

# An Analysis of the Research Status of Teachers Professional Learning Community in the Past Decade -- Bibliometric Analysis Based on CNKI

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## ABSTRACT

This study uses bibliometric analysis and scientific knowledge map, mainly with the help of CiteSpace 5.0 analysis software, with CNKI as the data source, to analyze the literature in the past ten years. This paper discusses the current situation of the research on teachers professional learning community from the three dimensions of high-yield authors, core institutions and high-frequency keywords, analyzes the current research focus of teachers professional learning community, and puts forward the existing problems of the current research institute, in order to provide some reference for the follow-up research on teachers professional learning community.

**Keywords:** *Teachers professional learning community, knowledge map, research status*

## 1. INTRODUCTION

Since the concept of "community" was first put forward by German sociologist Ferdinand Tönnies in "community and society", he thinks that community is a group of close relations formed under the influence of common spiritual consciousness between people [1]. Learning community refers to a group composed of learners and their students. They often communicate and exchange in learning, share various learning resources, and complete certain learning tasks together, thus forming a mutual influence and mutual promotion interpersonal relationship among members [2]. Teachers professional learning community is a reconstruction and creation of learning community in the field of teachers development. It refers to a group of teachers organized spontaneously by teachers and professionals concerned with teachers development based on a common vision and common goals, aiming to promote teachers professional development through shared cooperative learning, communication and dialogue activities [3]. Teachers professional learning community has its special form. In terms of scale, there is no clear boundary between teachers professional learning community and two or three people can form a learning community. In terms of organizational structure, teachers professional learning communities have the characteristics of spontaneous organization [4]. At present, in the process of traditional teacher development, there are many problems, such as the main way of development

is independent individual, lack of collective cooperation consciousness, low participation of organization members, lack of sense of organization belonging, passive development and lack of autonomy in the development mode [5], and the construction of teacher professional learning community can improve the above problems, break the traditional, closed and independent teachers development mode, provide rich and reliable paths and fields for teachers growth, and help teachers professional self-development rapidly. This study attempts to reveal the current situation of the research on the teacher professional learning community by using the quantitative analysis method, in order to provide reference for the research and development of the teacher professional learning community in China.

## 2. RESEARCH PROCESS

The main research tools selected in this study are CiteSpace 5.0 software, NoteExpress 3.2 software and Excel software. CiteSpace 5.0 software can make statistical analysis of documents, and draw knowledge map, which is presented in the form of map. NoteExpress 3.2 software is a professional document retrieval and management system. It covers knowledge collection, management, application and other functions. Through this software, duplicate and invalid documents can be screened out, and the related documents can be counted quickly by using the title statistics function. Combined with the data statistics of the software to analyze, in order to explore the

research status of teachers professional learning community, analysis of its research focus.

On the CNKI database, the subject keywords are "teacher community" or "teacher learning community" or "teacher professional learning community", and "2010.01.01-2019.12.31" is the age limit, and the subject category is selected as the education related subject under the social sciences II. In order to improve the validity and reliability of the data, the article content was strictly re screened, and the journals that did not conform to the subject and the pictures and texts were eliminated. Finally, 854 effective journal documents were obtained, and Refworks format was used in the export format.

### 3. STATISTICAL ANALYSIS OF DATA RESULTS

By using CiteSpace 5.0 software, 854 effective journal documents were analyzed from three dimensions: author analysis, organization source analysis and keyword analysis, revealing the research status of teachers professional learning community and exploring the research topic of teachers professional learning community.

#### 3.1. Author analysis

In this study, we use the Formula  $M = 0.749 (N_{max})^{1/3}$  [6], which is put forward by the famous American historian of science, to calculate the number of core authors, and calculate  $m \approx 3$ . We know that the authors of three or more publications are the core authors. According to the author statistics of CiteSpace 5.0, it is found that from 2010 to 2019, there are 1065 authors in total, among which 35 are core authors, i.e. authors with more than 3 posts, accounting for about 3%. It can be seen that although the number of people in the research field is relatively large, the number of long-term and stable researchers is not large. Among them, Wang Yanfei (8 articles), Wei Huiting (6 articles) and Wang Tianxiao (5 articles) are the most prolific authors in this field.

By CiteSpace5.0 software to further analyze the author cooperation contact, select the author as the node, and analyze its cooperation effect. It is found that the overall author nodes are scattered and the lines between author nodes are less. It can be seen that although the research of high-yield authors is more in-depth but mainly in the way of independent research, the cooperative author group is less, and the cooperation between researchers is weak.

#### 3.2. Source analysis of the authors organization

Through the analysis of the source of the authors organization, we can find the organization distribution

of the research on Teachers professional learning community in the past ten years. By using NoteExpress3.2 software, the authors institutions are counted and merged into colleges of the same university. The results are shown in Table 1. Among them, 8 of the top 10 institutions are from normal universities, and the high-yield institutions are central China Normal University (27), Southwest University (27), Northeast Normal University (21), etc. This shows that the research institutions of teachers professional learning community are mainly normal universities, which is related to the characteristics of normal universities emphasis on teacher education and teachers professional development, while the above-mentioned high-yield institutions are the core leading institutions in this research field in China [7].

**Table 1 organizations in the number of articles sent**

No	Number of articles	Issuing organization
1	27	Central China Normal University
2	27	Southwest University
3	21	Northeast Normal University
4	13	East China Normal University
5	13	Shanghai Normal University
6	11	HeNan University
7	11	Northwest Normal University
8	9	Beijing Normal University
9	9	Liaoning Normal University
10	8	Shaanxi Normal University

#### 3.3 Key words analysis

This study analyzes the key words, mainly around its frequency, centrality, emergence, clustering and other dimensions, and more comprehensively reveals the current research status of teachers professional learning community.

##### 3.3.1. Keywords frequency and centrality analysis

Through the statistics of the frequency and centrality of key words, we can explore the research focus of teachers professional learning community in the past decade. Because the frequency and centrality of keywords are directly proportional to the degree of attention. Select keywords as nodes, and merge keywords with the same meaning. The results are shown in Table 2. Except the number of retrieval word frequency, the higher ones are network teacher learning community (42 times), knowledge management (21 times), teacher development (19 times), famous teacher working room (13 times),

construction strategy (12 times), which can preliminary explain the general direction of research around above. The higher the centrality, the stronger the relevance of the keyword [8]. Besides the centrality of subject words, the key words such as teacher professional development (0.57), online teacher learning community (0.35), knowledge management (0.37) are all highly centrality. Furthermore, the research focus of teacher learning community focuses on network teacher learning community, knowledge management, teacher professional development, famous teacher studio, construction strategy and so on.

**Table 2 top 20 keywords of frequency**

No	frequency	Centrality	key word
1	215	0.5	learning community
2	170	0.81	Teacher professional learning community
3	139	0.57	Professional development of Teachers
4	86	0.35	professional Learning Community
5	57	0.15	Professional development
6	42	0.35	Network teacher learning community
7	37	0.18	teacher learning community
8	33	0.2	community
9	21	0.37	knowledge management
10	20	0.17	College Teachers

No	frequency	Centrality	key word
11	19	0.28	Primary and secondary school teachers
12	19	0.05	Teacher development
13	14	0.08	Teacher education

14	14	0.02	Teacher learning
15	13	0.09	Teaching Studio
16	12	0.07	Construction strategy
17	11	0.02	Preschool teachers
18	11	0.27	Professional growth
19	10	0.03	Teacher training
20	10	0.11	community of practice

### 3.3.2. Analysis of keyword emergence

The higher the emergence of key words, it means that the key words suddenly burst into many scholars research, that is, the forefront of the research field. Setting up  $\gamma = 0.5$  in CiteSpace5.0, acquiescence word by default Minimum Duration is 2, and discover that knowledge management with the highest index is 2.8419. Furthermore, it is found that by 2019, the research topics are Internet+, activity theory, collaborative learning and influencing factors. In conclusion, Internet+, activity theory, collaborative learning and influencing factors are the frontiers of the current research on teachers professional learning community.

### 3.3.3. Keyword cluster analysis

Cluster analysis is to use the concept of "birds of a feather flock together" to gather keywords close to each other, so as to become a cluster with relatively independent concepts, so as to maximize the consistency of keywords in each cluster and minimize the consistency between clusters. In this study, 854 journal documents were clustered by keywords, k-cluster was set as parameters, and LLR algorithm was used to get Q value of 0.8577 and greater than 0.3 (standard value), which shows that the clustering structure is significant; s value of 0.5219 and greater than 0.5 (standard value), which shows that the clustering is convincing [9], and 10 clusters were obtained, the results are shown in Figure 1. and the analysis results are as follows:

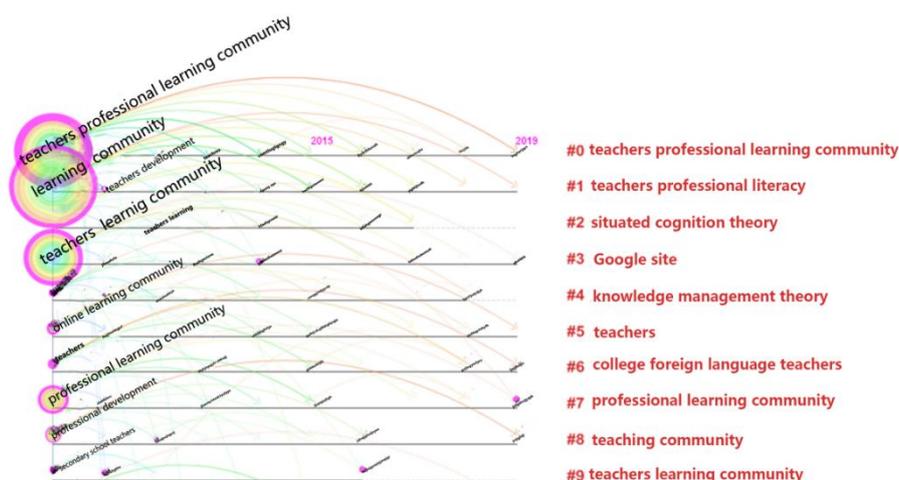


Figure 1 keyword clustering

Cluster 0 teachers professional learning community consists of 36 nodes, including: ecological philosophy, collaborative development, interpersonal culture, school system construction and other key words. According to the theory of ecological philosophy, it is necessary to systematically study the common system, culture and construction of teachers learning with systematic viewpoint and method, so as to promote the cooperative development of teachers.

Cluster 1 teachers professional Literacy includes 28 nodes, including keywords such as interdisciplinary, learning community and teacher core literacy. It can be concluded that the cultivation of teachers interdisciplinary literacy is the potential direction of teachers professional development in the future.

Cluster 2 situated cognition theory consists of 25 nodes, including Situated Cognition, virtual learning community, teacher development, network environment and other nodes. The analysis of node content can be summed up as the construction of professional learning community of network teachers based on the theory of Situated Cognition.

Cluster 3 Google site contains 25 nodes, including Google site, bilingual teacher community, teacher professional development, experiential learning, online learning community and other nodes. It can be seen that the clustering is based on the case study of the construction of the professional learning community of teachers based on the Google site platform.

Cluster 4 knowledge management theory, including knowledge management, strategy, collaborative communication, learning community, teacher professional development, teacher training and other key words. Clustering focuses on the construction of teachers professional learning community based on knowledge management theory, strengthens the cooperation and communication among teachers, and promotes teachers professional development.

Cluster 5 teachers and cluster 6 college foreign language teachers, including college foreign language teachers, teacher groups, teacher professional learning community and other key words, indicate that the research object in this field involves different levels of teachers, among which college teachers are the main core.

Cluster 7 professional learning community, cluster 8 teaching community and cluster 9 teacher learning community, including key words such as teacher professional learning community, professional learning, influencing factors, distributed leadership, teaching community, primary and secondary school principals, transformational leadership, principal leadership, etc. It can be seen that this kind of clustering mainly summarizes the research on the influencing factors of the development of teachers professional learning community.

#### 4. RESEARCH FOCUS

Through the frequency, centrality, emergence and cluster analysis of key words, combined with literature reading, the research focus on the professional learning community of teachers is reflected in theoretical research, construction research, application research and influencing factors.

##### 4.1. Theoretical research

From the above keyword analysis, it is found that the theoretical research on the connotation of teachers professional learning community mainly focuses on situated cognitive theory, knowledge management theory and activity theory. From the perspective of situated cognitive theory, knowledge is situation and develops continuously through activities [10]. It emphasizes that teachers learn new knowledge in the

process of interaction with situations, and learn and progress together by observing the characteristics of situations and experiencing the practical contents; from the perspective of knowledge management theory, the core of teachers professional learning community is the process of knowledge management, which is the unity of knowledge management and human management [11]. Teachers personal knowledge collides with collective knowledge, and then through community team consultation and cooperation, the previous knowledge structure changes to promote the development of teachers; from the perspective of activity theory, teachers take the common vision as the basis of cooperation, and the division of labor among teachers is clear, influenced by community team culture, system and interpersonal relationship, and through the way of collective cooperation and dialogue To achieve teaching objectives.

Based on the analysis of the connotation and characteristics of the above theories, it can be seen that the construction of teachers professional learning community is conducive to the sharing of knowledge and the derivation of new knowledge; it is conducive to the promotion of cooperation and communication between teachers and the creation of good interpersonal relationship between teachers; it is conducive to the formation of common value orientation and the enhancement of teachers sense of belonging and responsibility.

## **4.2. Construction Research**

Through the above results of clustering 0 of key words, combined with the analysis of literature content, it is found that the system construction of teachers professional learning community mainly includes: culture construction, system construction and construction strategy.

For cultural construction, Min Meizhen [12] proposed that leaders and teachers jointly manage the interpersonal culture of equal dialogue, mutual assistance between teachers and teachers; the learning culture of unity and cooperation; the management culture of people-oriented system construction; and the evaluation culture of collectivization. For the system construction, Wang Tianxiao [13] proposed three basic elements for the system construction of the governance of teachers learning community from the perspective of knowledge management: legitimacy, participation and respect; the system construction should be based on teachers and educating people; the school, teachers professional learning community and internal organizations should participate in the formulation of the system construction, and take all aspects into consideration; the timely and effective feedback mechanism should be set up to continuously promote We need to move forward and deepen the construction of the system. For the construction

strategy, Lv Jiangping [14] proposed four major elements of teacher professional learning community: learning team, learning task, learning process and learning resources. It also creates a teaching and research learning organization led by experts, with a common vision, cooperative learning and equal interaction, and a "complementary, cooperative, consultative and interactive" teachers professional learning community relationship. Zhang Jiahua [15] proposed to adopt the strategy of open discussion in turn or the way of "bringing the old with the new" to carry out collective teaching and research as a valuable and meaningful way of discussion.

To sum up, the construction of teachers professional learning community needs the promotion of culture, system, strategy and other aspects.

## **4.3. Application Research**

Through keyword analysis, it is found that the research field of teachers professional learning community is mainly focused on practical application field, and then combined with cluster 3 network teachers professional learning community construction research, it can be seen that the construction of teachers professional learning community can be divided into network construction and school (kindergarten) construction.

In line with the trend of development, scholars pay more attention to the research of online teachers professional learning community in the era of intelligence. Among them, the bilingual teachers online learning community based on Google site platform has been widely concerned by scholars. Zhang Zhijuan [16] proposed that a good and effective professional learning community for online teachers should have the advantages of learning resource sharing, effective knowledge management, equal communication between teachers, collective lesson preparation, etc. so as to promote the cooperation and communication between teachers in different fields and regions, so as to improve the professional ability of teachers.

On the other hand, the construction of school-based professional learning community for teachers mainly takes the organizational forms of "teaching studio" and "research workshop". Li Xiaojun [17] and others proposed that, in the process of construction, we should first negotiate and establish the common vision of the professional community of teachers, then build a resource platform for teachers to share, and regularly hold scientific research, academic exchange and learning activities. Finally, the studio should have a sound learning mechanism to protect the development of the teacher community. Zhuo Hui [18] proposed that in the process of constructing the scientific research workshop, the autonomy of teachers participation, equal communication between teachers, weakening school management, and the

research focused on practical problems of education and teaching.

In a word, the practical research of teachers professional learning community has gradually changed from the traditional school (kindergarten) based teacher group development to the teachers professional learning community which is not limited by time and space in the network environment, which extends the vitality of teachers professional development and promotes the continuous development of teachers profession.

#### **4.4. influencing factors**

It is found that the factors that affect the development of teachers professional learning community are also important research fields, and combined with the results of clustering 7,8,9, we can see that principal leadership has an important influence on the development of teachers professional learning community.

Wang Xiaofang believes that compared with the structure and culture, the influence of the principal leadership is at the core. She believes that the quality of principal leadership has a direct impact on the internal activities and relationships of teachers professional learning community, and it is necessary to reshape the structure of principal leadership [19]. And the leadership of the principal is abstracted into three different ways: teaching type, transformational type and distributed leadership. Among them, the transformational leadership of principals plays an important role in the establishment and maintenance of teachers professional learning community. Liswood Found that transformational leadership has a strong and obvious direct impact on school organizational conditions [20]. In conclusion, transformational principal leadership can promote the effective and sustainable development of teachers professional learning community.

### **5. PROBLEMS IN EXISTING RESEARCH**

To sum up, in the construction and development of teachers professional learning community, a certain degree of research has been carried out, and research results worthy of learning and reference have been achieved. However, there are some deficiencies in the research.

The number of in-depth researchers is small, and the cooperative education among scholars is weak. According to incomplete statistics, in the past decade, the number of relevant scholars has reached 1000, but the number of core authors is only dozens, and the number of scholars in this field is relatively small. Through the co-occurrence analysis of core

scholars, it is found that their relevance is weak, the degree of cooperation among scholars is shallow, and there is no active cooperation and common development research team.

Focusing on the construction strategy and development research, the practical effect research is more general and vague. Through the research, it is found that most of the research focuses are on the construction of teachers professional learning community, and a few focus on the operation effect of teachers professional learning community, and the demonstration of the effect research is often only expressed in a broad way (the development of teachers professional literacy, the improvement of teachers comprehensive application ability, etc.)

The research is still in the stage of speculation and demonstration, lacking of empirical research supported by data. The main research methods of teachers professional learning community focus on the theoretical speculation, case analysis and observation stage, and tend to think-provoking research. However, there are few quantitative or qualitative researches supported by data in the research demonstration, and there is no empirical research supported by data.

### **6. CONCLUSION AND PROSPECT**

This study visualizes 854 relevant documents about the research of teachers professional learning community in CNKI general database, and draws the following conclusions: first, from the perspective of the volume of papers, the overall trend is on the rise, and the research of teacher professional learning community has become a research focus. Second, according to the authors analysis, Wang Yanfei has the largest number of articles, reaching 8, followed by Wang Tianxiao and Wei Huiting. However, there is little communication and cooperation between authors. Third, from the perspective of institutional analysis, the institutions with the largest number of papers are central China Normal University and Southwest University, with 27 papers, followed by Northeast Normal University with 21 papers. Fourth, from the perspective of research focus, the most frequent keywords are network learning community, followed by knowledge management. The research topics include Internet+, activity theory, collaborative learning, and influencing factors. Among them, Internet+ is the most influential one. Fifthly, from the research field, the main fields include the theory, construction, application of teachers professional learning community and the main influencing factors of its development.

Through the research, we found that there are the following problems in the current research of teachers professional learning community: first, there is little academic cooperation between the authors, the degree of scientific research cooperation is not high, and there is a lack of high-yield and high impact scientific

research team in this field. Second, the practical effect of teachers professional learning community is more general and empty. Third, the number of empirical studies supported by data is not large. It is expected that the above problems will be improved reasonably in the future research, and the comprehensive and sustainable development of teachers professional learning community will be promoted by expanding the depth and breadth of relevant research continuously, so as to promote the teachers professional growth and strengthen the strength of teachers team.

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