an awareness of independent learning and enhance their sense of participation. Indeed, the effect and quality of blended teaching in colleges and universities should be promoted and improved through the continuous efforts of teachers, students, and schools.

This paper's research is based on the actual circumstances at X University. Certain restrictions exist since the university applies only the blended teaching mode for general education courses. The authors will continue to improve the problems discovered in future work and studies to provide meaningful improvement measures for the growth of blended teaching.

CONFLICT OF INTEREST

The authors of this paper declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Qianqian Song conducted the research, analyzed the data, and wrote the paper, while Marcelino M. Agnawa Jr. suggested revisions. All authors approved the final version.

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