The Construction of the Innovation Model of the Linkage Mechanism of Chinese and Foreign Online Education

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Abstract: New technology has derived a new way of learning, that is, the reform in modern teaching represented by online education. Online education is developed with the full use of information technology and intermediary characteristics to enhance the practical experience of learners' enjoyment in learning in interactive learning activities and people-oriented learning environment. As the related concepts and theories of online teaching at home and abroad permeate into the field of education, online teaching has gradually become a hot field of academic attention. This paper analyzes its hot topics and research frontiers, which can provide some reference for the development of online education research field.

Keywords: online education, linkage mechanism, analysis of visualization

Introduction

Modern science and technology have given birth to modern learning methods, such as micro-class, Tencent online class, MOOC, online learning and so on, which have brought development opportunities to modern education and are also an important way to promote the reform in modern education. In recent years, the rapid development of information networks also builds the platform for online education, which is based on Internet technology. Students use network resources for online synchronous teaching, which is not limited by time, space and location, and it realizes the effective complementation of online teaching and online assisted teaching, which makes up for the lack of uneven distribution of educational resources to some extent. Based on the background of visual analysis, this paper conducts advanced selection and quantitative analysis of existing Chinese and foreign literature, and analyzes the content and research trend of existing research literature in a objective and comprehensive manner. Thus, the future development trend of innovation model of domestic and foreign online education linkage mechanism is obtained, which also provides beneficial reference for online education informatization linkage mechanism home and abroad.

1. Data sources and basic characteristics of research

1.1 Main sources of data

The quantitative literature analysis principle adopted in this paper is a visualization based analysis under advanced screening of the literature of the keyword "online education" in the core collection of Web of Science and CNKI database. To impose restrictions on the input conditions from CNKI database and the key words are "online education" or "Network education" or "online teaching", and the publishing time ranges from 2010 to 2020, as a result, Chinese Social Sciences Citation Index (CSSCI) can be selected with a total of 1026 articles retrieved. Searching for "online education" or "online courses" or "network education" from the core collection of Web of Science with data sources from 2020 to 2020, and a total of 3336 results were retrieved.

The literature was imported from the core collection of Web of Science to draw the knowledge map in online education research, and the literature collection in the research field was calculated by using the literature measurement information visualization software Vosviewer.

1.2 Data statistics and analysis

Keywords of "online education" are searched from CNKI data, and the in-depth research on online education and online course based education in China has been conducted from 2000 to 2020 in the past two decades. Especially in the past decade, China's digital education has developed rapidly. Online teaching and online courses in the field of education have become a hot topic of scholars' research, and the number of published articles has increased year by year. The research status of online education abroad is retrieved from Web of Science.
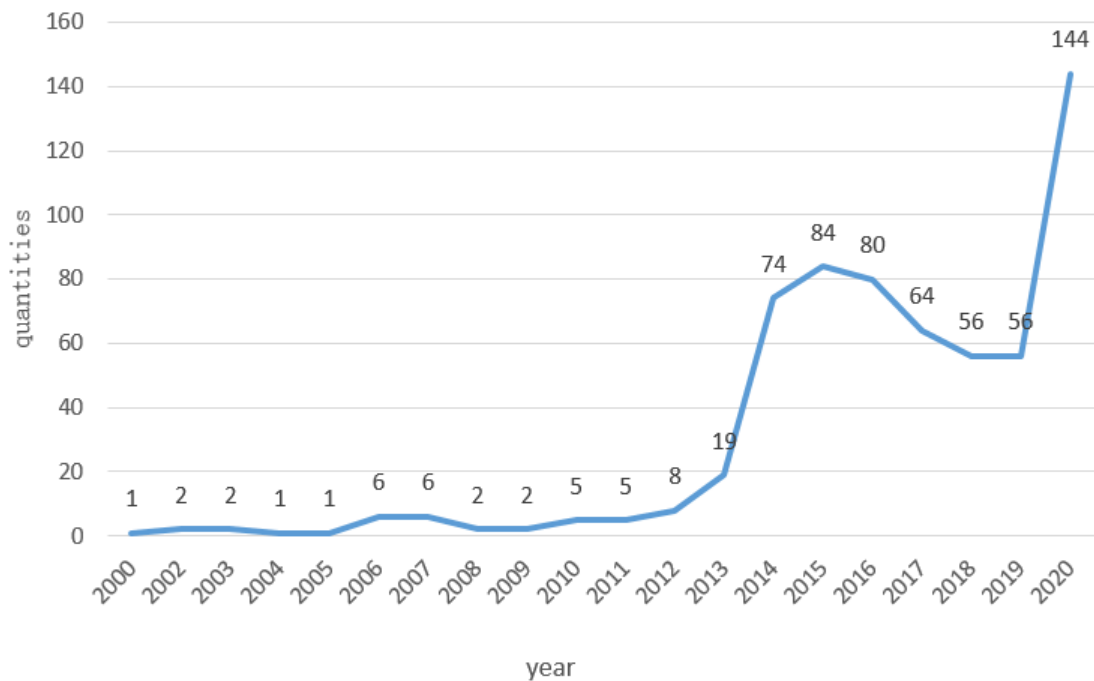
Figure 1. Number of papers on CNKI in 2000 to 2020
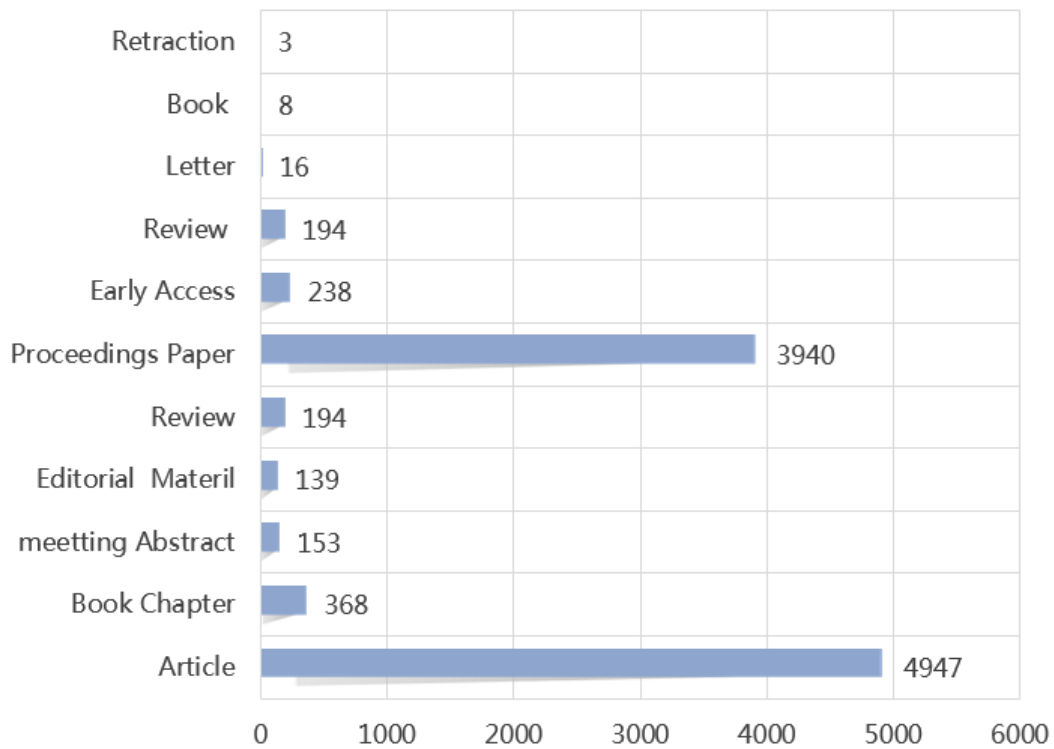

Figure 2. Online education discipline of web of science from 2000 to 2020

1.3 Analysis of journals

By analyzing the periodical sources of literature, the periodical distribution of online education research is statistically obtained. According to the following statistics, it can be seen as follows:
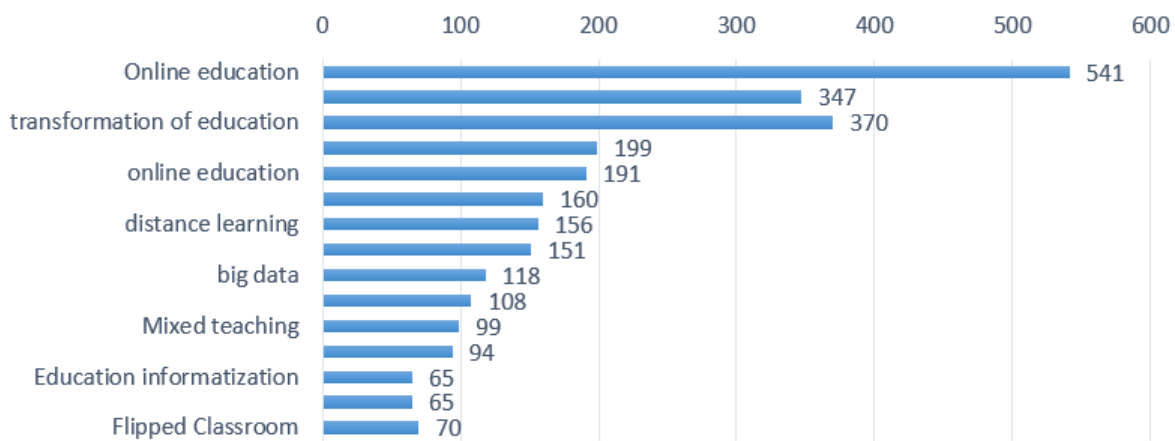
Figure 3. The paper of Online Education in CNKI from 2000 to 2020
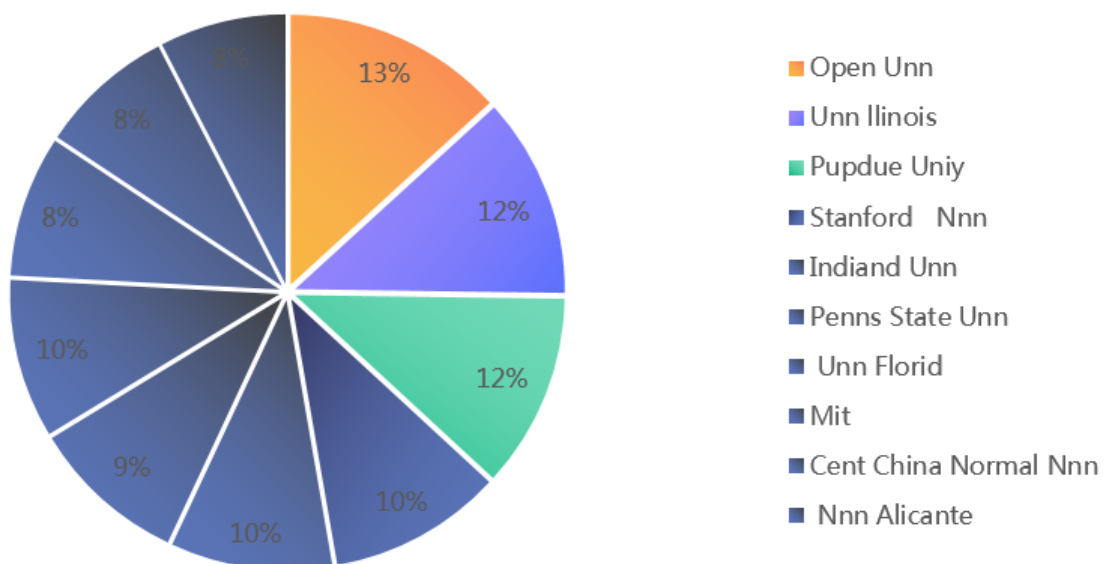
Figure 4. The paper of Online Education in web of science from 2000 to 2020

1.4 Distribution of institutions

According to the analysis of the publishing institutions indexed by CNKI, Beijing Normal University, Tsinghua University, The Open University of China, Peking University, Wuhan University and the Open University of China have published the most proportion of papers in the past decade. These research institutions are engaged in teaching and teaching research institutions with the most share of the research results of online education. According to foreign studies, educational institutions are the main body of online education research. In general, domestic universities and research institutes are the main publishing institutions of relevant research, and the above publishing institutions all maintain high enthusiasm for public participation research. Compared with other domestic universities, domestic key universities have made remarkable achievements in the field of online education research.

Figure 5. The top research institutions of CNKI online education in 2000 to 2020
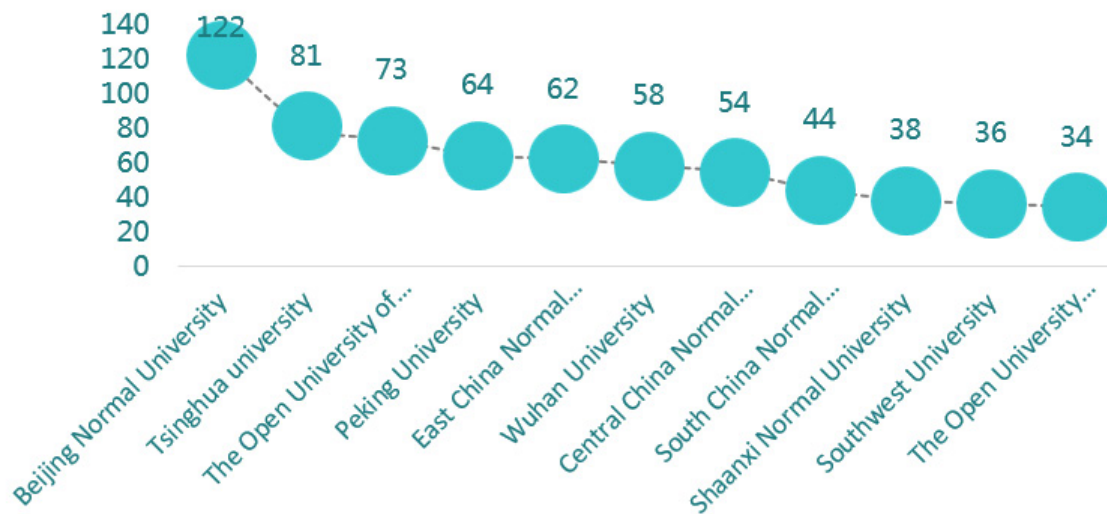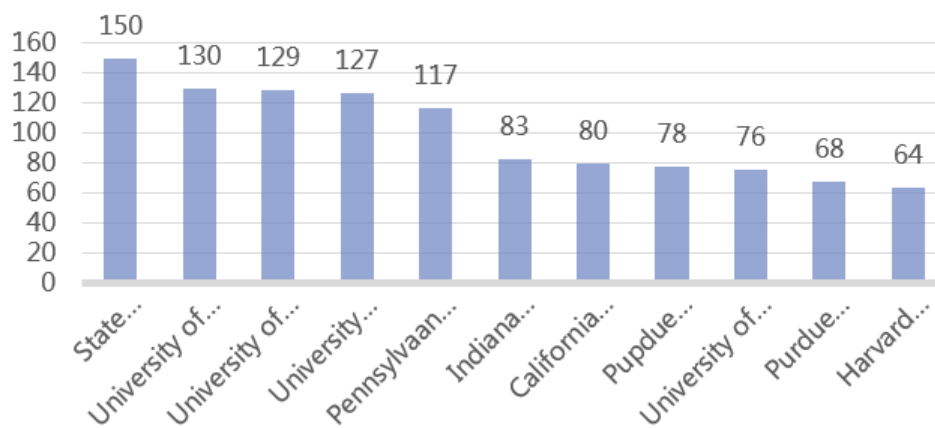

Figure 6. The top research institutions of web of science online education in 2000 to 2020

2. Knowledge graph of online education and keyword research

2.1 Research on frequency of keywords

To import 1365 results found in the Web of Science database into VOSviewer software and select Create a map based: On bibliographic data, Type of Analysis (Co-occurrence), Counting method (Full Counting)The Unit of Analysis is all keywords. To select 25 for Minimum number of occurrences of a keyword, 15, 238 keywords can be obtained, as shown in Figure 6. In order to better reflect the progress of online education research, there are many journals included in the Web of Science database, with a large gap between them. The keyword "online education"or"online courses"or"network education" was searched from 2000 to 2021, and 1365 search results were obtained. The retrieval results were resold and sorted out, and the papers calling for contributions in journal conferences, preface, introduction of individual academic achievements, introduction of scientific research institutions, book reviews, as well as the items signed as research group and without authors and irrelevant items were deleted. Finally, 1024 relevant articles were obtained.

Research results of keywords can be divided into four aspects: on Online education, online courses, Internet education, education performance. It can be seen that online education research at home and abroad is more diversified, among which the field of education is an important range of online education research abroad. From the presentation and analysis of the above data, it can be seen that the research on online education in China is characterized with relative singularity, focusing on education methods and information technology. In foreign countries, online education covers a wide range of research fields, including education methods and information technology, as well as the construction of online courses, which includes

medical treatment and the improvement of teachers' abilities.

2.2 Research hot-spots and analysis of keywords

According to the presentation and analysis of the above data,

Research on Mooc. Moocs, also known as Moocin Chinese, literally represent Massive, Open, Online, Course. It was first created in 2011 and first became popular in the United States. It was introduced into China in 2013. MOOC in Chinese universities is a specific example. Moocs have evolved into PMOOCs (personalized MOOCs), DLMOOCs (Deep MOOCs), and Mobi Moocs (mobile MOOCs) according to the needs of society. MOOC can not only provide students with knowledge through online videos, but also make text emotion calculation through comments of MOOCs to obtain students' direct perception in online learning. So MOOC has been a hot topic in the field of education until now.

Research on network course construction. From the graph, it can be seen that online course, online teaching, online environment and other high-frequency phrases have high research interest in online teaching course construction. The teaching mode of combining classroom teaching with network teaching needs to be supported by a set of strict and standardized teaching management system to ensure the smooth implementation of course teaching. As a means of supporting teaching,

Figure 7. Research hot-spots of web of science online education

During the use for auxiliary teaching management, we must fully consider the auxiliary status of the network course so as to make it clear that the use of network for teaching management is to better implement the course teaching, which is a supplement and improvement of the traditional teaching management system.

3. Conclusions and recommendations

3.1 Conclusions

Advanced screening of online education literature in CNKI and Web of Science from 2000 to 2020 was conducted by using VOSviewer software based on bibliometrics analysis method in this paper. Through visual analysis, the following conclusions are drawn: From the research on the subject and subject classification of online education literature from 2000 to 2020, it is found that the popularity of online education at home and abroad has increased, especially the effective combination of information technology and modern education in promoting the widespread use of online education. The hot topics of online education and their clustering are summarized by drawing the keyword atlas, and the frontier evolution of online education research at home and abroad is identified by further analyzing the emergence words. The research conclusions are as follows.

Comprehensiveness of online education research. In terms of details, as for the topics of foreign literature or the classification of subjects, most of them are the study projects of teaching subjects. It can be seen that online education is very popular in the field of education at home and abroad, and the classification is conducted in a meticulous manner. In recent years, China has begun to attach importance to Internet teaching. *The General Office of the Ministry of Education* issued documents such as *"Key Points of Work on Education Informatization and Network Security in 2018*". During the period of epidemic prevention and control, online education was adopted for "learning despite suspension of classroom teaching" through the network platform. It can be seen that online education enjoys great development prospects.

Diversity of the research content of online education. By analyzing the distribution of the top five online education institutions at home and abroad and the amount of authors' literature, we can make it clear the leading institutions and authors in the field of online education at home and abroad, as well as the high-quality literature of scholars. This can prompt research institutions and authors of online education in China to conduct discussions and cooperation, and these high-quality literature can be referred to when studying the corresponding field of online education.

Interdisciplinary online education research. Through the analysis of online education research hotspots, it can be concluded that China focuses more on the in-depth study of online education, while foreign research hotspots focus on the extension of online education application. On the one hand, this also supports the analysis results from the findings of the online education literature subject and subject classification research from 2000 to 2020. Therefore, it can be seen that in-depth research on education is the characteristic of the whole world. Chinese scholars should follow the trend and conduct more in-depth research in the field of education and information technology, which leads to the problem of waste and low utilization rate of online education resources.

3.2 Recommendations

(1) Promoting the allocation and optimization of educational resources, and deepening the mechanism of jointly building and sharing education. Although the maturity of online teaching technology at home and abroad, abundance of online teaching resources, completeness of disciplines and diversity of learning methods and other characteristics, problems of redundant teaching resources and the unbalanced resource allocation is prominent. At present, domestic and domestic universities have opened online high-quality courses, but the authority of online open courses of individual universities is limited, and they are not open to public. The duplication of disciplines is serious, which is mainly attributed to the imperfect cooperation and sharing mechanism of scientific research structure at home and abroad. Therefore, to realize the linkage mechanism of online education between China and foreign countries. Besides, we must deepen the mechanism of shared education and carry out the cooperation of online education between China and foreign countries so as to realize the linkage and integrated development of education in terms of resource contribution, technical support and collaborative development.

(2) Promoting the upgrading of ability in education consultation and optimizing the long-term mechanism of education operation. To improve the certification mechanism is to promote the development of online education platform towards regular online courses, which is also the trend of the future development of continuing education for students to obtain qualification certificates. The establishment and improvement of online education certification mechanism to promote the upgrading of education negotiation ability can not only enhance the recognition of online education, which is also a long-term mechanism for safeguarding students' rights, evaluating students and supervising the quality of online education. In the course design and construction of online education, multi-level, multi-directional and multi-disciplinary development should be carried out to continuously enrich the content of online courses and deepen the contribution of resources in the course field.

References

[1] Lan Guoshuai. Exploring community Theory model: Online Learning and Mixed Learning Paradigm [J]. *Open Education Research*, 2018, V. 24;No. 131(01): 29-40.

[2] Yu Shengquan, Wang Huimin. How to better organize online learning in extreme epidemic environment[J]. *China Educational Technology*, 2020, No. 400(05): 12-20+39.

[3] Chen Li, Shen Xinyi, Wan Fangyi, et al. Positioning of distance education quality in the era of "Internet +" [J]. *China Educational Technology*, 2018(1): 15-21.

[4] Qian Ling, Xu Huifu. The development trend and trend of Online education in the United States -- The Key points and reflections of CHLOE4[J]. *Open Education Research*, 2020(4): 24-36.

[5] Gao Duan. Quantitative analysis and enlightenment of online education research literature from 2001 to 2016[J]. *Higher Education Exploration*, 2018(5): 86-92.

[6]   Li, Wengao. Current situation and development trend of online education technology[C]// 2019.
[7]   Chupandina E E, Semenikhina A V. Online Education at Voronezh State University[J]. *Vysshee Obrazovanie v Rossii = Higher Education in Russia*, 2018, 27(8-9): 103-110.
[8]   Menear S, Mcmillan C . System and method for providing online education[J]. United States Patent Application, 2008.
[9]   Liu Qingqing, He Yanjun, Yang Shouhong. The dilemma and strategy of university network security education in the new era of mobile Internet[J]. *Journal of Chongqing University(Social Science Edition)*, 2018, 024(005): 218-226.