Visual analysis and application of college students' network literacy education based on Citespace

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Abstract: College students' network literacy education has attracted more and more attention from all walks of life. It will deeply explore the connotation of college students' network literacy, summarize and explore its realization path, build a long-term guarantee mechanism, study its hot spots and future development trends, which will help promote and guarantee the network literacy education system for college students in my country has developed better. This article uses the CitePace knowledge visualization analysis tool to conduct statistical research on 321 articles on college students' network literacy education collected by CNKI from 2004 to 2021. The results show that in the past 15 years, the research hotspots in this field have mainly focused on "college students", "network literacy", "network literacy education", "college student network literacy", and "ideological and political education." A wave-like forward trend that rises, then falls, and rises again. But overall, there are still deficiencies in the research on network literacy education for college students in our country.

1. Introduction

The Internet has become the main channel for college students to obtain information and interpersonal communication in today's society. General Secretary Xi once proposed: "We must proceed from the general international and domestic trends, make overall arrangements, coordinate all parties, innovate and develop, and strive to build our country into a network power." This fully reflects the importance of the network. In addition, General Secretary Xi pointed out at the cybersecurity and informatization work symposium that "cyberspace is the common spiritual home of hundreds of millions of people. The cyberspace has a clear sky and a good ecology, which is in the interests of the people. Interests." This shows that good online behavior and cyberspace are conducive to the development of the social state. However, the online world is complex and changeable, and the self-restraint of ideological network literacy is needed in network communication. Therefore, the problem of network literacy that appears in network communication has attracted continuous attention and attention from the academic community.

Researchers have conducted extensive research and discussion around the concept, connotation, cultivation path, and lack of network literacy education of college students. This article conducts a quantitative analysis of the domestic literature on college students' network literacy education in the past 17 years (2004-2021), and explores the research hotspots and development trends in this field through the analysis of the visualized results of the knowledge graph, with a view to providing follow-up research and practical exploration. Empirical basis and enlightenment.

2. Research Methods

2.1 Data Sources

The data in this article mainly comes from the China National Knowledge Network (CNKI) academic journals online publishing database. Select the "advanced search" function in CNKI and

search with "college students' network literacy" as the subject search term. The searched documents were published from March 30, 2004 to August 30, 2021. A total of 396 Chinese academic journals were retrieved After excluding 75 documents such as conference notices, newspapers and irrelevant to this research, we finally obtained 321 valid documents. The documents were exported in accordance with the requirements of the citespace file reading format to form a sample database for data analysis.

2.2 Methods and Tools

This article uses the citespace software developed by Professor Chen Meichao for data analysis, and the data analysis uses the 5.8.R1 version of the software. Citespace is a visual analysis software. As a diversified, time-sharing, and dynamic citation analysis visualization technology, citespace can centrally display the evolution of a knowledge field on a citation network map, and use citation node documents as the basis of knowledge The research fronts represented by co-citation clustering are automatically identified. Its functions include: author cooperation analysis, keyword co-occurrence analysis, institution cooperation analysis, author co-citation analysis, document co-citation analysis, etc. However, CNKI data cannot be co-citation analysis. This article mainly focuses on keyword data analysis.

3. Research Result

3.1 Distribution of the Number of Publications With the Development of the Year

This research analyzes the relevant literature from 2006 to 2021 and finds that the number of literature shows a wave-like trend of first rising, then falling and then rising. The general development process is: 2004 to 2014 is the initial stage of research, and overall it has shown steady progress. Since the 18th National Congress of the Communist Party of China, China has continuously attached importance to network security. The number of publications reached the first high point in 2012, and then fell into a stable period. The period from 2014 to 2016 is a stage of rapid development. Specifically, Beginning in 2014, the number of documents began to grow rapidly. In 2016, the number of publications reached the highest point in 17 years. The reason for this phenomenon may be that the network security and informatization work symposium was held in Beijing on April 19, 2016, but A hot spot has not been formed, and there are few core journals. People's attitude towards new things is often a process of waiting and watching, following, fanatical, calm, and returning to reason [1], resulting in a rapid decline from 2016 to 2018; 2018 to 2020 In order to slowly rise to the development stage, the analysis of literature data in 2021 will only be collected until August, so we will not do the analysis for the time being. From the current situation, China is constantly strengthening the penetration of network literacy and ideology, and is constantly striving to build a network power. This direction is in the future. Research trends should increase substantially (see Figure 1).
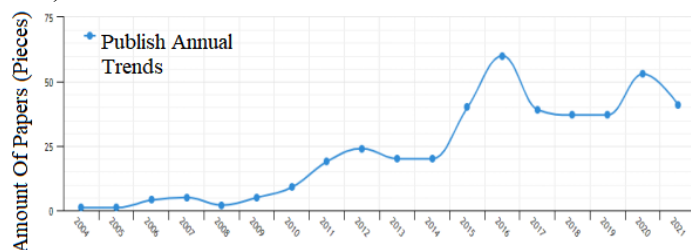

Figure 1 The number of published articles changes with the years

3.2 Research Hotspots

Keywords condensed the core and essence of a paper. Through keyword co-occurrence analysis, research hotspots in a certain scientific field can be discovered. [2] The frequency of occurrence of keywords directly reflects the hot topics in this research field. In this study, keywords were selected as nodes, the analysis time slice was 1 year, and the analysis item selection method was "TopN=50",

and a keyword co-occurrence network map was generated (Figure 2). Each circular node in the figure represents a keyword. The larger the circle, the higher the frequency of the keyword. The different colors in the circle represent different years. The thicker the color ring in the circle indicates that the keyword corresponds to the year in that color. The higher the frequency, the more links, the closer the relationship between keywords. In order to further understand the research hotspots in the data research of this paper, the high-frequency keywords extracted are mainly the top 8 keywords. It can be seen that the hot vocabulary includes "college students", "network literacy", "college student network literacy", "network literacy education", "ideological and political education", "self-media", "Internet +", "new media" and so on. It can be seen from this that my country's current research on college students' network literacy education is mainly reflected in the aspects of college students' network literacy, media literacy education, and ideological and political education. In many literature studies, many scholars will choose to combine network literacy and ideological and political education. Combining education to study network literacy education for college students. Media literacy education is the predecessor of foreign network literacy cultivation, and in 2004, Yan Ronghui also proposed: Internet literacy is media literacy in the Internet age, so I think that to a certain extent, network media literacy education is network literacy education[3,4].
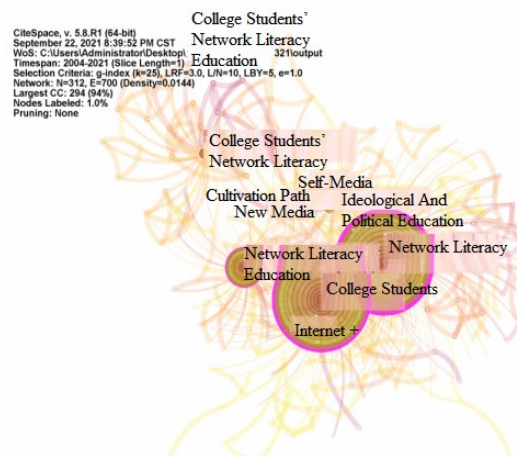

Figure 2 Keyword co-occurrence network map

3.3 Research Areas

Use citespace to perform keyword clustering analysis. The data analysis selects a knowledge map with a keyword cluster number of 8. The main clustering keywords are "college students", "network literacy", "network literacy education", "college students' network literacy", and "ideas" "Political education", "self-media", "cultivation methods", "media education" and so on (see Figure 3).

Cluster #0 "College students" is the largest cluster and contains keywords such as "ideological and moral education", "network environment", "network anomie behavior", and "indulging in the Internet". This category mainly discusses some problems encountered by college students in the process of using network carriers in the Internet age. Cluster #1 "Internet literacy" includes keywords such as "online education", "online community", "media literacy", "online youth mobile media intervention". This category mainly discusses the importance of network literacy from various aspects. Cluster #2 "Internet literacy education" includes keywords such as "ideological and political education", "network literacy", "network literacy awareness", "teaching model", and "teaching philosophy" measure. Cluster #3 "Network Literacy of College Students" includes keywords such as "Internet Media Literacy", "University Education", and "Network Literacy Education Mode". Cluster #4 "Ideological and Political Education" includes keywords such as "Internet Communication", "Ideological and Political Education", "Internet Influence", and "New Era Internet Political Literacy". It mainly analyzes the current status and influence of college students' Internet literacy[5]. Cluster #5 "self-media" includes the "self-media era" and "social

media". Cluster #6 "Cultivation Ways" contains keywords such as "Status Survey", "Network Literacy Education Issues for College Students", "Education Strategies" and "Improvement Strategies". It mainly analyzes the lack of network literacy issues through investigation and research, and proposes relevant measures. Cluster #7 "media education" contains keywords such as "network application", "network civilization literacy characteristics", "network new normal", and mainly discusses the new era characteristics and applications of network literacy (see Figure 4).

Although each category is different, from the current data analysis, the research on college students' network literacy education mainly focuses on the connotation of network literacy, the problems encountered by college students' network literacy in the survey, and the problems from school, family, and society. And the country proposes solutions and training paths[6].
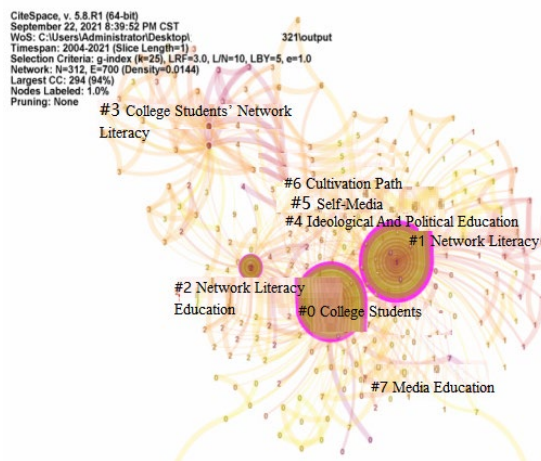

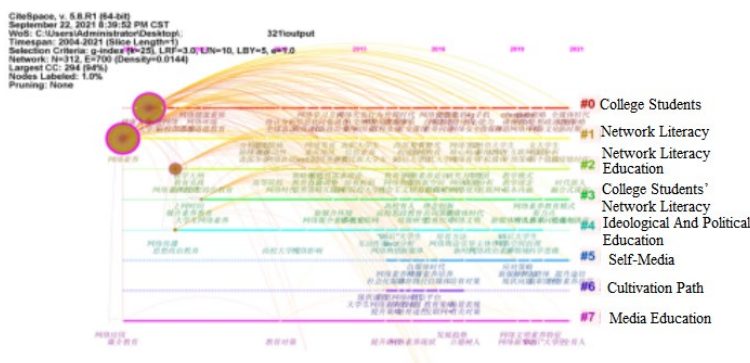Figure 3 Keyword clustering network map

Figure 4 Keyword clustering time chart

3.4 Research Trend

Figure 5 shows the top 13 emerging keywords from 2004 to 2021. The main emerging keywords are "media education", "college library", "Internet age", "college students", "online community", and "web20". "Media Internet", "self-adjustment", "upgrading strategy", "socialist core values", "new media", "ideological and political education", and "self-media". The emerging keywords from 2004 to 2010 were "media education" and "college library"; the main emerging keywords from 2010 to 2014 were "Internet age", "college students", "online community", and "self-adjustment"; from 2014 to 2021 The emergent keywords are "improvement strategy", "socialist core values", "new media", "ideological and political education" and "self-media"[9].

On the basis of the clustering diagram, the front-end keyword timing diagrams are counted according to time segments, as shown in Figure 6. Words such as "network literacy", "college students", "ideological and political education", "media literacy education", "network age", and "Internet+" connect several small nodes in the time zone, which are the foundation and support of the entire time zone.

The current research trends continue to combine reality and policies, facing the social

environment of "globalization, networking, and liberalization". The Internet is a means. The reality created by the Internet exists in a virtual environment. The main body mainly uses the Internet for emotional communication and Information exchange and communication require the subject to improve their own network literacy. At this stage, this is reflected in the continuous strengthening of college students' autonomous ideology, the practice of core socialist values, and the use of ideological and political education courses to spread and indoctrinate theoretical thinking[10].

Top 13 Keywords with the Strongest Citation Bursts

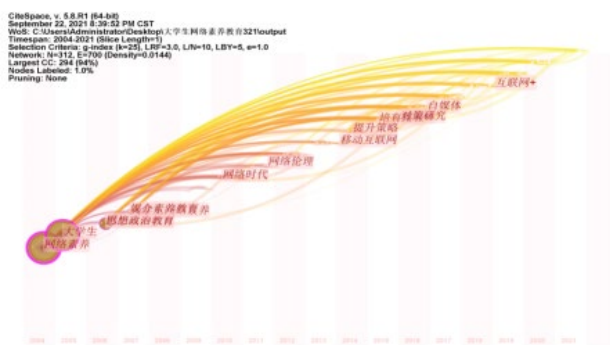| Keywords	Year	Strength	Begin	End	2004 - 2021
Media Education	2004	1.26	2004	2010	
College Library	2004	1.31	2006	2009	
Internet Age	2004	2.66	2010	2014	
College Students	2004	1.14	2010	2012	
Online Community	2004	1.14	2010	2012	
web20	2004	1.18	2011	2012	
Internet	2004	1.26	2012	2016	
Self-Adjustment	2004	1.16	2012	2013	
Upgrading Strategy	2004	1.47	2014	2015	
Socialist Core Values	2004	1.33	2015	2017	
New Media	2004	1.24	2015	2018	
Ideological And Political Education	2004	1.27	2018	2021	
Self-Media	2004	1.4	2019	2021	

Figure 5 Keyword emergence rate

Figure 6 Keyword timing diagram

4. Conclusion and Outlook

4.1 Conclusion

With the changes of the times, the increasing changes in the domestic and international network environment and the gradual changes in people's communication behaviors, the problem of network literacy education has gradually attracted widespread attention from the academic community. In this paper, CiteSpace is used to analyze the research results included in the CNKI database, to perform a cluster analysis on the amount of posts and keywords, and to summarize the research hotspots. Data visualization results show that domestic research has achieved staged research to a certain extent, but the systemization of college students' network literacy education mechanism is not deep enough to be theoretically and systematically. The main reason is to analyze the current situation and propose solutions to problems. It lacks the initiative of college students. Therefore, it is more necessary to continuously and deeply analyze the network literacy of college students, and for the new era, the importance of college students' network literacy education research should continue to rise to the level of society and the country. As the main group of Internet users, college students must be more equipped College students with good network literacy take the initiative to serve the society and the country, and build and improve my country's network literacy education system.

4.2 Outlook

Drawing lessons from relevant and mature research results of college students' network literacy

education, and combining some domestic practical construction experience, the future research on college students' network literacy education will continue to explore the following aspects:

Firstly, combine the characteristics of the new era to give new era connotations to network literacy education. The new era has new connotations of the era. We are experiencing major changes and new situations unseen in a century. We must proceed from the overall perspective and rise from the level of college students to the level of the country. The research on college students' network literacy education in our country is relatively late. At the same time, college students have not undergone systematic network literacy education before entering the Internet. The rapid development of the Internet has brought new challenges to our network literacy education, building new connotations of college students' network literacy education. Enhance college students' awareness of self-network literacy education, strengthen ideological struggle, expand international communication power and influence, compete for international discourse power, strive to be a newcomer of the times, and be a contributor to the great cause of socialism with Chinese characteristics.

Secondly, the innovation path, the combination of theory and practice. At present, college students' awareness of literacy education is not strong, and their active awareness needs to be strengthened. Many of them are often passively accepted and it is difficult to improve themselves. First of all, we must understand the network literacy education of college students and strengthen the penetration of theoretical knowledge. Ideological and political education courses in colleges and universities are the main way to carry out network literacy education. Therefore, new theoretical connotations and teaching methods are given to ideological and political education courses, highlighting the "new" and "fine" of the courses. The traditional indoctrination education allows students to form firm ideological beliefs in the exploration and practice, and the "essence" is in effect rather than quantity, in order to achieve the purpose of relying on ideological and political education to spread network literacy education. Second, combine theory and practice to create a path of practical innovation. The combination of on-campus and off-campus practice enables college students to learn to use network literacy skills on the basis of understanding the theoretical knowledge of network literacy, explore in practice, and reflect on exploration. Finally, relying on the Internet media, develop the "Internet Third Classroom". Make full use of media carriers such as Weibo, QQ, and WeChat to continuously enhance the communication power and influence of college students' network literacy education with the help of network means.

Thirdly, build a network literacy education system mechanism for college students. Construct a network literacy education mechanism for college students from the internal mechanism, external mechanism and network interconnection evaluation feedback mechanism. First, build an internal development mechanism that is internalized in the heart and externalized in the behavior. College students change from passive to active, and from coping to active, to enhance their self-active awareness of college students' network literacy education, from passive participation to active participation, and willingness to promote and carry out network literacy education activities. Second, build a national external guarantee mechanism that integrates schools, society, and the country. Maintain and guarantee the security of cyberspace, and optimize the external cyber literacy education environment. The school guarantees the smooth operation of network literacy education for college students, and the society guarantees a healthy and healthy network environment. The state has issued relevant policies and systems to ensure the effective operation of the network literacy education system for college students. Finally, construct a feedback mechanism for network interconnection evaluation. Strengthen the public opinion propaganda of college students' network literacy education, improve the self-awareness of network literacy in all sectors of society, and all sectors of society should clarify their responsibilities and division of labor, supervise each other, use the Internet to supervise the public, while the public supervises network security, so as to achieve timely evaluation and feedback, and create a new situation.

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