

Exploring the Impact of Blended Learning on Deeper Learning among University Students: A Qualitative Study Based on Teachers' Practice

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Abstract: *The aim of this study is to explore the role of blended learning in promoting deeper learning among university students, using teachers who use blended learning methods and students who participate in blended learning in Chinese universities as the study participants. The study used in-depth interviews and questionnaires to collect data, and applied qualitative research methods to analyse the data. The study found that blended learning can facilitate deeper learning by providing richer learning resources, fostering student motivation for learning and independent study and facilitating interaction and communication between teachers and students. In addition, the study also found that teachers and students have some concerns and challenges with blended learning, such as inadequate teaching skills and equipment, and students' unfamiliarity with online learning. Therefore, it is recommended that in promoting blended learning, teacher training and support should be strengthened and students' knowledge and skill level of online learning should be improved. The findings of this study may provide lessons for teaching reform and talent development in Chinese universities.*

Keywords: *Blended learning, University students, In-depth study*

1. Introduction

1.1 Background of the study

The 21st century is the era of information explosion, various big data in the context of 5G network information interaction, information sharing is more and more convenient. With the development and application of modern network information technology, online learning platform has become the reliance of university teaching. The new crown pneumonia epidemic since 2020 has even presented the online classroom directly in front of teachers and students.^[1]

From domestic and international research reports, it can be seen that at present, North American and European universities also mostly adopt blended teaching mode to break the traditional teaching mode of completely face-to-face. Practice shows that the blended teaching model is effective in developing students' ability to acquire knowledge, analyse and solve problems, create and organise themselves^[2]. More than 100 universities in China have opened their online courses on the China University MOOC platform. Internet-based Learning Pass and Rain Classroom are also gaining good teaching results in many courses.

In summary, the blended learning model clearly has a wide range of applicability, and the impact of blended learning on university students' learning outcomes deserves further in-depth exploration.

1.2 Problem statement

With the continuous development of digital technology and globalisation, higher education is faced with increasing opportunities and challenges. Traditional teaching methods can no longer meet the diverse and flexible learning needs of modern students, and the widespread use of information technology has brought unprecedented opportunities and challenges to higher education. However, in practice, traditional teaching methods still have some limitations and shortcomings, such as the one-way lecture model lacking interaction and feedback, while purely online learning lacks face-to-face communication and student collaboration and competition. These limitations and shortcomings limit the quality and effectiveness of traditional teaching methods, making it difficult to

meet students' learning needs and expectations.

The development and application of blended learning and teaching methods has therefore become one of the key directions in the current reform of higher education. Blended learning and teaching methods not only compensate for the limitations and shortcomings of traditional teaching methods, but also provide educators and students with additional teaching tools and resources. Blended teaching methods have been widely applied and explored in many universities, and have become one of the important means to promote reform and innovation in higher education.

In this context, exploring the application and impact of blended teaching methods in the in-depth learning of university students not only helps to promote the application and dissemination of blended teaching methods, but also provides useful references and insights for the reform and development of higher education. Therefore, this study aims to explore the application and impact of blended pedagogy in the deep learning of university students, with a view to providing certain theoretical and practical references for the reform of teaching and learning in higher education.

1.3 purpose of the Study

The main objectives of this study are to gain an in-depth understanding of the practical application of blended teaching methods in the in-depth learning of university students, and to investigate the impact and evaluation of the effects of blended teaching methods on the in-depth learning of university students from two different perspectives, that of teachers and students. The specific objectives are as follows.

Identify strategies for implementing blended learning approaches to promote deeper learning among university students.

Explore the impact of blended learning on students' learning outcomes and learning experiences.

To analyse the difficulties and challenges encountered by teachers in using blended teaching methods and suggest corresponding strategies to cope with them.

1.4 Research questions

The specific questions are stated as follows.

How can teachers apply blended teaching methods to promote deeper learning among university students? What are some of the ways in which blended learning can be applied?

How do students evaluate the effectiveness and experience of blended learning? How do students feel that blended learning facilitates deeper learning?

What difficulties and challenges do teachers encounter when using blended learning in practice? How can these difficulties and challenges be overcome?

1.5 Scope of the study

The scope of this study focuses on teachers who use blended teaching methods and students who participate in blended teaching in Chinese universities. The study will use qualitative research methods to explore the impact of blended teaching methods on the in-depth learning of university students in a comprehensive and in-depth manner through interviews and questionnaires with teachers and students.

1.6 Significance of the Study

With the popularisation and application of digitalisation, the blended teaching mode has become an important direction in the development of modern teaching in the Internet environment, combining the advantages of traditional teaching and online teaching through the combination of "online + offline". This study uses the blended teaching model to improve students' motivation to learn relevant knowledge and promote in-depth learning among university students. The study further enriches the theoretical research on blended teaching and provides a theoretical direction for future research on related topics.

In addition, blended teaching has been around for a long time, and many scholars at home and abroad have conducted research on blended teaching models, but there are not many studies on blended

teaching based on the SuperStar Learning Platform^[3]. In this study, we selected SuperStar Learning Connect as a representative digital platform and interviewed teachers and students who used the SuperStar Learning Connect platform for blended teaching and learning, so as to provide practical guidance for the improvement of courses based on Learning Connect, enhance the quality of course teaching, and promote students' deep learning.

1.7 Limitations of the study

Firstly, the scope of this study was limited to teachers using blended teaching methods and students involved in blended teaching in Chinese universities, and therefore is not representative of other regions and other types of educational institutions. Secondly, the research method used was qualitative and the sample size was small and not sufficiently representative of the whole population of subjects. In addition, there may be issues such as subjectivity and memory bias in the respondents' responses, which may have an impact on the findings. Finally, this study only focused on the impact of blended teaching methods on the in-depth learning of university students, and the impact of other educational factors was not explored in depth.

1.8 Definition of terms

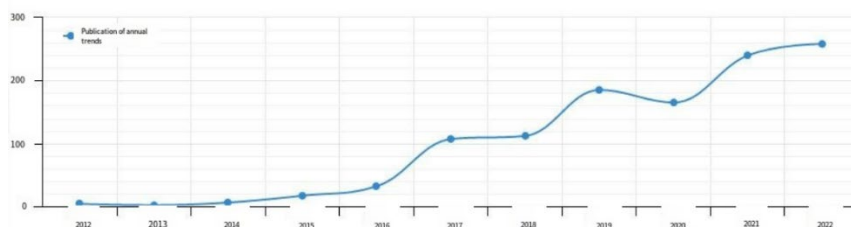
Blended teaching: Garrison & Kanuka (2004)^[4] see blended learning as a form of instruction used in combination between face-to-face instruction and online learning, where face-to-face instruction and online learning complement each other and students must interact between the two. vaughan (2007)^[5] sees blended learning as a combination of face-to-face classroom instruction and an online learning environment that allows students to have greater autonomy in their individual Osguthorpe & Graham (2003)^[6] argue that blended learning is a combination of face-to-face classroom instruction and online learning that aims to improve student learning outcomes and the quality of instruction.

Deep learning: Deeper learning for university students can be understood as a higher level of learning that goes beyond the simple acquisition and memorisation of knowledge and emphasises the deeper understanding, analysis, application and innovation of knowledge.^[7]

2. Literature Review

2.1 Preamble

The results of a search of the China Knowledge Network database in the discipline of "higher education" with the theme of "blended teaching mode" show that from 2010 to the present, there are 871 related articles, including 714 academic journals, 13 dissertations, 14 conferences, 2 academic albums and 128 featured journals. The results show that from 2010 to the present, there are 871 related articles, including 714 academic journals, 13 dissertations, 14 conferences, 2 academic albums and 128 special journals. According to the analysis of the number of articles published in academic journals in the past ten years (as shown in Figure 1), it is found that the number of research papers on blended teaching has increased abruptly in the past five years, indicating that carrying out and promoting blended teaching mode is an important trend in China's education reform.



Data source: China Knowledge Network

Figure 1: The number of articles published on blended teaching models in higher education disciplines

After careful reading and screening, 25 high level papers with high relevance to this topic in the past five years were selected (Figure 2), including 15 core journals, 1 master's thesis and 9 general journals. The high-frequency keywords include "blended teaching", "learning process", "learning effect", "quality evaluation", "MOOC" and "quality assessment". "MOOC", "learning pass", "rain

classroom", etc

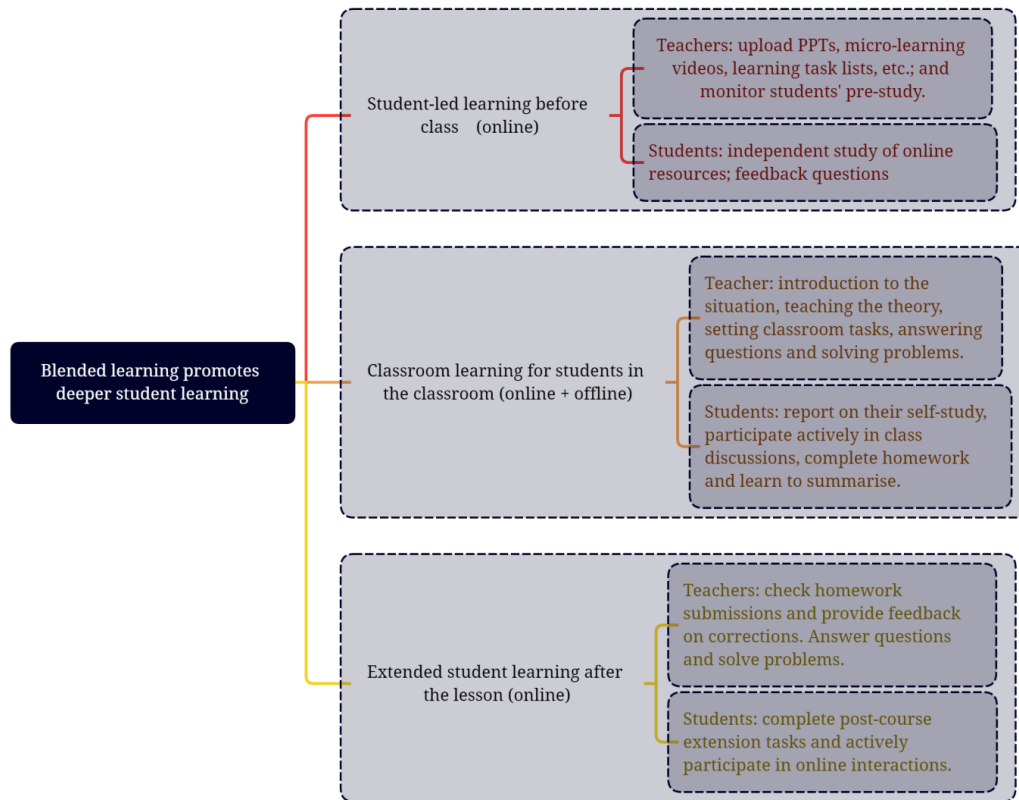


Figure 2: Factors influencing blended learning for deeper student learning

2.2 Research Paradigm

The research paradigm for this paper is the qualitative research paradigm. It is a research method that aims to describe, explain and understand phenomena, usually using unstructured or semi-structured data collection methods such as interviews, observations and documentary analysis. The qualitative research paradigm is suitable for exploring the intrinsic meaning and complexity of social phenomena and human behaviour, allowing insights and understanding to be gained from the perspective of the subjects. As the aim of this thesis is to explore how teachers can apply blended pedagogies to promote deeper learning among university students and to understand their feelings and experiences, the qualitative research paradigm is an appropriate methodological choice.

2.3 Relevant Past to current studies

Although in the field of higher education, there are many studies on blended teaching models, the entry points of various types of studies on blended learning instructional design research differ. Ren Jun (2017)^[8] developed a strategy for promoting blended teaching mode reform in Chinese colleges and universities. The strategy focused on five aspects, including top-level design, training, quality monitoring, incentives, and services. This comprehensive approach aimed to improve the implementation and effectiveness of blended teaching modes in higher education; Zhang Ce et al. (2018)^[9] proposed using the advantages of MOOC to reshape teaching and gave an online reshaping of teaching organization and teaching-learning relationship Tang Bo et al. (2018)^[10] studied "Internet +" blended teaching and established a flexible course content system based on the "MOOC + micro-class" platform; Luo Yinghong (2019)^[11] Exploring the construction and practice of hybrid teaching mode in colleges and universities, integrating modern information technology, innovating and constructing the hybrid teaching mode of "two-dimensional trinity" in colleges and universities; Gao Qi et al. (2022)^[12] Research on comprehensive evaluation system of teaching quality in hybrid teaching mode, researching and discussing the evaluation subject and evaluation index of comprehensive evaluation of teaching quality, and constructing an objective, effective and practical hybrid teaching system based on big data information technology. And hands-on hybrid teaching quality evaluation system.

Although some achievements have been made in research on blended teaching models in the digital era, there is no denying that many of the problems in the theory and practice of blended teaching have yet to be tested, observed, data analysed and evaluated in more ways. It is very necessary to conduct research and curriculum practice on blended teaching models in the context of datafication, explore the design of blended teaching programmes, summarise and promote feasible blended teaching models, and provide useful references for realising new models of talent training in the context of the datafication era. In the subsequent development of the project, the research will focus on building an online and offline hybrid teaching model for the course based on Learning Pass, with the aim of promoting the effectiveness of students' in-depth learning.

2.4 Chapter Summary

This chapter presents research on blended teaching models in the China Knowledge Network database, reporting not only on the increase in the number of articles on the topic over the last five years, but also highlighting 25 high-quality papers. In reviewing past and recent relevant research, the author found a wealth of studies, covering different subject areas and different levels of blended teaching practice. These studies provide valuable experiences and insights, and provide ample literature to support and inform our research. Based on this literature and practical experience, this paper will explore in depth the strategies and methods of applying blended teaching models and their contribution to the in-depth learning of university students.

3. Research Methodology

3.1 Preamble

Qualitative research is an excellent research method that is based on attributes and intrinsic laws, looking at social phenomena or things in themselves, in the form of in-depth interviews. The number of interviewees is small and each respondent's answers can have a huge impact on the overall findings, so special care must be taken in the selection and invitation of people. The setting and atmosphere of the site during the interviews is also very important; a good environment makes the interviewees more comfortable and at ease so that the most accurate research results can be produced.

3.2 Research design

This paper adopts a qualitative research approach, based on teachers' practice, to explore the impact of blended teaching methods on the in-depth learning of university students. Both interviews and questionnaires were used for data collection during the study. Firstly, semi-structured interviews were conducted with teachers involved in blended teaching to find out how they applied blended teaching methods to promote deeper learning among university students and the strategies and methods used to apply blended teaching methods. Secondly, questionnaires were administered to students involved in blended learning to understand their evaluation and experience of the blended learning approach and its effectiveness in promoting deeper learning. Finally, the data from the interviews and questionnaires are analysed and interpreted to explore the impact of blended teaching methods on the deeper learning of university students and to make recommendations.

3.3 Participants and setting

The participants in this study were teachers and students from Jilin University of Foreign Studies in China. The university is a comprehensive university with 36 majors. In this study, three teachers and two classes of students from the university were selected as participants to explore the practical application of blended teaching methods. As the author was not based in China, online interviews were conducted via WeChat and questionnaires were sent to the students via WeChat to collect data.

3.4 Data collection

In-depth interviews and questionnaires were used to collect data for this study. Firstly, three university teachers were invited to participate in in-depth interviews for this study, all of whom had practical experience in blended teaching and learning. The first interviewee has many years of experience in blended teaching and has led relevant projects at the provincial level or above; the second

interviewee has been conducting blended teaching for two years and has some profound reflections and experiences; the third interviewee is new to the teaching profession and is experimenting with blended teaching and is still in the exploratory stage. Through the interviews, this study will understand their practical experiences and teaching strategies in blended teaching. Secondly, two classes were selected for questionnaire survey in this study to understand students' perceptions and experiences of blended teaching and to collect their opinions and feedback.

3.5 Data analysis

In-depth interviews and questionnaires were used to collect data for this study. For the in-depth interview data, a verbatim approach was used, transcribing the interview transcripts into electronic text and progressively dividing their details into themes. For the questionnaire data, the same method of qualitative content analysis was used to analyse students' perceptions and experiences of blended learning and teaching. Themes and concepts were then coded and categorised, compared and integrated. Ultimately, these themes and concepts were grouped into three areas: the first was pre-lesson independent learning, through the use of online resources; the second was in-class teacher-led blended learning, combining online and offline learning; and the third was post-lesson extended learning by students using online resources.

4. Findings and Discussion

4.1 Preamble

In recent years, Chinese universities have advocated a blended teaching approach, and the digital platforms commonly used include SuperStar Learning Connect, Wisdom Tree, Cloud Classroom and Rain Classroom. The interviewees in this study all selected Learning Connect as the digital platform vehicle to study the factors influencing blended teaching to promote deeper student learning. Data were obtained from the interviews and coded for analysis. In the following, the findings will be summarised, and discussion will take place.

4.2 Findings

To further explore the advantages and disadvantages of blended learning and how it facilitates deeper learning for students, the researchers conducted interviews with teachers and questionnaires with students.

According to one teacher interviewed, "Blended learning allows me to provide my students with more varied and comprehensive teaching materials, and I can monitor their progress more closely. However, the amount of time and effort required to prepare online materials, and the fact that some students still prefer traditional face-to-face teaching, presents a challenge for me".

Another teacher interviewed shared: "Blended learning can provide more opportunities for teacher-student interaction, which can stimulate students' interest in learning and encourage them to think independently. However, it can also be difficult to ensure that all students participate equally, especially when it comes to online discussions".

Students who participated in the questionnaire generally agreed with the blended approach as it allows students to access course material and review it at any time. However, some students found it challenging to stay motivated when studying independently and found it difficult to understand certain concepts without explanations from the teacher. Another student added: "I appreciate the flexibility that blended learning offers, but I find it difficult to manage my time effectively when I have to balance online learning with my other responsibilities".

Based on this interview and questionnaire information, it is clear that blended learning has both advantages and challenges. To facilitate deeper learning, teachers must invest time and effort in designing and organising blended courses, while also providing opportunities for interaction and feedback. Students must also take responsibility for their own learning and actively engage with the online material. Regular evaluation and improvement are necessary to ensure the effectiveness of blended learning in promoting deeper learning among university students.

4.3 Discussion

The study highlights the advantages and disadvantages of blended teaching methods in universities, and emphasizes the joint efforts required by both teachers and students to promote deeper learning. The findings suggest that blended teaching can provide several benefits, such as providing more comprehensive teaching resources, easy access to course materials, and enhancing the overall learning experience through increased interaction between students and teachers.

However, the study also points out some potential challenges associated with blended teaching, such as inadequate online materials, students struggling with independent learning, and difficulty effectively utilizing online resources. These challenges highlight the importance of both teachers and students working together to ensure the success of blended teaching methods.

To promote deeper learning, the study suggests that teachers should do a good job in the overall design of blended teaching, organize and supervise students to carry out learning tasks before, during and after class, and increase questions, discussions, quizzes, and other forms of interaction to stimulate students' interest in learning. Students need to develop the habit of independent learning, make full use of online resources, combine the content taught by the teacher, think actively and understand the knowledge in depth, and then actively apply it to practice. It is also crucial for teachers and students to evaluate the actual effectiveness of the blended course in promoting deeper learning, identify shortcomings, and continue to improve until a scientific and complete teaching model can be formed to ensure the sustainability of deeper learning.

Overall, blended teaching methods can offer many benefits to both teachers and students, but it requires careful planning, implementation, and collaboration between teachers and students to ensure that it is successful in promoting deeper learning.

5. Conclusions, Implications and Recommendations

5.1 Preamble

This section will explore the implications of the findings of this study. These implications include implications for educational practice, pedagogical theory and future research on blended learning and teaching. Some practical suggestions on how best to apply the blended learning model to promote deeper student learning will be made, taking into account the findings of this study and the theories from previous research. Also, this chapter will discuss the implications for both the teacher and student subjects of this study.

5.2 Conclusion

Through the data collection and analysis of this study, we have explored in depth the application of the blended teaching method in promoting in-depth learning among university students, and found that the teaching method has significant effects in increasing students' motivation, enhancing their independent learning ability and improving their learning outcomes. In terms of teachers, the blended approach requires teachers to be highly skilled and experienced in teaching, and to organise and apply different teaching strategies scientifically and rationally in the classroom in order to maximise the educational impact of the blended approach. For students, the blended approach stimulates their interest in independent learning and requires good study habits and the ability to learn independently in order to get better results from it. However, we also found that there are still some problems in the practice of blended teaching method, such as the quality of teachers' teaching and insufficient teaching resources, which need to be further discussed and solved. To sum up, blended teaching method has a broad application prospect in the in-depth learning of university students, but in order to more effectively fulfil its function and support the thorough development of higher education teaching reform, it must be continually enhanced and optimised.

5.3 Implication

This study found that blended learning can improve learning outcomes and deeper learning for university students. Teachers should try to use blended learning in their teaching process to provide students with a better learning experience and to help them achieve deeper learning. This study also discovered that teachers must personalise the design and implementation of teaching and learning to fit

the various requirements of students and that the adoption of blended approaches necessitates collaboration between teachers and students. This suggests that in order to accommodate the needs of various students and to promote student learning, university education needs to place a greater emphasis on the interaction between teachers and students. The findings of this study therefore have important implications for university teachers and students alike. Teachers should enhance the use of blended learning in their instructional design and teaching practices to help students learn better. Students should actively participate in blended learning and work together with teachers to achieve better learning outcomes. University education should pay more attention to students' individual needs and learning experiences to continuously improve the quality and effectiveness of teaching and learning. At the same time, the application of blended teaching methods can also promote the informatization and digitization of education, promote the innovation and upgrading of the talent training model, and provide better support and guarantee for the future of university education.

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References

- [1] Xu Z. Choo K. K. R. Dehghantanha A. Parizi R. & Hammoudeh M. (Eds.). (2019). *Cyber security intelligence and analytics* (Vol. 928). Springer.
- [2] He G. (2020). *Blended teaching mode of art course based on objective achievement scale*. *International Journal of Emerging Technologies in Learning (iJET)*, 15(13), 289-302.
- [3] Jan M. A. & Khan F. (Eds.). (2021). *Application of Big Data, Blockchain, and Internet of Things for Education Informatization: First EAI International Conference, BigIoT-EDU 2021, Virtual Event, August 1–3, 2021, Proceedings, Part I* (Vol. 391). Springer Nature.
- [4] Garrison D. R. & Kanuka H. (2004). *Blended learning: Uncovering its transformative potential in higher education*. *The Internet and Higher Education*, 7(2), 95-105.
- [5] Vaughan N. D. (2007). *Perspectives on blended learning in higher education*. *International Journal on E-learning*, 6(1), 81-94.
- [6] Osguthorpe R. T. & Graham C. R. (2003). *Blended learning environments: Definitions and directions*. *The Quarterly Review of Distance Education*, 4(3), 227-233.
- [7] Chickering A. W. & Gamson Z. F. (1987). *Seven principles for good practice in undergraduate education*. *American Association for Higher Education Bulletin*, 39(7), 3-7.
- [8] Ren Jun. (2017). *Research on the strategy of promoting the reform of blended teaching mode in higher education*. *Modern Educational Technology*, 27(4), 74-78.
- [9] Zhang Ce, Xu Xiaofei, Zhang Long, Gu Songlin, Chu Dianhui, Ji Zhenzhou, & Sun Meng. (2018). *Using MOOC advantages to reshape teaching to achieve a new model of online and offline hybrid teaching*. *China University Teaching*, (5), 37-41.
- [10] Tang Bo, Kong Jianyi, Zeng Liangcai, Jiang Guozhang, & Hou Yu. (2018). *"Internet+" blended teaching research*. *Higher Education Development and Evaluation*, 34(3), 90-99.
- [11] Luo Yinghong. (2019). *Exploring the construction and practice of blended teaching model in higher education*. *Exploration in Higher Education*, (12), 48-55.
- [12] Gao Qi et al. (2022) *Research on the comprehensive evaluation system of teaching quality under the mixed teaching mode: Science and Technology&Innovation*, 135-137