Trends of Higher-Vocational English Teaching Modes in China-Based on The Visualization of Cite-Space

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Abstract

Researches on higher-vocational English teaching modes in China have developed for 19 years from 2003 to 2022. There are 8342 researches on higher vocational English teaching modes till Aug. 2022. It is urgent to figure out the research trends of higher-vocational English teaching modes, which include the research hot spots, frontiers and prospects in order to make recommendations for the further researches. Since the number of relative researches has been decreasing since 2018, 3058 researches on higher-vocational English teaching modes from Jan. 2018 to Aug. 2022 on CNKI platform were collected for this study. Cite Space 6.1.R3, as literature visualization analysis tool, was utilized for the study. Cluster analysis, kkeywords visualization function, burst detection function, keywords clustering and timeline function of Cite Space were applied for this research. As the analysis results indicate, the major research trends of higher-vocational English teaching modes include blended teaching mode in China; higher-vocational English teaching modes based on We-chat and other platforms. Research frontiers include business English, public English and hotel English teaching modes; Spoc (Small Private Online Course) teaching modes. Research prospects include blended teaching mode in public English education. As for the authors and institutions for the literature, Zhao Keyan has 15 frequency by citation and Hunan Arts and Crafts Vocational College has the strongest strength. As for the recommendation for further researches on higher-vocational English teaching modes, blended teaching modes in public higher-vocational English education are proposed.

Keywords: Trends; Teaching Modes; Higher-Vocational English Education

1. Background

At present, English teaching in higher vocational colleges is generally lack of vitality, which means the effective communication between teachers and students is not sufficient, and teaching efficiency is in a low degree (Liu Run, 2020). Cheng Qi (2017) made a survey with questionnaire on the use of English by graduating students, the results of which show that the effectiveness of English teaching in higher-vocational colleges is not ideal, because many students' English knowledge cannot meet the needs of their jobs (Hu Jun, 2021). Moreover, the English teaching mode in higher vocational colleges cannot adapt to the current teaching requirements. The traditional examination-oriented teaching mode emphasizing the explanation of basic English knowledge and the training of basic skills are still used as the single teaching mode in many higher-vocational colleges (Yan Hongmei & Chen Jianbo, 2020; Cui Dongmei, 2018; Wang Fei, 2018).

Reasons leading to the current status of higher-vocational English education is various. The first one is that the source of students in higher-vocational colleges is complex and students ' foundation of English is different, which leads to the emergence of English teaching problems in higher-vocational

colleges (Cheng Qi, 2017; Deng Xiaoyan & Liu Yu, 2019; Chen Rui, 2020). Furthermore, English teachers ' teaching concepts are backward and their teaching ability is not compound enough to combine English basic knowledge with other knowledge for specific majors (Liu Run, 2020; Yan Hongmei & Chen Hongbo, 2020; Wang Fei, 2018; Deng Xiaoyan & Liu Yu, 2019). In addition, formalization of evaluation system is also one of the reasons for the low efficiency of higher-vocational English education in China (Yan Hongmei & Chen Hongbo, 2020).

Researches on the measurements to promote the development of higher-vocational English are referential too. The first measurement is to improve the teaching mode. Cheng Qi (2017 P.37) suggested adopting blended teaching mode by mixing traditional teaching mode with the new MOOC (Massive Open Online Courses) teaching mode. Similarly, Chen Rui (2020) proposed that teachers need to follow the humanistic theory and multiple intelligence theory, and adopt a mixed teaching mode with multiple types in teaching methods and evaluation methods. When it comes to the teaching methods, modern education methods such as scenario simulation teaching, bilingual teaching and micro-course teaching are adoptable for teachers to improve students' professional ability according to the different majors they are in (Deng Xiaoyan & Liu Yu, 2019). Yang Hongmei & Chen Jianbo (2020) proposed that teachers should actively use project-based teaching method and task-based teaching method to clarify the dominant position of students. At the same time, suggestions on the teaching materials are also meaningful. Deng Xiaoyan & Liu Yu (2019) indicated the clear distinction between basic English and vocational English in different stages. There also should be obvious differences in the education of students from different majors, which means higher-vocational English teaching should be carried out around some English knowledge that may be involved in the future work of students (Hu Jun, 2021).

Teaching mode has become an independent category in educational research as generally started with the study of Joyce B. *et al*. (1999), in which the teaching mode is defined as a plan or model that constitutes a course (a long-term learning course), selects teaching materials, and guides teaching activities in the classroom and other environments. This research will be focused on analyzing higher-vocational English teaching modes in China.

In order to survey the research status of the higher-vocational English teaching mode in China, the researcher entered "Higher-Vocational English teaching mode" into the "Subject searching" of CNKI database. The searching results indicate that there are 8342 researches on higher-vocational English teaching modes on the CNKi database till Aug. 2022, including 5171 journal articles, 140 theses, 59 conference papers, and one newspaper article. The annual trends of all the published literature are shown in Figure1.
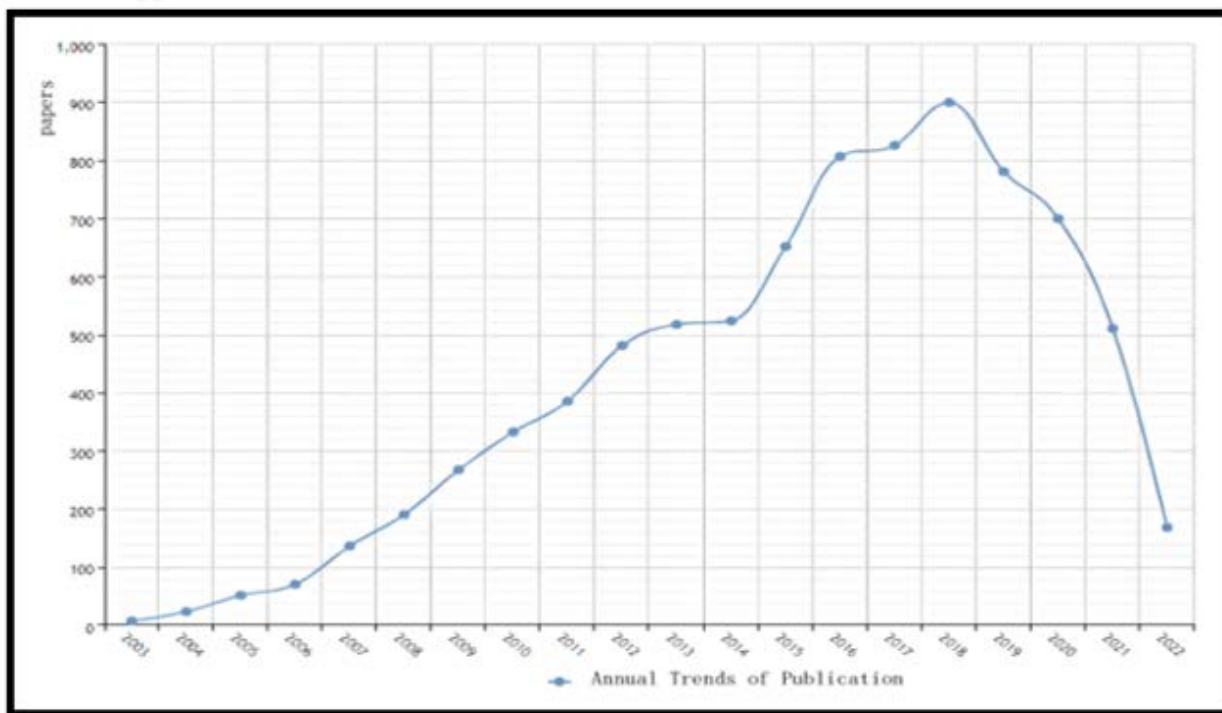
Figure 1. Annual trends of papers on higher-vocational English teaching modes from CNKI

Researches on English teaching mode in higher-vocational colleges have gone through three stages: hazy research stage, conscious research stage and self-characteristic research stage. As for the status of current self-characteristic research stage, researches on the English teaching mode in higher-vocational colleges is becoming more and more mature. Moreover, the current teaching mode researches have made great progress both in theory and practice (Chu Jia, 2017). Therefore, figuring out the trends including the research hot spots, frontiers and prospects of the current higher-vocational English education in this study has research value itself.

To make a summary, higher-vocational education plays an important role in the whole education system of China. Both students and teachers of the higher-vocational education occupy an important position in the whole education system of China. English, as a foreign language, plays an important role in China's educational system. As for the higher-vocational education, English is one of the basic courses in the higher-vocational colleges in China. Nevertheless, the teaching efficiency of higher-vocational English education in China is not satisfying because of the traditional examination-oriented teaching modes. Since there are a large number of researches on higher-vocational English teaching modes, it is impending to figure out the trends of the researches on teaching mode for higher-vocational English education in China in order to provide referential values for the further researches on the higher-vocational English teaching mode in China. Analysis on the huge numbers of literature has long been a time-consuming work for researchers. In the recent years, the development and utilizing of CiteSpace has relieved the stress of literature review. CiteSpace software presents the structure, law and distribution of scientific knowledge through visualization which can be used to judge the basic knowledge status, research hot spots and development trends in related research fields, and is widely used in various research fields (Yang Yang *et al.*, 2020). Researches related to higher-vocational English teaching mode have also taken advantage of the functions of CiteSpace. Wu Tianhui (2020) analyzed the research status of English flipped classroom in higher-vocational colleges in China from three dimensions: research status, hot spots and evolution prospects with the support of Cite space. Luo Na (2019) made a research on the hot spots and trends on MOOC by co-word Analysis, Cluster Analysis and Time Zone Analysis to make the data visualized.

This research aims to find out the trends including the hot spots, frontiers, and prospects of the higher-vocational English teaching modes in China on CNKI platform by analyzing the literature of CNKI

on higher-vocational English teaching mode from Jan. 2018 to Aug. 2022 with the support of the data visualization function of CiteSpace 6.1.R3.

2. Methods

2.1 Data Sources

Data required of Citespace for this study was firstly generated from CNKI platform. CNKI is a network data platform in China with international leading level, which integrates journals, dissertations, conference papers, newspapers, reference books, yearbooks, patents and overseas literature resources. At present, CNKI has become the world 's largest Chinese literature database, covering various disciplines and fields, and can comprehensively reflect the research results and development trends in all aspects of China (Wang Weili *et al*., 2015).

As shown in Figure1 above, the number on higher-vocational English education reached the highest point with 899 papers. Before reaching the peak, from 2003 to 2017, the number steadily increases steadily. Since 2018, the number of papers on higher-vocational English teaching mode decreases rapidly. In order to analyse the trend of the higher-vocational teaching mode in China, this research focused on the literature from January 2018 to August 2022. The searching strategy was described as "Topic Search=Higher-vocational English Teaching modes" and the time span from Jan. 2018 to Aug. 2022. All the literature data of the founded 3058 papers including 1699 journal papers, 34 theses, and 28 conference papers in the CNKI database was collected for the research.

2.2 Data Analyzing Method

CiteSpace is a citation visualization analysis software which is applied to identify and display new trends of scientific development in scientific literature (Ding Ke, Ye Zhongkang & Liu Pingqing, 2022 P83). Data of ' Higher-vocational English Teaching Mode ' as the topic searched from CNKI database were downloaded as "refworks" into a txt. file. Then CiteSpace 6.1.R3 was used to export literature from CNKI in order to format conversion by the data processing utilities. The original data will be inputted into CiteSpace and the CNKI Format Conversion (3.0) will finish the conversion and send it into the output directory document. Finally, a new project for the higher-vocational English teaching mode in China was constructed based on the conversion of the data from CNKI in the CiteSpace. The new project will be utilized in the CiteSpace 6.1.R3 to analyze the data of the keywords from the title, key words and abstract of the collected data, which were analyzed from different perspectives. Based on the visualizing results of the data collected, the hot spots, frontiers and prospects of higher-vocational English teaching modes will be summarized.

The new project on higher-vocational English teaching modes will be analyzed with Citespace. The researcher will input the transformed CNKI data document into Citespace for the analysis. In order to validate the data analyzing with Citespace 6.1.R3 in this study, the researcher set time slice from January 2018 to August 2022, time zone 1 year, term source from title, abstract and keyword. The chosen node type was keywords. The selection criteria was Top N with 100, and the cutting technology was Pathfinder. The research results of the study mainly include the cluster analysis and the keywords' frequency and centrality, the burst keywords analysis, the timeline map with clusters and analysis of authors and institutions based on the citation of literature collected.

3. Research Results

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frequency and centrality, the burst keywords analysis, the timeline map with clusters and analysis of authors and institutions based on the citation of literature collected.

3.1 Cluster Analysis

In order to figure out the representative clusters, the project with data from relative references during Jan. 2018 to Aug was analyzed with the cluster analysis function of Citespace. The modularity Q generated for the cluster analysis reached 0.5936, so we concluded that the cluster results were significant. The weighted mean silhouette score was 0.8517 which is also significant. The harmonic mean reached 0.6996. All the analyzing results indicate the major clusters founded are high.

As shown in Figure 2, there are 15 clusters of the keywords in the collected literature and these clusters are labeled by the keywords based on LLR. The detailed information of these clusters are shown in Table 1. Based on cluster visualization, the largest clusters mainly include #0, labeled higher-vocational colleges; #1, labeled higher-vocational English; #2, labeled teaching mode; #3, labeled flipped classroom; #4, labeled blended teaching; and #5, labeled higher-vocational education.
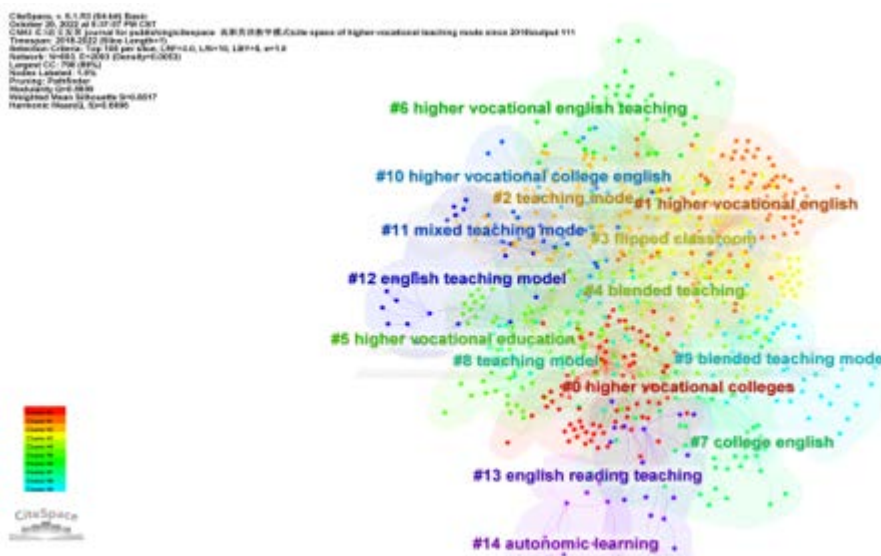

Figure 2: Cluster visualization based on the document of higher-vocational English teaching modes of 2018-2022

Table 1 is created based on the cluster summary table generated from Citespace. The clusters are firstly focused on the research discipline and describe the research content gradually. As is described in Table 1, Cluster #0 is the largest cluster with 95 members and a silhouette value of 0.812. It was labeled as higher-vocational colleges, which is the research setting of studies on higher-vocational English teaching modes. Cluster #0 labeled as higher-vocational education with 75 members and a silhouette value of 0.851 is also the description of the research setting.

Cluster #1 is the second largest cluster labeled as higher-vocational English with 89 members and a silhouette value of 0.843, which is the research discipline in general for studies on higher-vocational English teaching modes. This is also the focus of Cluster #10 as higher-vocational college English. Cluster #6 with 49 members and 0.923 silhouette value is labeled as higher-vocational English teaching which is in accordance with Cluster #1. College English, as the upper concept of higher-vocational English, is labeled to Cluster #7.

Cluster #3 is the third largest cluster labeled as teaching mode with 80 members and a silhouette value of 0.666, which is the concrete research field. Meanwhile, there is another description of Cluster #8 being labeled as teaching model with 44 members and 0.858 silhouette value. This consequence might be caused because of different translation in English of the same research topic. To be more specific for the research topic, Cluster #12 is labeled as English teaching model having 24 members and a silhouette value of 0.974. Moreover, Cluster #13 labeled as English reading teaching with 22 members and 0.97 silhouette value indicates the specific research part of higher-vocational English.

As for the concrete research direction on the higher-vocational teaching mode or model, there are some clusters shown in Table 1. Cluster # 3 labeled as flipped classroom with 80 members and 0.824 silhouette value is a perspective of researches on higher-vocational teaching models. Moreover, there are three clusters with similar direction of researches. The first one is Cluster # 4 labeled as blended teaching having 75 members and 0.827 silhouette value. The second one is Cluster # 9 labeled as blended teaching mode having 44 members and 0.905 silhouette value. The last one is Cluster # 11 labeled as mixed teaching mode having 25 members and 0.934 silhouette value.

In addition, autonomic learning as the label of Cluster 14 with 13 members and 0.982 silhouette value describes another perspective of the literature on higher-vocational English teaching modes in China from Jan., 2018 to Aug., 2022.

Table 1: Top 15 key words clusters based on frequency in higher-vocational teaching modes

Cluster				
ID	Size	Silhouette	Label (LLR)	Mean (Year)
0	95	0.812	higher vocational colleges	2019
1	89	0.843	higher vocational English	2019
2	80	0.666	teaching mode	2019
3	80	0.824	flipped classroom	2019
4	75	0.827	blended teaching	2019
5	75	0.851	higher vocational education	2019
6	49	0.923	higher vocational English teaching	2019
7	46	0.946	college English	2019
8	44	0.858	teaching model	2019
9	44	0.905	blended teaching mode	2019
10	25	0.932	higher vocational college English	2019
11	25	0.934	mixed teaching mode	2019
12	24	0.974	English teaching model	2019
13	22	0.97	English reading teaching	2018
14	13	0.982	autonomic learning	2019

3.2 Keywords Analysis

3.2.1 Frequency and Centrality

The fundamental content, or essence, of the literary work is captured in the keywords. Thus, using term co-occurrence analysis to track particular study areas' hot themes and shifting research frontiers over time is effective (Yang, H. *et al*., 2019). In this paper, literature time span was set from Jan. 2018 to Aug. 2022 with one year's time slice and the top 14 keywords' frequency and centrality were generated from the analyzing results of Citespace which is shown in Table 2.

Table 2: Frequency and centrality of Keywords on Literature of Higher-Vocational Teaching Modes in CNKI analyzing with Citespace.

No.	Frequency	Keywords	Centrality	Keywords
1	149	Higher vocational English	0.18	Flipped Classroom
2	109	Teaching mode	0.14	Blended Teaching
3	94	Higher vocational college	0.12	Blended teaching Mode
4	80	Flipped classroom	0.08	Professional ability
5	59	English teaching	0.07	Blended teaching model
6	53	Vocational English	0.05	Teaching reform
7	48	Blended teaching	0.05	Business English
8	36	Higher-vocational education	0.04	Mixed teaching mode
9	33	Teaching model	0.04	Blended learning
10	28	College English	0.04	Stratified teaching
11	27	Higher-vocational English Teaching	0.04	Reading teaching
12	24	Blended teaching mode	0.04	We-chat platform
13	18	Mixed teaching mode	0.03	English writing
14	17	Public English	0.03	Oral English Teaching

As is shown in table 2, there are 14 keywords with the frequency over 15. As the searching topic is "Higher-vocational English teaching mode", keywords similar to this will be eliminated. As a consequence, "Flipped classroom" ranks first with 80 times, "Blended teaching" ranks second with 48 times, "Blended teaching mode" ranks third with 24 times, "Mixed teaching mode" ranks fourth with 18 times.

As for the centrality of top 14 keywords indicated in Table 2, flipped classroom ranks first with 0.18 centrality, blended teaching and blended teaching mode ranks second with 0.14 and 0.12 centrality individually, which is in accordance with the findings of the analysis above. Moreover, there are three other key words: blended teaching model with 0.07 centrality, mixed teaching mode with 0.04 teaching mode and blended learning with 0.04 centrality in Table 2, which shows that researches on blended or mixed teaching mode in higher-vocational English education is definitely a research hot spot. This is relative to the development of big data and internet plus, the centrality of which is both 0.02. As for the platform for the implement of teaching modes, We-chat platform with 0.04 centrality and SPOC platform with 0.02 centrality are the research hot spots. When it comes to the different dimensions of higher-vocational English researches, business English for higher-vocational colleges with 0.07 centrality is one of the hot spots. In addition, reading teaching with 0.04 centrality, English writing with 0.03 centrality, oral English teaching with 0.03 centrality are the research hot spots too.

3.2.2 Burst Keywords

CiteSpace's burst detection function will be utilized to analyze the burst keywords of higher-vocational English teaching modes in China. The minimum duration was set as 2. The number of states was set as 2. The burst distribution map with top 16 keywords was generated in Table3 based on the burst intensity.

As is shown in Figure 3, the strongest citation burst words are mixed teaching model and blended learning mode with 0.88 and 0.81 strength individually. The bursting time of mixed teaching model is from 2019 to 2020. As for the bursting time of blended learning mode, it starts from 2020 to the current time of 2022. Information environment and flip the classroom with strength of 0.76 burst from 2018 to 2019. The other bursting keywords from 2020 to 2022 with strength of 0.54 are listed in Figure 3. Business English, public English, hotel English teaching modes are the frontier English education courses for higher-vocational colleges.

Top 16 Keywords with the Strongest Citation Bursts

Keywords	Year	Strength	Begin	End	2018 – 2022
information environment	2018	0.76	2018	2019	
flip the classroom	2018	0.76	2018	2019	
mixed teaching model	2018	0.88	2019	2020	
blended learning mode	2018	0.81	2020	2022	
business english correspondence	2018	0.54	2020	2022	
public english cla	2018	0.54	2020	2022	
output-oriented method	2018	0.54	2020	2022	
three-dimensional teaching	2018	0.54	2020	2022	
five-year higher vocational education	2018	0.54	2020	2022	
hotel english	2018	0.54	2020	2022	
teaching video	2018	0.54	2020	2022	
teaching case	2018	0.54	2020	2022	
spoc teaching mode	2018	0.54	2020	2022	
vocational education	2018	0.54	2020	2022	
rain classroom	2018	0.54	2020	2022	
network environment	2018	0.54	2020	2022	

Figure 3: Top 16 burst keywords from literature on higher-vocational English teaching modes from 2018 to Aug. 2022 with Citespace

3.3 Timeline Knowledge Map Visualization

In order to figure out the prospects of higher-vocational English teaching modes in China, the researcher has applied the timeline function of CiteSpace and the timeline map with clusters was generated and shown in Figure 4. In this research, as is show in Figure 4, Modularity Q = 0.7456 and Weighted Mean Silhouette S = 0.8991, which means the community structure is indigenous and the clustering is convincing and reasonable. The nodes in different clusters and timelines represents the focusing of certain research perspective in different periods. The more nodes there are, the higher frequency is the research cluster in this period. As is described in Figure 4, there are more nodes from 2018 to 2019. The top 14 clusters evolve from Jan. 2018 to Aug. 2022. Nevertheless, cluster 15 to cluster 19 gradually are decreasing from Jan. 2018 to Aug. 2022.
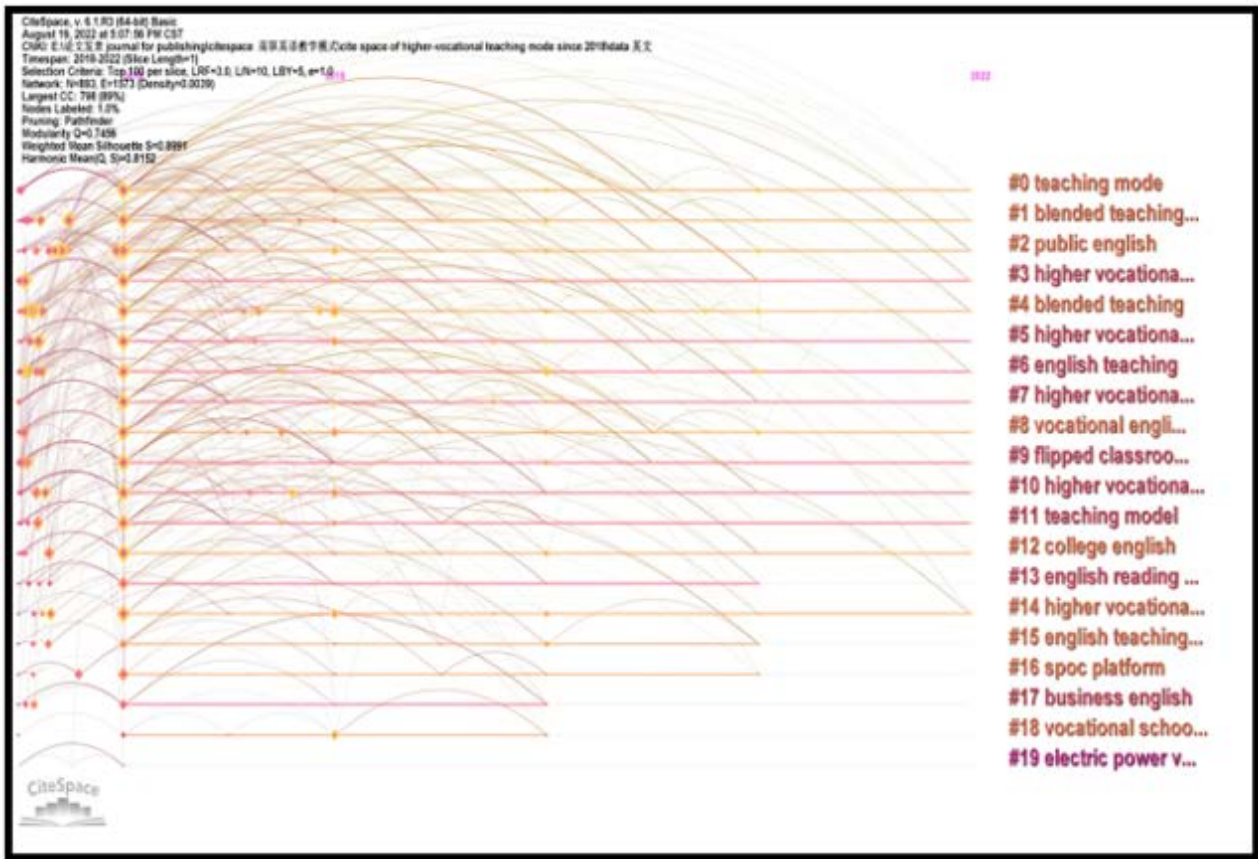
Figure 4: Timeline Visualization Map of Literature on Higher-vocational English Teaching Modes from 2018 to Aug. 2022 with Citespace

3.4 Analysis on Authors and Institutions

In order to figure out the authors of researches of CNKI platform on higher-vocational English education in China from Jan. 2018 to Aug. 2022, the project in Citespace were reset as time slicing from Jan. 2018 to Aug. 2022, node types as author, selection criteria as top 10 levels of most cited or occurred items from each slice, and pruning as minimum spanning tree and pruning the merged network. The node labels is by citation with 5 threshold and 49 font size.
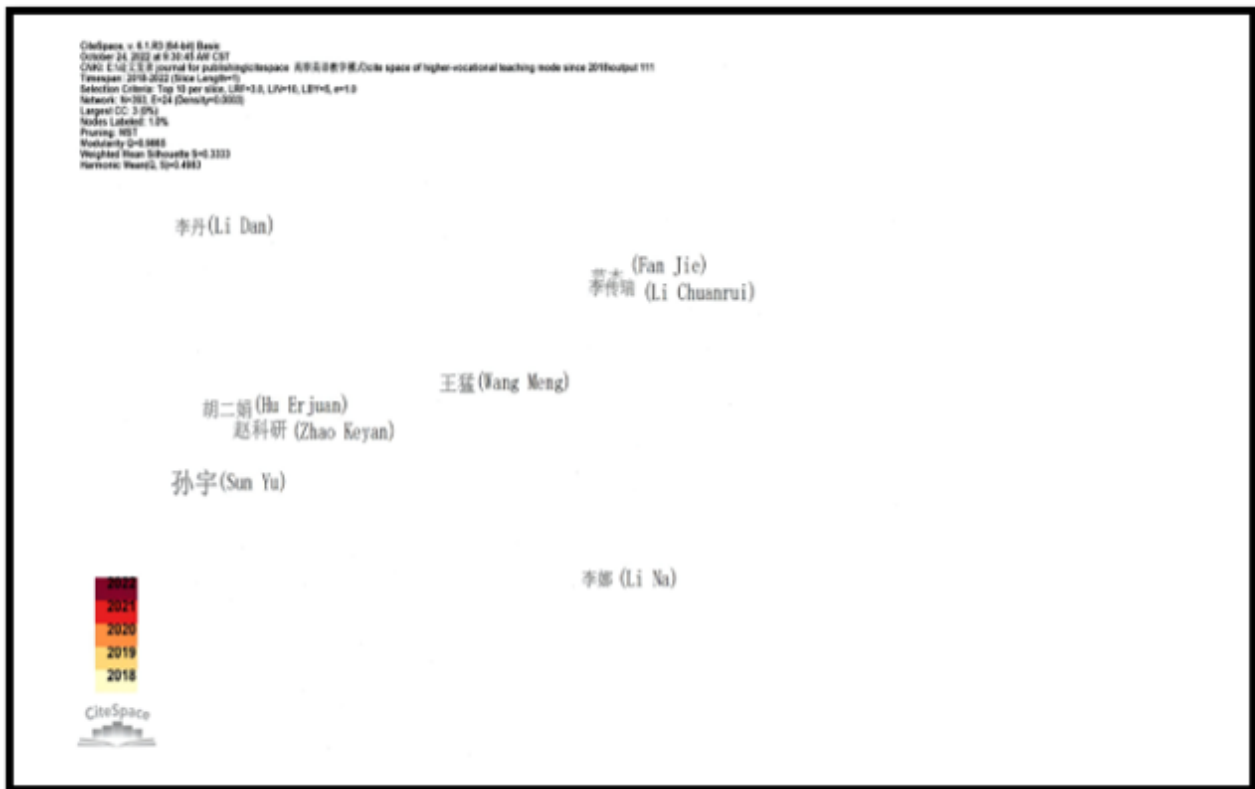
Figure 5: Keywords Visualization Map of Authors for Literature on Higher-Vocational English Teaching Modes from 2018 to Aug. 2022 with Citespace

As is shown in Figure 5, the larger the name of the author is, the more frequency will the author appear in citation. As is shown in Figure 5, Sun Yu with 15 frequency, Zhao Keyan with 7 frequency, Wang Meng with 7 frequency are the authors with highest frequency among the literature on higher-vocational English education from Jan. 2018 to Aug. 2022. Moreover, there are other two authors with 6 frequency including Hu Erjuan and Fan Jie. Li Chuanrui, Li Na, Li Dan are the three authors with 5 frequency in citation of the literature on higher-vocational English teaching mode from Jan. 2018 to Aug. 2022.

Top 20 Institutions with the Strongest Citation Bursts

Institutions	Year	Strength	Begin	End	2018 - 2022
Hunan Arts and Crafts Vocational College	2018	2.93	2018	2019	
Lanzhou Modern Vocational College	2018	2.45	2020	2022	
Hunan Technical College of railway high-speed	2018	2.39	2019	2020	
Jiangxi Modern Polytechnic College	2018	2.34	2018	2019	
Shanxi Polytechnic College	2018	2.34	2018	2019	
Jilin Communications Polytechnic	2018	2.23	2018	2019	
Hunan Biological and Electromechanical Polytechnic	2018	1.75	2018	2019	
Wuhan Technical College of Communications	2018	1.75	2020	2022	
Yiyang Vocational & Technical College	2018	1.67	2019	2020	
Jiangsu Martime Institute	2018	1.23	2018	2019	
Changchun Polytechnic	2018	1.23	2018	2019	
Suzhou Vocational University	2018	1.22	2020	2022	
Hunan Chemical Vocational Technology College	2018	1.05	2020	2022	
Shenmu Vocational & Technical College	2018	0.97	2020	2022	
Suzhou Vocational University	2018	0.97	2020	2022	
Jiangsu Union Technical Institute	2018	0.97	2020	2022	
Luoyang Polytechnic	2018	0.97	2020	2022	
Loudi Vocational & Technical College	2018	0.97	2020	2022	
Jinken College of Technology	2018	0.97	2020	2022	
Zhengzhou Institute of Technology	2018	0.97	2020	2022	

Figure 6: Top 20 Institutions with the Strongest Citation Burst from literature on Higher-Vocational English Teaching Modes from 2018 to Aug. 2022 with Citespace

In order to allocate the institutions focusing on the higher-vocational English teaching mode of the literature from Jan. 2018 to Aug. 2022, the burst words visualization in the Citespace was utilized by setting the burstness function of the control panel as: the number of states=2, minimum duration=2, r=0.3. As is described in Figure 6 , top 20 institutions were founded and their strength, beginning and ending burst time are shown in detail. All the researches with the strongest citation burst are in the year 2018. Hunan Arts and Crafts Vocational College is the institute with strongest citation burst 2.93 from 2018 to 2019. Lanzhou Modern Vocational College is institute with second strongest citation burst 2.45 from 2020 to 2022. Hunan Technical College of railway high-speed ranks third with 2.39 strength and burst duration from 2019 to 2020. Shanxi Polytechnic College, Jilin Communications Polytechnic, Hunan Biological and Electro mechanical Polytechnic take the place from No. 4 to No. 7 with the burst duration from 2018 to 2019. Wuhan Technical College of Communication is the second institution with burst duration from 2020 to 2022. Suzhou Vocational University has 1.22 strength and the burst duration from 2020 to 2022. Hunan Chemical Vocational Technology has 1.05 strength and the burst duration from 2020 to 2022. Shenmu Vocational & Technical College, Suzhou Vocational University, Jiangsu Union Technical Institute, Luoyang Polytechnic, Loudi Vocational &Technical College, Jingke College of Technology and Zhengzhou Institute of Technology are the institutions with 0.97 strength and the burst duration from 2020 to 2022.

4. Discussion

4.1 Hot Spots Based on the Frequency and Centrality of Keywords

If keywords appear in multiple documents in the same field, it shows that the high frequency keyword is the research hot spot (Zhang Li 2019). According to Price ' s law, the frequency of keywords ≥ 15 is the research hot spot words (Wen Xiaolan, Jin Dan, 2022). Based on the keywords with higher frequency, there are two hot spots of researches on teaching mode for higher-vocational English education in China: the first one is higher-vocational English flipped classroom teaching mode; the second one is blended or mixed teaching mode for higher-vocational English education.

Moreover, the centrality is the main indicator to measure the importance of keywords. The higher the centrality of keywords is, the more important the keywords are in the co-occurrence network (Small, H. 1986). Therefore, the centrality of keywords can be used to study and analyze the hot spots of literature (Luo Na 2019, Li Jian & Liu Wei 2019). The analyzing results shows that researches on blended or mixed teaching mode in higher-vocational English education is definitely a research hot spot. As for the platform for the implement of teaching modes, We-chat platform with 0.04 centrality and SPOC platform with 0.02 centrality are the research hot spots.

4.2 Frontiers of Higher-Vocational English Teaching Modes.

Automatic clustering visualization of Citespace is based on the default view, through the spectral clustering algorithm to generate knowledge clustering, which indicates a certain knowledge-based research frontier (Luo Na, 2019). As for the concrete research frontiers on the higher-vocational teaching mode or model, flipped classroom as a perspective of researches on higher-vocational teaching models is the representative research frontier. Moreover, there are blended teaching, blended teaching mode, and mixed teaching mode represent the similar research frontier as the teaching mode including online and offline education for higher-vocational English. In addition, autonomic learning describes another perspective of the literature on higher-vocational English teaching modes in China from Jan., 2018 to Aug., 2022.

CiteSpace ' s burst detection function was utilized to analyze the burst keywords of higher-vocational English teaching modes in China. Based on the analyzing results, business English, public English, hotel English teaching modes are the frontier English education courses for higher-vocational colleges. Output-oriented teaching method, three-dimensional teaching method, teaching with videos are also the frontier researches. It is also necessary to point out the SPOC (Small Private Online Course) teaching mode and rain classroom, network environment which are relative to online teaching have also been the research frontiers in higher-vocational English teaching modes in China.

4.3 Prospects of Higher-Vocational English Teaching Modes

Timeline function of CiteSpace is frequently used for the research of the prospects and trends. By means of the timeline knowledge map of Citespace, we can further observe the historical evolution of various clustering topics on time series and the close relationship between different research topics (Gao Ruijie *et al*., 2022). The prospects of higher-vocational English teaching modes can be analyzed in general. First, there are many valuable researches came in to being in the year 2018, which influences the further researches in the later years. Second, the amount of researches on higher-vocational English teaching modes is decreasing gradually from January 2018 to August 2022 . Third, eliminating the invalid information of the clusters like "teaching mode", blended teaching becomes the first cluster, public English the second, which are also the prospect of higher-vocational English teaching modes in China.

4.4 Authors and Institutions

As for the authors of researches on higher-vocational English education in Chian from Jan. 2018 to Aug. 2022, Sun Yu ranks first with 15 frequency and Zhao Keyan is equal to Wang Meng ranks

second with 7 frequency. There are many authors with no more than 4 frequency, which indicates that only a few researchers can make a continuous research on higher-vocational English teaching mode from 2018 to 2022.

When it comes to the institutions ranking by citation, Hunan Arts and Crafts Vocational College is the institute with strongest citation burst 2.93. Lanzhou Modern Vocational College is the second one. There are four institutions in Hunan province within the Top 20 burst citation institutions of the literature from Jan. 2018 to Aug. 2022. There are only two institutions of Henan province in the list: Luoyang poly-technique and Zhengzhou Institute of Technology.

5. Conclusion

Aiming to figure out the research trends of higher-vocational English education including hot spots, frontiers and prospects, this research has analyzed 3058 researches on higher-vocational English education in China from January 2018 to August 2022 generated from CNKI database. Based on analysis results of the frequency and centrality of keywords, hot spots of higher-vocational English teaching modes are captured into three major ones in general. The first major hot spot is blended teaching mode in higher-vocational English education. The second major hot spot is utilizing We-chat platform, SPOC platform or others in higher-vocational English teaching modes. The third major hot spot is teaching reform and innovation for higher-vocational English teaching modes.

When it comes to the research frontiers, the data analysis results were described in the burst distribution map with 16 keywords. Based on this map, mixed teaching model and blended learning mode are the first frontier for the researches on higher-vocational English teaching modes, flipped classroom mode is the second one, online teaching modes like SPOC, rain classroom are the third one.

The timeline map with clusters was generated by CiteSpace to indicate the prospects of higher-vocational English teaching modes, which came into three ones: researches in 2018 is the year with most valuable researches; researches from January 2018 to August 2022 are decreasing year by year; blended teaching as the first cluster of researched literature is definitely the prospect for higher-vocational English education teaching modes.

As for analysis on the authors and institutions for the literature collected, there are only a few researchers pay continued attention on higher-vocational English teaching modes; higher-vocational institutions in Henan province located in the central plains of China are supposed to pay more attention on higher-vocational teaching mode researches.

As the analysis is based on the literature data collected from CNKI database, there might be some omission of the other literature on higher-vocational teaching modes in other databases like WOS database, WANFANG database and VIP database. Therefore, it is suggested that future studies on literature related to higher-vocational English teaching modes from other databases can be implemented. Moreover, the citation of data collected from CNKI database cannot be analyzed in CiteSpace, which lead to the imperfection of this research to some extent. For future researches, it is suggested that the citation of literature on higher-vocational English teaching modes should be analyzed to form the complete visualization of the collected data. Researches on higher-vocational English teaching modes in the future should also lay more emphasis on blended or mixed teaching modes in the public English education in China.

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