

Research the Progress, Hot Spots and Prospects on Teaching Models in Vocational Colleges in China - Based on the Citespace Knowledge Map Analysis

Jianjun Zhu¹, Tianqi Liu^{2*}

¹ Department of Transportation Engineering, Suining Secondary Vocational School of Jiangsu Province, Xuzhou, China

² School of Management and Humanities, Jingjiang college of Jiangsu University, Tianzhou, China

Email Address

1175643331@qq.com (Tianqi Liu)

*Correspondence: 1175643331@qq.com

Received: 6 March 2025; Accepted: 25 April 2025; Published: 28 May 2025

Abstract:

Through CiteSpace software, 1856 related documents from CSSCI, CSCD and Peking University's Chinese core database from 2001 to 2024 were analyzed for basic information, research hotspots, and evolution trends. The study found that the hot areas of research on teaching models in vocational colleges in China include "higher vocational colleges", "vocational education", "teaching models", "higher vocational" and "reform", etc. The research on teaching models largely benefits from the empowerment of the policy economy. Future development needs to strengthen the improvement, expansion and innovation of the interpretation system, content system and path system.

Keywords:

Vocational College, Teaching Model, CiteSpace, Bibliometric Analysis

1. Introduction

The report of the 20th National Congress of the Communist Party of China proposed that "modernization with a huge population is China's modernization." Promote the coordination and joint innovation of vocational education, continuing education, and higher education, promote the integration of industry and education, vocational and general education, and optimize the type of vocational education. In 2021, the General Office of the CPC Central Committee and the State Council pointed out in the "Opinions on Promoting the High-Quality Development of Modern Vocational Education" that the characteristics of vocational education types should be more distinctive in 2025, when the modern vocational education system is basically completed and the construction of a skill-based society has been comprehensively promoted. [1] The teaching model is a type of paradigm and plan that builds lessons, courses, prompts teachers for activities, and selects textbooks. Problems existing in

today's vocational college teaching model include: outdated models, inability to adapt to learned teaching concepts, lagging teaching models and inability to stimulate students' inherent learning potential.

As an important component of vocational colleges, the formation and changes of its framework are more complex. A comprehensive analysis of the historical evolution and future development trend of the teaching model of vocational colleges in China, and a systematic analysis of the impact of changes in the teaching model of vocational schools are of great significance to coping with the new round of industrial changes and scientific and technological revolution, improving education quality, and promoting the modernization of vocational education in China.

2. Data Sources and Research Methods

2.1. Data sources

The data used in this study are all from China's National Knowledge Network (CNKI). The literature is searched through advanced search, using "vocational colleges" and "teaching models" as the keywords. In order to ensure the reliability of the literature, the search uses the Chinese Social Science Citation Index (CSSCI), China Science Citation (CSCD) and Peking University's Chinese Core Database as source certification for academic journals. Therefore, this study eliminated irrelevant results such as degree thesis, newspapers, and conference papers, and set the publication period of the literature to 2001 to 2024. A total of 1856 core journals were retrieved as research data.

2.2. Research methods

The research software used in this paper is CiteSpace6.3.R1, which is a knowledge mapping tool that includes clustering analysis, social network analysis and other methods. It is a type of document analysis software developed by Professor Chen Chaomei. It is one of the most influential analysis software today. [2] When conducting literature analysis through CiteSpace 6.3.R1, the time span of "TimeSlicing" is set to "2001-2024", and the value of "Yearspeeslice" is set to "3"; "Author", "Institution", and "Keyword" will be checked respectively on the operation interface, and other parameters default to preset values. Through this software to visually analyze and display relevant data, it can promote research trends and development status to be expressed as directly as possible, providing corresponding reference directions for subsequent research.

3. Current Research Status of Teaching Models in Domestic Vocational Colleges

3.1. Analysis of the co-occurrence of documents published and authors

The documents used in this study came from 1586 core journals collected by China's National Knowledge Network from 2001 to 2024. The number of domestic documents on the teaching model of vocational schools changed and increased from 2001 to 2005. It increased significantly from 2006 to 2014, and then declined in 2015, and the number of documents published has generally stabilized. Analysis was performed using CiteSpace software. The 1856 retrieved core documents were exported on HowNet. The specific settings are as follows: the time span is set to

2001-2024, and the time slice is selected; the author is selected for the type of node, Top N=50, and then the software is run for visual analysis to obtain that the authors are distributed in the cooperation network. The number of generated nodes in the network is 291, the number of connections is 42, and the density is 0.001. Its network density is well below the normal level of 0.1. Although there are a large number of scholars conducting research on teaching models in vocational colleges nowadays, most of them are independent research and there is little cooperation among them.

3.2. Analysis of co-occurrence of research institutions

Using CiteSpace software, select node types as institutions, and obtain institutional cooperation maps through software analysis. The number of nodes is 238, the number of connections is 31, and the network density is 0.0011. Among them, the network density is much lower than the normal level of 0.1. It can be seen that the cooperation among various institutions in the research of teaching models in domestic vocational schools is not close and there is a lack of communication. Judging from the publication status, there are 9 institutions that have published more than 5 or more pages in this field, namely: Tianjin University School of Education (10 articles), Zhejiang Financial Vocational College (9 articles), Changchun Vocational and Technical College (8 articles), etc. 2005-2018 Year is the number of publications published in the main concentration of documents, and the number of publications published in the near future is relatively small. It can be seen from the number of publications that domestic vocational college teaching model research institutions need to further strengthen cooperation and exchanges.

4. Analysis of Hot Topics in Domestic Vocational College Teaching Models

4.1. Analysis of hot words

Hot words for research refer to topics or issues to be studied by papers that are related to each other and have a large number of them within a certain time range. Select keywords as nodes, run CiteSpace, set Top=35, and get its keyword co-occurrence graph after running. There are a total of 292 nodes in the graph, 703 connections, and the network density is 0.0165. Each node in the graph represents a keyword. The size of the node is positively correlated with the frequency of occurrence of its keyword. The outer circle of the keyword is positively correlated with the time span of the study. Higher vocational colleges and teaching models appear most frequently, followed by vocational education and higher vocational education, which reflects that the teaching reform and practice in vocational schools are the focus of attention of relevant scholars. The degree of dependence of other keywords on research keywords is called centrality. It can be seen from the value of centrality that the keyword with the highest value is higher vocational colleges, followed by teaching models, vocational education, etc. The research time span can reflect the length of research at this point. It can be seen from the figure that higher vocational colleges, teaching models, etc. all have a long research time span. However, countermeasures, curriculum systems, reforms, and work-study integration have certain chronological characteristics and appear frequently in specific eras.

4.2. Cluster analysis of hot words

Through CiteSpace, keywords are extracted using Log-Likeness Ratio (LLR) called cluster tags, and then a keyword cluster map is obtained. The stability of network clustering in software analysis is usually measured by the module value (Q value), which is usually $0 \leq Q < 1$. When $Q > 0.3$, it indicates that the cluster structure divided is significant and has good effect. The average contour value (S-value) is used to express the clarity of the cluster, when $S \geq 0.7$, indicating that the confidence and efficiency of the clustering are high. [3] Through analysis, it can be concluded that the Q value is 0.4325, which is greater than 0.3; the S value is 0.8071, which is greater than 0.7, which shows that the clustering of the network is significant and the clustering results are reasonable. From this, we can get the 10 major groups of research in this field, which are sorted according to the size of the clusters: higher vocational colleges, vocational education, teaching models, higher vocational colleges, etc. It can be seen from the figure that these are the top 10 research topics of concern in the field of teaching models in domestic vocational colleges.

Relevant clustering information is summarized through CiteSpace, and then keyword clustering of domestic vocational school teaching models is obtained. Combined with relevant literature and data, it can be found that the research theme of “higher vocational colleges” is mainly concentrated in higher vocational colleges, higher vocational education, etc., and the proportion of duplicate logos is 20%. The research on “vocational education” is mainly concentrated in the fields of higher vocational colleges, vocational colleges, talent training, etc. The repetition rate of its logos is 20%, which has a certain degree of relevance. Research on the “teaching model” level mainly focuses on the fields of higher vocational education, innovation, curriculum design, higher vocational colleges and other fields. It overlaps with higher vocational colleges and higher vocational education, with a repetition rate of 40%. It can be seen that the teaching model has a high correlation with higher vocational colleges. The theme research of “higher vocational education” focuses on classroom teaching, higher vocational colleges, art design, etc., and the proportion of duplicate logos with higher vocational colleges and other aspects is 20%. The theme research of “integration of work and study” focuses on school-enterprise cooperation, teaching, models and values; the research theme of “reform” mainly includes teaching methods, curriculum reform, teaching content and other fields. The level of “teaching reform” is mainly concentrated in flipping classrooms, English teaching, etc.; the research of “practical teaching” is mainly concentrated in ideological and political courses, on-the-job internships and other fields; the research topics of “curriculum system” mainly include professional groups, work processes and other fields. The research theme of “Countermeasures” mainly includes fields such as applied writing teaching and two-year higher vocational teaching reform. It can be seen that higher vocational colleges, vocational education, etc. have a high repetition rate and are all focused on higher vocational colleges, and the connection between higher vocational colleges and teaching models is closer, focusing on higher vocational education and higher vocational colleges.

5. Frontier Evolution of Teaching Model Research in Domestic Vocational Colleges

Use CiteSpace to predict the direction and theme of cutting-edge research, and conduct comprehensive analysis based on emerging literature and emerging keywords. Through the analysis of keywords in CiteSpace, 20 emerging words in the field of teaching models in domestic vocational schools are obtained. This research divides

the research from 2001 to 2024 into three stages to analyze the cutting-edge issues and progress trends that the research on teaching models in domestic vocational schools focuses on, namely, the early stage, mid-term and recent years.

5.1. Preliminary research frontiers (2001-2008)

The frontier of initial research emerged from 2001 to 2008. During this period, the frontier of research in the field of vocational school teaching models mainly focused on “reform” and “higher vocational education”. Since the first core journal was published in 2001, the research on teaching models in vocational colleges has continued to deepen and received widespread attention from scholars from all walks of life. The 2000 Work Conference of the Ministry of Education pointed out that higher vocational education, as a new economic growth point, plays an important role in its development model, region, etc. in society. Jin Yaqiu pointed out in 2004 that the reform of English in higher vocational colleges should promote the renewal of teaching models based on teaching purposes, requirements and characteristics, thereby reflecting the characteristics of higher vocational colleges and cultivating students’ practical ability to apply language. Guan Yuying and Huang Guoxiong pointed out in 2007 that in the reform of the teaching model of computer majors in higher vocational colleges, example teaching should be adopted, teaching methods should be continuously innovated, and students’ thinking ability should be cultivated. In 2008, Zhang Wenjun proposed that the combination of content teaching method (CBI) and work-study is a new idea to innovate English teaching for higher vocational majors. The research at this stage focuses on higher education, and the research used is mainly qualitative research, including policy exploration and speculative analysis. The number of documents is small, but the number of papers published is increasing, and it belongs to the early stage of development.

5.2. Mid-term research frontiers (2009-2019)

The cutting-edge period of mid-term research emerged from 2009 to 2019. During this period, the research frontier of vocational school teaching models mainly focused on “on-the-job internship”, “practice”, “curriculum construction” and other aspects. Liu Ping, Zhou Guansheng and others proposed in 2009 that the importance of research on integrated curriculum evaluation plans for science and practice should include classroom teaching evaluation forms and student evaluation forms. In 2010, Lin Ying proposed the “three-element” and “six-integrated” quality assessment systems in the management of the internship process, as well as the “six-level” teaching quality monitoring and guarantee. In order to adapt to the development process of artificial intelligence, Jiang Zhijian, Zhao Xingmin and 2017 proposed that vocational education should be designed at the national level, coordinated at the regional level, and matched with needs at the institutional level. After 19 years, we can find that there are many analytical research at the levels of policy practice research, subject research, and industrial system research. Some articles use quantitative research, the research directions have become diversified, and the content system has gradually been enriched.

5.3. Recent research frontiers (2020-2024)

The cutting-edge of recent research emerges from 2020 to 2024. During this period, the research frontier of vocational school teaching models mainly focuses on the fields of “vocational education”, “vocational colleges”, “curriculum ideological and

political”. With the rapid development of information technology, the renewal and iteration of digital mobile devices, and the gradual improvement of network construction, the traditional form of teaching and learning has undergone major changes. Around 2020, blended teaching has become a new trend in higher vocational education, which promotes the high integration of education and information technology. Hu Xingang and others pointed out in 2023 that the digital transformation of vocational colleges should be carried out through policy guidance, optimization of conditions, innovation of diversified collaboration, improvement of collaboration mechanisms and strengthening of transformation design. Zhu Zhenghao and others pointed out that the digital era has a profound impact on professional positions, and clarified the “dual-ability” practical approach to the technical adaptability of vocational colleges. With the economic development of the times and the promulgation of relevant national policies, most of the research at this stage focuses on the research levels of digitalization and system improvement. The student-centered approach will be more emphasized and the integration of information technology and teaching will be realized. The research on teaching models in relevant vocational colleges will be more complete, and the research content will be more in-depth and diverse. Relevant empirical research that is in line with the times continues to increase, and the teaching model of vocational schools is becoming more information-based, large-scale and systematic. It can be seen that the research field of domestic vocational school teaching models is gradually becoming mature.

To sum up, the annual document volume pattern of relevant teaching models in vocational colleges in China shows an “M”-shaped trend of rising first and then falling. In the analysis of hot words in the literature, the key words with high frequency and centrality are higher vocational colleges, teaching models, etc., and this field has a strong impact on this.

6. Conclusions

The research scope of teaching models in vocational colleges is wide, and the exploration of their content will continue to change with changes in external policies, environment and other factors. Nowadays, the research on vocational school teaching models mainly focuses on qualitative research and lacks quantitative research. The direct changes in numerical quantification can more intuitively reflect the impact of different factors on vocational school teaching models. By improving the interpretation system of vocational school teaching models, expanding and expanding the content system of vocational school teaching models, and innovating the path system of vocational school teaching models, the research on vocational school teaching models can be made more complete and meet the needs of vocational education talent training.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding

This work was supported by The “14th Five-Year Plan” for Educational Science in Xuzhou City-Analysis and Research on Online Teaching in the Context of Hybrid Teaching (ZX14 -24-X013).”

Acknowledgments

Thanks to Suining Secondary Vocational School in Jiangsu Province for its support.

References

- [1] Chen, L.; Tan, Y.P.; Chen, C.X. Practical difficulties and countermeasures in improving the professional practical ability of higher vocational teachers in underdeveloped areas--Based on a survey of some higher vocational colleges in Guangxi. *China Vocational and Technical Education*, 2023, 13, 91-96.
- [2] Chen, Y.; Chen, C.M.; Liu, Z.Y. et al. Methodological functions of the CiteSpace Knowledge Map. *Science Research*, 2015, 33(02), 242-253.
- [3] Chen, Y.; Chen, C.M.; Liu, Z.Y. et al. Methodological functions of the CiteSpace Knowledge Map. *Science Research*, 2015, 33(02), 242-253.



© 2025 by the author(s); licensee International Technology and Science Publications (ITS), this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (<http://creativecommons.org/licenses/by/4.0/>)