

Knowledge Atlas Analysis of Teaching Repositories under the Blended Learning Environment in China Based on CiteSpace

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Abstract: In this paper, CNKI is used as the data source to accurately match and retrieve the blended learning and teaching repositories through the theme or keywords, and bibliometric analysis is carried out through CiteSpace software. From 2002 to 2022, the core journals in the research of teaching repositories under the background of blended teaching in China are analyzed and visualized. Literature atlas analysis is carried out from the perspective of time distribution, paper publisher institution, journal source, and keywords. The dynamic trend of the theme, important research bases, cited high frequency journals, and keyword hot trends are obtained.

1. Introduction

Under the background of blended learning, the education market based on cloud platform has shown a good momentum, and the industrial market scale is increasing. In the new era, education needs to meet the needs of China's industrial market in the future with a new talent training model, professional settings, teaching content and curriculum system. In November 2007, the National Demonstration Higher Vocational College Construction Cooperation Committee began to take the lead in the construction of the teaching repositories^[1], and began to try online course with Chinese characteristics. Under this background, the construction of teaching repositories of each specialty was started. Relying on modern network technology to build a teaching repositories can make the presentation of teaching knowledge become three-dimensional, visualized and simplified^[2]. This paper uses the bibliometric method and CiteSpace software to make a visual analysis of the core journal documents in the research of teaching repositories from 2002 to 2022.

2. Research methodology

In this paper, CNKI is used as the data source, and the single database retrieval method is used, that is, advanced retrieval is carried out in the academic journal database of CNKI. The specific search conditions are as follows: Select "theme=blended learning; teaching repositories" or the title contains "blended learning; teaching repositories" (exact matching). Or the keyword contains "blended learning; teaching repositories" (exact matching). The retrieval time of educational theory and educational management is set from January 1, 2002 to December 31, 2022. The source journal

category is set to "Core journal" or "CSSCI Journal", and then the retrieval is conducted. A total of 398 pieces of literature information were retrieved. After the author checked them one by one, 5 related literature in the field of animal husbandry and veterinary medicine was removed, and the remaining 393 literature were used as the samples of literature research in this study. Downloaded bibliography of literature included the title, author, research institutions, literature source, keywords and other relevant data information. Selected journals are all core journals, and the quality of the articles published is relatively high. Therefore, it is representative to select these core journal papers as research samples for analysis.

In terms of data processing, this study uses CiteSpace knowledge atlas analysis software, which is widely used in academia, as a research tool to visualize the statistical analysis of documents. Based on the CNKI database platform, this paper will analyze the time distribution, main research institutions, high-yield authors, highly cited documents, literature distribution journals, keyword frequency, etc in the field of multicultural education research in China by using CiteSpace software, as showed in Figure 1. In addition, CiteSpace software is used to conduct visual analysis of research institutions' co-occurrence atlas, keyword co-occurrence knowledge atlas, research scholars' co-occurrence network atlas, research hotspots timeline atlas, etc., aiming at analyzing the development context, research hotspots and trends of teaching repositories in China's current design education research field.

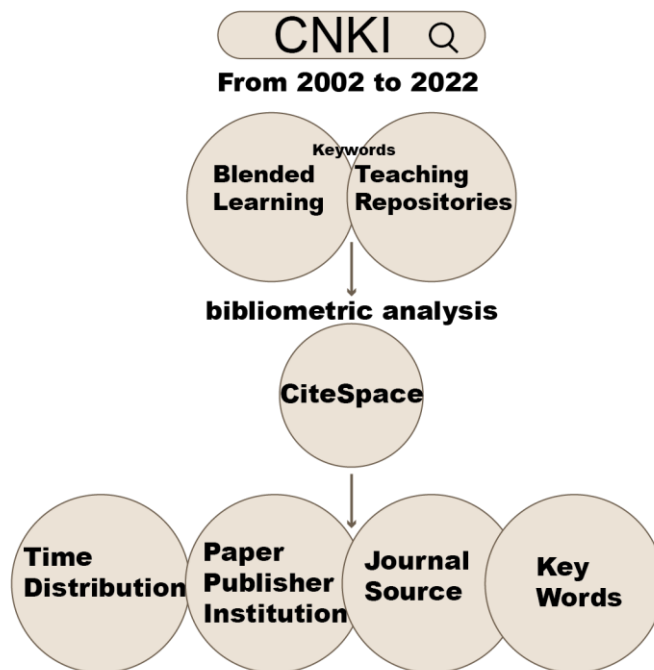


Figure 1: Research methodology from author

3. Data analysis

In order to fully study the literature information of the teaching repositories in the field of blended teaching method research in China from 2002 to 2022, this paper will then conduct quantitative and visual analysis of 393 core journal literature research samples from the perspectives of time distribution, main research institutions, main research scholars, research knowledge base, research hotspots, future research trends, etc.

3.1 Time Distribution - Active Situation

As an important reference index to measure the degree of academic research activity, the change in the number of papers helps to reveal the characteristics of discipline development and predict the future trend of discipline development. The change in the number of documents in the teaching repositories in the research field of blended teaching method in China is a direct reflection of the fluctuating growth of knowledge in its research field. As showed in Figure 2, it can be seen that the number of documents on the teaching repositories in domestic core journals is in a fluctuating growth trend on the whole.

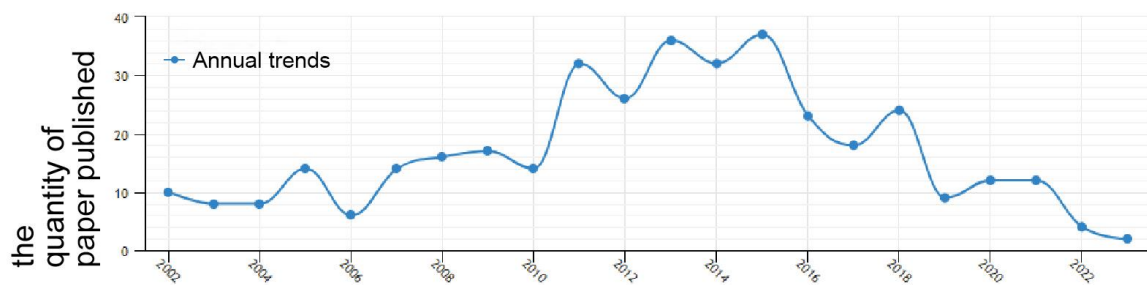


Figure 2: The trend of the annual volume of core papers in the teaching repositories in the research field of blended teaching methods in China (2002-2022) from CNKI

From the line chart, it can be seen that the number of papers published on the teaching repositories from 2002 to 2010 showed a steady trend, ranging from 10 to 18, with a slight decline from 2005 to 2006, and a fluctuating upward trend from 2010 to 2015. From 2010 to 2011, the number of papers published increased rapidly from 14 to 32. In 2015, the number of literature in this field reached a peak (38). After that, the overall number of annual papers on the subject showed a downward trend, and the research enthusiasm decreased.

3.2 Research Institution - Important Research Base

In order to more clearly reveal the development status of the teaching repositories in the field of blended teaching method research in China, this paper uses CiteSpace to analyze the institutions of the first author of the paper, and presents them according to the frequency ≥ 2 (as shown in3). Domestic scholars engaged in the research of teaching resource pool are mainly distributed in 347 research institutions. According to the main name of the institution, there are 30 research institutions with a frequency greater than or equal to 2, mainly composed of vocational and technical university. It can be seen that vocational and technical universities are currently the main body of the research of education resource pool in China. Among them, the frequency of Zhejiang Financial College is 11 times, the frequency of Higher Education Press is 6 times, the frequency of Tianjin Vocational University, Wuxi vocational and Technical College, Ningbo Vocational and Technical College is 5 times, the frequency of Tianjin University, Nanjing University, the Department of Vocational Education and Adult Education of the Ministry of Education of China is 4 times, and the frequency of Jiangnan University, Tsinghua University, etc. is 3 times. 30 research institutions listed in Figure 3 have issued 98 core papers, accounting for 24.9% of all relevant core papers. It can be seen that these universities are important bases for the research of teaching resource pool in China. At the same time, it can also be seen that the research force of China's teaching resource pool is highly concentrated and relatively dispersed.

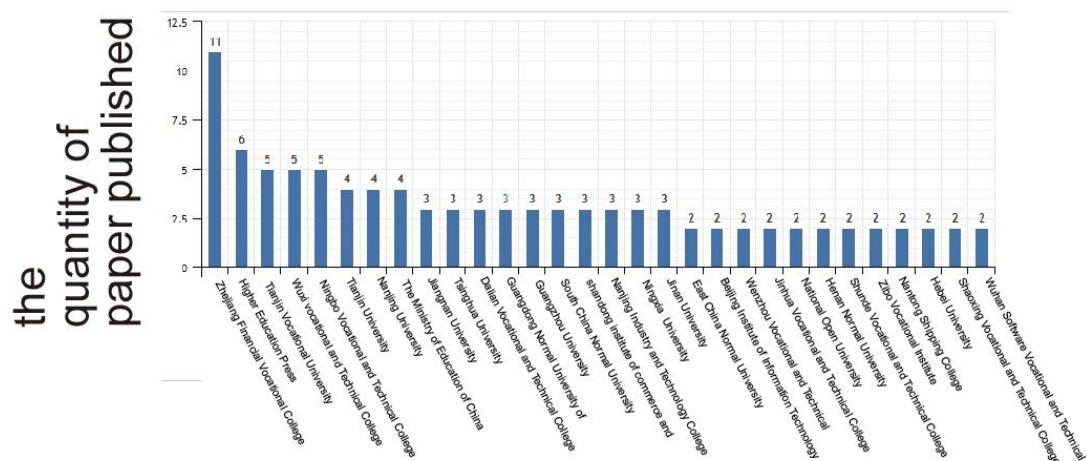


Figure 3: Institution distribution and number of documents of authors from CNKI

3.3 Cited Journals - Knowledge Platform

From the perspective of bibliometrics, citations form the research frontier, the cited documents form the knowledge base, and the knowledge base of the research of teaching resource base is composed of the foundation documents with high frequency of citations in the early stage^[3]. This paper mainly analyzes the knowledge base of teaching repositories research through CiteSpace's co-cited journal distribution (Figure 4) and cited literature. Among them, the top 15 journals with the highest frequency are listed in the cited journal chart. It can be seen from Figure 4 that the high-frequency journals in the field of teaching resource library research are mainly educational journals, including experimental technology and management. Among the 393 core sample papers selected in this study, the largest number of papers is "China's audio-visual education", which is 21, followed by "Research on audio-visual education", "China's higher education research", "China's distance education", "Experimental technology and management", etc. These journals together constitute an important knowledge dissemination carrier in the research field of domestic teaching resource base.

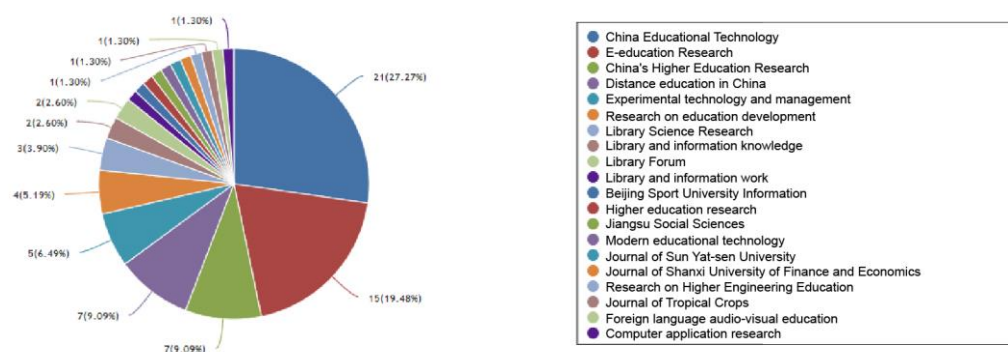


Figure 4: Journal distribution pie chart from CNKI

3.4 Keywords Atlas - Hot Trend

The keywords of an academic paper are a high summary of the topic of the article and a high refinement of the focus of scholars' research, and are an important representation of the content of the paper. The keywords usually come from the title, abstract and text of the paper. The frequent

occurrence of the keywords indicates that the corresponding problems have received high attention from the academic community^[4]. Therefore, keyword analysis of the thesis is conducive to accurately understanding and grasping the research hotspots in relevant fields. For this reason, this paper uses CiteSpace software to analyze the word frequency of the keywords of the relevant papers on the research of education resource base in the domestic blended teaching environment, and draws a knowledge atlas of the keywords co-occurrence, and extracts the current research hotspots in this field with CiteSpace software LLR algorithm. In the keyword atlas, the centrality of the keyword represents the degree of co-word of the keyword, while the size of the keyword font is positively related to the centrality of the keyword^[5]. That is, the larger the font of the keyword, the stronger its centrality, indicating the greater the influence of the keyword in the co-occurrence network of the corresponding research field.

With repositories as the core key word, the teaching reform was introduced. Secondly, the research was rapidly carried out in vocational education. Based on the concept of sharing learning, the concept of learner autonomy emerged. At the same time, the construction of online and offline blended teaching methods was also carried out on the supporting textbooks. Teaching repositories built based on cloud database can make learning breakthrough in place and time restrictions.

4. Conclusion

This data analysis takes the literature of the teaching repositories under the blended teaching environment in China as the research object from 2002 to 2022. First, from the time distribution of the core papers published, the annual volume of papers generally showed a trend of increasing first and then decreasing, with obvious fluctuations and instability. Especially in recent years, domestic attention to this issue has shown a significant downward trend. Secondly, from the perspective of the academic institutions where the main scholars are located, domestic researchers on the teaching resource pool in the blended teaching environment are mainly distributed in vocational and technical colleges. As a result, the discussion of multicultural education issues in China is in a relatively concentrated but decentralized research situation. Thirdly, from the perspective of the distribution of the papers and the high contributions of the cited papers, the core papers of the domestic teaching repositories research are mainly distributed in educational journals. At the same time, from the perspective of the publication time of these cited papers, most of them were mainly published in 2007 and before, and very few of the core papers published in this field were cited. Fourth, from the perspective of future research trends, multimedia, constructivism, virtual reality and practical teaching will become the research trends in this field in China in the future.

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