Current Situation and Development Trend of Intercultural Education:
A Scientometric Analysis with CiteSpace

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Abstract:
By using the visual analysis software CiteSpace 5.8.R3 and the bibliometric method, this paper presents a statistical analysis of the relevant papers on the application of Chinese intercultural education in CNKI from 2001 to 2021. It reviews papers' publication date, published journals, published institutions, core authors and the focus of keyword clustering, etc. This helps to clarify the current knowledge structure and development context of Chinese intercultural education research, with a view to providing reference for further research in this field in the future.

Keywords: intercultural education; CiteSpace; visualization analysis

1 INTRODUCTION

Intercultural education originated in the 1960s and was formally proposed by UNESCO in 1992. In 2006, three basic principles for intercultural education practice mentioned in UNESCO Guidelines. It takes into account different cultural identities of different learners and provides them with cultural knowledge, attitudes and skills to achieve active and full participation in society. It also fosters every learner to respect, understand and unite with each other regardless of race, social background and religious groups. These targets have contributed positively to the worldwide dissemination of intercultural education [6]. Many researchers in the international education field have aroused extensive attention for it. Undoubtedly, intercultural education has gradually become one of the important trends in international education since the 21st century [1].

After years of precipitation, since the intercultural education-related research and academic achievements are increasingly developing, the in-depth exploration and excavation of the current research in this field and research hotspots is very essential. In order to objectively understand and grasp the real situation of intercultural education, the paper combed the relevant papers on intercultural education research in the core journals and CSSCI journals in CNKI from 2001 to 2021. It intended to make statistical analysis on these papers with the literature measurement method by the visual analysis software CiteSpace 5.8.R3. With CiteSpace, this paper explored the core fields, hot changes, emerging research hot spots and trends of domestic intercultural education research. The purpose is to better understand the knowledge structure and development of intercultural education research in the last twenty years, and to provide reference for the future research of intercultural education in China.

2 DATA SOURCE AND PROCESSING

In the advanced retrieval of CNKI Journal Full-text Database, this paper used the retrieval type of "time (2001-2021) + theme (cross-cultural education)" to carry out fuzzy retrieval. A total of 431 papers were retrieved, and 346 effective academic ones were finally obtained after excluding conference notices, news, conference summaries, paper introductions, book reviews, etc.

The visual analysis software, CiteSpace 5.8.R3, is developed by Chaomei Chen, professor of computer and Information Science, Drexel University. This software aims to analyze the potential information contained in scientific knowledge and to reveal the co-occurrence relations in the knowledge units of papers through methods of Scientometrics and Data with information visualization, such as the author, institutions, the frequency of keywords and so on [5].

At present, CiteSpace visualization software has been widely used in education research and other fields. The

time span of the collected papers in this study is 20 years, i.e. 2001-2021, and the single time zone is 1 year, i.e. So there are 20 single time zones in total. Due to the limited number of literatures in this study, no restrictions such as node threshold are set, and no network pruning algorithm is used to maintain the integrity of the knowledge map.

3   RESULTS AND ANALYSIS

3.1   *Number of Publications and Their Annual Distribution*

Scientific research achievements in a certain discipline reflect the development and research level to a certain extent. This paper drew a chronological distribution map of papers related to intercultural education applied research in China (Figure 1). As can be seen from Figure 1, during the years from 2001 to 2005, the number of papers published is relatively small with a total of 28 papers. It was in the slow starting phase. And papers in this phase have their own shortcomings in depth, breadth and systematicness relatively. While in 2006, 17 papers were published, showing a rapid growth trend. In the years that followed, the publication fluctuated, falling in 2007, 2008, 2009, 2010 and 2011. While in 2012, it reached a new high of 30, followed by the peak of 33 in 2014. These numbers indicates that researches on cultural teaching and intercultural education in foreign language teaching are gradually heating up. Representative research achievements in this period include Hongling Zhang (2012) and Weidong Zhang, Li Yang (2012) and so on. And yet, the figure shows that in the following years, the number of papers published decreased, and the number of publications was not stable. All this reflects that there is still a large space for the development of intercultural education research in China. For instance, the research needs to be further expanded in the localization of intercultural education. [8] [9]
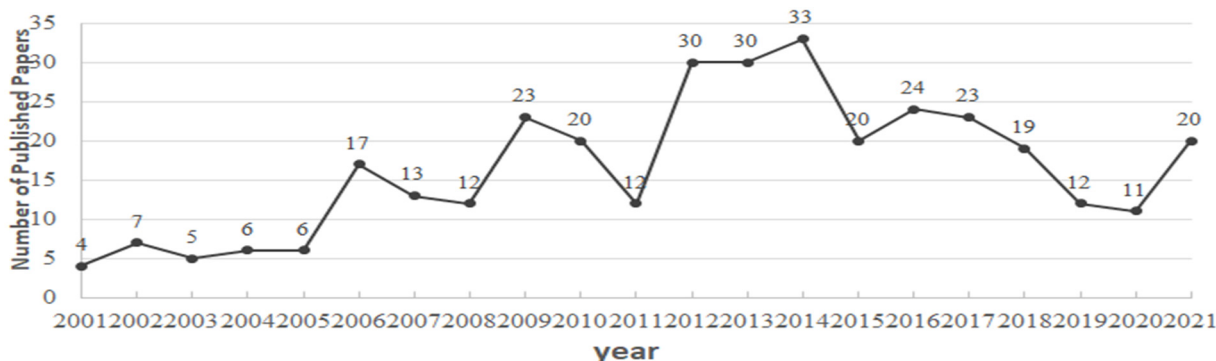

Fig 1. THE VOLUME OF INTERNATIONAL EDUCATION PER YEAR IN CHINA (2001—2021)

3.2   *Spatial Distribution Characteristics*

3.2.1   *Journal Source*

346 papers were published in different journals. Among them, the top 9 journals published 89 papers, which have unfolded an important source of research literature in the field of intercultural education. As is shown in Table 1, these journals are *China Adult Education, Heilongjiang Researches on Higher Education, Journal of Research on Education for Ethnic Minorities, International and Comparative Education, Education and Vocation, Studies in Foreign Education, Foreign Language World, Primary & Secondary Schooling Abroad, and Theory and Practice of Education.*

Of all the journals, consistent with its published purpose *China Adult Education* has the largest number of publications. It adheres to the principle of "using the past for the present, and the foreign for the Chinese", promoting national scientific culture, international scientific and cultural exchanges, etc. By activating the academic atmosphere for teaching and research, this journal means to make accomplishment in teaching and scientific research.

TABLE1. SOURCE DISTRIBUTION

Journals	Number of posts	Percentage
China Adult Education	16	4.61%
Heilongjiang Researches on Higher Education	13	3.75%
Journal of Research on Education for Ethnic Minorities	12	3.46%
International and Comparative Education	12	3.46%
Education and Vocation	10	2.88%
Studies in Foreign Education	10	2.88%

Foreign Language World	6	1.73%
Primary & Secondary Schooling Abroad	5	1.44%
Theory and Practice of Education	5	1.44%

3.2.2 Author Distribution

In CiteSpace, "n" represents the node, that is, the location node where the author appears. "E" represents the connection, that is, the connection between nodes represents the connection between authors [3]. In this paper, node types were selected to conduct the authors' visual graph analysis, thus obtaining two pieces of data. There are 397 nodes and 159 connections in the author's cooperation map. But based on the analysis data about the authors displayed in CiteSpace, the relationship between the authors is not very close. To make it clearer, this paper intercepted the data with the highest publication volume and made a table as shown in Table 2. The top ranked item by citation counts is Zhicheng Huang (2007) in Cluster #8, with citation counts of 3. While the second one is Xiaoping Jiang (2006) in Cluster #101, with citation counts of 2. These data infer that the current intercultural education research in China has not yet stably formed a core group.

TABLE 2. CORE AUTHORS' DISTRIBUTION

Citation Counts	References	Cluster ID
3	Zhichen Huang, 2007	8
2	Xiaopin Jiang, 2006	101
2	Changchun Wang, 2002	76
2	Yongcai Chang, 2013	25
2	Li Liu, 2012	86
2	Wenjing Zhang, 2010	4
2	He Li, 2020	5
2	Yang Li, 2013	10
2	Ping Li, 2010	136
2	Jie Wang, 2006	46

While in the perspective of centrality, the top ranked item is Wenjing Zhang (2010) in Cluster #4, with centrality of 3. The second author is He Li (2020) in Cluster #5, with centrality of 3. And the others are shown below in Table 3.

TABLE 3. THE CENTRALITY DISTRIBUTION

Centrality	References	Cluster ID
3	Wenjing Zhang, 2010	4
3	He Li, 2020	5
3	Xiaoguang Liu, 2012	1
3	KWSCHAIE, 2002	3
3	Jing Zhu, 2019	0
3	Ping Shen, 2012	1
3	Xiaobo Li, 2012	1
3	Zhimin Liu, 2020	2
3	Shiping Chen, 2002	3
3	RDUTTA, 2002	3

This table presents that while authors mentioned above to some extent has formed a cooperative network with other authors, further collaboration and exchanges among Chinese scholars are urgent.

3.2.3 Organization Distribution

The institutions' collaboration can reflect the strength of the research distribution in a certain field. With the help of CiteSpace 5.8.R3, this study comes to the following conclusion (Table 4):

TABLE 4. CITATION COUNTS

Citation Counts	References
3	School of Education, Renmin University of China, 2012
3	School of Education, Minzu University of China, 2013
2	International College of Guangdong University of Foreign Studies, 2018
2	Harbin University, 2014
2	Chinese College, Beijing Language and Culture university, 2012
2	Guangdong University of Foreign Studies, 2009
2	Nanyang Institute of Technology, 2010
2	East China Normal University, Institute of International and Comparative Education, 2013
2	Chinese Language and Cultural College of Beijing Normal University, 2011

2	School of Education, Minzu University of China, 2020

The table exhibits that the research collaboration and exchange still urges improvement even though certain collaboration networks among domestic institutions have been built up.

4 ANALYSIS OF THE HOT SPOTS AND EVOLUTION TRENDS OF INTERCULTURAL EDUCATION RESEARCH

Keywords in a paper can help to research a field of research content, research direction and research focus [7]. Therefore, the frequency of keywords can be counted and analyzed by cluster analysis so as to grasp the research hotspots in a certain field [6].

The frequency of keywords is directly proportional to the research popularity [2]. The higher the frequency of keywords, the stronger the research popularity; besides, the higher the centrality of a keyword, the more central the keyword is in the network, and the stronger its influence and dominance in the whole network. This paper takes keywords as nodes and divides the time into 1 year to draw an outcome of hot knowledge in intercultural education research in China.

4.1 *Analysis of Frequency and Centrality*

This paper drew up Table 5 and Table 6 according to the related data of keyword frequency (more than 5 times) and centrality (more than 0.02 times). In Table 5, there were 16 key words appearing more than 5 times in the 346 intercultural education-related research papers. "Intercultural" is the largest node with a frequency of 45, followed by "foreign language teaching", "globalization", "multi-culture", "internationalization", "foreign language education", "teaching reform" and so on.

Besides, centrality can be used to judge the research hot spots, since it can reflect the degree of keyword coinage, its media and influence in the whole network. What's more, keywords with high centrality can reflect the focus and direction of researchers' attention in a certain period to a certain extent [4]. In the order of centrality, "cross culture", "foreign language teaching" and "globalization" are listed in the top three respectively, followed by "multiculturalism" "teaching reform", "foreign language education", "culture teaching", "Ethnic Universities", "internationalization" and other key words. These words play an important intermediary role in the field of intercultural education research. While key words like "foreign language teaching", "globalization", and "internationalization" rank high in frequency and centrality, representing the hot spots in the field of intercultural education research.

TABLE 5. HIGH FREQUENCY

Sort	Key words	Frequency	Centricity
1	intercultural	45	0.35
2	foreign language teaching	13	0.16
3	globalization	13	0.07
4	multi-culture	9	0.04
5	internationalization	9	0.02
6	foreign language education	8	0.03
7	teaching reform	7	0.04
8	college student	6	0.00
9	college English	6	0.00
10	culture teaching	5	0.03
11	liberal education	5	0.02
12	cultural differences	5	0.02
13	culture education	5	0.02
14	culture	5	0.01
15	International student	5	0.01
16	English education	5	0.01

TABLE 6. HIGH CENTRALITY

Sort	Key words	Frequency	Centricity
1	Intercultural	45	0.35
2	foreign language teaching	13	0.16
3	globalization	13	0.07
4	multi-culture	9	0.04
5	teaching reform	7	0.04
6	foreign language education	8	0.03
7	culture teaching	5	0.03
8	ethnic colleges	3	0.03
9	globalization	9	0.02

10	liberal education	5	0.02
11	cultural differences	5	0.02
12	culture education	5	0.02
13	teacher education	4	0.02
14	Confucius Institute	3	0.02
15	cultural shock	2	0.02

4.2 *Analysis of Keyword Cluster Map*

In CiteSpace, keyword co-occurrence can foster keyword clustering [2]. Based on it, the mean value of the modularity in this study (knowledge map module value / Q value) is 0.8358 and the mean value of silhouette (network homogeneity / S value) is 0.9602. On the whole, a Q value > 0.3 indicates the significance of the clustering structure, and an S value > 0.5 shows the rationality of the clustering [6]. Thus these values show a good effect on a clustering. The largest 12 clusters are summarized in Table 7.

TABLE 7. THE LARGEST 12 CLUSTERS

ClusterID	Size	Silhouette	Mean (Citee Year)	Label (LSI)
0	54	0.925	2009	Koran Crosscultural Education in Japan
1	33	0.968	2010	A Study on the Lack of Intercultural Education in Foreign Language Teaching
2	21	0.947	2012	Intercultural Education: A New Horizon of Development of Internationalization of Chinese Wushu
3	17	0.989	2006	Cross-cultural Communication and Logical Liberal Education
4	14	0.992	2012	On the Integration of Education in Europe
5	13	0.951	2011	Intercultural Education under the Framework of Multiculturalism
7	8	0.991	2009	An empirical Study on Personality Education of College Students in Ethnic Areas: A cross-cultural Perspective
9	6	0.986	2007	Ways for Intercultural Communication Barriers in Adult English Education and Training in Maritime Colleges
10	6	1	2014	An Analysis of the Causes of the Difficulties in Cross-cultural Foreign Language Education
13	5	0.984	2001	The Cross-cultural Teaching and Learning Cooperation of Distance and Open Education in the Internet Age

| 14 | 5 | 0.988 | 2010 | Research on the Training of Cross-cultural Talents in Local Universities Based on the "Learning Output" Education Model |
| 29 | 3 | 0.995 | 2010 | The Obstacles and Educational Guidance of Intercultural Communication of Vocational College Students |

As can be seen from Table 7, the S value of these main clusters is all above 0.9, indicating the positive effect of the clustering. These clusters to some extent represent the research hotspots of intercultural education in the corresponding years.

5 ANALYSIS OF THE EVOLUTION AND TREND OF INTERCULTURAL EDUCATION RESEARCH

With CiteSpace 5.8.R3, this paper sketched out the development of intercultural education research in China. Three stages are as followed to illustrate its evolution of specific research hotspots:

• The first stage is a fluctuating development phase from 2001 to 2011. At this stage, the application of intercultural education research in China was being explored and yet developing. The intercultural education research was relatively mature and China had begun to focus more on internationalization for the intercultural teaching and learning.

• The second stage is a rapid development phase from 2012 to 2014. During this period, more and more papers about intercultural education were published. Keywords like "intercultural education", "cultural knowledge", "cultural learning", and "intercultural awareness" and so on are high-frequency. They have reflected the general research direction of this period to a great extent.

• The third stage is a slow development phase from 2015 to 2021. Researchers continued to focus on the application of intercultural education research. While a lot of intercultural education-related teaching materials have been appearing, more attention has been paid to the evaluation effect of intercultural education.

6 CONCLUSION

The analysis above has found that: (1) The overall intercultural education research has experienced ups and downs in the last twenty years. It reached its high peak in 2014, while it failed in the following years. Though the volume of papers has weakened, it remains certain development. (2) Some cooperative groups in small scale have been set up for intercultural education research in China, but cooperative communication and interaction among the group scholars are still relatively deficient. This field urges a stable core group of authors. (3) From the perspective of the distribution of research institutions, although various scientific research institutions have formed a cooperation network at a certain scale, cooperation and exchange is still in great demand.

Combining previous research with the above quantitative analysis, this paper provides reference and insights for the development of the context, hot frontiers, and in-depth development of intercultural education research in China over these twenty years, and will be of significance in the future.

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REFERENCES

[1] Banks, A. J. (1995). Handbook of Research on Multicultural Education. J. USA: Macmillan Publishing.

[2] Bo, F. (2020). Bibliometric Analysis of Research Articles on China's Ethnic Language Policy and Planning since the 21st Century. J. Journal of Ethnology. 05, 93-101.

[3] Li, J. & Chen, C. M., 2016. CiteSpace: Text Mining and Visualization in Scientific Literature. Beijing: Capital University of Economics and Business Press.

[4] Li, Y. J., Duan, G. D., Hu, X. L., Yan, X. Y., Jin, J. & Hao, S. W. (2020). Visualization Analysis Of Chinese Space Syntax Research Situation Based On The CiteSpace. J. Journal of Inner Mongolia Agricultural University (Natural Science Edition). 03, 27-32.

[5] Lin, D. M., Chen, C. M. & Liu, Z. Y. (2011). Study on Zipf-Pareto Distribution of the Betweenness Centrality of a Co-citation Network. J. Journal of the China Society for Scientific and Technical Information. 01, 76-82.

[6] UNESCO. (2007). UNESCO Guidelines on Intercultural Education", Paris: United Nations Education Scientific and Cultural Organization.

[7] Yue, C., Chen, C. M., Hu, Z. G. & Wang, X. W., 2014). Principles and Applications of Analyzing a Citation Space, Beijing: Science Press.

[8] Zhang, H. L. (2012). Intercultural Education-oriented Foreign Language Teaching: History, Status and Future. J. Foreign Language World. 02, 2-7.

[9] Zhang, W. D. & Yang, L. (2012). Construction of Intercultural Communicative Competence—An Empirical Study from Perspective of Foreign Language Education in China. J. Foreign Language World. 02, 8-16+5.