



Hot Spot Perspective and Trend Analysis of Blended Teaching Research

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Abstract. This paper attempts to investigate the hot spots, cutting-edge trends of China's mixed teaching research so as to clarify and address the focus of their improvement in the post epidemic era. The information visualization software Cite Space was explored to visualize and analyze the relevant journals and literatures of mixed teaching research including in the Web of Science Core Collection database from 2018 to 2022, and has drawn the corresponding map of scientific knowledge. The research reveals that mixed teaching research concentrates on blended learning, technology acceptance model, learning, community of inquiry, etc. in which institutional driver, distance learning, and student perception will be the focus of mixed teaching research in the future from the perspective of research trend. Based on the research results, five suggestions for improvement are proposed regarding the establishment of the system and mechanism, the creation of the teaching platform, and the construction of the training system.

Keywords: Blended teaching · Research hotspots · The development trend · Visualization

1 Introduction

In the new century, with the popularization of the Internet and the development of online learning, blended teaching has attracted more and more attention [1]. In the post-epidemic era, blended teaching has become an important direction of teaching reform [2]. But how to continue to explore and innovate on the basis of existing research results and promote the rapid development of blended teaching research is a problem that should be considered at present [3]. For this reason, this paper intends to investigate the hot spots and frontier trends of blended teaching research in a more scientific and intuitive way with the assistance of visual literature analysis software so as to supply useful information for subsequent researchers in the hope of broadening future research approaches.

2 Research Methods and Data Sources

In this study, the method of knowledge graph visualization is employed to process the sample data while the analysis tool selected was Cite Space (6.1.R3) software [4]. With the data from the “Web of Science Core Collection”, it has the advantages of extensive

content, rich literature and timely update, which can guarantee the integrity and validity of the original data to a large extent as the academic journal database with the largest publication volume and continuous dynamic update [5]. With the search time from July 1, 2018 to December 12, 2022, the search function was adopted and the Title Blended Teaching or Online and Offline Teaching or Blended Learning was entered. The time range was set as “2018–2022”, and a total of 1285 results were retrieved. After sifting through them, there are 1,275 records left. While txt format is exported to Cite Space for visualization processing, corresponding map of scientific knowledge is drawn.

3 Hot Spot Perspective

Keywords, as the representative vocabulary of the thesis topic [6], are also the highly condensed and summarized contents of the thesis, which also enables researchers to gain an insight into the core theme and focus of the thesis with the help of keyword inspection [7]. In view of this, if the frequency of co-occurrence of some keywords in a certain discipline or field is high, the hot spots and research trends of scholars in this field are revealed. Therefore, after 1275 sample data into Cite Space (6.1.R3) software were imported with key-word as the node type, the time span as 2018–2022, and the time slice as 1 year, the keyword clustering time graph as shown in Fig. 1 can be obtained.

Limited by space, the top 20 keyword information from highest frequency to lowest were listed. As the frequency can tell the degree of the researchers’ attention in which blended learning is a strong keyword with the frequency of 550 times in the research literature of multiple courses of different disciplines, “online”, “online learning” “environment” is all concerned with online teaching platform. In addition, the frequency of “model”, “skill” and “design” is flipped to the different focuses of blended teaching research (Table 1).

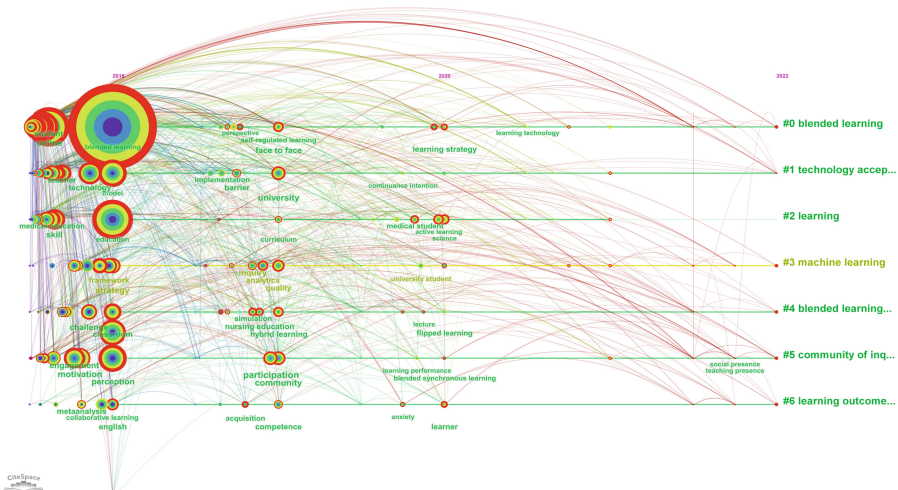


Fig. 1. Keywords clustering time graph [self-painted]

Table 1. Highest frequency of keywords in the top 20 [self-painted]

S/N	count	year	keywords	S/N	count	year	keywords
1	550	2018	blended learning	11	58	2018	online learning
2	131	2018	online	12	57	2018	achievement
3	129	2018	education	13	55	2018	impact
4	128	2018	student	14	50	2018	technology
5	126	2018	higher education	15	42	2018	experience
6	86	2018	performance	16	41	2018	motivation
7	73	2018	satisfaction	17	39	2018	environment
8	68	2018	model	18	39	2018	skill
9	66	2018	perception	19	37	2018	design
10	60	2018	flipped classroom	20	37	2018	engagement

4 Analysis of Frontier Research Topic

4.1 Frontiers of Research

An emergent word refers to a sudden change in data over a period of time [8]. On the basis of the analysis of emergent words and the comprehensive judgment combined with relevant literature, the development trend of the subject can be better grasped [9]. With this function, this study set the threshold of the Minimum Duration as 2 years for visual analysis, and obtained the changes of emergent words (Fig. 2). It can be seen that under this threshold condition, a total of 10 emergent words are detected among which the mutation of “user acceptance”, “technology acceptance model”, “communication”, “distance education”, “social media” and “adult” had ended by 2019, with the remaining four keywords being “distance learning” (2.27), “student perception” (2.02), “institutional driver” (1.92), and “learning management” in order of the degree of mutation 1.85 the system “.

4.2 Frontier Theme Interpretation

In general, the appearance of emergent words is caused by the change of external environment and the development trend of blended teaching research in the future can be roughly judged by analyzing the prominence intensity [10], time and duration of emergent words, combined with the basic orientation of educational policies in recent years. Of the 10 keywords with persistent mutations, the three key words “institutional driver”, “distance learning” and “student perception” have attracted high attention in recent years, apart from “user acceptance”, “technology acceptance model”, “communication”, “distance education” and “learning management” widely discussed system “, “social media”, “adult education”.

Top 10 Keywords with the Strongest Citation Bursts

Keywords	Year	Strength	Begin	End	2018 - 2022
user acceptance	2018	3.24	2018	2019	
technology acceptance model	2018	2.88	2018	2019	
communication	2018	2.21	2018	2019	
distance education	2018	1.9	2018	2019	
learning management system	2018	1.85	2018	2020	
social media	2018	1.8	2018	2019	
adult education	2018	1.8	2018	2019	
institutional driver	2019	1.92	2019	2020	
distance learning	2020	2.27	2020	2022	
student perception	2020	2.02	2020	2022	

Fig. 2. Top 10 Keywords with the Strongest Citation Bursts [self-painted]

5 Research Recommendations

Based on the above analysis, in order to further deepen the research on blended teaching, blended teaching research, blended learning, technology acceptance model, learning, community of inquiry and other key research contents, this study proposes the following suggestions according to the focus of blended teaching research on “institutional driver”, “distance learning” and “student perception” for a period of time in the future.

5.1 Reinforcement of Support

Colleges need to increase their support for blended teaching and inspire the enthusiasm of all teachers and students to explore it. The first is to provide sufficient hardware and software backup, namely, to provide appropriate classrooms and teaching sites while reinforcing sufficient curriculum reform funds for blended teaching. Colleges also need to actively collaborate with relevant online learning platforms to facilitate online learning for teachers and students. The second is to transform the teaching management mode, implement a separate incentive and assessment mechanism for the teachers who undertake the blended teaching task, and motivate the teachers to participate in the blended teaching reform from the system level.

5.2 Improvement of the Construction of Teaching Platforms

Each platform organization should focus on improving the fluency of the platform operation, intensify the compatibility of the learning platform system, realize real-time synchronization of the learning progress of the computer and mobile terminals, and constantly enhance the experience of teachers and students.

5.3 Strengthening Technical Training for Teachers

Colleges can supply teachers with short-term training on blended teaching techniques to help them master blended teaching techniques and promote operational efficiency, so as to heighten the level of teachers' blended teaching techniques and conduct characteristic reforms according to local conditions of students or the school, so as to raise the overall teaching quality of the whole school.

5.4 Cultivation of Students' Comprehensive Ability

In order to help students better adapt to blended teaching and strengthen the learning effect, students' comprehensive ability can be cultivated from the following two aspects. To start with, improving students' Internet technology should be well undertaken, as students are affected by regional, family, school and other conditions with a technology gap in the use of online teaching platform. Therefore, relevant training should be conducted regularly to enhance students' ability to use technology and reduce the gap in operational technology to lay a good foundation for blended teaching. What is more, the interaction between teachers and students is to strengthen. In terms of resources and platforms, teachers should strengthen the construction and improvement of supervision mechanism to effectively track students' learning progress and learning feedback, and provide a good foundation for the next teaching. Students also need to overcome their fear of difficulties psychologically, strengthen communication with teachers, improve the adaptability of blended teaching, and learn to reflect, so as to truly develop their learning ability.

5.5 Promotion of the Teaching Design Scheme

In order to achieve good results in blended learning, the key is to improve the teaching scheme design. Teachers should integrate the strengths of online teaching and offline teaching, and conduct teaching design based on the perspective of students, supply visual and interesting learning materials, consciously cultivate students' awareness of independent learning, and stimulate their learning motivation.

6 Conclusion

Blended teaching represents a new direction for the future of teaching which is not only a summary of the traditional offline teaching model, but also a high degree of integration with the latest science and technology. Driven by the post-pandemic era, this new teaching model is promising to become the "new normal" of education in the future. Blended teaching research has produced fruitful results in the past five years, blended learning, technology acceptance model, as learning and community of inquiry are the key research contents at the present stage with topics discussed including "user acceptance", "technology acceptance model" and so on. Consequently, combined with the analysis results of emergent words, it can be demonstrated that "institutional driver", "distance learning" and "student perception" will be vital contents of the research in the future.

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References

1. Siemens G . Connectivism: A Learning Theory for the Digital Age [J]. international journal of instructional technology & distance learning, 2004(1).
2. Tzeng G H , Chiang C H , Li C W . Evaluating intertwined effects in e-learning programs: A novel hybrid MCDM model based on factor analysis and DEMATEL [J]. Expert Systems with Applications, 2007, 32(4):1028-1044.
3. Deranger B . Blurring the Lines Between Instructor-Led and Online Learning: an Evaluation of an Online Composition Curriculum on the Bleeding Edge [D]. University of North Texas, 2007.
4. Cooney M H , Gupton P , Michael O’Laughlin. Blurring the lines of play and work to create blended classroom learning experiences [J]. Early Childhood Education Journal, 2000, 27(3):165–171.
5. Dong N , Harris A , Ng D . A review of the empirical research on teacher leadership (2003–2017) [J]. Journal of Educational Administration, 2020, 58(1):60-80.
6. Hiralaal A . Students experiences of blended learning in Accounting Education at the Durban University of Technology [J]. South African Journal of Higher Education, 2016, 26(2):316-328.
7. Vo H M , Zhu C , Diep N A . The effect of blended learning on student performance at course-level in higher education: A meta-analysis [J]. Studies In Educational Evaluation, 2017, 53:17-28.
8. Bernard R M , Borokhovski E , Schmid R F , et al. A meta-analysis of blended learning and technology use in higher education: from the general to the applied [J]. Journal of Computing in Higher Education, 2014, 26(1):87-122.
9. A A M B , B P G , C R A E . Research focus and methodological choices in studies into students’ experiences of blended learning in higher education [J]. The Internet and Higher Education, 2007, 10(4):231–244.
10. Qin Qin. Research and Practice of Applied Undergraduate Teaching Quality Assurance System [J]. International Journal of Computational and Engineering, 2022(7): 96-98.

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