Trends in E-learning Implementation in Tertiary Education: A Review of Blended Learning in China and Other Countries

Xianjun Dai[1], Nur Suhaidah Sukor[2], He Sun[3]

[1,2] *Faculty of Psychology and Education, Universiti Malaysia Sabah, Malaysia*
[1]*daphnedxj@163.com;* [2]*nursuhaidahsukor@ums.edu.my*
[3]*Faculty of International Education, Qingdao Hengxing University of Science and Technology, China*
785401145@qq.com

ABSTRACT

Blended learning is a combination of online learning and face-to-face learning. It is an important trend in the development of tertiary education in China and foreign countries. In recent years, the discussion of blended learning gradually moves from theory to practice, and more and more college teachers begin to pay attention to blended teaching design and put it into practice. This study attempts to give an overview on the topic of blended learning in tertiary education, with a comparison of Chinese and global perspectives. By using "blended learning" and "higher education" as the theme word, and through the advanced search function in CNKI (Core of Peking University /CSSCI) and Scopus database, this paper retrieved 356 and 2293 relevant journals respectively from 2004 to 2023. Utilizing a comparative approach, this study compared the retrieved data from CNKI and Scopus, sorted out the research context in China and foreign countries, analyzed the current research hot-spots, research topics and research trends of blended teaching in tertiary education using a comparative approach, and provided references for the future research in this field. The result showed that the research hot-spots includes the effectiveness of blended learning, blended learning models, blended learning strategies, and influencing factors of blended learning adoption. Furthermore, the study demonstrated a shift in research focus, from initial discussions to investigations into its pedagogical implications.

Keywords: blended learning, higher education, online education, teaching design, teaching reform

INTRODUCTION

Today's society is in a technological era characterized by globalization and informatization. All aspects of the living environment on which human beings depend are inseparable from modern science and technology, which deeply affects human cognition of the world, thinking about the phenomena we see and the way of thinking in dealing with problems. In recent years, with the deepening of education informatization and teaching reform, more and more tertiary education have turned from traditional teaching to blended teaching.

Blended learning is a teaching method, combining traditional face-to-face instruction with online learning activities. It aims to make use of the benefits of both methods, offering flexibility and personalized learning experiences. This combination allows students to engage with course materials and interact with instructors and peers both in a physical classroom and through digital platforms, fostering a more dynamic and adaptable learning environment. Blended-Learning is an excellent compromise between e-learning and face-to-face training. It combines their advantages to provide a

more effective and challenging learning environment. The e-learning infrastructure is a key element of the Blended Learning ecosystem, as it hosts the distance learning platform (El Habti, 2022).

It is an important trend in the development of tertiary education in China and abroad. In recent years, the discussion of blended teaching gradually moves from theory to practice, and more and more college teachers begin to pay attention to blended teaching design and put it into practice. By comparing the core journals on blended teaching in CNKI database (Core of Peking University /CSSCI) in China and the journals on blended teaching in Scopus database in foreign countries from 2005 to 2023, this paper sorted out the research context at home and abroad, analyzed the current research hot-spots, research topics and research trends of blended teaching in tertiary education, and provided references for the future research in this field. The search deadline for this study is August 10, 2023.

LITERATURE REVIEW

From its infancy at the end of the 20th century to the present day, it is widely recognized internationally that the development of blended learning has gone through three main stages of evolution.

Stage 1 Theoretical research and technology application (2005-2007)

At this stage, blended learning is still a relatively new concept, and research focuses mainly on theoretical studies of blended learning, teaching models, classroom teaching, and instructional design. The year 2000 was the year of blended learning resentment, first proposed by Cooney et al. in their study of preschool children's education. Definitions of blended learning at this stage emphasize the physical characteristics of blended learning, most notably the Sloan Consortium's definition: "Blended learning is a combination of face-to-face and online instruction, blending two historically separate modes of instruction: traditional face-to-face instruction and online learning (Allen, 2003). It is a combination of online and face-to-face instruction with a percentage of online content (Bonk, et al., 2009). The first formal advocate of blended learning in China is He Kekang. He (2004) used the blend learning (or blended learning) term's basic meaning while giving it a completely new interpretation: the so-called Blending Learning is to combine the advantages of traditional learning and e-Learning (i.e. digital or networked learning), that is to say, to give full play to the leading role of the teacher in guiding, inspiring and supervising the teaching process, and to fully reflect the initiative, enthusiasm and creativity of the students as the main body of the learning process.

A crucial component of blended learning has been the use of e-learning. E-learning played a key role in enhancing the educational process. Traditional face-to-face training was enhanced by the incorporation of online resources, interactive platforms, and multimedia content, allowing students to connect with the material in a variety of ways (Garrison & Kanuka, 2004). Picciano (2006) explored in depth the theoretical basis and technological application of blended learning as an educational model and its positive impact on educational growth and access. He called on educators and policymakers to explore more deeply how to maximize the benefits and overcome the challenges of blended learning to achieve a wider range of learning opportunities. In conclusion, the theoretical research and technological application that characterized the first stage of the evolution of blended learning established the groundwork for the later expansion of this paradigm in education. The incorporation of e-learning and the creative applications of blended learning in many contexts laid the foundation for later improvements and developments.

Stage 2 Technology integration and practical exploration(2007-2013)

After 2007, the definition of blended learning became clearer as research and practice evolved. At this stage, scholars begin to pay more attention to blended learning from the perspectives of teaching strategies and teaching methods, and to the design of teaching and learning in blended learning environments that combine online and face-to-face teaching. Therefore, at this stage, the concept of blended learning focuses on "interaction", the changes brought by the blended learning environment

to interaction, and the corresponding changes in instructional design. The most representative definition is that of Bliuc et al (2007): blended Learning describes a new way of learning that realizes a new way of learning that combines face-to-face (on-site) and online interactions between students and students, students and teachers, and students and resources. Yen and Lee (2011) called blended learning "a fundamental change and redesign of the instructional model" and propose three characteristics of blended learning: (1) a shift from teacher-centered to student-centered; (2) enhanced student-student, student-teacher, student-content, and student-external resource interactions; and (3) the use of an assessment mechanism that combines formative and summative assessment.Vaughn and Garrison (2012) provided in-depth insights into all aspects of applying blended learning in higher education, from theory to practice, from instructional design to technology integration, providing useful guidance and insights for educational practitioners. In summary, convergence of theoretical knowledge and actual application in the field of blended learning occurred between 2007 and 2013. Technology and pedagogical knowledge came together to transform teaching strategies, enhance student relationships, and open up new avenues for innovative instruction in both traditional and online settings.

Stage 3 Deep integration and diversified development (2013-now)
With the rapid development of the Internet and mobile technology, especially the arrival of the "Internet Plus" era, the concept of blended learning has also been newly developed since 2013. The concept of blended teaching has evolved from "the mixture of online teaching and face-to-face teaching" to "the teaching situation based on mobile communication devices, network learning environment and classroom discussion" (Wasoh,2016). The concept of blended learning at this stage emphasizes the "student-centeredness" and Goodyear emphasizes that blending is not only a mix of face-to-face and online instruction, but also a mix of teaching and tutoring styles in a "student-centered" learning environment (Goodyear & Dudley, 2015). Hrastinski (2019) revealed the importance and trends of blended learning in education. Emphasizing the diversity of blended learning, learner-centered approaches, and the critical role of teachers in it, he provides useful insights for educational practitioners to better apply blended learning concepts and strategies. Lim and Graham(2021) noted the importance of blended learning in promoting diversity in higher education in the Asian region. They explored the educational contexts, cultural differences and student needs in different countries and regions, and how blended learning strategies, including flexible learning pathways, adaptive learning resources and pedagogical approaches, could be customized according to these factors to meet the needs of different student populations. Nikolopoulou and Zacharis (2023) investigated university students' blended learning behavior perceptions shortly after the Covid-19. In summary, the current stage of blended learning is characterized by deep integration, technological diversity and student-centered learning. The rapid increase of digital resources, mobile technologies and immersive learning experiences has revolutionized education, paving the way for an era of education that transcends traditional boundaries.

METHOD AND SAMPLING

In order to sort out the research context in China and abroad, analyze the current research hot-spots, research topics and research trends of blended teaching in tertiary education, thereby providing references for the future research in this field, this paper uses the method of documentary analysis and method of comparative analysis, which are used by Liu (2021) in the study *Blended Learning of Management Courses Based on Learning Behaviour Analysis.* This study searches for Chinese and English literature from the CNKI database (Core of Peking University and CSSCI) and Scopus database respectively and made a comparison. The search deadline for this study is August 10, 2023.

Literature selection

In CNKI database, the author used the "blended learning" and "higher education" in Chinese character as the key words and limited the time span from 2005 to 2023. 356 literature were retrieved within Core of Peking University and CSSCI. On Scopus database, the author used the same key words"blended learning" and "higher education" and limited the period from 2004 to 2023, a total of 2293 literature were retrieved.

High citation analysis

In order to further explore the knowledge base of blended learning, the author selected and analyzed the top ten highly cited documents in the citations of related research papers in CNKI database and Scopus database respectively. The period was limited from 2004 to 2023.

High-frequency keyword analysis

The high-frequency keywords of a paper are a high level summary of the research topic. A high-frequency keyword indicates that more research has been conducted on that keyword and it is a research hot-spot. In this paper, the author analyzed the research papers on blended teaching in tertiary education included in the Core of Peking University and CSSCI on CNKI database, and selected the top ten to make an analysis.

Co-occurrence matrix analysis

Co-occurrence matrix analysis is a method used to examine the relationships between items or elements based on their co-occurrence frequencies within a given context. This method entails building a matrix where the rows and columns stand in for various aspects in the cells indicate the frequency or strength of co-occurrences between these elements. In order to better explain and analyze the research theme of blended learning in tertiary education, this paper used co-occurrence matrix analysis method.

Research tools

In this paper, the author has utilized the existing data analysis functions of the database and Python to do the co-occurrence matrix analysis on the topic of blended learning in tertiary education.

FINDINGS AND DISCUSSION

Time distribution of research papers on Blended learning in tertiary education

By August, 2023, 356 literature were retrieved within Core of Peking University and CSSCI in CNKI database, while 2293 literature were retrieved within the Scous database. Time distribution of research papers on blended learning in tertiary education is shown in Figure 1.
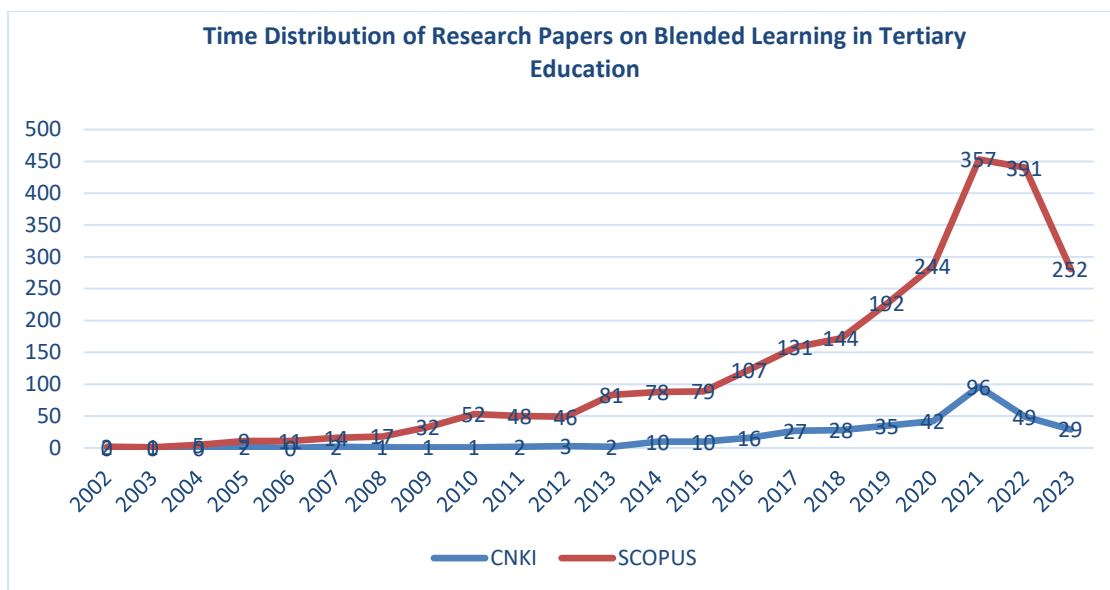
Figure 1 Time distribution of research papers on blended learning in tertiary education

The research on blended learning in tertiary education indexed by Core of Peking University and CSSCI in CNKI and Scopus database started in 2005 and 2006 respectively. Both showed a rising trend and grew particularly rapid from 2020 with the spread of COVID-19 virus (Mayo-Cubero, 2021). Significantly more research has been done abroad than in China. According to the time distribution, research papers on blended learning in tertiary education can be divided into three stages: stage 1 from 2005 to 2007, stage 2 from 2007 to 2013, stage 3 from 2013 to present. During stage 1, fewer papers are published, and blended learning is in the exploratory stage. In stage 2, there was a significant growth of the study relative to the first phase and the studies moved from theory to practice. In the third stage, there was a significant increase in the number of papers published, especially through 2020, when there was a dramatic increase in the number of papers published. At that stage, blended learning in tertiary education is in the stage of diversified development and deep integration.

High citation analysis of blended learning in tertiary education
In order to further explore the knowledge base of the field, this paper analyzes the highly cited literature in the citations of the relevant research papers, and obtains the top ten highly cited frequency papers (Table 1), which are mainly focused on the following aspects:

Theory and design of blended learning
Blended learning learning is an evolving concept. He (2004) used the blend learning (or blended learning) term's basic meaning while giving it a completely new interpretation: the so-called Blending Learning is to combine the advantages of traditional learning and e-Learning (i.e. digital or networked learning), that is to say, to give full play to the leading role of the teacher in guiding, inspiring and supervising the teaching process, and to fully reflect the initiative, enthusiasm and creativity of the students as the main body of the learning process. Yu (2005) pointed blending Learning is a kind of enhancement of the learning concept, which will make the students' cognitive way change, and the teachers' teaching mode, teaching strategy, and role also change. This kind of change is not only a change of form, but also a change of teaching mode and role of teachers. Garrison and Kanuka (2004) defined blended learning as an instructional model that combines face-to-face instruction with online learning. They emphasize the versatility of this model, which allows for different levels of integration depending on specific educational goals and content.

Exploring teaching practice

The practice of blended learning theory and the integration of technology is another hot research topic both in China and foreign countries. Picciano (2009) explored a multi-modal model that emphasizes the integration of different learning modalities and technologies into a blended learning environment to meet the diverse learning needs of students. The authors presented a model that emphasizes the use of both face-to-face and online activities in blended courses for a richer and more flexible learning experience. Huang et al (2009) proposed a design framework for blended learning courses and their activity framework, and gives examples of related course design.

Blended learning design and Influencing Factors

In recent years, more and more college and university teachers have begun to pay attention to blended instructional design and put it into practice. Xie and Zhu (2012) pointed out that blended learning design should incorporate appropriate theories, such as mastery learning theory, primary teaching principles, deep learning theory and active learning theory, to design instruction and build a blended instructional implementation process. Hew and Cheung (2014) reviewed the use of students and instructors in Massive Open Online Courses (MOOCs), including their motivations, challenges, and experiences, while also providing some insight into blended learning design.

Table 1 Highly Cited Papers on Blended Learning Research in Tertiary Education in CNKI, 2005-2023

Citation Number	Title	First Author	Year	Journal
2559	Principles and application models of blended learning	Li Kedong	2004	Chinese audio-visual teaching
1449	A Literature Review on Blended Learning : Based on Analytical Framework of Blended Learning	Feng Xiaoying	2018	Journal of distance education
1271	The Theoretical Basis and Instructional Design of Blending Teaching	LI Fengqing	2016	Journal of Modern Educational Technology
1250	Blended learning based course design theory	Huang Ronghuai	2009	Chinese audio-visual teaching
1236	Rain Classroom: The Wisdom Teaching Tool in the Context of Mobile Internet and Big Data	Wang Shuaiguo	2017	Journal of Modern Educational Technology
2917	New developments in educational technology theory from blended learning	He Kekang	2005	Chinese audio-visual teaching
1114	The Design of New Blended Learning Model Based on Flipped Classroom	Zhang Qiliang	2013	Journal of modern educational technology
1030	Blended Teaching in Network Environment--A new teaching model	Yu Shengquan	2005	Chinese University Teaching
603	Exploration and Practice of Blended Teaching Based on MOOC+SPOC	Su Xiaohong	2015	Chinese University Teaching
316	Factors Influencing Blended Teaching Quality at Higher Education Institutions	Xie Xiaoshan	2012	Distance Education in China

Analysis of Research Hot-spots

The keywords of a paper are a high level summary of the research topic. Keywords with high frequency indicate that more research has been carried out on the keyword, which is a research hot spot. By retrieving 356 journals on CNKI database (Core of Peking University and CSSCI) and Scopus database, this paper analyzes the keywords of the research papers on blended teaching tertiary

education, and obtains the top ten high-frequency keywords in the citation frequency. Figure 2 and Figure 3 show the high-frequency keywords, and the higher frequency means the more likely to become a research hot spot. (1) the design of teaching mode around blended learning effect; (2) the development and teaching design of MOOC and flipped classroom; (3) the influencing factors of blended learning adoption; (4) blended learning strategies.

One difference between CNKI and Scopus high-frequency words: while Chinese studies focus on college ideological and political courses and College English, foreign studies focus on subjects such as medical education. Another difference is that there are gender differences in foreign studies while there are few such studies in China.
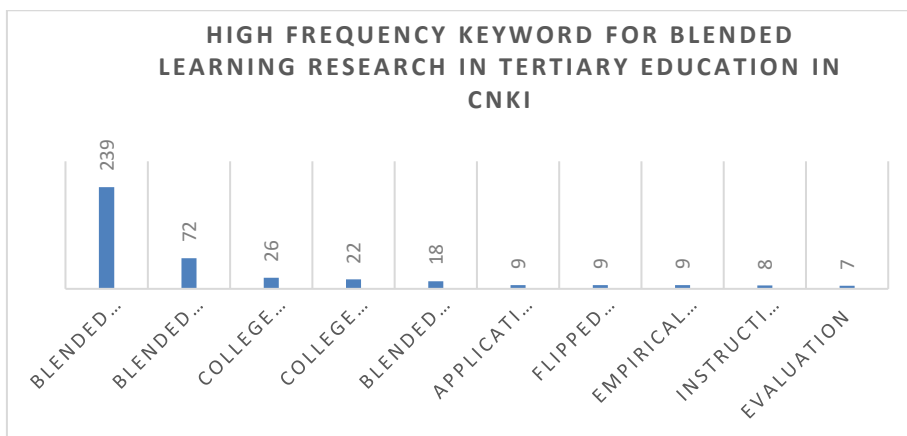

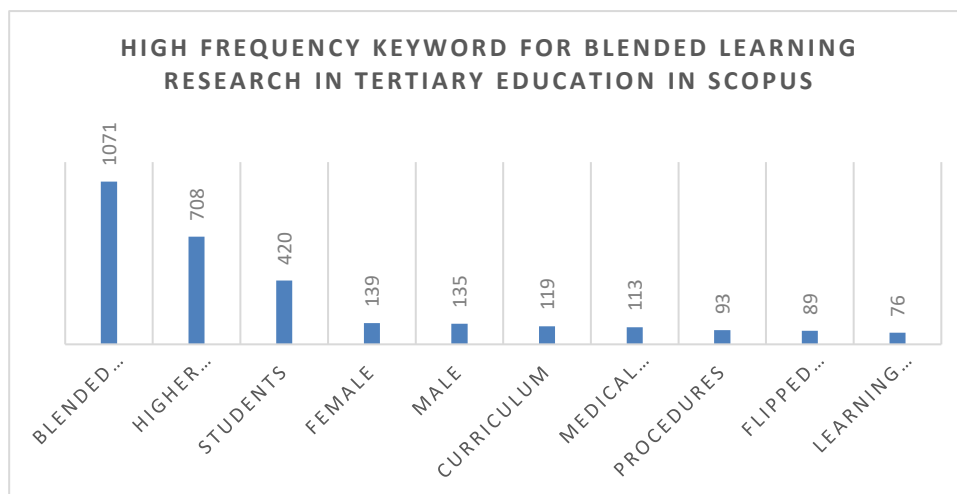**Figure 2** High-frequency keywords for blended learning research in tertiary education in CNKI

Figure 3 High-frequency keywords for blended learning research in tertiary education in Scopus

Co-occurrence matrix analysis

Co-occurrence matrix analysis is a method used to examine the relationships between items or elements based on their co-occurrence frequencies within a given context. When two keywords appear together in a text, a relationship between them is implied. The connection between the set of terms is higher when the two occur together more frequently. Combining the previous analysis of highly cited papers, high-frequency keyword analysis, and co-occurrence matrix analysis shown in table 3 and table 4, this paper summarized and sorted out the following research topics of blended learning in tertiary education.

Table 3 Co-occurrence Matrix of CNKI Blended Learning in Tertiary Education High Frequency Keywords

	blended learning	blended learning model	college English	college ideological and political courses	blended learning reform	applications in teaching and learning	flipped classroom	empirical research	instructional design	evaluation
blended learning	239	38	22	21	10	3	6	7	6	5
blended learning model	38	72	12	7	0	0	3	0	0	0
college English	22	12	26	0	0	0	0	0	0	0
college ideological and political courses	21	7	0	22	0	0	0	0	0	0
blended learning reform	10	0	0	0	18	0	0	0	0	0
applications in teaching and learning	3	0	0	0	0	9	0	0	0	0
flipped classroom	6	3	0	0	0	0	9	0	0	0
empirical research	7	0	0	0	0	0	0	9	0	0
instructional design	6	0	0	0	0	0	0	0	8	0
evaluation	5	0	0	0	0	0	0	0	0	7

Table 4 Co-occurrence Matrix of Scopus Blended Learning in Tertiary Education High Frequency Keywords

	blended learning	higher education	students	female	male	curriculum	medical education	procedures	flipped classroom	learning system
blended learning	1071	615	231	105	102	46	105	56	83	70
higher education	615	708	241	87	84	75	107	40	43	50
students	231	241	420	79	78	32	78	18	53	62
female	105	87	79	139	87	23	67	29	65	31
male	102	84	78	87	135	23	66	28	66	30
curriculum	46	75	32	23	23	119	6	7	3	0
medical education	105	107	78	67	66	6	113	11	0	0
procedures	56	40	18	29	28	7	11	93	0	0
flipped classroom	83	43	53	65	66	3	0	0	89	0
learning system	70	50	62	31	30	0	0	0	0	76

Research on blended teaching theories and models

The research in this area includes the clusters of blended teaching model, blended teaching, teaching model, online education, and flipped classroom. As early as 2004, some scholars began to conduct research on blended teaching, including the concept of blended teaching and related theoretical foundations. Many researchers have conceptualized blended learning from different perspectives have elaborated on it. Blended learning is based on various information technology platforms, giving full play to the advantages of traditional classroom teaching and online teaching, and mobilizing multiple forms of teaching to serve the teaching system (Tian &Jiao, 2005); blended learning is a kind of enhancement of the learning concept, which makes the students' cognitive style changes, and teachers' teaching mode, teaching strategies and roles are also changed (Yu, 2005); the so-called blending Learning is to combine the advantages of traditional learning and e-Learning (i.e. digital or networked learning), that is to say, to give full play to the leading role of the teacher in guiding, inspiring and supervising the teaching process, and to fully reflect the initiative, enthusiasm and creativity of the students as the main body of the learning process (He, 2004); blended learning as an instructional model that combines face-to-face instruction with online learning (Garrison& Kanuka, 2004).

Based on the deepening research on the concept and theory of blended teaching, more and more scholars have begun to study blended teaching models. Centering on the three basic issues of teaching: purpose, process, and evaluation, Luo (2019) proposed a "two-dimensional trinity" blended teaching model for tertiary education, and designed an eight-phase blended learning process, which provides a reference for blended teaching reform.

Bake (2000) was an early proponent of the idea of the flipped classroom and put it into practice. The flipped classroom is based on cognitive theories such as cognitivism, behaviorism, constructivism, and humanism. By optimizing and decomposing the teaching procedure, students can learn independently outside the classroom through various ways, and the classroom can strengthen teacher-student communication in the classroom, so as to enhance personalized learning and knowledge internalization. The advantages of receptive learning and constructive learning are organically integrated to improve the learning efficiency (Rong & Peng,2015).

Research on blended teaching theories and applications

This area of research includes blended learning, online learning, self-directed learning. Blended learning and blended teaching are two different concepts. Blended learning research focuses on the main body of learning - students, research from the perspective of how to learn; while blended teaching research focuses on how to teach, research from the perspective of teachers. But the two are very closely linked, the theoretical basis is similar, the ultimate goal is to improve the learning effect, but blended learning research is earlier than blended teaching research (Peng & Jin, 2021). It is based on blended learning research that began to constantly explore how to carry out blended instructional design in order to achieve the teaching goals. Research on blended learning theory and practice provides a richer perspective on the study of blended learning.

Research on blended instructional design and practice

Research in this area includes instructional reform, instructional design, and influencing factors. To achieve the desired results, blended learning needs to be combined with the characteristics, objectives, technological environment, methods, processes of blended teaching, and student characteristics to do the teaching design. Li (2016) combined learning theory and the ADDIE model (five steps of analysis, design, development, implementation and evaluation) to design the blended teaching implementation process according to the three phases of pre-course, in-course, and post-course, so as to provide hands-on guidelines and empirical references for carrying out blended teaching. Vaughan (2007) provided perspectives and experiences of different participants (teachers, students, administrators, etc.) on blended learning. It helps to understand how to design and implement blended instruction with the involvement of different roles.

Conclusion

Through the study, it is found that Chinese and foreign research on blended teaching in colleges and universities are similar. Although the number and depth of studies on blended teaching in colleges and universities in China are weaker than those in foreign countries, both studies on blended teaching in colleges and universities are divided into three stages, and the contents of the studies in the three stages are similar. Another difference is that Chinese research on efficient blended teaching mainly focuses on college English courses and Civics courses, while foreign research focuses on medical courses (Saeed, 2022)). Based on previous studies, this paper summarizes the following research trends in blended learning in tertiary education.

First, continue to carry out in-depth research on the theoretical mechanism of blended teaching. Although after more than ten years of research, people have gradually formed some mainstream cognition on blended teaching, but there are still differences in many areas. At the same time, due to the complexity of online behavior, teaching behavior, learning behavior, interaction mode and teaching effect are affected by many uncertain factors, and many rules need to be explored, and the mechanism behind them needs to be further explored.

Second, it studies the applicability and evaluation of blended teaching. At present, the mixed teaching in colleges and universities has different quality of courses and can not reach the expected teaching goal. In the future, combined with curriculum practice, the applicability of blended teaching will be discussed from the aspects of student level, teacher level, curriculum characteristics, technical environment and so on.

Thirdly, it explores the innovative development of blended teaching mode under "Internet + technology". The development of the Internet, big data, cloud platform, AR, and Internet of Things technology provides opportunities for blended teaching. Intelligent and informationization is the trend of future education development, which will certainly have a significant impact on the blended teaching mode and teaching design (Tang, 2023). Finally, research on the influence of blended teaching on individual ability and core quality. To improve the quality of blended teaching, it is necessary to explore the relationship between blended teaching and the cultivation of students' individual ability and core literacy and the realization path.

REFERENCES

Allen, I. E., & Seaman, J. (2003). Sizing the opportunity: the quality and extent of online education in the United States, 2002 and 2003. *Sloan Consortium, 23*, 659-673.

Bake, J. W. (2000). The "Classroom Flip": using web course management tools to become the guide by the side. *In 11th International Conference on College Teaching and Learning,* 9-17.

Bliuc, A. M., Goodyear, P., & Ellis, R. A. (2007). Research focus and methodological choices in studies into students' experiences of blended learning in higher education. *Internet & Higher Education, 4,* 231-244.

Bonk, C. J., Graham, C. R., Cross, J., et al. (2009). The handbook of blended learning: global perspectives, local designs. *Turkish Online Journal of Distance Education, 4,* 181-181.

El Habti, F. E., Chrayah, M., Bouzidi, A., & Ali, H. A. (2022). Blended learning platform model. *In Proceedings of the 12th International Conference on Virtual Campus* (JICV 2022).

Garrison, D. R., & Kanuka, H. (2004). Blended learning: uncovering its transformative potential in higher education. *The Internet and Higher Education, 7*(2), 95-105.

Goodyear, V., & Dudley, D. (2015). "I'm a lacilitator of learning!" understanding what teachers and students do within student-centered physical education models. *Quest, 3,* 274-289.

He, K. K. (2004). The new development of educational technology theory from the perspective of blended teaching. T*echnical Education in Primary and Secondary Schools, 4*, 18-42.

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.

Hrastinski, S. (2019). The educational landscape of blended learning: Contemporary views. *Educational Technology Research and Development, 67*(2), 387-405.

Huang, R., Ma, D. Zheng, L. Q., & Zhang, H. S. (2009). Theory of course design based on blended learning. *Research in Distance Education, 2009*(1), 9-14.

Li, F. Q. (2016). The theoretical foundation and instructional design of blended teaching. *Modern Educational Technology, 9*, 18-24.

Liu, Y. (2021). Blended Learning of management courses based on learning behaviour analysis. *International Journal of Emerging Technologies in Learning, 16*(9), 150–165.

Luo, Y. H. (2019). Construction and practice exploration of blended teaching model in higher education. *Exploration of Higher Education, 12,* 48-55.

Mayo-Cubero, M. (2021). Teaching innovation experience for COVID-19 times: a case study on blended learning of television journalism courses with moodle. *Asia Pacific Media Educator,* 31(2), 178–194.

Nikolopoulou, K., & Zacharis, G. (2023). Blended learning in a higher education context: exploring university students' learning behavior. *Education Sciences, 13*(5), 514.

Picciano, A. G. (2006). Blended learning: Implications for growth and access. *Journal of Asynchronous Learning Networks, 10*(3), 95-102.

Picciano, A. G. (2009). Blending with purpose: The multimodal model. *Journal of Asynchronous Learning Networks, 13*(1), 7-18.

Rong, M., & Peng, X. H. (2015). Historical development, current Status, and analyzing practical strategies of flipped classroom. *China Distance Education, 2015*(7), 108-115.

Saeed, S. (2022). Teaching clinical skills using online modality through modified Peyton's framework: An experience from a medical university in Pakistan. *Journal of Advances in Medical Education and Professionalism, 11*(1), 15-23.

Tang, Z. M. (2023). Exploration of the application of blended teaching in college curriculum instruction. *Journal of Shenyang Institute of Engineering (Journal Title in English), 19*(3), 112-116.

Tian, F. P., & Jiao, D. L. (2005). Exploring the practice of blended teaching model in higher education under the informationized environment. *Research in Distance Education, 4,* 63-65.

Vaughan, N. D. (2007). Perspectives on blended learning in higher education. *International Journal on E-Learning, 6* (1), 81-94.

Vaughn, N. D., & Garrison, D. R. (2012). Blended learning in higher education. *Journal of Virtual Learning in Medical Sciences, 7*, 68-69.

Cooney, M. H., Gupton, P., & O'Laughlin, M. (2000). Blurring the lines of play and work to create blended classroom learning experiences. *Early Childhood Education Journal, 27*(3), 165-171.

Wasoh, F. (2016, November 17). Exploring the Roles of Blended Learning as an Approach to Improve Teaching and Learning English. Retrieved from http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=27144a22-f991-47c4-a39e-94160e6ce0a9%40sessionmgr4007&vid=0&hid=4214 .

Xie, X. S, & Zhu, Z. L. (2012). Analysis of factors influencing the quality of blended teaching in higher education. *China Distance Education, 10,* 9-14, 95.

Yen, J. C., & Lee, C. Y. (2011). Exploring problem solving patterns and their impact on learning achievement in a blended learning environment. *Computers & Education, 1*, 138-145.

Yu, S. Q. (2005). Blended teaching in the online environment: A new teaching model. *University Teaching in China, 10*, 55-56.